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The Cheapest Motoring for Two.

THE MOTOR CYCLE

3D

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No. 849. Vol. 23. Thursday, July 3rd, 1919. Price 3d.

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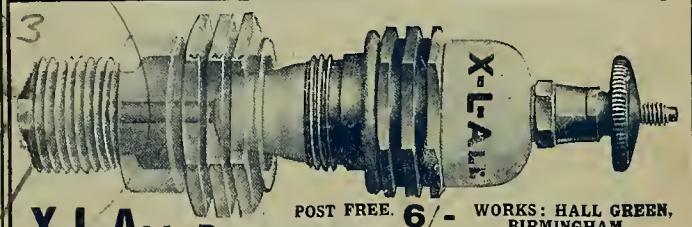

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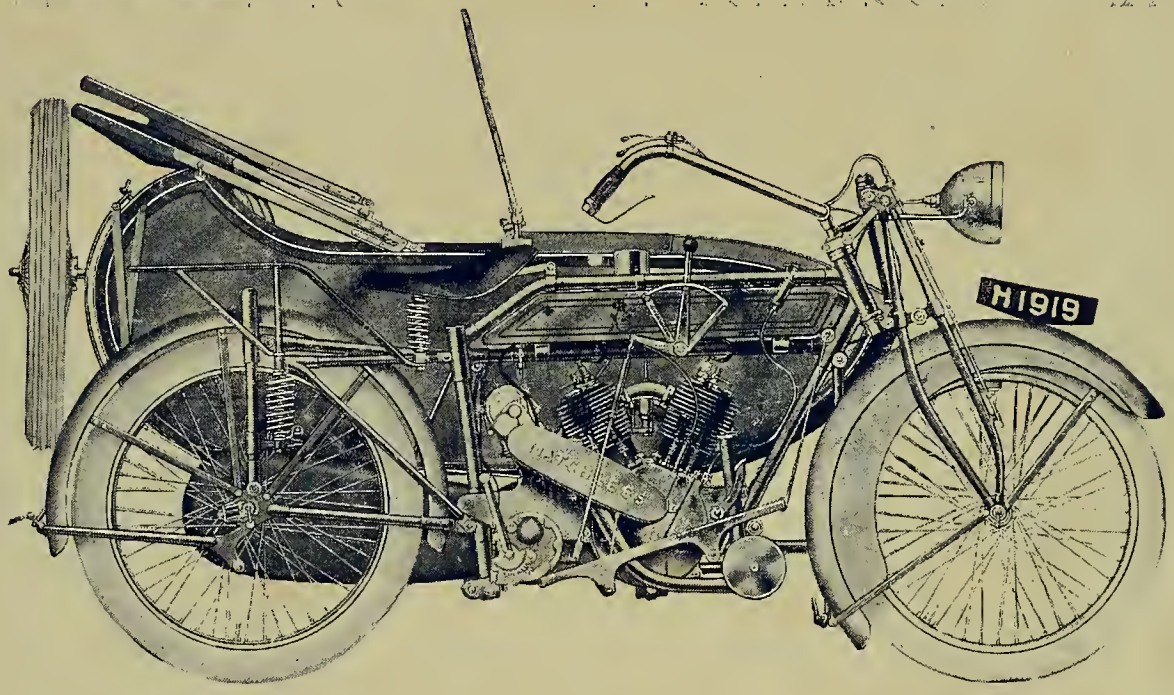

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Telegrams: "Cyclist, Fleet, London."
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Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
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Northern Offices:
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The Scottish Trials.

WE are glad to be able to announce that the Scottish Trials, the most sporting of all tests, is to be revived this year, and will take place on July 21st-26th inclusive. The decision is apparently somewhat sudden and the time for preparation short, but this is unavoidable, as it is most desirable that trials, which include long distances (approximating 200 miles on certain days), should be held before the evenings begin to close in at all early.

The Scottish Trials have been so popular in the past with every class of rider that, we may be sure, many will make great efforts to have their machines ready and in good trim by the opening day. The regulations will be found elsewhere in this issue, and it will be noticed that the promoters have not thought it necessary to depart, except in occasional small details, from the pre-war conditions or route.

The Scottish Trials are hardly suitable to the butterfly rider, but to the real motor cyclist who uses his machine day by day the whole year round they have in the past proved most enjoyable, and doubtless will do so again, for in spite of the fact that they form so strenuous a test of man and machine, the absence of irksome regulations has caused them to be looked upon by the hardy rider as something in the nature of a joy ride.

What is a Scooter?

NOW that provision is being made for the inclusion of motor scooters in competitions, the need for some official definition which would clearly show the line of demarcation between the scooter and the miniature motor cycle becomes apparent. We contend that the question of accommodation is the easiest and truest point to be considered in this direction. The term "scooter" was applied to the pre-war platform machines by *The Motor Cycle*, because they resembled the pavement toy so popular with the younger generation. A scooter, however small, can no longer be regarded as such if it is provided with a seat. Obviously it is an open-frame miniature motor bicycle; therefore, we think, when the governing body sit to define the scooter, as soon it must, a suitable definition may be arrived at which will meet the views of the majority.

Lightweights in Trial.

ALTHOUGH it is true that lightweight motor cycles have received a certain amount of encouragement in the trials of the past, we think that rather more might be done to aid the development of these little machines and make them more suitable for serious touring. We are not thinking of machines having engines with a capacity in the neighbourhood of 300 c.c. and more: these have long since proved their capabilities for practically any service which may be demanded of them. Rather we have in mind the really small and light machine with an engine capacity of not more than 225 c.c. and weighing about 100 lb., or a little more, completely fitted for the road. Motor cycles of this type are often bought simply as runabouts for use on short journeys only, but, though they are not to be compared with heavier and more powerful mounts in the matters of comfort and speed on long journeys, they are really capable of much more than this.

In the past it has been customary to cut out one or two of the worst hills in a trial in the case of the smaller machines. This policy, carried a little further, would enable a "baby" to compete with success in the A.C.U. Six Days Trials and to prove its usefulness, though perhaps not its equality, to its larger brother. The development and perfection of the spring frame to which, as our readers know, we have given much encouragement, will be another factor in ultimately fitting the lightweight for more serious work than that on which it has been hitherto employed.

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An index to the advertisements in this issue will be found on the page facing the back cover.

THE 1920 CLYNO ON THE ROAD.

A Lengthy Test of the Latest 8 h.p. Sidecar Outfit.

Mr. Frank Smith, with *The Motor Cycle* representative, aboard one of the new 8 h.p. Clyno sidecar outfits.

THE motor cycling fraternity had seen little, if anything, of this post-war production of the Wolverhampton firm until its appearance in the recent London-Edinburgh Trial, when Mr. Hugh Gibson drove it through without mishap, but the interest which it aroused at Highgate and *en route* was evidence that its fame had preceded it.

A member of *The Motor Cycle* staff was able to sample its power and comfort on an extensive trip recently, which was really a preliminary canter for the bigger event on the Great North Road.

The new Clyno was fully described in our issue of February 20th, and it is only necessary to say that very few minor alterations have taken place since. The V twin engine is 76 mm. bore × 102 mm. stroke, giving 925 c.c.; the transmission is by totally enclosed chain through a specially designed three-speed countershaft gear, to a sprung rear wheel; the sidecar wheel is also sprung.

Our journey started from the works at Wolverhampton, and the first fifteen miles were a horrible dream, as regards road surface; if anything worse exists than this road through Walsall to the suburbs of Birmingham, then a tank is the only suitable vehicle to traverse it. Had there been any defects in the springing system this section would have shown them up, without doubt, but it is quite true to say that not one really bad jolt was experienced by passenger or rider; the average speed over this section of the road was about seventeen miles per hour, and fast enough, in all conscience.

The run was continued *via* Dunchurch and Dunstable to London, thence up the North Road to the neighbourhood of York; here we turned south through Derby to Wolverhampton again—a round trip of nearly 400 miles.

Hills are unimportant on the earlier part of this route, and the machine simply hummed along at an even "bat" somewhere around 30 m.p.h. in the smoothest possible manner; it appeared possible to continue indefinitely.

A Comfortable Sidecar.

Both the sidecar passenger and the driver had, in Army parlance, a decidedly "cushy" job. The springing system, coupled with the unusually roomy sidecar, gave comfort, the like of which used to be found only on a good car; it was quite possible to write fairly legibly, and later, during the run, which was continuous over some twenty-two hours, the passenger slept soundly for a time. The almost silent running will satisfy the most fastidious—it may be compared to the ticking of a sewing machine. So pronounced is this point that, when the first change from low to top gear was made, we thought the engine had stopped accidentally.

On the return journey one or two fairly steep hills were encountered in the neighbourhood of Nottingham; on one of these one might quite reasonably expect to change down to second gear with any modern touring outfit. The Clyno took it on top, and, more than that, it was slowed and accelerated again several times with perfect ease; the average speed on this hill, for a little over a quarter of a mile, was about 25 m.p.h. The throttle was never quite fully open, and the load was a good touring standard. It was not an exacting hill, but sufficient to demonstrate the excellent hill-climbing powers of this new Clyno engine.

The Transmission.

More than a passing word in praise is due to the transmission; snatch is entirely absent, the clutch operating very smoothly.

Lubrication occasioned no worries; there are two systems. One is a mechanically-driven pump, forcing oil through a sight feed, and the other is the ordinary plunger pump. They may be used together or apart.

On a run of 400 miles one finds time to pick out faults if they exist, but our chief difficulty seems to be to describe impartially whilst keeping a curb on the superlatives. Without doubt we retain a definite impression of one of the best passenger mounts which will come before the public this year.

Difficulties still lie in the way of the production of this machine in large quantities; it is partly the Clyno company's reward for doing their war aero engine work so well that a considerable portion of their energies is still engaged in this direction: hence the delay in motor cycle work. Progress is improving, and when the fortunate purchasers of the new model take delivery they will, we feel, agree with our restrained eulogy.

OCCASIONAL COMMENTS

BY "IXION"

Pardonable.

IT is not altogether surprising that certain motor firms are unable to supply replacements from stock. When a new model is put on the market, a certain percentage of spare parts in reserve is specified by any decent works manager. To take an imaginary example: he may order 500 cylinders and 5,000 kick-starter pinions to be made and put into store, as a surplus to the quantities required for the output which he has planned for the year. It is, of course, impossible for the complete supply to be in the bins by January 1st of the year in which the new machine is introduced. In practice, the full quantity of several parts may be binned by the end of January, while the output of machines may be retarded or reduced because he cannot procure the production quantity of another part, let alone put aside a surplus for replacement orders. Thus January 31st may see some bins full, whilst December 31st may find other bins still empty. In 1914, many firms introduced new models, or at any rate machines embodying small modifications from previous patterns. War broke out in August, 1914, before the specified stocks of surplus parts could be completed. Since then few factories have had any chance of replenishing empty bins, and the drain upon such stocks of replacements as were completed has been excessive. No rider can, therefore, nourish a very ferocious resentment if his order for a pre-war replacement part elicits a polite apology, plus the information "that we are putting through a further supply of these spares as fast as possible."

Unpardonable.

UNFORTUNATELY, as our correspondence columns indicate, and as private information amply confirms, quite a large number of British factories grudge the small expenditure requisite to pacify customers who are pardonably anxious to get their machines into running order; and the culprits are by no means confined to the back-street, one-machine-per-month type of maker. Here is a case which is not at all extreme. A working man uses his 1914 machine to travel daily to a job seven miles way. Early in April he broke a weak part of his machine; the corresponding parts of sister machines had begun to collapse early in 1914, so that the makers must have been aware that a demand was certain. He put his order for spares through the local agent, and as he was compelled to use a push bicycle over steep, rough roads, great was his glee when the first week in May brought a *pro forma* invoice and a request for cash from the firm concerned. The cash was sent by return. Since that date neither owner nor agent has heard so much as a whisper from the factory, except for an official receipt. Repeated letters, finally culminating in a reply paid wire, have failed to stir the lethargy of this factory. Needless to say, its "goodwill" in that particular district has long since evaporated, and will not easily be regained. As the ancients said, "*Quem Deus vult perdere prius dementat.*" There is no excuse for such conduct. The concern in question is spending hundreds on advertisement. Had it engaged a demobilised adjutant, an ex-Whitehall flapper, and an Hotel Bolo Brownie (to dictate letters, stenograph, and enquire at the storekeeper's respectively), it would have enjoyed an advertisement worth far more than it has spent since the Armistice. In lieu of this, it apparently engaged one clerk to circulate a Roneo-ed letter, "We are putting this in hand right away," and left it at that. It is quite fair to point out that American factories have never been so pushed as to exhaust or mislay their pre-war spares, or even as to leave empty bins unfilled indefinitely; it is also fair to add that no American firm would treat its humblest and most remote customer in such callous and unbusinesslike fashion.

Honourable Exceptions.

FAR be it from me to imply that such misconduct is typical. I know another firm which was caught napping by the war. It was in process of reorganising and rebuilding to meet a sudden boom in its wares, and it possessed neither spares, store room, nor storekeeper. During the war it was swollen by Government demands into a concern of first-class importance; and since its duties were largely of an experimental kind, its growing shops were almost buried under junk and dud and litter of every imaginable kind. Suddenly the war ended. I doubt whether the firm had a hundred motor cycles on the roads of the world, and with its new reputation as an asset, vistas of unimaginable wealth must have opened before the eyes of the three partners. Under such circumstances many men would have washed their hands of the handful of 1914 customers, scattered thinly over two hemispheres. Not a bit of it. The trio met in solemn conclave. "The best advertisement is a contented customer," was the order of the day. One of the three directors was set free to organise a proper spare parts service for those miserable ninety odd 1914 clients, or whatever the exact number was. If he cannot always send you a new engine by return of post, at least you get a graceful explanation, and the guarantee that his men are busy making what you need. That firm is going to rake in the shekels, and deserves them.

The Cheapest Motoring for Two

COMMENTS, WISE AND OTHERWISE, ON THE PRESENT-DAY SIDECAR OUTFIT.

BY "CAR DRIVER."

IT is probable that many motor cyclists owning sidecar outfits may take exception to the wording at the head of this article, and condemn me for either a coward or a heretic in that I state, or at least imply, that a sidecar outfit is a two-seater. It would appear to the observant traveller that, although through some foolish whim of the designer a combination may be, as it were, condemned to bear abroad a mere two, such condemnable niggardliness of mind carries no weight with clients, and that from three upwards is the average number carried on most sidecar outfits.

As a car driver by birth and upbringing, so to speak, I have been reared on the creed of one seat one occupant, but since I have taken to doing my motoring on a sidecar I perceive with all humility how unsociable I have been in the past, and to be in the *mode* I must have a couple of passengers in the body of the sidecar and at least one on what I understand the most highly initiated of the cult term the "flapper bracket."

But to our story.

Being released from the toils of the Army, my first thought was a car. Unfortunately, an intensive study of the markets revealed all makers in possession of a metaphorical queue, yclept a "waiting list," each clamouring its loudest for delivery of the goods. Standing in a queue is ever a waste of time, so I did not.

The Super Second-best.

There remained the second-hand car market, unattractive at all times to my mind. I soon discovered that to pick up a good second-hand car at even twice its apparent value required more time for investigation than could be spared conveniently. There are no second-hands to be bought, I was often told. A small advt. in *The Autocar* brought many replies, but each letter appeared to be written by "Get-rich-quick Wallingford," or a blood relation. The second-hand alternative seemed equally off the map with the new car theory. It was most annoying, for the amiable Messrs. Cox had most obligingly cajoled some three hundred odd of the best out of the reluctant Treasury in the shape of War Gratuity, and it seems a hard world when something on four wheels cannot be acquired for three hundred Bradburys. Something worth while, of course. But no luck anywhere could be found among cars.

However, Easter loomed near and benzole was acquired, but there was nowhere for it to lay its head—no tank, that is. Bright thought, a sidecar! As a matter of fact finding a good sidecar outfit was not the easiest thing in the world, but, put briefly, it was done, and just before Easter I found myself with a very excellent outfit, consisting of a famous single-cylinder machine, and attached to it a sidecar by one of the most eminent members of the sidecar making craft. Since then I have covered close on fifteen hundred miles without an involuntary stop or the need for a single adjustment; therefore I will say right here and now that I consider that, as far as *reliability* goes, a *good* sidecar outfit is equal in the matter of reliability to a motor car.

Evolution.

Now for a few observations. It is some years since I rode motor cycles: years ago, from 1902 onwards, I owned dozens, and accumulated a total mileage of many tens of thousands of miles. So I know something of the ways of the two-wheeler.

I have not ridden a motor cycle since 1913. Since then I have used cars whenever the war has let me.

Frankly, I am astounded at the improvement in the engines of the present day over, say, those of 1912-13: far more power and flexibility, easier starting, and better balance.

Fittings and gadgets generally have vastly improved: the perfecting of electric lighting alone lifts sidecaring from a terror by night to its being a matter of indifference whether daylight is available or not. The almost universal little Klaxon makes one far happier than the horrible old pip-squeaks that formerly went by the name of horns. Mudguarding is better, and is apparently still improving. Transmission details are far stronger and better carried out. General controllability is on a higher plane than before the war.

Chain cases are now perfected.

So far all is to the good.

There is another side to the question

While the passenger is well looked after, the comfort—as opposed to the convenience—of the driver is not any better studied than in 1912. Only a few firms appear to be resolutely tackling the question of rear suspension of the motor bicycle itself.

It seems to me it is too easily said that rear springing renders proper attachment of the sidecar difficult. I

The Cheapest Motoring for Two.—

cannot agree. It has been done, and it can be done, and what is more it *must* be done.

There are, in my opinion, three main problems which must be tackled very quickly. First and foremost the question of springing, second provision of detachable wheels, and third some well-thought-out plan of carrying a reasonable amount of luggage for two on the *sprung* portions of the outfit. There is nothing impossible or unreasonable in such demands. Everyone who sidecars wants these, and when everyone wants anything it is generally obtainable.

One can obtain all the points, and has long been able to obtain them, in the smallest and cheapest cars: I had almost written cycle cars.

I sincerely trust that Olympia will be bristling with outfits so equipped next November.

The Motor Cycle was the power in the land that got us multi-speed gears for motor cycles. Is it too much to hope that it will use its great influence to educate the public to demand and urge the manufacturers to supply sprung rear frames? It ought to be as rare a thing to see a powerful outfit minus rear springing and detachable wheels in 1921 as it is now uncommon to encounter such *necessities*. Really such fitments are due in 1920, but one desires to be reasonable, and to give manufacturers a chance to perfect such devices.

Given such an outfit, I really cannot see that a cycle car of moderate price has much advantage over a sidecar. It has certain disadvantages: it will always cost more to run a four-wheeled vehicle than one with three wheels. The cycle car will lose in hill-climbing, petrol consumption, speed, first cost, taxation, and in difficulties of garaging. But on present-day design, it is a big winner on *comfort*. There is no mechanical reason why it should be so, and as a carist and motor cyclist, I consider I have a right to a great deal more comfort and convenience on a sidecar outfit than I get at the moment.

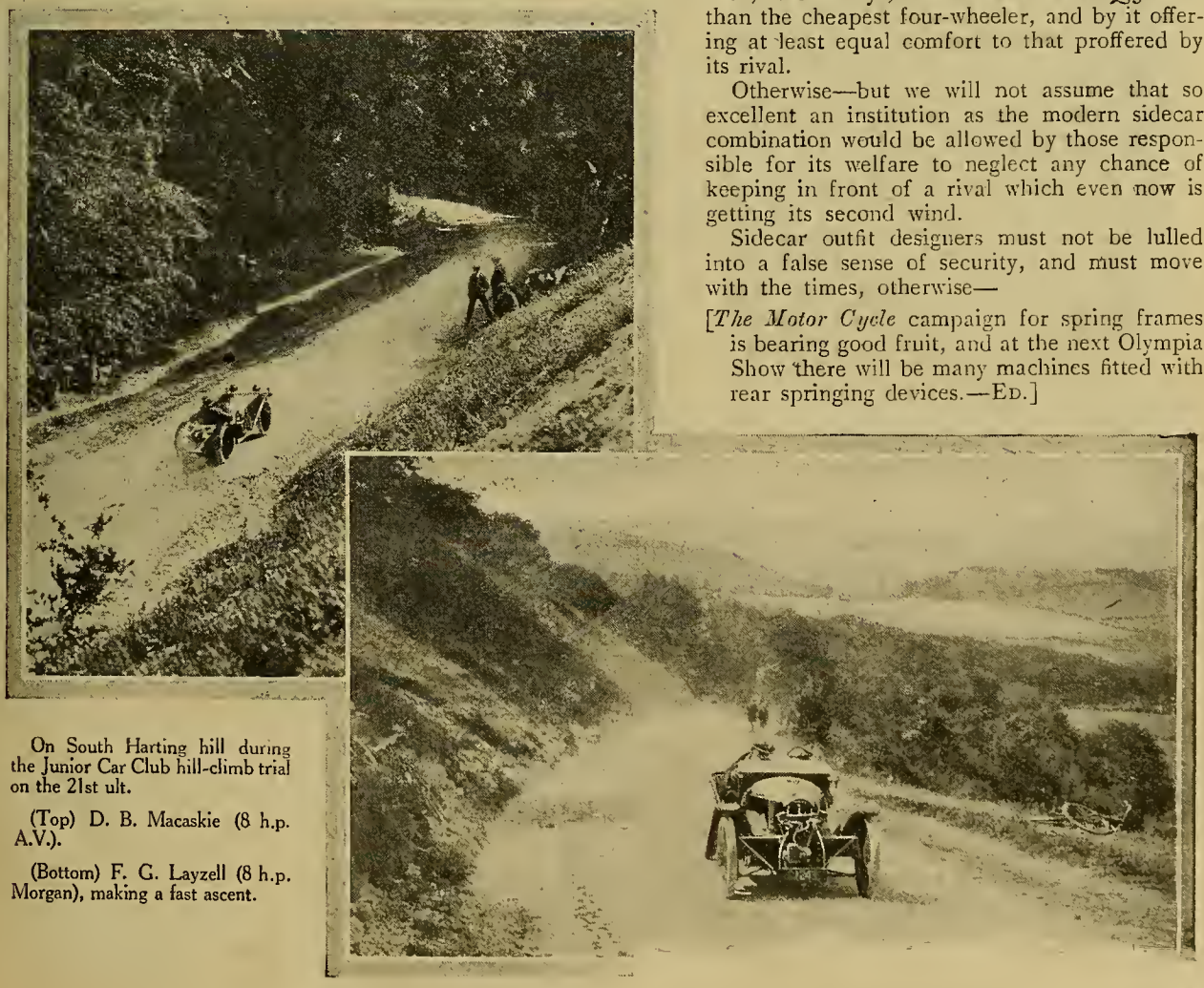
Four Wheels or Three?

It seems possible that manufacturers are living in a rather dangerous time. Before the war, the cycle car attack on the sidecar position, though promising to be formidable, eventually wilted and came to nought. Things have progressed somewhat since that time, and when the cycle cars make their massed attacks on the sidecars next time, they will not be beaten off so easily. What will save the sidecar combination now, then, and always, will be its sale at £50 less than the cheapest four-wheeler, and by it offering at least equal comfort to that proffered by its rival.

Otherwise—but we will not assume that so excellent an institution as the modern sidecar combination would be allowed by those responsible for its welfare to neglect any chance of keeping in front of a rival which even now is getting its second wind.

Sidecar outfit designers must not be lulled into a false sense of security, and must move with the times, otherwise—

[*The Motor Cycle* campaign for spring frames is bearing good fruit, and at the next Olympia Show there will be many machines fitted with rear springing devices.—ED.]



On South Harting hill during the Junior Car Club hill-climb trial on the 21st ult.

(Top) D. B. Macaskie (8 h.p. A.V.).

(Bottom) F. G. Layzell (8 h.p. Morgan), making a fast ascent.

THE MOTOR MACHINE GUNS.

An Attractive Service Now Open for Recruits.

IT was quite a happy thought on the part of the individual who invited the Motor Machine Gun Batteries to participate in the Bristol rally. The four companies which paraded on that occasion created a very favourable impression, and we were struck by the very apparent enthusiasm of the men. During the gymkhana, arranged by the Bristol M.C.C., some of the officers and men competed in most of the events, and the *camaraderie* which existed between officers and men was clearly apparent. In the procession, and later in the gymkhana events, great skill was displayed by the drivers, Lt. Bradshaw in particular shining when it came to "stunt" performances.

We understand that this unit has authority, and is prepared, to accept suitable motor cyclist recruits. The corps is recommended to any motor cyclist or would-be-motor cyclist who is at a "loose end" and who would appreciate membership of what is, to all intents and purposes, an up-to-date motor cycle club, with all found and no subscriptions to pay.

Major B. Arthur, D.S.O., informed us that there is a certain amount of light duty, but plenty of leave and liberal pay, a most excellent combination of duty, business, and pleasure. Any aspirants should apply personally to the Headquarter Orderly Room at the White City, Ashton Gate, Bristol.

Maj. B. Arthur, D.S.O., on a military Clyno outfit, passing through the archway entrance of Ashton Court, Clifton, on the occasion of the recent Bristol M.C.C. Rally.

Four companies of the 1st Motor Battalion M.G.C. at Bristol, where they have been stationed since their return from Overseas.

Our readers will recall that *The Motor Cycle* played a prominent part in the formation of the popular Motor Machine Gun Service, obtaining over 10,000 recruits among readers of this journal at a time when their services were urgently wanted. At the present moment batteries of sidecar machine guns are scattered all over the world, doing yeoman service in guarding British interests in our overseas possessions. Regularly our postbag contains letters from these men stationed in the most unexpected—and sometimes unheard of—places. The famous Tank Corps—whose deeds played such a big part in winning the war—was, in the first place, manned largely by motor cyclists drafted from the ranks of the M.M.G.S. Their brave deeds will live in history for all time.

A.C.U. NOTES (Officially Communicated).

PETROL LICENCE REBATE.—Since the removal of restrictions on the sale of petrol, the Auto-Cycle Union has been actively assisting members to obtain the rebate on paid-up licences to which they are now entitled.

MOTOR CYCLE COMPETITORS' CERTIFICATES.—The Auto-Cycle Union desires to impress upon intending competitors in open motor cycle competitions that it is essential for them to obtain the Union's competitor's certificate. Various delays and inconveniences have been caused in connection with recent competitions by riders neglecting to do this. These certificates can be obtained only from the Auto-Cycle Union, 83, Pall Mall, London, S.W.1, and the necessary application forms and particulars regarding them will be forwarded to intending competition riders on request.

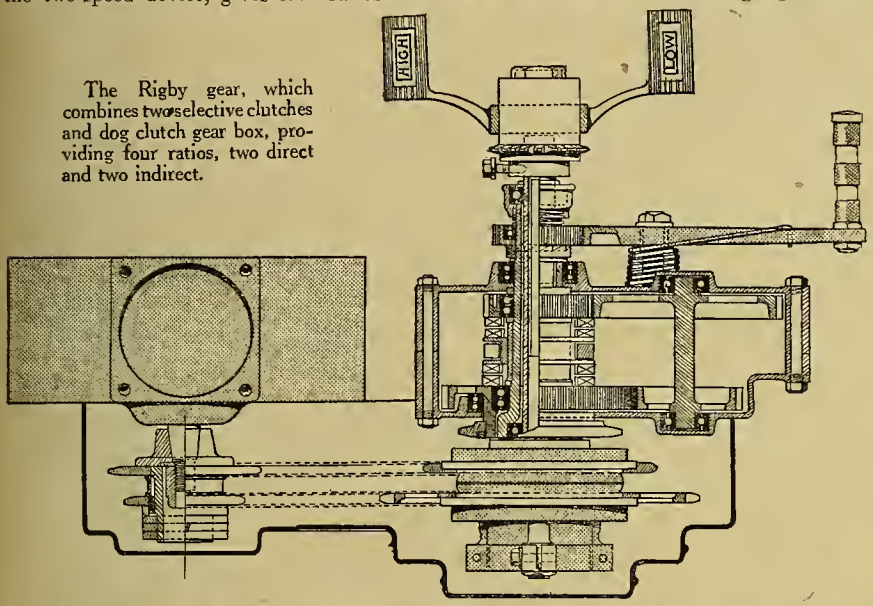
MOTOR CYCLISTS INSURING.—A large number of motor cyclists are insuring themselves and their machines through the special policy prepared for their benefit by the Auto-Cycle Union. This policy is, of course, only issued to A.C.U. members, but it is in itself a sufficient inducement to every thoughtful motor cyclist to join the Union.

A BOOM IN MOTOR CYCLE TOURING.—Motor cycle touring has already surpassed its pre-war popularity. Just before Whitsun the Auto-Cycle Union received an enormous number of requests from members to supply them with routes and other touring information. The A.C.U. Touring Department worked at high pressure in meeting the varied demands made upon it.

BUYING SECOND-HAND MOTOR CYCLES.—Owing to trade exigencies new motor cycles are almost unobtainable at present. This a good many enthusiasts have found to their disappointment, but there has been practical consolation for those who are members of the Auto-Cycle Union. These have taken full advantage of the free technical advice in the purchase of second-hand machines, to which they are entitled, and many prospective riders have had likely purchases examined by the A.C.U. Engineer under the modest scale of charges provided for members.

A SIMPLE FOUR-SPEED GEAR.

IN our issue for May 22nd we illustrated the Rigby selective clutch two-speed gear intended for old-type machines with pedalling gear. The inventor and patentee, Mr. E. J. Rigby, of Prescot Road, St. Helens, Lancs., has designed a modification of this gear, embodying a simple countershaft gear box, which, combined with the two selective clutches of the two-speed device, gives four ratios.



The Rigby gear, which combines two selective clutches and dog clutch gear box, providing four ratios, two direct and two indirect.

The ratios provided are 4, 6, 8, and 11½ to 1, with two neutral positions, and the device allows the pedal starter to be used with the back wheel on the ground.

As will be seen from the illustration, two chains alternatively convey the drive from the engine to the countershaft, providing two ratios equally direct—that is, without driving through the spur gears in the gear box. This latter part of the unit approximates to a conventional dog clutch gear box providing two ratios, therefore, two "indirect" ratios. The top gear is obtained when the inside chain wheel is clutched to the main shaft by depressing the high gear pedal, which moves the dog clutch in the gear box to lock the larger of the two spur wheels on the main shaft. The driving sprocket of the rear chain is connected to this spare wheel, consequently, by clutching it to the main shaft the drive is direct to the rear wheel, the spur gears running idly.

Obviously, if the outside sprocket is clutched to the main shaft (by the low gear pedal) in place of the one on the inside, a second direct ratio is provided; while if the far side gear wheel is connected to the main shaft by the sliding dog clutch, the drive will be from one or the other chain sprocket clutch through the main shaft and two far side gear wheels, hence through the near side spur wheel on the layshaft to the gear on the inside and the small driving sprocket. Thus, four ratios are obtained, the 4 to 1 and 8 to 1 being direct.

To start the engine by the pedal starter the dog clutch in the gear box is placed in the neutral position, as shown in the illustration, and the pinion wheel, meshing with the segment in the starting crank, transmits the motion through the main shaft to whichever of the two chain sprockets is clutched to it.

TWO-SEATER SIDECARS.

GREATER sidecar accommodation has, for a considerable time, been demanded by many motor cyclists with families, and, to meet this call for a second seat, the Venus Sidecar Company, 6 and 8, Gourley Street, S. Tottenham, London, N., have recently introduced several new sidecar designs.

One model, known as "The Tank," is a large and comfortable sidecar with a "square" body somewhat resembling a Tank, which amply accommodates two passengers; one seated in the large front seat, and the other, sufficiently large to seat a juvenile up to fourteen years of age, located at the rear.

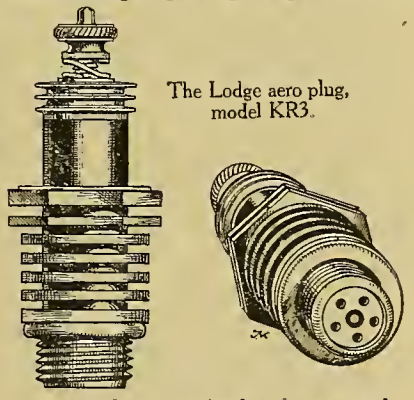
The bulbous two-seater illustrated carries its passengers in the reverse way. The adjustable bucket seat in front of the seat proper is provided at each side with a bracket suspended from bolts on the inside of the car, and is held in position by a folding leg hinged to the underside of the seat. When the seat is not required the whole fitting is rotated forward, providing a comfortable footrest for the passenger in the rear seat. A spacious recess is provided in the back of the sidecar for the storage of a petrol tin or luggage, access to which is given by the hinged backrest.

Another two-seater sidecar is being produced, fitted with a flat seat located in front of the main seat, additional comfort being provided by a backrest.

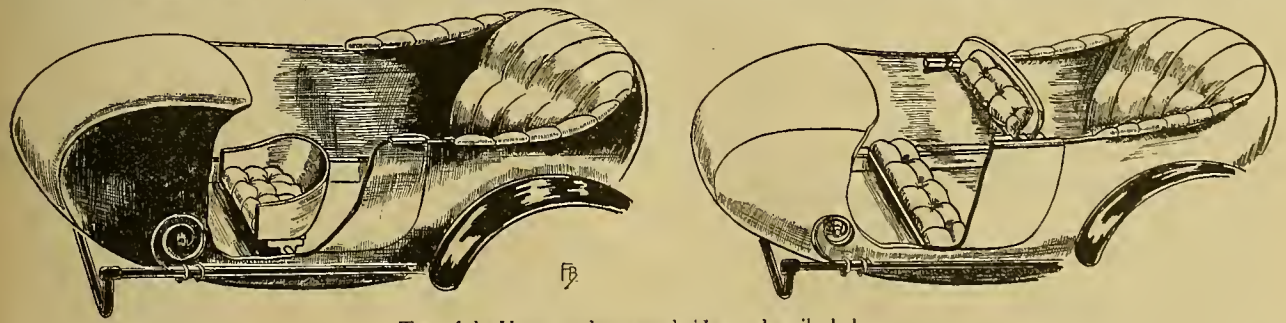
AIRCRAFT PLUGS.

MANY of our readers have displayed keenness to try the special plugs which were used in the British aircraft engines.

The aircraft plug considered to be in widest use during the war was the Lodge aeroplug (Model KR3), and the makers, Messrs. Lodge Sparking Plug Co., Ltd., of Rugby, have received a large number of applications for them from motor cyclists. Until quite recently, however, Messrs. Lodge were not permitted to supply the plug except through the Air Board; but, we understand, the makers are now released, and a quantity of this model KR3 plug is available for general use at a cost of 8s. 6d. each. The manufacture of the plug is not being proceeded with at the present time, and the plugs offered by the makers are those actually made for use by the R.A.F.



The Lodge aero plug, model KR3.



Two of the Venus tandem-seated sidecars described above.

HOT OR COLD INDUCTION?

THE THEORY OF PETROL CARBURATION.

THERE is one fundamental point in connection with the question of hot induction which I have not yet seen mentioned. I refer to the matter of vapour pressures.

Before going further an explanation of the term might not be amiss. If a small quantity of any pure liquid be introduced into the Torricellian vacuum of a mercurial barometer (I do not recommend playing around with respectable pendant instruments, however), it will be observed that the liquid evaporates and the mercury drops a certain distance. If the addition of liquid be continued, there will come a point at which the mercury level remains stationary despite any further additions. The difference in levels is due to the pressure of the vapour driving the mercury down, and is known as the vapour pressure of the liquid at the temperature of the experiment. If, however, the barometer be heated, it will be observed that the vapour pressure increases, and, if the boiling point be reached, the mercury sinks to the level of the reservoir and the vapour pressure is exactly one atmosphere.

The Significance of the Vapour Pressure.

All this does not seem to have much bearing on petrol engines as yet, but the important point is that the amount of vapour in any closed space that is saturated with it can be found if we know the vapour pressure of the liquid at the particular temperature. It is given by the expression:

$$\frac{\text{Vapour pressure at given temperature}}{\text{Atmospheric pressure at time}} \times 100\%$$

Now, imagine a cylinder saturated with inflammable vapour. A certain percentage of the vapour is essential before we can get an explosion. The percentage actually there can be found from the above expression, provided we know the vapour pressure of the liquid for a number of temperatures. Possibly the cylinder is too cold for the saturated vapour to be explosive: heating the liquid will raise the vapour pressure and raise the percentage of vapour present till it does constitute an explosive mixture. From this it is clearly seen that *the necessity for hot induction in a petrol motor will depend entirely on whether the vapour pressure of the fuel is sufficiently great to yield an explosive mixture with air.*

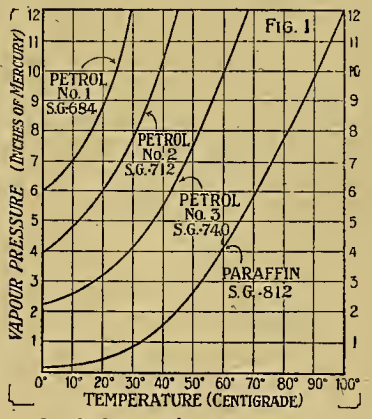


FIG. 1
VAPOUR PRESSURE (INCHES OF MERCURY)
PETROL No. 1 S.G.·684
PETROL No. 2 S.G.·712
PETROL No. 3 S.G.·740
PARAFFIN S.G.·812
0° 10° 20° 30° 40° 50° 60° 70° 80° 90° 100°
TEMPERATURE (CENTIGRADE)

Graph showing the vapour pressures of various fuels.

Having thus stated my case, I trust the reader will forgive my introductory diatribe. Being unable to gain access to any published data on the vapour pressures of various fuels, I had perforce to determine them myself, using standard samples of the fuels quoted. The experiments were carefully done, and, although not academically accurate, are nevertheless sufficiently accurate for the present purpose. Fig. 1 shows the results in graphical form. The wide difference between the three grades of petrol and paraffin is at once apparent.

Explosive Mixtures.

Now the heavier a fuel is (in the same class of fuels, of course) the more air it will take for complete combustion per one volume of vapour.

Thus a c.c. of petrol vapour would require from 40 to 50 c.c. of air, while paraffin vapour would need twice as much. True, weaker mixtures than these will certainly explode, but it is more economical to get complete combustion, and we will concern ourselves exclusively with the temperatures of induction needful to get the proper mixture.

It is an easy matter to calculate from chemical principles the volume of air required by various fuels (assuming a definite mixture of typical compounds for each, according to its density and range of boiling point), and, without bothering the reader with details, I give the actual figures:

Petrol No. I.	50	Volumes of air per one volume of pure vapour.
,, No. II.	60	
,, No. III.	75	
Paraffin	100	

(By pure vapour is meant vapour such as would be obtained by boiling the fuel unmixed with air.)

The "Attenuation Theory."

"But if we heat the induction we expand the gas, and less will enter, entailing less fuel per stroke, and so less power," I hear many readers say. Well, let us discuss the matter systematically.

The curve at the top of fig. 2 has been obtained by considering a vessel of 1,000 c.c. capacity and working out how much air would actually be contained therein at various pre-determined temperatures, *its contents at any temperature being cooled to* 0° *centigrade and measured.*

For instance, if the cylinder were filled at 0° C., and then heated to 60° C., some air would escape, and the remainder, if again cooled, would occupy 820 c.c.

Hot or Cold Induction?

Now, this 820 c.c. might be saturated with vapour, and the amount present is determined by the expression already given. (Scientific readers will say at first, "But it is the 1,000 c.c. that are to be saturated." Strictly speaking, it is, but a little thought will show that by taking the reduced volume we co-ordinate vapour volume and weight of fuel.)

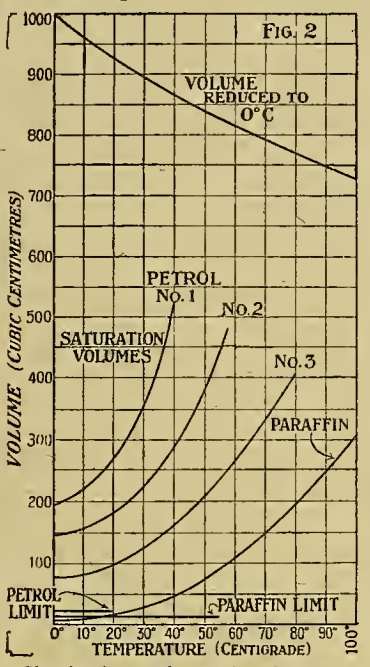
From the data furnished by my vapour pressure experiments I calculated this quantity for various fuels at successive temperatures, obtaining thereby the three lower curves of fig. 2.

Herein lies the discomfiture of the "attenuation theory" *per se*. It is strikingly plain that, instead of getting less, the volume of fuel in the cylinder increases enormously with increasing temperature.

Hot or Cold?

So now for the great question! With what fuels is hot induction needed and with what is it superfluous? In the curves of fig. 2 we have all our data.

From the quantities mentioned above we find that a litre of explosive mixture containing paraffin vapour and air should have 10 c.c. of paraffin vapour. On fig. 2 we therefore draw a horizontal line at 10 c.c. It cuts the curve at a point indicating about 20° C. Now, if we have air at less than 20° it cannot pick up enough vapour to reach the explosive limit, so here, *in the case of paraffin, induction heating is necessary.*



Showing degree of saturation of various fuels at different temperatures.

But now for the three petrols! Petrol No. I. requires most vapour in the litre space—20 c.c., in fact. Let us draw a similar line at 20 c.c. and see what happens. The line does not cut the petrol curves at any reasonable temperature. Even Petrol No. III. —that anathematised bugbear of weary kick startists and handle-swingers—comes nowhere near it.

But it may be argued that these results are only theoretical, and need modification according to the type of carburetter used. Let us examine this problem. Throughout the foregoing it has been assumed that all the air passing the throttle gets saturated with vapour. In the case of a wick carburetter or the old-fashioned surface instrument this is the case. But a modern jet type supplies a suspension of tiny drops which evaporate in transit, either in the induction pipe or on contact with the hot cylinder walls. In such a case once the engine is hot the vapour becomes supersaturated at the throttle and undersaturated in the cylinder, and *better results would be obtained than the foregoing results would show.*

If the jet happens to be partially stopped up, however, or too small, the air will not even be saturated at the throttle. This is not the fault of the theory, but of the carburetter, which merely needs scientific adjustment.

Summing up, the only fuel which needs induction heating is paraffin, or, more generally, any fuel above specific gravity 0.800 in the petrol-paraffin series.

H. J. POOLE, Int.B.Sc.

THE HANDLE-BAR DECOMPRESSOR.

A Simple and Convenient Auxiliary Means of Control.

LONG experience as a Scott rider has taught me the value of a decompressor which, though not intended to be used as a means of stopping the engine, is nevertheless sufficient to enable one to reduce the compression to the very merest burble, thus eliminating all knock or fierceness in the pulling during brief intervals of stress. As every rider of a Scott machine knows, the decompressor on this machine is used not only for starting, but also as a means of control when under way—as, for example, when changing from low gear to high, so that the engine does not race while the gear goes gradually home and obtains its full grip. In traffic it is endlessly useful, for on running slowly on top the slightest pressure on the decompressor lever prevents any tendency in the direction of knocking, and enables the engine to turn over to an easy, steady tune instead of labouring harshly.

Variable Compression.

A petrol engine required to pull hard over a wide range of speeds should, theoretically, possess variable compression, but as it is an engine is turned out to attain a certain speed at a certain load, and the compression ratio is fixed to obtain this result.

The same ratio, therefore, is not correct when it comes to much lower speeds at approximately the same load. In other words, the compression of a motor cycle engine is not the best that might be given were we riding eternally in traffic, and it is for this reason that some means of varying the compression to suit the emergencies of the moment is advantageous. The simple means of allowing a part of the charge to escape may be wasteful, but it saves the engine, and though certainly I do not recommend the use of the exhaust valve lifter as a means of control, it may be pointed out that the only objection to this system is that it is rough on the exhaust valve.

When turning from a Scott to some other make I miss the h.b. decompressor more than anything, for, even though full use be made of the throttle lever and the gears, there are times when the pressure of the finger on this little instrument would add much to the comfort of both rider and engine.

CHINOOK.

[Incidentally, a recent two-stroke design reviewed in *The Motor Cycle* embodied a device to obtain the choice of three compression ratios at will.—ED.]

NO AGE LIMIT.

A Selection of Letters from "Young-old" Riders who are in the "Sixties."

IN last week's issue and that preceding it we gave letters from "young-old" motor cyclists who responded to our invitation to send us their experiences. So far we have published communications from seven riders whose total ages amount to 508 years, or an average of over seventy-two.

Below we give a selection of letters from readers who are riders over sixty years of age, to which grade of veteran and to all old-young riders we repeat our invitation to send photographs and comments. This series of experiences is not published exclusively to find the oldest motor cyclist, but to show that there is no age limit where the motor cycle is concerned, and experiences from men of

A 69 year old Scottish rider who has two motor cycles in use.

mature years may go far to remove any doubt which at present may exist in the minds of many old-young readers who are hesitating about joining the ranks of motor cyclists. With present-day reliability, ease of starting, and controllability, there is no reason why the average man over sixty years of age should not enjoy the pleasures of the open road with his sons and grandsons.

A Long Record.

Mr. Robert Cumming, of 71, Broad Street, Aberdeen, who is in his sixty-ninth year, regularly uses two machines—twins he calls them—a Baby Levis and a Baby Triumph. He gives his record below:

"At the age of seventeen," he writes, "I commenced cycling on a 'bone-shaker.' Then came the 50in. Spider, followed by the Kangaroo, a Crypto gear, and then a safety bicycle with cross frame and gate hinge neck weighing about 70 lb. Afterwards came the Swift with spring forks, not unlike the present Druid. My first Swift had cushion tyres, but when the Dunlop tyres came along I had them solutioned on to the rims.

"My first motor cycle, obtained in 1905, was an Ormonde, with 2¾ h.p. Kelecom engine, placed underneath the seat, with a short belt drive. The sparking plug was on the right side, projecting outwards, so that when pedalling the leg came in contact, with the result that the trousers got warm, and the rider often got a shock!

"I had the first sidecar in this town, and when learning to drive it had the usual experiences of getting into the ditch.

"My next mount was a Clement-Garrard with round belt drive and jockey pulley—a beautiful little lightweight. Since then I have had numerous other makes, and now, in my sixty-ninth year, have 'twins'!—a Baby Levis and a Baby Triumph. The former I use mostly in town, as I find it even easier than an ordinary push bicycle when going through traffic.

"In conclusion, I can recommend a lightweight to any old cyclist who is thinking of taking the 'plunge.' He will manage it first go."

Another reader, Mr. H. J. Hodder, of Taunton, sends us news of a sixty-six year old veteran who is too modest to do this himself. He writes:

"Mr. Sibley is between sixty-five and sixty-six years of age, and two years ago had never touched a motor cycle of any description. Having many public duties to perform, and the train service being bad, I offered to teach him to ride. He purchased a Dayton lightweight, and within a half-hour of leaving the house he started off on a ten-mile trip by himself. He has since purchased two 2¾ h.p. Allon two-strokes, and went for a fifty-mile trip even as recently as last week, also a fifty-mile run the previous week with the club now formed in this town.

An "All-weather" Rider.

"Although he has been riding constantly in all weathers, Mr. Sibley has never been in any difficulty, and obtains the keenest enjoyment from his runs. I may say that Mr. Sibley is not of a mechanical turn of mind, and has not been accustomed to machines of any description, and started two years ago as a pure novice."

Mr. S. Walker, of Sale, Cheshire, who is sixty-five years of age, writes as follows:

"I shall be sixty-five in a month or so, and purchased a Junior Triumph in March last. Since then I have had a number of short trips, and on Tuesday last went thirty-four miles in 2¼ hours; not excessive speed for a young man, but just as fast as I care to go. I am looking forward to having some nice runs this year. The machine runs beautifully, and I have not had any trouble."

We have also received a letter from Mr. A. J. Hicks, of Clapton, who is sixty-three years of age, and thinks nothing of riding a hundred miles in the evening after being "at the bench" on aircraft work for nine hours. He commenced cycling at the age of ten on a hobby-horse.

Several of our "old young" readers are clergymen, who find their machines of great utility in connection with their work in scattered parishes. The Rev. H. G. Stembridge, of Keysoe, St. Neots, did not commence motoring until sixty-two years of age. He writes:

"I began my career of motor cycling on my sixty-second birthday. I then bought, on February 27th, a second-hand 3½ h.p. Triumph and cane sidecar. The engine is a 1908 one, and the motor cycle was fitted with a Sturmey-Archer three-speed hub and clutch a year or two later.

"For this, my beginners' outfit, I paid £35—and I think it was a good investment.

A Sidecar Enthusiast.

"I am a country Nonconformist minister, living ten miles from anywhere, and have a big district to look after, and I find the sidecar an admirable help for my wife in our visitation, and for town and station work.

"At first I had plug trouble, and did not know what was the matter; and then the magneto, with worn-out platinum points and a gap of nearer a quarter of an inch than an eighth, often refused to spark at all, but after new points were fitted and adjusted all went well for a time.

'Then I traced my second magneto trouble to a dirty carbon brush and high-tension cable connection, and in finding these things my education was advanced. *Experientia docet.*

"Next, with the aid of my youngest boy, I took down the engine, decarbonised it, fitted up new valve springs with proper lift to the valves, ground these in, and got a new bush turned up for the big end of the connecting rod.

"After a few short trips, on one of which I ran against a farm cart, and on another brought the 'chair' over on the top of me going round a corner, both without much damage being done, I undertook a journey to Luton and back, thirty miles each way.

"The outward journey was done in good style, and I felt rather proud of myself and the ancient mount.

"I am a regular reader of *The Motor Cycle*, and much enjoy and profit by it."

The Rev. H. G. Stembridge, of St. Neots (age 67).

Scottish Six Days Open Reliability Trial.

Popular Scottish Event to be held July 21st to July 26th.

PROBABLY no motor cycling event of pre-war days appealed more strongly to the sporting rider than the Scottish Six Days Open Trial, and it is with much pleasure that we announce that our Edinburgh friends have decided, at the eleventh hour, as it were, to hold this fascinating event again this year. The trial will take place on July 21st to 26th, and the route and conditions of the trial are practically the same as those which obtained in 1914. We give all the information available up to the time of going to press. Slight re-adjustments and improvements are liable to be made, more particularly, however, as regards matters which do not concern the competitor. There may also be slight diversions as concerns the route, much of which has not been visited since 1914, but it is probable that no alteration will be made in the observed test hills. Messrs. Campbell McGregor and D. A. McKay, of 6, Castle Terrace Edinburgh, the headquarters of the Edinburgh Motor Club, Ltd., have the administration of the trial in hand, and to them all communications should be addressed. Hotel coupons, by which competitors and others doing the round of the trials are relieved of all responsibility *en route*, are again to be provided. Entrants having unused coupons will be refunded their face value, provided application is made within a week.

Route.

FIRST DAY.—Edinburgh, Stirling, Crieff, Amulree, Kenmore, Aberfeldy, Trinafour, Dalnacardoch, Pitlochry, Tullymet, Dunkeld, Perth. 157 miles approximately.

SECOND DAY.—Perth, Coupar Angus, Forfar, Brechin, Edzell, Cairn o' Mount, Ballater, Crathie, Cockbridge, Tomintoul, Grantown, Inverness. 168 miles approximately.

THIRD DAY.—Inverness, Abriachan, Beanly, Braemore Lodge, Dundonnell, Gairloch, Garve, Inverness. 179 miles approximately.

FOURTH DAY.—Inverness to Applecross, returning by Auchnashellach, Kinlochewe, to Inverness. 179 miles approximately.

FIFTH DAY.—Inverness, approach Beanly, by Abriachan, Drumnadrochit, to Cluanie, returning by Tomdown, Invergarry, Glendoe, Craggie Inn, Grantown. 145 miles approximately.

SIXTH DAY.—Grantown, by Tomintoul, Braemar, to Pitlochry, Ballinluig, Kenmore, Crieff, Stirling, Edinburgh. 185 miles approximately.

Total distance, approximately, 1,013 miles.

Regulations.

Machines, of course, must be in touring order, *i.e.*, fitted with stand and carrier, two independent brakes, an efficient silencer, standard mudguards, tyres, tool-box, and lamps, and conform in every way to the Motor Car Act, 1903.

The following spare parts only may be carried: Tyre repair outfit, sparking plugs, magneto parts, belts, chains, tyres, inner tubes, valves, and a selection of nuts and washers. A competitor desiring to carry some further spare parts must submit them to the officials for approval before the trial.

The following is the scale of entry fees:

Manufacturers nominating a non-member to ride ...	£8
,, ,, ,, member ,, ,, ...	£7
Agent non-members or nominating a non-member ...	£6
,, members ,, ,, ,, member	£5
Private owners, non-members	£3
,, ,, members	£2

To qualify for a first-class award a competitor must lose no marks on reliability, climb all observed hills (seven in number), and lose not more than twenty marks on the final condition of his machine. The system of marking will be worked out on the basis of—

(a) Reliability,
(b) Hill-climbing, and
(c) Condition of machine.

Thus a second-class award will be given to all who

(1) Fulfil *(a)* and *(b)*, but lose more than twenty marks under *(c)*; or

(2) Lose up to sixty marks on reliability, climb five or more hills, and lose not more than twenty marks under condition of machine heading.

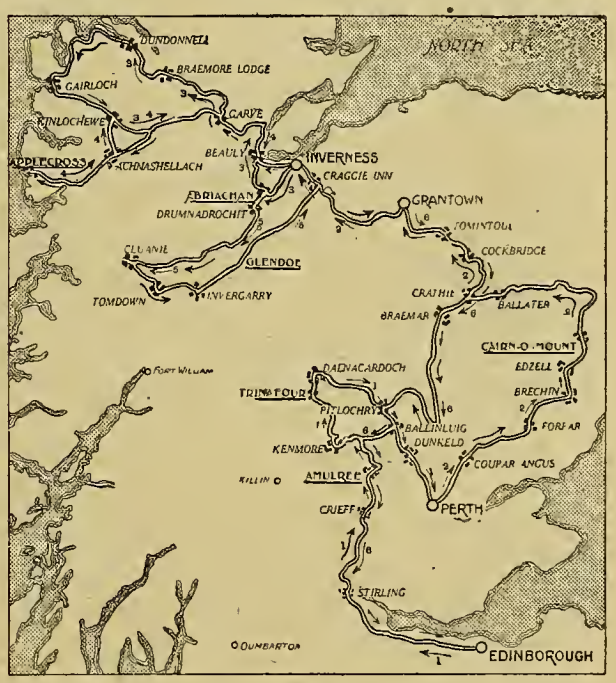
Third-class awards will be given to all who comply with the conditions, but fail to qualify for first and second-class awards.

Reliability takes precedence, and although one mark will be lost for each failure on an observed hill, a competitor who loses *no* marks on *reliability* but fails on two hills will be placed before an entrant who is two minutes late on time and climbs all hills. This applies, of course, only to second and third-class awards.

Balloting and Starting.

All entries received prior to July 5th will be included in the first ballot, occupying the numbers from 1 onwards, subsequent ballots being held till July 11th.

Entrants must present their machines at Croall's Garage, Castle Terrace, Edinburgh, on July 20th. Specific instructions will be sent to entrants notifying them as to the time their machines are to be presented. Each machine, on being handed over, must be prepared with a piece of sixteen gauge copper wire passing round each cylinder, and thence to a frame member in such a manner that a seal can be affixed, the removal of a cylinder necessitating the breakage of this seal.



Route for the Scottish Six Days Trial (approximately 1,000 miles).

Protests must be written, and must be accompanied by a deposit of one guinea, which will be forfeited in the event of the protest being considered frivolous. Entrants who claim that they have been baulked must be prepared to assist the officials by taking the number of the competitor who baulked them.

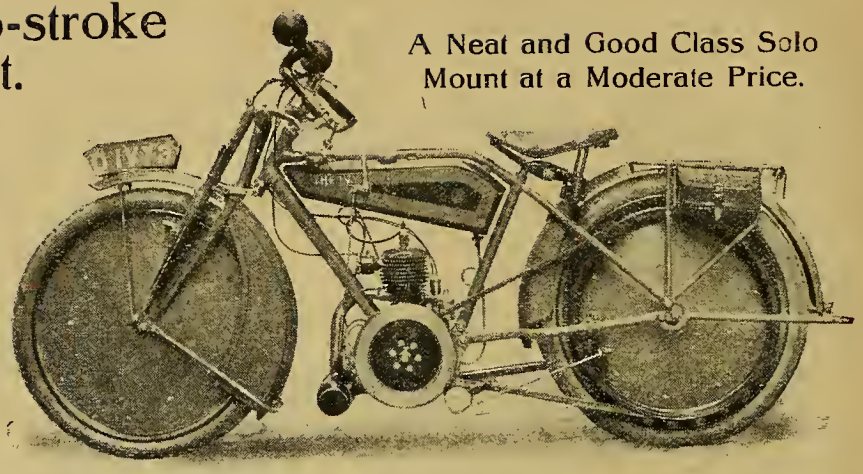
Under the heading of condition of machine it is impossible for a competitor to earn marks; he can merely lose marks for defects. For breakage of frame, forks, or handle-bars a competitor must retire immediately.

Ten marks will be lost for each of the following defects: Broken carriers and leaking tanks. Five marks will be lost for each broken front wheel stand, broken rear stand, broken or disconnected control wires, broken mudguards, broken petrol pipe, front or back brake out of order, broken or loose chain cases, and damaged silencer. One mark will be lost for each broken spoke, and marks up to ten may be lost for any other breakage.

No secret checks are to be included.

A Sporting Two-stroke Lightweight.

A Neat and Good Class Solo Mount at a Moderate Price.



The Ivy sporting model, 224 c.c. engine, disc wheels, weight 130 lb.

WITH one or two exceptions, two-stroke lightweights are so much alike that any break away from the conventional black enamel finish at once attracts attention. Without looking at all "freakish," the 1919 Ivy, with its disc wheels and framework of khaki-grey, and a tank of the same colour, with a black panel and picked out with black and gold lines, immediately stands out as a good class proposition.

It is a handsome little machine, and, as will be noticed in the illustrations, the lines are good and give a sporting appearance.

Added strength is given to the heavy gauge steel tube frame by the duplex construction of the front down tubes. These firmly support the Ivy 224 c.c. engine, rated at 2½ h.p., which is practically identical with the engine which made such a good showing in the 1914 Junior T.T.

We recently had the opportunity of sampling the "I.O.M." sporting model, as it is called, which we took on a forty mile run. As the engine had not been run in, we did not, of course, expect too much in the way of speed, but we were favourably impressed by its smooth running and pulling power. The machine is exceedingly comfortable to ride, due to the excellent saddle and Ivy spring forks, combined with the convenient "set" of the bars. Proof of the good steering was afforded by the fact that we were able to ride considerable distances without touching the bars, despite the inequalities of the road surface.

A little extra air inlet is provided on the induction pipe which helps in the cool running considerably, and doubtless reduces the petrol consumption. Pulling power is not in any way lacking, as we proved by slowing down on hills of no mean gradient and running at about 10 m.p.h. to the top. We also tested the accelerating powers of the engine by throttling down to 7 or 8 m.p.h. and suddenly opening the throttle, when the machine would quickly pick up speed without a sign of four-stroking. A speed of a little over 30 m.p.h. on the flat was obtained, which would doubtless be increased when the engine was properly run in.

Other details are tank capacity one gallon, tyres 26 × 2¼in. black celluloid-covered bars with a special extension for the attachment of a lamp. The magneto fitted is an E.I.C., and Albion two-speed gear box is an option. The weight of the machine is 130 lb., and price £48 7s. 6d.

Messrs. Newman and Sons, whose works are at Aston Cross, Birmingham, are concentrating on these two models, and, as the war-time contracts are completed, hope to turn them out in increasing numbers.

Racing in Italy.

THE first important motor cycle road race since the war was held recently near Rome, over a course of 255 kilometres. Although only fourteen entries, the greatest enthusiasm was displayed. With the exception of the Frera team, all competitors were amateurs. Prohibition of imports accounted for the small field.

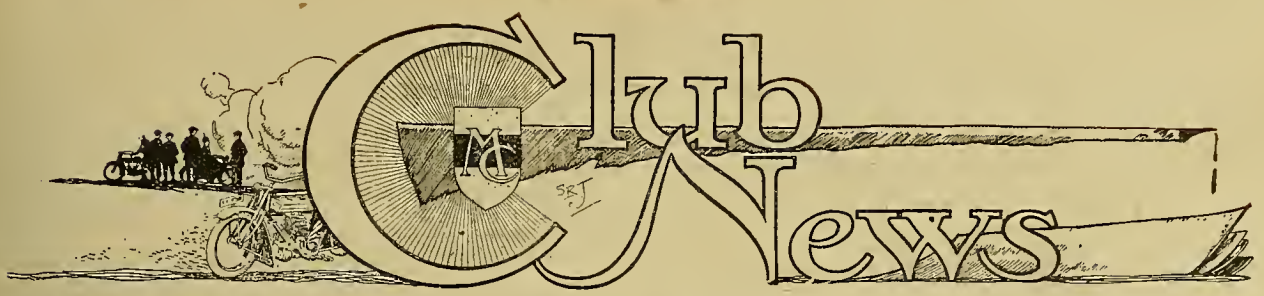
The fastest time in the first lap was made by Ranaboldi (Motosacoche), closely followed by Tuccimei (Triumph) and Acerboni (Frera); but in the next lap Acerboni took the lead, and kept at the front. Many competitors suffered from tyre trouble.

The winner rode one of the new model Frera machines—a single-cylinder of 500 c.c., bore and stroke 85×88 mm. The front fork of this new model resembles closely the Triumph, but has two springs instead of one—the second being to check rebound. The results were as follow:

1.	Acerboni (Frera)	3.36 hours*
2.	Tuccimei (Triumph)	3.56 ,,
3.	Ranaboldi (Motosacoche) ..	4.16 ,,
4.	Galluppi (Rudge)	4.21 ,,

*Equals 41 m.p.h.

(Left) Mario Acerboni (Frera), the winner of the Italian T.T. (Right) Tuccimei (Triumph) going well at one of the bends.



Notice to Club Secretaries.

Club news and fixtures for this page should reach the editor by Friday morning preceding date of issue. We ask club officials to advise us *immediately* in cases where an event is postponed.

Troedyrhiw and District M.C.

A hill-climb has been arranged to be held to-day (Thursday, July 3rd) at Llanfabon, when three events will be run. (1) solo and (2) sidecars on A.C.U. formula, (3) flexibility, one gear only; no clutches to be used. Weighing will commence at the quarry weighbridge, Merthyr Vale, at 4 p.m.

The Douglas Club (Nottingham).

This new club, which is confined to riders of Douglas motor cycles, is offering a prize, open to any Douglas owner from any district for the smartest machine of that make at the Nottingham club rally at Dovedale on July 6th. The age of the machine will be taken into consideration.

Reading and District M.C.C.

There now appears to be a general desire in Reading for the activities of the Reading and District M.C.C. to be resumed. Mr. F. O. Mosley, Whernside, Basingstoke Road, Reading, the hon. secretary in 1914, is anxious to arrange a meeting for discussion of the position. Interested motor cyclists are asked to communicate with him at the address mentioned.

N.M.C.F.U. (Leeds).

The Leeds branch of the National Motor Cyclists' Fuel Union recently held a slow hill-climb at Garrowby Hill, which attracted fourteen entries. The donor of the first prize was F. G. Toze, who also made the best performance. Results:

	m.	s.
F. G. Toze (A.J.S. sc.)	13	0
F. W. Wilkinson (New Hudson sc.) ..	10	22
T. H. Clarke (A.J.S. sc.)	10	4
H. Pattinson (2¾ Revere)	9	40

Middlesbrough and District M.C.C.

Ten members competed in the recent trial for the Craddy cup. The results are as follow:

Competitor and Make of Motor.	Estimate of Speed.	Actual Speed.	Error.
	m.p.h.	m.p.h.	m.p.h.
1 C. J. Dingle (2¾ Douglas) .	24.0	24.0	None.
2 J. Gilchrist (6 A.J.S. sc.) .	21.5	21.8	.3
3 C. Close (3½ Singer)	18.0	18.6	.6
4 H. Williams (7-9 Indian) .	25.0	24.0	1.0
A. Blackburn (8 Bat-Jap).	20.0	21.2	1.2
W. Wesson (7-9 Indian) ..	21.5	23.1	1.6
W. Ryan (7-9 Indian) ...	27.0	28.8	1.8
G. Blackburn (8 Bat-Jap) .	20.5	23.2	2.7
A. Young (Morgan)	19.0	21.8	2.8
H. Broadbent (6 Matchless)	18.5	22.2	3.7

Future Events.

July 3.—Cumberland County M.C.C., Carlisle. Hill-climb at Warnell Fell.
July 3.—Taunton and District M.C.C. Reliability Trial.
July 3.—Troedyrhiw and District M.C. Hill-climb at Llanfabon.
JULY 4 AND 5.—ARBUTHNOT TROPHY TWO DAYS TRIAL. PLYMOUTH DISTRICT.
July 5.—M.C.C. Hill-climb.
July 5.—Birmingham M.C.C. Social Tour.
July 5.—Streatham and District M.C.C. Members' Reliability Trial.
July 5.—Wolverhampton M.C.C. Half-day Reliability Trial.
July 6.—Woolwich, Plumstead and District M.C. Picnic Run to Toy's Hill.
July 6.—Cumberland County M.C.C., Carlisle. Social Run.
July 6.—Western M.C.C., Glasgow. Run to Clovenfords.
July 6.—Nottingham and District M.C.C. Rally at Dovedale.
JULY 6.—OLDHAM AND DISTRICT M.C. RELIABILITY TRIAL.
JULY 12.—LIVERPOOL M.C. RACES AT COLWYN BAY.
July 12.—Public Schools M.C.C. "Touch Nothing" Run.
July 12.—Western M.C.C. Team Trial.
July 12.—Motor Cycling Club. Hill-climb.
July 13.—Wolverhampton M.C.C. Social Run to Stratford-on-Avon.
July 14.—Troedyrhiw and District M.C. "Disarranging" Competition.
JULY 14-15.—M.C.U. OF IRELAND; ULSTER CENTRE. IRISH END-TO-END RELIABILITY RUN.
July 16.—York and District M.C. Reliability Trial.
July 19.—Middlesbrough and District M.C.C. Sidecar Competition.
JULY 19.—SUTTON COLDFIELD AND MIDWARWICKSHIRE A.C. OPEN HILL-CLIMB AT STILE COP, NEAR RUGELEY.
JULY 19.—BIRMINGHAM M.C.C. MIDLAND CUP TRIAL.
July 19-20.—Cumberland County M.C.C., Carlisle. Reliability Trial to Aberdeen and Back.
July 20.—Nottingham and District M.C.C. Run to Donington.
JULY 21-26.—SCOTTISH SIX DAYS TRIAL.
JULY 23.—ESSEX M.C. SPEED TRIALS AT SOUTHEND.
JULY 26.—SUTTON COLDFIELD AND MIDWARWICKSHIRE A.C. LIGHTWEIGHT TRIAL FOR CALTHORPE CUP.
July 27.—Streatham and District M.C.C. Picnic Run to Ashdown Forest.
July 27.—Trocdyrhiw and District M.C. Reliability Run.
AUG. 16.—S.E. COUNTIES INTER-TEAM. TRIAL.
AUG. 16.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
SEPT. 5.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
SEPT. 15-20.—A.C.U. SIX DAYS RELIABILITY TRIALS.

Orkney M.C.

The Orkney M.C. has been reformed, and now consists of motor cyclists only. An attractive programme of events is being arranged.

North Birmingham A.C.

This club is holding a members' reliability trial and speed-judging competition on the 26th inst. Three prizes will be awarded. The annual reliability trial for the Shell cup will be held early in September. Hon. secretary is Mr. A. W. Thrush, 34, Reservoir Road, Erdington.

Sutton Coldfield A.C.

Mr. F. W. Finnemore, 122, Colmore Row, Birmingham, the secretary and treasurer of the above club, wishes to learn the present address of H. Graham-Dixon, a well-known competition rider before the war, and who is the present holder of the Muratti Ariston trophy.

Coventry and Warwickshire M.C.

The second paper-chase will be held by this club on Saturday next, the 5th inst., starting from Davenport Road, Coventry, at 2 p.m. sharp. A speed-judging competition will be incorporated with the run, and prizes will be awarded to the winners. Hon. sec., Mr. M. F. W. Sampson, 19, Hertford Street, Coventry.

Leven and East of Fife M.C.C.

An open speed contest under the auspices of the above club will be held on the West Sands, St. Andrews, on Saturday, the 5th inst., commencing at twelve o'clock noon, under the rules and regulations of the S.A.C.U. Entry forms to be had on application to the hon. secretary, Mr. Jas. Robertson, 5, Lemon Terrace, Leven, and Messrs. Christie Bros., motor agents, St. Andrews.

Ealing and District M.C.C.

This club was formed long before the war, and is affiliated to the A.C.U. The Ealing district has large numbers of keen motor cyclists, and the hon. sec., Mr. S. P. L. Brown, 25, Ormiston Road, Shepherd's Bush, W 12, would be glad to hear from them with a view to their joining the club, the officers of which are as follow: President, Major A. M. Low, R.A.F., A.C.G.I., D.Sc., etc.; captain, K. V. Chidley; hon. treasurer, L. Pulham; official timekeeper, D. Jones.

Public Schools M.C.C.

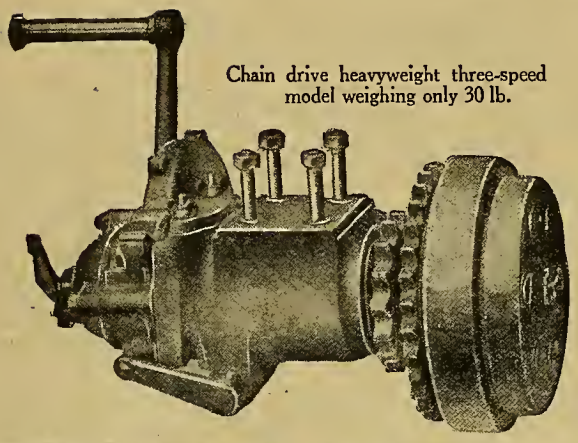
The recent surprise competition proved to be a most amusing event and included several unconventional items. The first competition consisted of starting within a distance of twelve yards. The best performance was made by P. Davey (4 h.p. Norton). Then, without warning, the competitors were all asked the bore and stroke of the 4 h.p. Triumph, and, strange to say, nobody could answer this question accurately. The next test, a figure 8, was most neatly executed by Davey (Norton), followed by Tweedie (Black Demon). The last test was a speed burst in pairs over a distance of 120 yards. Here, again, the Norton was victorious. Results:

1. P. Davey (4 Norton), winner of silver cup.
2. { B. Garland (6 Bat). K. Tweedie (6 Black Demon). C. D. Wright (7 Harley-Davidson). E. M. P. Boileau (3½ Sunbeam).
6. D. W. Brett (3½ Rover).

The next competition is a week-end "touch-nothing" run on the 12th.

BURMAN GEAR ASSEMBLIES.

Two Little Known but Well Tried Gear Boxes.



Chain drive heavyweight three-speed model weighing only 30 lb.

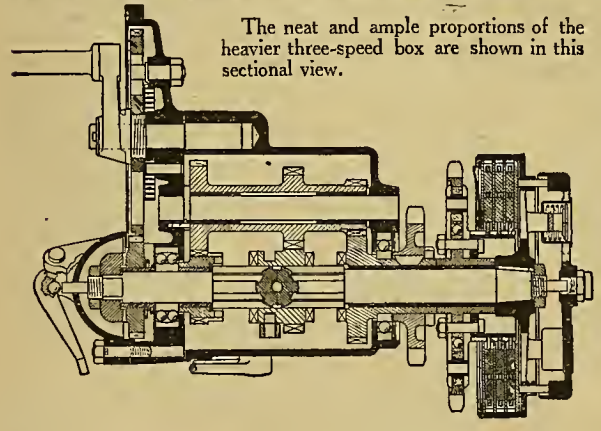
REALLY substantial gear assemblies are few and far between at the present time, so that motor cycle manufacturers as a whole will welcome the appearance on the open market of the Burman gear units, made by Messrs. Burman and Son, Ltd., Ryland Road, Birmingham. These are by no means new propositions. Before the war the small gear box was very popular with several makers of lightweight motor cycles, and during hostilities the larger one has been supplied in considerable quantities to the makers of the 8 h.p. New Imperial, on which machine it has given every satisfaction. Unfortunately, at present, the output is somewhat restricted, and Messrs. Burman are not able to cope with the existing orders, a state of affairs it is hoped will not obtain for long.

The two principal models are a two-speed and clutch lightweight box with kick-starter, and a three-speed box with clutch kick-starter and shock-absorber for machines of 4 h.p. and over.

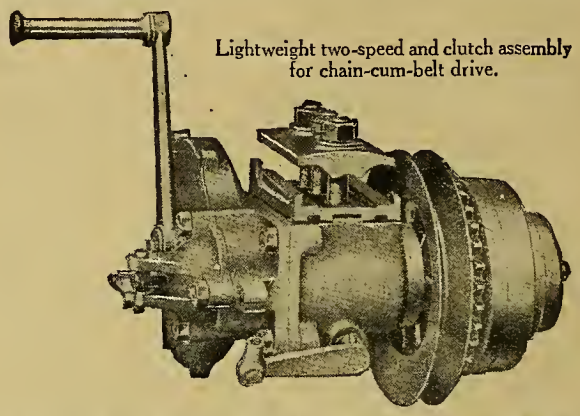
The Lightweight Model.

For machines up to 4 h.p. the smaller unit is an attractive proposition. It provides two ratios (1.0 and 1.85), a large sized clutch, and fool-proof kick-starter. As in the larger box, all the gears and shafts are made of the well-known Kayser Ellison steel adequately heat treated. Both lay gears are on a common sleeve internally bushed to run on the solid layshaft, which is securely anchored at both ends. Ball bearings, however, are provided for the hollow main shaft which supports the two gears, and is splined for the double sliding dogs. One of the bearings is designed to take the end thrust when the clutch is operated, the operating rod passing through the shaft.

There are several features which point to much thought in designing the clutch. This unit, which is on the end of the main shaft, consists of three plates carrying cork or Ferodo inserts interposed between plain steel plates, against which they are held by the pressure of five light spiral springs disposed round the circular aluminium clutch cover, the pressure being transmitted by a number of small pins to the edge of the outside steel plate. As a big frictional surface is employed, combined with light springs, the clutch operation is extremely easy and smooth.



The neat and ample proportions of the heavier three-speed box are shown in this sectional view.

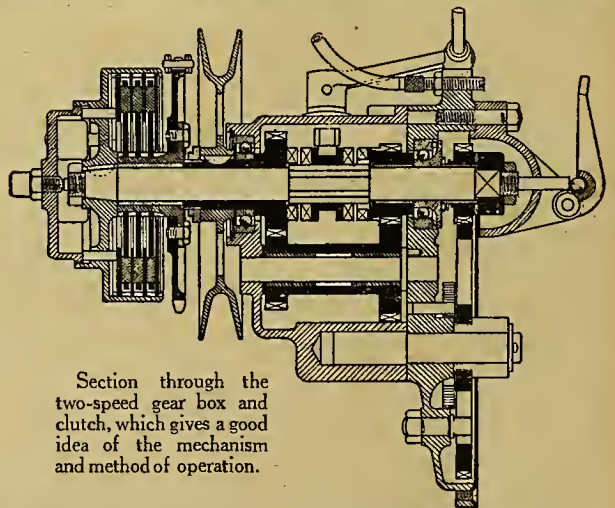


Lightweight two-speed and clutch assembly for chain-cum-belt drive.

Another excellent feature is the novel shock-absorbing arrangement. The chain sprocket is drilled with a number of holes into which thick rubber bushes are forced. Through these are fitted steel pegs, the ends of which terminate in metal discs on either side of the chain wheel; these in turn are attached to the flanges on the main shaft.

A Larger Model.

The three-speed box suitable for machines of from 4 to 8 h.p. is very similar to the smaller one in all respects except that the sliding dogs on the mainshaft have another pinion integral with them, which engages a corresponding gear on the layshaft, providing the middle speed and giving altogether ratios of 1.0, 1.89, and 2.82. Naturally, the clutch is proportionally larger, having two concentric rings of inserts instead of one—one on each plate. The kick-starter



Section through the two-speed gear box and clutch, which gives a good idea of the mechanism and method of operation.

is of similar design on each box, and consists of a good strong lever connected to a toothed quadrant, which engages with a gear wheel having ratchet teeth on its side. These latter engage in turn with a ratchet on the gearshaft, which is held up to it by a light coil spring. The lever itself is retained in position by a strong clock spring, which, together with the quadrant, is enclosed by a neat metal cover.

THE TRIALS EPIDEMIC.

Well-known Manufacturers Organise a "Staff" Event. Sutton Coldfield A.C. Lightweight Trial.

BEFORE the war there was a feeling that the popularity of motor cycle competitions was on the wane, but, since the Armistice, there has been quite an epidemic of trials—open and club events—which shows that competitions are more popular than ever. Provided some novelty is introduced and irritating time factors eliminated, there is no reason to believe that trials and tests of all kinds will fail to attract entries.

The Humber Staff Trial.

This year "staff" trials may become a feature in the competition field. Two weeks ago, *The Motor Cycle* staff held a private event, and on the 12th inst. the Humber staff is holding a trial over an eighty mile course, which will include stopping and restarting, braking and slow running tests. A silver cup will be awarded for the best performance, and there will be a number of other prizes for the respective classes.

Although entries are only accepted from actual Humber employees, there is no bar to the make or power of machine that may be entered, so that, even though it is an exclusive trial, it is, so far as motor cycles and cars are concerned, an open one, and is, we believe, the first of its kind promoted by any motor manufacturing firm in the country. It is the intention of Humber, Ltd., to continue these events in the future, which is a step in the direction of creating that feeling of united interest in engineering progress amongst a community of workers and directors which is so desirable.

Sutton Coldfield A.C. Trial for Lightweights.

This open reliability trial, which will be held on the 26th inst., will start from the "George in the Tree" at Berkswell, and the turning point of the course is at Banbury. Entries will be confined to lightweights and scooters with engines not exceeding 230 c.c.

There will be a stopping and restarting test on Sunrising, and a fast time test on Edge Hill, and competitors will be penalised on time only if they are more than three minutes late or early at the end of the outward and return journeys. This rule should do much to remove the annoyance caused by timing the competitors' time to split seconds. A lower schedule average per hour will be worked out for scooters.

The winner of the trial will be awarded the Calthorpe trophy (value one hundred guineas), together with a replica (value ten guineas).

In addition there will be gold medals as second and third prizes, a special gold medal for the best scooter performance, and silver medals to all those making non-stop runs and obtaining full marks. Mr. F. W. Finnemore, 122, Colmore Row, Birmingham, is the organising secretary.

South Birmingham M.C.C. Open Trial Postponed.

The committee of the South Birmingham M.C.C. have decided to postpone their open trial, which was originally arranged for July 12th, until August 16th. A really sporting course has been chosen, which will not endanger the machine or the driver, and the aim of the committee is to eliminate one or two weak points that still exist in the modern machine. All communications should be addressed to Mr. E. Boydell, 93, John Bright Street, Birmingham.

THE ARBUTHNOT TROPHY TRIAL.

A Sporting Naval Two-day Event on Friday and Saturday next in the Plymouth District.

ALTHOUGH the entries in the Arbuthnot Trophy trial, which is being held under the auspices of the A.C.U. on Friday and Saturday next, will not be so numerous as in an open trial, the event is bound to create a great deal of interest on account of its nature—the fact that it is confined to officers of His Majesty's Navy, and because the trophy was subscribed for by the motor cycle public to perpetuate the memory of the late Rear-Admiral Sir Robert Keith Arbuthnot, Bart., K.C.B., M.V.O., who lost his life at the Battle of Jutland.

Friday's course will be 120 miles in length, and on Saturday 116 miles will be covered. The maximum speeds for different sections vary from 15 to 20 m.p.h., and a consistent driving test will be held on a hill which the competitors will have to ascend each day. The hill will be divided into two parts, the first part to be climbed at an average speed of not more than 10 m.p.h., and the second at an average speed of not less than 15 m.p.h. The difference between the time taken by a competitor to climb the slow and the fast parts of the hill respectively will be noted each day, and the competitor who most nearly repeats his performance of the first day will be adjudged the winner of this test.

If no competitor succeeds in completing the trial according to the regulations the rider who makes the lowest number of involuntary stops will hold the trophy, or if two or more competitors make the same number of stops, then, of these competitors, the one who makes the best performance in the consistent driving test will be awarded the trophy.

The Route—First Day.

The course will be marked by red arrows on a white ground on the portion to be covered during the morning, and by black arrows on yellow ground on the afternoon section.

Time of First Competit'r.		Speed.	Intermediate Distance.	Total Distance.
	NON-STOP SECTION No. 1.			
9.0	Plymouth (Central Hotel)	—	—	—
9.12	Crownhill (3rd milestone from Plymouth)	15	3	3
10.52	Tavistock	20	12	15
10.7	Merrivale Bridge	20	4½	19½
	NON-STOP SECTION No. 2.			
	CONSISTENT DRIVING TEST.			
10.10		—	½	20
10.20	Two Bridges	20	3	23
10.34	Huccaby	20	4	27
10.50	Holne (check)	18	4⅜	31⅜
11.9	Dart Bridge	18	5⅜	37½
11.44	Widecombe	20	10½	48
12.10	Moretonhampstead	20	8	56
12.52	Exeter (Rougemont	20	12½	68½
	NON-STOP SECTION No. 3.			
2.30	Exeter	—	—	—
2.55	Tedburn St. Mary	20	7¼	75¾
3.20	Moretonhampstead	18	7½	83¼
3.35	Chagford	18	4⅜	88
3.44	Main Road (Exeter-Tavistock)	18	2½	90½
4.14	Two Bridges	20	9	99½
4.34	Dousland	20	6¼	105
5.3	Cornwood (Church)	20	8½	114¼
5.14	Smithaleigh	20	3¼	117½
5.30	Longbridge (check)	20	5	122½
5.42	Plymouth (Central Hotel)	15	3	125½

The Route—Second Day.

The course will be marked by black arrows on yellow ground for the morning section, and by green arrows on white ground for the afternoon portion.

Time of First Competit'r.		Speed.	Intermediate Distance.	Total Distance.
	NON-STOP SECTION No. 1.			
9.0	Plymouth (Central Hotel)	—	—	—
9.12	Crownhill (3rd milestone from Plymouth)	15	3	3
9.36	Denham Bridge	20	7	10
9.57	Gunnislake	20	6½	16½
10.15	Callington (on right)	20	5¼	21¾
10.39	Tideford	20	7¼	29
11.11	Looe (bridge)	20	9½	38½
11.47	St. Veep (Church)	18	10¾	49¼
12.2	Lostwithiel	20	4½	53¾
12.20	Bodmin (Royal Hotel)	20	5½	59¼
	NON-STOP SECTION No. 2.			
2.0	Bodmin	—	—	—
2.14	Launceston (on left)	20	22	81¼
2.55	Tavistock	20	12½	93¾
4.12	Merrivale Bridge	20	5	98¾
	CONSISTENT DRIVING TEST.			
4.15		—	½	99¼
4.24	Princetown	—	2½	101¾
5.3	Crownhill (check)	20	11½	113¼
5.15	Plymouth	15	3	116¼

The trial is of a real sporting nature, and one such as will appeal to motor cyclists in the Navy. No doubt every competitor will take the event more seriously than is usual in trials of this nature, as the winning of the trophy will be a distinctive honour for the rider.

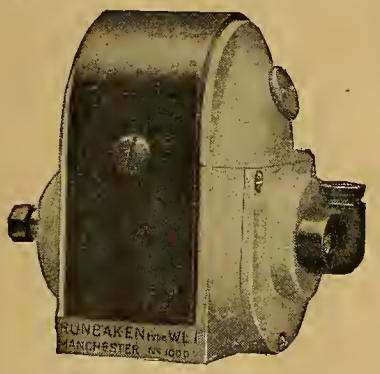
THE RUNBAKEN LIGHTWEIGHT MAGNETO.

A 3½ lb. Magneto incorporating Novel Features.

MOTOR cycle ignition has settled down into two standard forms of magneto—the usual high-tension instrument—and that working on the polar inductor principle as exemplified by the Dixie. The former type differs so little from the earliest Bosch magnetos that we welcome the novel features introduced by the Runbaken Magneto Co. Ltd., of Cheetwood Lane, Derby Street, Manchester, in their latest models.

Messrs. Runbaken, whose output has been until lately entirely consumed by war requirements, are about to market a complete range of ignition instrnments, from the largest car type to the miniature model forming the subject of this description, which will without doubt meet a growing demand for a small ignition instrument suitable for the several auxiliary engines, scooters, and small lightweights, the manufacturers of which have been handicapped for lack of this type of magneto.

Type W.L.I. is intended for use with single-cylinder engines up to 2¾ h.p. and weighs no more than 3½ lb., its overall



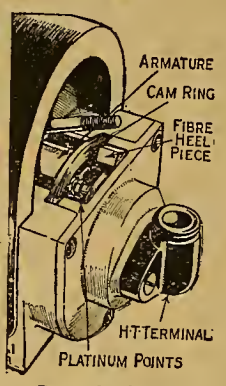
The Runbaken 3½ lb. magneto.

dimensions being: Length 4½in., width 2¾in., and height 4¼in. Externally, perhaps the most striking features beside the size are the position of the high-tension terminal and the apparent absence of any contact-breaker.

On closer examination, however, it is found that the armature unit includes a condenser at the driven end and a contact-breaker of the face cam type at the opposite end.

On removing the end plate by means of a knurled nut, the contact-breaker is revealed, and the adjustment of the platinum points is extremely simple, as there is plenty of room for the adjusting spanner—a point which is too often overlooked in the more normal design.

A slip ring, as such, is entirely dispensed with, and the carbon collector brush beds up against a brass plug connected, of course, to the secondary winding and lying inside an insulated extension of the armature spindle.



Part of the contact breaker revealed. Note the unconventional position of the high-tension terminal.

The standard magneto has fixed point ignition, but, if variable spark timing is required, a very simple method of altering the position of the cam ring has been devised, which enables the firing point to be varied through the maximum practicable range.

The actual details of construction include so many interesting features as to merit description. The first point of importance is that the face cam and ring for the contact-breaker is formed of non-magnetic steel, an alloy of steel with chromium and nickel in certain proportions which has the peculiar property of being non-magnetic.

The ball races which carry the armature are insulated from their housing, for it has been found by experiment that the current returning through greasy bearings has an electrolytic effect, which causes more wear than that involved by mechanical and frictional reasons. The bearings, it may be mentioned, are packed with a special grease which does not melt under running conditions, and do not require any further lubrication.

The makers have found that the most suitable aluminium alloy for the end plates and carcass is not ideal for die castings, but, though die castings are not used, a special method has been devised by means of which very smooth, clean results are obtained. Incidentally, the pole shoes are constructed as a unit with the carcass and the driven end plate, the armature unit being easily withdrawable from the opposite end.

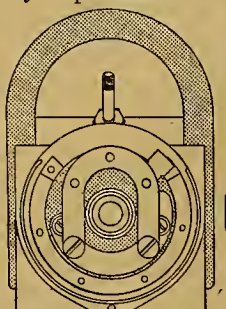
The armature unit comprises, besides the windings, which are built up to a special formula, a condenser, spark gap, earth brush, contact-breaker, and high-tension collector.

During a walk round the very compact and self-contained factory, which, though it was only completed in September, is to be almost doubled in size at an early date, we were able to examine a W.L.I. magneto which was undergoing bench tests.

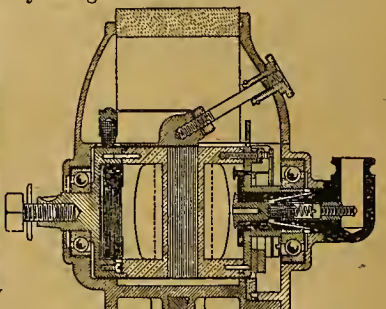
The results were extraordinary for so small an instrument. A spark passing the standard ball gap at a speed well below that at which any ordinary motor cycle engine will run, while, by means of a rotary spark gap, we were able to check the regularity of each spark at over 3,000 r.p.m.

The Runbaken Magneto Co. will market a slightly larger instrument for 3½ h.p. engines, and, by modifying the contact-breaker and high-tension collector, both types can be made suitable for twins.

Detail work has been as carefully studied as design, and the works are entirely self-contained, even the moulding being carried out on the premises. With the coming of the ultra-lightweight motor cycle, Messrs. The Runbaken Magneto Co., Ltd., are to be congratulated on producing so light and satisfactory an ignition unit.



The contact-breaker is of the face cam type.



Longitudinal section showing how the usual slip ring is entirely dispensed with.

M.C.C. MEMBERS' HILL-CLIMB.

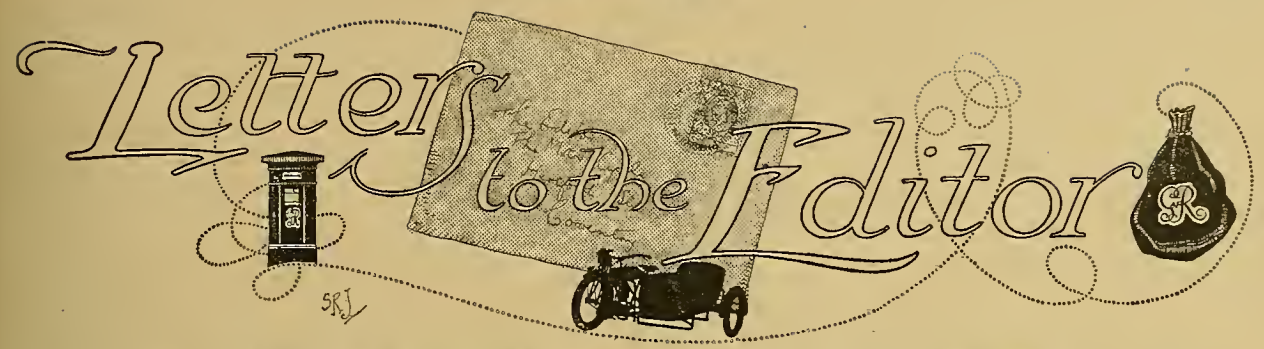
AS the Motor Cycling Club is one of the largest in this country, a good entry is expected for the members' hill-climb on the 12th inst. This event will be more interesting than the usual hill-climb, as the aim of the regulations is to provide a flexibility test. The hill will be divided into two sections:

The first section has to be covered without stoppage, and without the feet of the rider touching the ground, at as slow a pace as possible, from a "flying" start; the machine to be brought to a standstill after crossing the finishing line of the first section, and before reaching the starting line of the second section.

The second section to be traversed at as fast a pace as possible from a standing start. The order of merit in all classes will be determined by the figure obtained by subtracting the time for the fast section from the time for the slow section.

Motor cycles, sidecars, and cars must be standard touring types as usually sold to the public, fully equipped for the road. Classes:

(1.) Sidecar machines not exceeding 600 c.c.
(2.) Sidecar machines exceeding 600 c.c.
(3.) Solo motor cycles not exceeding 350 c.c.
(4.) Solo motor cycles not exceeding 600 c.c.
(5.) Solo motor-cycles exceeding 600 c.c.
(6.) Cycle cars conforming to the A.C.U. definition.
(7.) For cars (which must be standard touring types) no limit.



The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

PROFITEERING.

Sir,—We beg to say that we have had several complaints from riders of our Radco motor cycles to the effect that agents have been selling our machines at a premium, although we advertise in all the leading motor cycling papers our retail prices to the public. Under the circumstances, we wish to warn purchasers against any overcharges by these profiteers.

E. A. RADNALL AND CO.

BENZOLE.

Sir,—With reference to a letter from one of your correspondents recently regarding benzole, the following may be of interest.

During the past week-end, on a 3½ h.p. Rudge-Multi, 1919 model, I covered a total distance of 244 miles (eighty miles with a passenger on the carrier) on a tankful of benzole (two gallons). On test my machine covered 135 miles on one gallon of the same fuel. I have tried petrol (No. 1), but riding with the spark advanced as for benzole the engine knocked badly on hills and when going slowly on "top."

Surely such economical fuel consumption as above constitutes almost a record for a 3½ h.p.? E.M.

London.

A QUESTION.

Sir,—I do not know if you think the following difficulty worth putting before your readers.

Machine: 1912 Triumph with senspray carburetter. Symptoms: Misfiring at all speeds. Temporary cure: "Tickling" the float.

I rode like this nine miles, and then dismantled the carburetter and found all in order, *i.e.*, pipe free, needle not sticking, passage to jet and jet clear, no water in fuel. On reassembling the trouble had not disappeared. I thereupon took out the plug and found the central electrode broken off short, leaving a gap of ⅛in. or rather more. I put in a new plug and the trouble was gone. Why should flooding the carburetter stop misfiring from a faulty plug?

(Rev.) J. M. PHILPOTT.

PILLION RIDING.

Sir,—As a regular reader of your paper and a keen devotee to the pastime of motor cycling for many years, I regret to hear that the Town Council of Oswestry has sent a petition to Parliament begging it to make the practice of pillion riding illegal, on account of the accidents caused thereby.

I should like to ask why this practice should not continue? Is it not dangerous to cross the streets of London where there is no refuge? Then make it illegal to do so, except where there is one! Are not boating accidents frequent occurrences? Then why not make it an offence to boat unless one rows oneself?

What a boon the pillion seat is! Whether to take one's friends for rides or to give an acquaintance a lift to the station, or it may even be used to take a stranded motorist home.

And now it is suggested that motor cyclists should be compelled to become selfish individuals, content with their own company, unless they are burdened with a sidecar.

But who will take a sidecar? The owner of a low-powered machine will not, and the average person just "demobbed" certainly will not. He is a sportsman out and out. He has fought as such, and has been catered for as such. His mount is a 3½ h.p. single or a "big twin" geared very high, and with no consolation prizes such as gears or kick starters; in short a "sportsman's mount," which is not suitable for sidecar work. He wishes to take a passenger, and yet he is expected to ride alone or give up his machine for a "double purpose mount," consisting of gadgets and etceteras, with a power unit tucked away as though it were only a useful adjunct to the whole.

Since Easter I have ridden over 2,000 miles with sixteen different passengers on the carrier without even a near shave, and I have exceeded 50 m.p.h.

I can honestly say that I have never seen an accident occur to a person on the carrier of a motor bicycle, though I have seen accidents to persons on the step of a push bicycle, including accidents to my own person and that of the passenger on my own step.

A REGULAR FLYING OFFICER (PILOT).

Chobham.

PULLEY GRIP.

Sir,—I note the letter from Messrs. Grado, Ltd., in your issue of May 1st. I should like to draw their attention to the fact that I never disputed the fact that the "belt does actually pull the pulley flange inwards (due to the curved slot)." On my gear this action is so powerful that, when lowering the gear with the throttle well open, I have to switch off momentarily, otherwise the gear handle cannot be moved. What I *did* dispute was the claim that this action increased the grip on the belt. I pointed out that it really only resulted in a greater thrust on the control ring, and not on the belt. I effected a vast improvement on my own gear, first, by fitting two ball races—one each side of the control ring—and, secondly, by drilling $\frac{3}{16}$in. holes to a depth of about ⅛in. in the pulley flanges. I did not drill right through, for fear of weakening the flanges. Provided these holes are cleaned out periodically the belt shows no sign of slip, even in the lowest gear and the bottom part of the belt nearly on the ground.

GRADUATE.

GOVERNMENT MOTOR CYCLES.

Sir,—With reference to the motor cycles being offered for sale at the Agricultural Hall, I think it my duty to point out the difference in the catalogue description now being made, as compared with the description for the previous lots. Originally the machines were described as new, and were understood by the buying public to be this, but now we find that they are described as "unissued." An an example of a machine I recently bought, I would like to point out that the front tube is second-hand, having some eleven patches thereon, and, unfortunately, is badly perished. The majority of the tyres, even if new, are always so badly perished that they are unfit for more than a hundred miles running, whilst such things as magneto, mudguards, etc., are likewise badly second-hand. In fact, I frankly believe that, without any means of confirming this, the whole of these machines are all second-hand, and are being sold after overhaul. Considering that the Government were supposed to be putting an end to profiteering, is it quite reasonable that they should be allowed to mislead the public, with the result that they are paying between sixty-three to seventy guineas for second-hand 1914, 1915, and 1916 Douglas machines? A close examination of any of the models that have recently been offered at the Agricultural Hall will verify these statements.

London, W. RETYRED HURT.

REASONS FOR RETIREMENT.

Sir,—May I make a suggestion through your journal? In big compctitions like the M.C.C. Edinburgh and similar events every competitor who falls out of the run should be compelled to state a definite reason as to the cause of his failure to the club, and this to be published in the official club report and the press.

For instance, we note in the recent run, "So and so mysteriously disappeared." This ought not to be, but a genuine and truthful reason should be stated, so that the public can draw its own conclusions as to the qualities of the various makes of machine under test.

May I take this opportunity of congratulating the committee of the Motor Cycling Club on the excellent organisation of the recent run, and the enthusiasm it displays on behalf of the movement. A. C. ROBBINS.

A HEAVY TWIN AS A SOLO MOUNT.

Sir,—I have ridden the road from Acton to Uxbridge several times on a solo Harley-Davidson with a passenger on the bracket. Your correspondent must be very solicitous for the welfare of his 'bus if he gets off to push it over the bumps. I will say, though, that the last time I rode it I brought a sidecar back with me, and the fearful bumps broke the rear connection. I had to ride it side-saddle then to prevent my leg being pinched, under which circumstances the hand clutch came in particularly useful. (I sent the passenger on by train.)

I have ridden over bad roads round Uxbridge with three up solo (one on the tank), and even with the dead jars one gets on striking a 12in. hole I have not seen anything give way so far. I rode from Coventry to Uxbridge last week in two and a half hours solo.

The only trouble with a heavy twin is lifting it on to the rear stand. Two small wheels to let down from the footboards seem to me to be the thing needful, and I do not think that they should come under the head of unnecessary gadgets. H. IBBOTSON, Lt. R.A.F.

A 'VARSITY T.T.

Sir,—I read, with great interest, Mr. Millett's letter in which he proposed that a 'Varsity T.T. should be inaugurated.

He makes specific mention of Oxford and Cambridge, but, I take it, entry would be open to students of all the British 'Varsities. We might be able to judge, from the results, as to whether or not a Cambridge medical degree equals that of Glasgow, etc.!

Re the date: I do not know how they work things in England, but we, up here (Glasgow), have degree examinations in September, so that I suggest the end of July or beginning of August (preferably the former) would be more appropriate.

Could not this brilliant scheme be carried still further, and let us have a "'Varsity Scottish championship" similar to the Scottish championship of pre-war days, which was "run off" annually on the sands of St. Andrews? And, I earnestly ask, is it too late or too difficult to organise *this* this year?

JOHN W. WALKER.

Sir,—I have no doubt that the suggestion of your correspondent, Mr. H. Millett that an Oxford *v.* Cambridge motor cycle speed event should be inaugurated will be widely welcomed.

Probably both Universities would enthusiastically support such an event, and it might eventually become an annual fixture on a par with the Oxford *v.* Cambridge boat race. By that time records might be so far reduced that the contest would have evolved into a track event. A road race approaching the condition of the T.T. would probably be too ambitious for exclusively amateur riders, but there should be no doubt of the success of a contest restricted to two laps of the I.O.M. course, and run under the auspices of the A.C.U.

I am glad to see that Mr. Loughborough favours the proposal, and considers it practicable to promote the initial event during the long vacation next year. Probably a good many who are not usually interested in motor cycle racing would be glad to see this sport included in the annual inter-'Varsity contests.

As Mr. Millett suggests, the event would certainly bear the hall mark of sporting amateurism; and, being unique in its way, might provide a stimulus to amateur sport generally.

OSCAR E. SEYD.

THE ARBUTHNOT TROPHY.

Sir,—May I remark on the rules of the Arbuthnot Trophy, which appeared in *The Motor Cycle* of June 5th?

It would seem that the most sporting elements of motor cycling—the fixed geared machines—are washed out by the slow hill climb.

A fixed engined 4½ to 1 cannot beat a 15 to 1 bottom gear and clutch on a slow climb. Also it would appear that the other sporting effort in fast climbs—the speedy jump start—has no advantage with the slow climb coming first.

Cannot these already handicapped athletes be given a better chance; or must we spend our prize money on a hundred guinea three-speeder?

I feel sure that the gallant officer, whose name the trial commemorates, would think but ill of such regulations.

Cambridge. FIXED ENGINE.

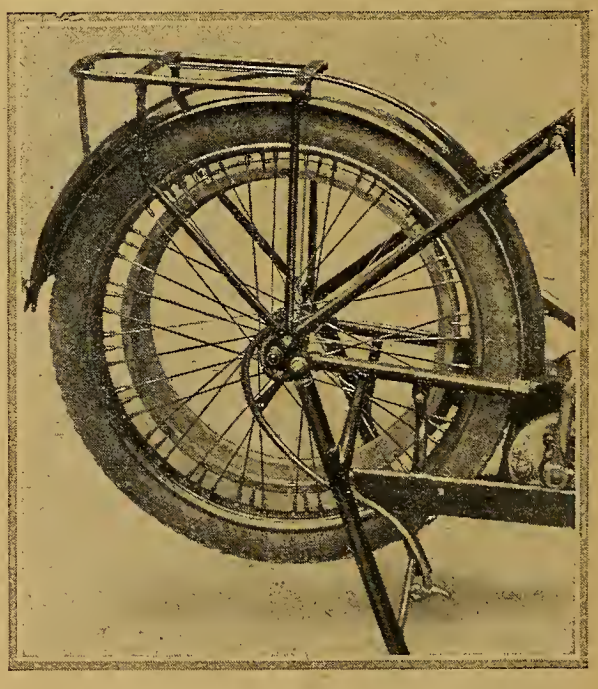
INFORMATION WANTED.

Sir,—With reference to Mr. Guthrie's letter and Mesopotamia, there is plenty of business to be done there with the Arabs, but, if he intends going up country, let him make the journey by one of the many river boats. He will be able then to make the journey in comparative comfort, be able to drink his iced soda water on deck and under an electric fan, and thank his lucky stars that he is not one of the engineers down below.

I have only just returned from the land of the three D.'s, viz., dates, dust, and dysentery, and it was then 102°, and this year it is predicted to be another 1916, so, with luck, the thermometer will show 132° again. It is not worth paying freight out on a motor cycle considering the little time and distance one can use it. Get to know an Arab, and, for a little cash, he will supply a motor cycle, or anything else, and relieve you of it the next night!

Mr. Kelk is quite right about the ten-day river trip from Basra to Baghdad on the average steamer, but what about the General's "Bint," which does the trip against the stream in thirty-five hours and down river trip in thirty hours, and uses on an average two dozen sparking plugs?

Wandsworth Common. W.F.D.



AN EXTRAORDINARY ROAD OBSTACLE.

Recently a Triumph rider "picked up" a length of ½in. round iron which once had formed the handle support of a perambulator. This caught in the spokes and wound round the hub as shown above, but did not unseat the motor cyclist, and only broke one spoke.

PRICES AND PRINCIPLE.

Sir,—Manufacturers are surely tightening the cord around the neck of the goose that lays the golden eggs.

Every one knows that the high priced machines are good 'buses, but the leading makers are losing sight of the fact that *most* machines on the market to-day are excellent goods, and any maker of the lower priced machines who can resist the almost overpowering impulse to raise prices because for the moment the motor cycle purchasing public has sun-stroke will in the end reap inestimable advantage.

I believe the A.B.C. will be a great machine, and I ordered one early on at £70. I withdrew at £85, *though I could afford to pay it.* I then ordered a 2¾ h.p. Douglas at £62, stuck the advance to £65, but now withdraw at £72. Moreover, my agent informs me that this machine at £72 is still only the W.D. model, and the price of the 1919 when it does appear will shock motor cycle buyers.

The Englishman is a peculiar breed; he will remember this season.

When I recently asked a respectable Birmingham agent why he did not advertise the A.B.C. and get deposits on it, he replied, "Because there can be none on the market for two or three months yet." I commend his reply to some of the advertisers of to-day.

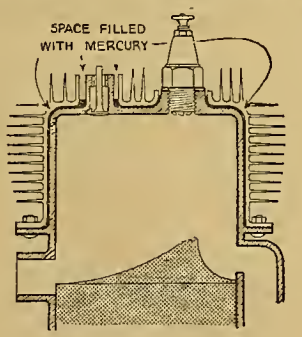
There are good machines at reasonable prices; there are agents out for respectable business. Let us stand by these and help to rescue the motor cycle trade from deserving the name for which it is fast qualifying.

The above two mentioned machines have been consistently and *deservedly* praised by *The Motor Cycle*, and we are prepared to pay too much for them, but the makers must not ask "three much."

A BUYER.

MERCURY AS AN AID TO COOLING.

Sir,—One frequently sees in your paper reference to attempts to use copper or aluminium jackets or rings as air-cooling, but difficulty is experienced owing to the unequal expansion of different metals under heat. Though I know very little about the subject, it has occurred to me that the jacket with rings might be made a *loose* fit, clearance, say, about $\frac{1}{64}$in., and the space filled in with *mercury*, which will allow for expansion and yet make a first-class conductor of heat.



A suggested method of using mercury as an aid to the cooling of engines. (See letter G. Madge.)

Conductivity of heat of cast iron = 507, conductivity of heat of aluminium = 966, conductivity of heat of copper = 2,085.

Water vaporises at 212° Fahr., mercury vaporises at 674° Fahr.

Therefore with four times' the heat conductivity of cast iron rings, even allowing for three times the heat, the mercury should not vaporise.

I do not know, but I hardly think that electrolitic, etc., action between mercury and copper or aluminium would be serious.

On the score of expense, so little mercury would be used in the $\frac{1}{64}$in. clearance that it would not be out of the way.

Can any reader tell me if it is feasible or has been tried?

G. MADGE, Major, R.E.

AN ECONOMICAL AMAC.

Sir,—From time to time I have been very much interested in the various devices tried by readers of *The Motor Cycle* in order to attain an economical consumption of petrol, and one which particularly took my fancy was a simple idea described by Mr. J. W. G. Brooker in the issue of April 6th, 1916. By inserting pins in the holes of his Amac he obtained 115 m.p.g. on a 3½ h.p. Rover. I have recently tried the same device and obtained 120 m.p.g. on a 3½ h.p. Alldays-Matchless, with sidecar attached. In my Amac there are five small holes above the jet, and in the three centre ones I placed ordinary pins, head downwards, and bent over at the top, cut off sufficiently to allow the carburetter slides to close. On Monday, May 5th, I travelled from Lincolnshire to West Hartlepool, a distance of 120 miles, with sidecar load of about five stones of luggage, and a slight rear wind. On previous occasions in the same journey, when riding solo, I usually refilled with petrol after doing about eighty miles, but on the last occasion I was agreeably surprised to finish the whole distance on *one* tankful of fuel. My tank is small, holding slightly under one gallon, and the fuel used was a mixture of benzole and No. 1 petrol (half and half). Owing to the bumpy surface of the roads in many parts, and several short halts for refreshment, I travelled at a moderate speed; my average for the whole journey worked out at 18 m.p.h. I found no difficulty in starting, and the only difference in driving was that, whereas I usually drove with air lever fully opened, on this trip it required to be only partly open on the level and closed a little on the gradients. My machine is a 1912 make, with the Roc two-speed hub gear, and I might mention that, in spite of its seven years' wear and tear, it runs as well as ever, though, naturally, not quite so silently. It is somewhat antiquated in many respects, but it still has the fascination to me of an old and well worn suit. What consumption it will give when used solo I have not yet tried, but I quite expect 140 m.p.g.

S. F. BRAY.

MOTOR CYCLE TRIALS.

Sir,—The M.C. and A.C. deserve every encouragement in its attempt to evolve a method that will "find a winner," and undoubtedly the rules the club formulated for its trial on the 28th ult. will enable the club to dispose of its awards without difficulty, but whether satisfactorily remains to be seen.

The deciding factor apparently is to be the flexibility test, somewhat on the same lines as adopted by the A.C.U. in the 1913 Six Days Trial.

Our criticism of this method is that it will not in practice enable a satisfactory comparison to be made between the different machines. For instance, if we have read the regulations correctly the following performances will be bracketed equal:

Slow portion.	Fast portion.	Figure of merit.
1 m.p.h.	20 m.p.h.	20
2 m.p.h.	40 m.p.h.	20
3 m.p.h.	60 m.p.h.	20
4 m.p.h.	80 m.p.h.	20

We take it that nobody would consider these performances equal in merit, and suggest that, as 4 m.p.h., or at most 3 m.p.h., is slow enough for all ordinary purposes, one or the other of these speeds should be taken as the "lowest possible" for the slow portion.

A further criticism is in regard to the method of equalising the figures of merit for the different classes. What we have in mind is that in Class A you may have a collection of real good machines all obtaining high figures of merit, whilst in Class B the majority make bad performances, with one outstanding exception. The ultimate figure of merit obtained by the winner in Class B will, under these circumstances, be much higher than that obtained by the winner of Class A, although the latter may be using a smaller engine, and may actually have put up a better individual performance.

A solution of this difficulty is not easy; but, in any case, would it not be wise to adopt a rule stipulating that a premier award will not be awarded to a machine if its individual performance shows a lower figure of merit than a machine in a smaller class? Another suggestion is that the average figure of merit should be based on the three best performances in each class.

GODFREYS, LTD.

Useful Books and Maps for Motor Cyclists.

	Price net.	By post.
"THE MOTOR CYCLE" ROAD MAPS. England and Wales, Scotland, London (showing roads into and out of London and avoiding London). Mounted on linen. Set of three, complete in case	4/6	4/10
"HINTS & TIPS FOR MOTOR CYCLISTS." Full of useful "wrinkles" and little items of sound advice on the management, repair, equipment, and general care of a motor cycle. It will be found invaluable to all those who are thinking of overhauling their machines. *Sixth edition (2nd reprint)*	2/-	2/3

Obtainable by post (remittance with order) from
ILIFFE & SONS Ltd., 20, Tudor Street, London, E.C.4,
or of leading Booksellers and Railway Bookstalls.

CURRENT CHAT

Times to Light Lamps.

SUMMER TIME.

July 3rd	... ...	9.48 p.m.
,, 5th	... ...	9.47 ,,
,, 7th	... ...	9.46 ,,
,, 9th	... ...	9.45 ,,

Purchase of Motor Cycles by War Office.

Referring to the paragraph on page 649 in our last issue, Major A. J. Palmer of the Tank Corps points out that the 5th Battery of the M.M.G.S. (recruited from Coventry) were supplied with eighteen Enfield sidecar outfits, and that other batteries were supplied with Scotts.

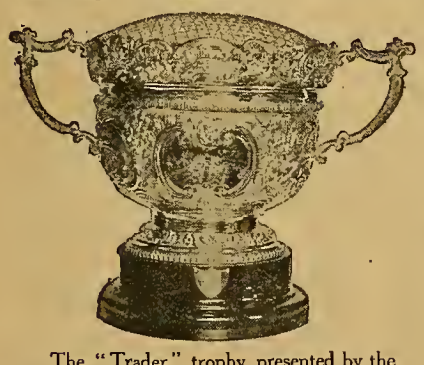
Col. Lindsay Lloyd.

Congratulations to Colonel Lindsay Lloyd, C.M.G., on his appointment to the important and responsible post of Assistant-Commissioner for Disposals in France. Colonel Lindsay Lloyd was well-known before the war to all who visited Brooklands, and did valuable work as Assistant-Director of Transport, Mobilisation and Embarkation Area, M.T., at Bulford, during the war.

Police Traps.

One of our readers informs us that he was caught in a police trap at Beulah Hill, Upper Norwood (Metropolitan police district) and also at Findon (Sussex) in the ten-mile limit.

We have also been informed that the police are working a trap just before reaching Tally Ho! Corner, Whetstone, mainly in connection with the use of cut-outs, number plates not being clearly visible, obscured, or dirty, and also examining the brakes.



The "Trader" trophy presented by the proprietors of our contemporary, *The Cycle and Motor Cycle Trader*, for the best performance on any solo machine of over 350 c.c. in the M.C. and A.C. Trial.

Our Hero Motor Cyclists.

A memorial service in commemoration of those gallant motor cyclists who gave their lives for their country during the war will be held at 3.30 p.m. on Friday, the 11th inst., at St. James's, Piccadilly, London, W.1. The service will be taken by the Rev. E. P. Greenhill. The Rev. B. H. Davies and the Rev. E. Hassard Short have been invited to assist.

The Edinburgh M.C. Hill-climb.

The Edinburgh and District M.C. is holding a hill-climb on Saturday next on Redstone Rigg, near Gifford. Ten classes have been arranged, six being handicap events and four scratch, so that almost every type of machine is being catered for. Hill-climbs have always been very popular among Scottish riders, and this event should attract a good entry. Messrs. S. L. Aitken and A. Bruce Lindsey, 6, Castle Terrace, Edinburgh, are the organisers.

To Promote Research.

The Research Association of British Motor and Allied Manufacturers is now practically assured. Promises of support have been received from a large number of the leading firms in the industry.

This Association is the first approved body of its kind to represent any section of the engineering industry, and will be governed by a council assisted by a committee of research men possessing high qualifications. The work of the Association naturally will fall under two heads, *i.e.*, research proper and the collection and organisation of scientific information bearing upon all questions which may subsequently become the subjects of research.

Open Hill Climb at Stile Cop.

There will be sixteen classes as follows:

Motor cycles: 1, up to 230 c.c.; 2, 230 c.c. to 275 c.c.; 3, 275 c.c. to 300 c.c.; 4, 300 c.c. to 350 c.c.; 5, 350 c.c. to 500 c.c.; 6, 500 c.c. to 600 c.c.; 7, over 600 c.c.

Sidecar machines: 1, Up to 400 c.c.; 2, 400 to 600 c.c.; 3, over 600 c.c.

Light cars: Under 1,100 c.c.

Scooters.

Three-wheelers.

In addition to the above classes there will be classes open to members of the club only for—

Light cars: From 1,100 c.c. to 1,500 c.c.

Motor cars (internal combustion): Open to any member who has never won a prize in any hill-climb.

Special Features.

THE CHEAPEST MOTORING FOR TWO.
HOT OR COLD INDUCTION.
NEW SCOOTER DESIGNS.

A Floral Carnival.

Wolverhampton is to hold a floral fête on the 9th and 10th inst. with events for motor cycles, both solo and with sidecars.

I.O.M. Customs.

Motor cyclist visitors to the Island are advised that they are required to take their machine registration papers, the receipt obtained on purchase of the motor cycle, and, if Customs Duty has been paid in England, a receipt for that also, as the Manx Customs authorities require to be satisfied that the machine was in England prior to its arrival in the Island, or that, if of foreign manufacture, the Import duty payable has been paid in England.

The Mont Ventoux Hill-climb.

The famous climb up the road to the summit of Mont Ventoux, organised by the Marseilles Motor Club, took place on Sunday last.

There was a fairly representative entry among the motor cyclists, many of them being French riders of British motor cycles, such as the New Hudson, Indian, Triumph, B.S.A., etc. The climb is a true test of power and reliability, as the hill has several hairpin bends, and is about nine miles long, with a culminating grade of about 1 in 4 covered with loose stones.

The M.C. and A.C. Premier trophy presented by Mr. C. F. Dawes (O.K. motor cycles), for the best performance, irrespective of class, in their 200 Mile Trial last Saturday.

The Bristo Rally.

Winners of prizes in the recent Bristol gymkhana should send their addresses to Mr. H. Smith, 6, Brynland Avenue, Bristol.

The Gjers Cup Trial.

A 200 mile day trial in the Lake District was organised by the Middlesbrough and District M.C.C. to take place yesterday, the 2nd inst., a feature of which was a one hour's interval at mid-day. The first competitor was due to start at 7.30 a.m.

Arbuthnot Trophy.

The following additional entries for the Arbuthnot Trophy have been received: No. 18, Lt. H. C. Dairns, R.M., 4 h.p. Triumph; No 19, Acting-Lt. A. G. Elliott, 4 h.p. Douglas; No. 20, Lt. D. F. E. Thompson, 3½ h.p. P. and M.; No. 21, Lt. J. S. Bethell, 2¾ h.p. Allon.

A New Two-stroke.

We are informed that the Calthorpe equipped with the new Precision two-stroke, lately described in our pages, which made its appearance in the Midland C. and A.C. trial on Saturday last, is being produced in quantity, and will be ready for delivery shortly.

Another Italian Race.

On the 23rd ult., an Italian event called Le Circuit d'Orbassano was held by the Turin M.C.C. over a distance of sixty-two miles. In the 350 c.c. class, B. Felice (2¾ h.p. Douglas) was first in 1h. 27m 1⅘s. The second man rode a Maffeis, and was 16s. slower than the winner; the third rode a Douglas.

The Maffeis made the fastest lap in 11m. 55⅘s.—about 46 m.p.h. In the 500 c.c. class, B. Pietro (Motosacoche) won in 1h. 6m. 50⅘s. A Della Ferrera started, but retired in the first lap. The regularity prize was won by Gianiolo (Fongri).

Speed Trials at Weston-super-Mare.

Capt. Philip Grout, of the Bristol M.C.C., informs us that application has been made to the A.C.U. for a permit to hold their postponed open speed trials on August 30th at Weston-super-Mare.

To Welcome Home D.R.'s.

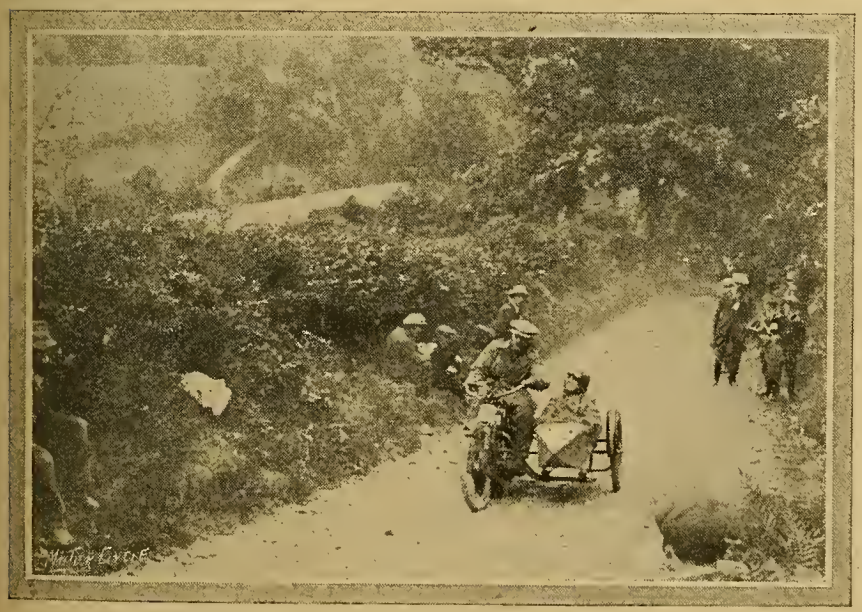
A movement is afoot in the Midlands to give a real welcome home to motor cycle despatch riders. A meeting is being held at the White Horse Hotel, Congreve Street, Birmingham, on Friday, the 11th, at 7.30, when representative heads of the trade, together with prominent motor cyclists, will discuss the question.

Government Motor Cycles.

A large number of new 2¾ h.p. Douglas motor cycles were sold at the three Government sales held last week at the Agricultural Hall, Islington, London, N.

The prices realised for these machines at the sale on Wednesday, June 25th, remained at approximately the same figures as at the previous sales, averaging sixty-eight guineas. At the following sale the auctioneer stated that there were only a limited number of unissued Douglas machines available, and hoped the prospective buyers would make their bids with this fact in mind. The prices obtained for these machines rose to approximately seventy and seventy-one guineas.

The lowest price, however, paid for one of these mounts was in the vicinity of sixty-three guineas, quite a fair price for war-stored machines. The sales of W.D. pattern 4 h.p. Triumph motor cycles were continued. First-class machines were bought, after considerable competition, for an average price of forty-two guineas, whilst the second-class motor cycles of the same make were knocked down for thirty guineas. Fourteen guineas was the amount paid for the third-class Triumphs, which was quite a good price in view of the appallingly bad condition.



MIDLAND CYCLE AND ATHLETIC CLUB'S TRIAL IN WALES.
Capt. J. L. Stocks (6-7 h.p. Ariel sidecar) on the lower portion of Alt-y-Bady.
(See pages 22 to 24.)

Atlantic Flight Hero and A.C.U.

Capt. Sir John Alcock, the Atlantic flight hero, wired to Bristol on the occasion of the recent "rally": "Wish every success to the A.C.U. As an old member, I consider every motor cyclist in the country should join."

Hill-climb at Garrowby.

The York and District M.C.C. held a successful hill-climb at Garrowby on Wednesday of last week, when C. S. Russell (3½ h.p. Norton) made fastest time. A. G. Kilner (2¾ h.p. Douglas) won the lightweight class, with two Coulson B machines second and third.

Officially Conducted Tests.

The Auto Cycle Union is now able and willing to undertake special trials and tests under its certified trial scheme, and invites applications from manufacturers who are desirous of submitting new models to officially conducted tests.

Stolen Motor Cycle.

Motor cycle thieves are still very active. A report reaches us that a B.S.A. sidecar outfit was stolen in Oxford last week. The machine is a 1919 Model K, engine No. 29043, frame No. 29152, with Millford sidecar and Easting windscreen fitted. Any information should be sent to the Chief Constable of Oxford.

Southend Speed Trials.

Arrangements are now being completed for this meeting, and that it will be a successful one is practically assured. A very large number of entries is anticipated, the motor cycle classes both being largely supported. In response to numerous applications, it has been decided to include classes for motor cycles with a cylinder capacity not exceeding 250 c.c. in the kilometre races for both standing and flying starts, and, subject to the number of entries being sufficient, a class for motor scooters of any size will be included. Entries positively close on July 8th by first post. Additional entry forms and full particulars may be obtained from the hon. organising secretary, Mr. Harold Fuller, 51, Pulteney Road, South Woodford, E18.

The £100 Runabout.

An innovation of direct interest to the sidecar enthusiast is promised for the autumn in the "Aero-car," a Bristol production which is a serious attempt to produce a runabout embodying the low weight, simplicity, and operation of a motor cycle.

We are given to understand that this miniature is to be built as a three-wheeler and a four-wheeler, and transmission will be by means of a belt or chain.

The power unit, it is expected, will be a horizontally opposed twin engine, 5-7 h.p., and the drive will be transmitted through a motor cycle type clutch to a small gear box. Two important novelties are introduced, the cooling being by means of a fan and cone in front of the bonnet, and the engine will be mounted on helical springs with the intention of eliminating vibration. The body is provided with side by side seats. It is hoped the "Aero-car" will be offered at £95 for the three-wheeler and £105 for the four-wheeler. The concessionnaires are the Beaufort Motor Agency, 26, St. Nicholas Street, Bristol.

A "LONG DAY" TRIAL.

Successful 200 Mile Event organised by the Midland Cycle and Athletic Club.

PROBABLY the most searching day trial held this year was the 200 mile event organised and successfully run last Saturday by the Midland Cycle and Athletic Club. Although comparatively new to the motor cycle competition field, the M.C. and A.C. is one of the strongest clubs in this country, and has the support of all the leading enthusiasts of road vehicles. A strong club is in the position to organise and carry out a motor cycle trial of an ambitious character, because it is sure of willing and capable helpers to act as officials. Hence the success of the first big trial of the M.C. and A.C., for the organisation, the arrowing of the course, and the conditions of the trial were all that could be desired. There was no confusion at any point, either on the part of officials or competitors; every observer had his duties clearly defined, and the working of the conditions eliminated the chance of misunderstanding on the part of the competitors. The riders were warned fifty yards before each test by prominent placards, and one mile from each check similar signs were displayed.

The first of the seventy-one competitors started at 6 a.m. from Griffin's Hill, Selly Oak. About five miles from the start, it came evident that considerable driving skill would be required. The first tests were a couple of hairpin turns, the second of which presented read difficulties to both solo and sidecar riders. It consisted of a steep drop, followed by a turn to the left, and an immediate rise of 1 in 8 or so to the top of the hill. This corner would never be taken in the ordinary course of things, for the two roads were joined by a curve overlooking the corner, and making an excellent place from which to view the attempts of the competitors. The turn being to the left increased the difficulties of the sidecar drivers, and more than one overturned, while the rough road and the sharp corner made it difficult for the soloists to keep their feet off the ground. No marks were lost here, but two extra were given for a successful turn, and many riders performed excellently, H. B. Denley (8 Morgan), E. Williams (2¾ A.J.S.), holder of the Junior T.T., and J. Allday (3½ James) being conspicuous.

Scene in Llangollen cattle market, used to park the competitors' machines during the breakfast and luncheon intervals.

A few miles through narrow lanes brought the competitors to Hagley Wood hill, where the fast and slow test was held. The road was little more than a cart track, very loose with dust and stones, and the test took place near the top of the hill after a certain amount of climbing had been done. About a mile along a track on the hillside, where it was often better to leave the so-called road and ride on the grass, brought the competitors to the "stop and start" test. This was almost on the summit of Clent Hills, where the gradient was somewhere in the neighbourhood of 1 in 6, the surface consisting, for the most part, of loose earth and grass. Several failed owing to wheel slip, but many good performances were made. E. Williams (2¾ A.J.S.) and H. B. Denley (Morgan) were again excellent, as were also J. Doherty, jun. (4 Triumph), G. E. Stobart (4¼ James), and H. J. Stretton Ward (4 Triumph).

Eighty Miles before Breakfast.

After these tests the competitors turned their wheels to Llangollen, where breakfast awaited them, through Bridgnorth and Shrewsbury.

The first competitor, after covering eighty miles of the course, reached Llangollen at ten o'clock, where excellent arrangements had been provided for the parking of the machines in the cattle market adjacent to the Town Hall—the official breakfast room.

Here, an interval of an hour was included, but, before the last competitor had arrived at one gate, the earlier members were being despatched from another. An examination of the check sheets revealed that eleven competitors had failed to reach Llangollen.

The second section of the trial was the most strenuous, and several long steep gradients had to be negotiated, including

R. C. Atcherley (4 h.p. Triumph) picking his way up Alt-y-Bady. Note the surface and the farm horses, which caused some excitement by appearing on the hill at a critical moment.

F. Stevens (6 h.p. A.J.S. sidecar) entering the Llangollen control.

Pentredwr, Tan-y-Bwlch, and Alt-y-Bady Hills. Tan-y-Bwlch is a long, rough, and narrow lane, with several awkward bends. It did not present any great difficulty to modern machines, and even the little two-strokes, after over two miles of grinding low gear work, surmounted the crest without signs of undue fatigue. The descent on the other side of the hill was exceedingly rough, and as narrow as, and steeper than, Jacob's Ladder, in the last English Six Days' Trial.

The Brake Test.

The only point in the whole trial which we are constrained to criticise is the brake test. Towards the bottom of this Welsh "Jacob's Ladder," the competitors were called upon to stop their machines in a given distance. Failure to pass this test entailed absolute disqualification from the trial. In the rules and regulations, it was stated that this test would be imposed upon a descent dangerous to poorly braked machines, and, having traversed the descent ourselves, we know that the hill was of the nature mentioned. We think the test should have been made on the top portion of the hill, as any machine which could safely descend to the officials already had proved the efficiency of its brakes. A machine inadequately braked would not have reached the testing place undamaged. The hill had a river bed surface; locked wheels produced landslides, and a brake test at the bottom of the hill is tantamount to locking the garage door after the motor cycle has been stolen. It testifies as to the quality of the brakes on the machines that only two competitors failed in the tests.

Two miles beyond this hill the competitors were faced with the *pièce de résistance* of the trial—Alt-y-Bady—a long rough tiring hill with a surprise corner, upon rounding which the riders found a hundred yards of about 1 in 3½. The hill at this point is fairly wide, but exceedingly rough, and, owing to the slate and rock-strewn surface, practically unclimbable in wet weather. Probably it is the "worst" hill ever included in a day trial—in fact, we cannot call to mind any trials hill in England which is quite so bad. Before the war the inclusion of such a hill probably would have brought forth vigorous protests, and on examining the hill one at first thought that it should be placed in the category of freak hills; but when one considers that there are dwellings which can only be reached by this hill, and that it is the direct road from Llangollen to Glyn Ceiriog, and saves a twelve-mile detour, one agrees that such hills are quite justified.

As was to be expected, a large crowd of spectators had assembled to witness the climbs of the competitors, and until the first dozen riders had ascended it seemed that no sidecars would succeed in climbing Alt-y-Bady.

In reviewing the performances of the riders, it is interesting to classify them according to the power of their machines, dividing the machines into three classes. (1.) Lightweights (under 350 c.c.), (2) other solo machines, and (3) sidecars.

Lightweight Performances.

It is perhaps scarcely fair to compare the respective performances of 350 c.c. singles and twins with those of 200 c.c. two-strokes, but, since some of the latter came near to equalling the performance of the larger type, it may be permissible to include them all under one heading.

The only lightweight rider to make a clean ascent was Eric Williams on his 1913 2¾ A.J.S. (a similar machine to that upon which he won the 1914 Junior T.T.). Kuhn (2½ Levis) touched the ground with one foot. This did not appear necessary, however, and he soared to the top in the usual Levis way. H. Newey, the other Levis rider, helped with his feet, but otherwise made a good ascent.

Hall (2½ O.K.), Bown (2½ Bown-Villiers), Clulee (2½ New Imperial), Taylor (2½ New Imperial), Phillips (2½ Allon), Hollyoak (2¼ Radco), Greaves (Calthorpe-Precision), and Gibb (2¾ Douglas) all elected to run beside their machines, while Newman (2¼ Ivy), Johnson (2½ Allon), Hartwright (2½ New Imperial), Abbott (2½ Diamond), Vale (2¾ Douglas), and Ford (2½ Diamond) stopped. Abbott, however, made a really good climb up the worst portion of the hill, failing within sight of success. Gibb chose the looser side of the road, and hit two rocks in quick succession which stopped his engine.

Solo Performances.

In the larger solo class, the majority succeeded in negotiating the hill without assistance. Dowler (3½ Sunbeam), Sealey

J. E. Greenwood (8 h.p. Sunbeam sidecar) making the fastest sidecar ascent of Alt-y-Bady

A "Long Day" Trial.—

(4¼ B.S.A.), Enticknapp (4 Blackburne), Dance (3½ Sunbeam), Strange (5-6 James), Choldcroft (4 A.J.S.), Stobart (4¼ James), Peck (3½ Ariel), J. A. Newman (3½ Sunbeam), Doherty (4 Trinmph), Stretton Ward (4 Triumph), and Dudley (3½ Sunbeam) all made clean ascents.

Stobart ran into the bank, but made a splendid recovery. Doherty made what was probably the fastest ascent; in fact, he made a consistently good performance throughout the trial, and had the hard luck to burst a tyre ten miles from the finish.

Just before the last of the competitors ascended the hill, some excitement was created by the presence of six farm horses appearing at a critical moment. Stretton Ward skilfully threaded his way through them and earned the applause of the spectators.

Watson-Bourne (4 Blackburne), Atcherley (4 Triumph), and Jackson (6 L.M.C.) used their feet, the last named probably on account of having to avoid another competitor who had stopped.

Minton (4 Norton) and Boynton (5-6 James) stopped, the former in avoiding a stranded competitor ran into the bank, while Boynton was brought to a standstill with his wheel spinning. He made a successful restart on the worst part of the hill.

Duke (4 Triumph) was a victim to over cantion. He carefully picked his way up the hill, but took too wide a sweep in avoiding one particularly loose patch, and skidded and fell.

The Sidecars on Alt-y-Bady.

Giles (6 A.J.S. sc.) was the first sidecar to make a clean ascent. Frank Smith's new 8 spring frame Clyno made a steady climb, with ample reserve of power, as did Capt. J. L. Stocks's 6-7 Ariel. J. E. Greenwood (8 Sunbeam) made the fastest sidecar ascent, and Denley's Morgan climbed steadily. Amongst the sidecar machines probably the most praiseworthy performances were those of Oreton and L. Newey on 3½ Ariel sidecars. These two machines, with engines of only 500 c.c., made excellent climbs. Watson on a similar machine also ascended the hill in good form, but on the 1 in 3½ portion his belt broke. Oreton and Newey were the only riders of single-cylinder sidecars successfully to negotiate the hill. Woodcock (5-6 Ariel sc.), Dalby (4 Trinmph sc.), and Arch (8 New Imperial) were brought to a standstill with spinning rear wheels, while Cutler (4 Norton sc.), Heather (4¼ B.S.A. sc.), Norris (8 Royal Ruby), Bird (4¼ B.S.A. sc.), W. Urry (4¼ B.S.A. sc.), and Grinton (8 Harley-Davidson sc.) also stopped. Grinton's Harley-Davidson had the sidecar on the right side of the machine, American fashion, and, as it happened, this would have favoured him on the hill as the very loose patches had to be traversed by the driving wheel of the conventional sidecar.

After this hill the competitors had to descend a very severe gradient into Glyn Cerriog, which was very rough and trying to men, machines and sidecar chassis. A further thirteen miles and the riders were back again in the market yard for the luncheon interval of one and a half hours.

Seventy Miles on Main Roads.

At 3.30 the first competitor was due to start in the third and last section of the trial—a straightforward main road run of seventy miles to the finishing point at "The Parson and Clerk," Streetly, where forty-nine survivors of the hard day's gruelling were checked in.

It was an excellent trial, and we heard many competitors congratulate the officials upon its sporting nature. We, too, congratulate Mr. F. J. Urry, the hon. trials secretary, and his many willing officials on the manner in which the trial was run.

The following handed in their cards at the finish :

A. J. Dowler (3½ Sunbeam)
L. L. Sealey (4¼ B.S.A.)
A. S. Ward (6 Enfield sc.)
N. Hall (2½ O.K.)
J. A. Watson-Bourne (4 Blackburne)
H. P. Cutler (4 Norton sc.)
P. J. Enticknapp (4 Blackburne)
G. Dance (3½ Sunbeam)
D. S. Heather (4¼ B.S.A. sc.)
H. Newey (2¼ Levis)
G. N. Norris (8 Royal Ruby sc.)
G. Knhn (2½ Levis)
F. W. Giles (6 A.J.S.)
W. A. B. Bown (2½ Bown-Villiers)
Frank Smith (8 Clyno sc.)
P. Newman (2½ Ivy)
C. Hollyoak (2¼ Radco)
F. Stevens (6 A.J.S. sc.)
C. Hartwright (2¾ New Imperial)
J. Dudley (3½ Sunbeam)
W. Woodcock (5-6 Ariel sc.)
L. E. Clulee (2½ Allon)
P. L. Taylor (2½ New Imperial)
C. Oreton (3½ Ariel sc.)
A. H. Johnson (2½ Allon)
W. Jackson (6 L.M.C.)
E. Arch (8 New Imperial)
G. A. Strange (5-6 James)
H. Minton (4 Norton)
L. Newey (3½ Ariel sc.)
H. Phillips (2½ Allon)
J. E. Greenwood (8 Sunbeam)
E. W. Choldcroft (4 A.J.S.)
F. J. Watson (3½ Ariel sc.)
G. E. Stobart (4¼ James)
H. B. Denley (8 Morgan)
G. A. Dalby (4 Trinmph sc.)
J. A. Newman (3½ Sunbeam)
T. Peck (3½ Ariel)
S. T. Abbotts (2¼ Diamond)
T. B. Vale (2¾ Douglas)
J. G. Orford (2½ New Imperial)
E. Williams (2¾ A.J.S.)
J. Allday (3½ James)
J. L. Stocks (6-7 Ariel sc.)
H. Boynton (5-6 James)
G. Grinton (7 Harley-Davidson sc.)
H. Greaves (3½ Calthorpe-Precision)
H. J. Stretton Ward (4 Triumph)
R. C. Atcherley (4 Triumph)
W. B. Gibb (2¾ Douglas)

A Passenger Machine Trial on Touring Lines.

The Birmingham M.C.C. will run the Midland cup trial on touring lines. Freak hills, speed-judging, and flexibility tests will be excluded. We are informed that the conditions will provide for eventualities which usually occur on a tour.

Glasgow Western M.C.C. Slow Hill-climb.

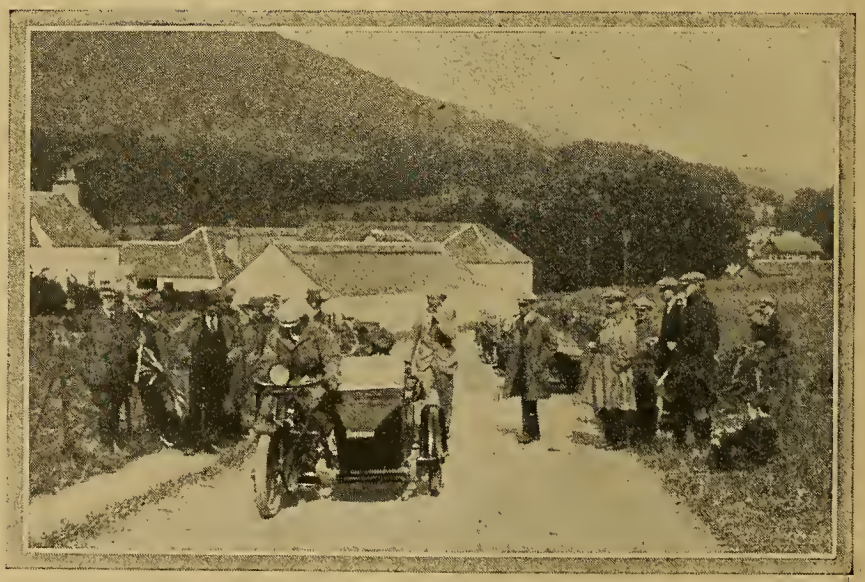
An Impromptu Test.

THE Western Clnb of Glasgow were due to hold an old crock hill-climb on Satnrday last, bnt owing to the non-appearance of the old crock the members of the clnb present at the rendezvous ran off an impromptn slow climb instead.

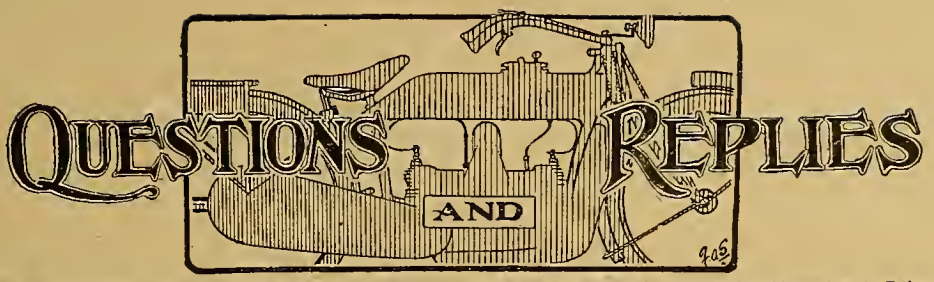
There was quite a large turnont of members, and several good ascents were made, the most notable being E. M. While (6 h.p. A.J.S. sc.) and I. Barclay (6 h.p. A.J.S. sc.).

Owing to the small nnmber of solo riders present, a solo class was not run off. J. Connal on a 2 h.p. Victoria-Precision put up a very fine performance.

The reason of the non-appearance of the old crock was due to the fact that when about to leave for the venne the engine refused to start, although the previous evening everything was going well. In all probability, however, the event will be rnn off later in the season.



Glasgow Western M.C.C. slow hill-climb at Cult Brae. J. Henderson, 4 h.p. A.J.S. and sidecar, starting the climb.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Raised Prices.

I ordered a new motor cycle from an agent, and was promised delivery in four or five weeks. I now have a letter from the agent saying the price is raised by £7, and enquiring if I will confirm the order. Is it the practice of the trade to raise the price of a motor cycle after it is ordered at a certain price and past the date of delivery?—W.B.

Deliveries are so uncertain at the present time, and it is frequently necessary for prices to be advanced on account of the fluctuations of the raw material market. Whether you will have to pay the increased price depends on whether you have a definite written quotation from the agent. If so, you can hold him to that price.

Misfiring.

I have a 1914 8 h.p. Rex sc. outfit. (1.) The front cylinder misfires about once in every four revolutions when travelling at slow and high speeds. When travelling at about 20 m.p.h. this does not appear to occur. The plugs are clean, as are also the carbon brushes, and the make and break are quite efficient. What is the cause of the misfiring? (2.) I have a B. and B. carburetter which chokes the engine when the throttle is opened more than half-way. Please tell me the cause and remedy. (3.) The oiling system is by pump and semi-automatic drip feed, but I cannot get the oil to drip. The only way to feed oil to the engine is by means of the hand pump, which is incorporated with the oiler. The crank case has a breather pipe, which I have stopped up, thinking that this would give me suction in the crank case and thereby draw the oil down. Instead of suction the crank case seems to be blowing out. Should there be a valve in the union joining the oil pipe to the crank case, and is it necessary to have a breather in the crank case, as oil is thrown all over the machine? I have thoroughly cleaned the pump and all the parts of the oil system but still cannot get the oil to drip.—F.J.W.

(1.) The trouble may be due to air leaks at the carburetter or induction pipe unions, or to the tappets requiring adjusting. Perhaps the jet is partially choked. (2.) Bad carburetter adjustment. Try fitting jets of different sizes. (3.) The oil will not feed to the engine unless the pump incorporated with the oiler is put into action. You would serve no useful purpose by stopping up the breather pipe. There should be no valve in the union. The object of the breather is to release the crank case compression, and prevent oil being thrown out through the bearings.

Loss of Compression.

The compression on my 2¾ h.p. Douglas is not good, and on turning the flywheel by hand when cold there is a hissing noise as of air escaping. It improves when hot. I presume new piston rings are necessary, but do not want the bother of fitting them just now. (1.) Does it harm the engine to run in this condition? (2.) Is petrol consumption of about one hundred miles to the gallon satisfactory? My weight is 9 stone 10 lb.—G.J.B.

(1.) We do not think it will harm the machine at all to run it in this condition. The engine is a low compression one, and depends upon its high engine speed for its power. The leak may not be at the piston rings, but may be at the valves or valve caps. Also make sure that the tappets are adjusted correctly, and see that the valves are closing properly. (2.) The petrol consumption is highly satisfactory.

F.N. Parts.

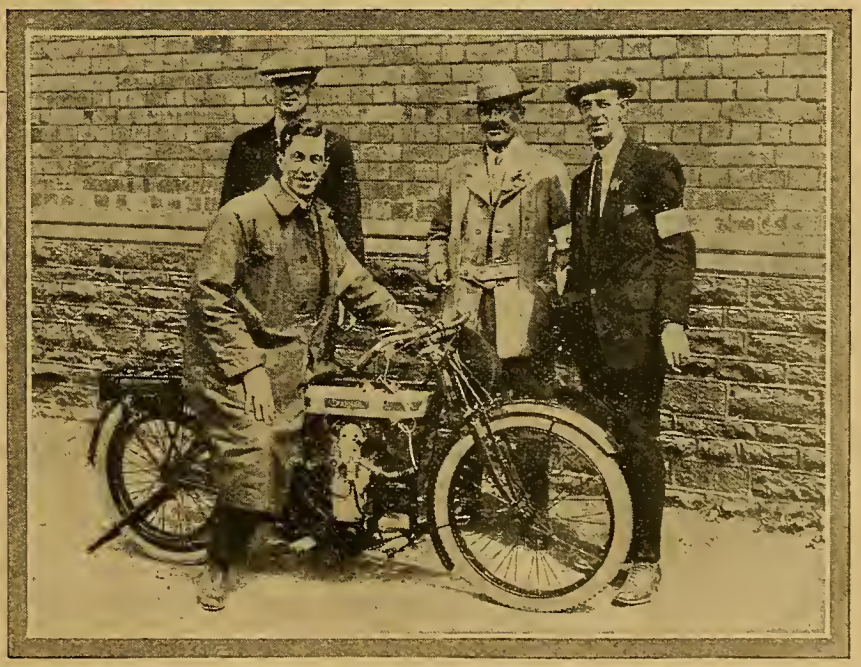
I should be extremely obliged if you would be good enough to inform me where I can obtain spare parts for a 2¾ h.p. F.N. two-speed motor cycle.—E.W.W.

Write F.N. (England), Ltd., Kimberley Road, Willesden Lane, Kilburn, London, N.W.6.

Deposit Refund.

After having paid a deposit of £20 on a second-hand motor cycle, I find myself unable to obtain the other money necessary to complete the purchase. Can I claim my deposit back whole, or would the dealer be in order in selling the machine for less than I was going to pay for it, and deducting the difference from my deposit, or would I be compelled to have £20 worth of goods from him?—H.E.D.

You will either have to complete your purchase, or otherwise you are liable to pay damages. You could be sued for the balance of purchase money, or the owner could resell and deduct the difference in price (plus any expenses in connection with the resale) from the deposit.



Mr. E. B. Ware (A.C.U. Committee member) on the 2¾ h.p. Douglas he won for 10/- at the recent Bristol Rally.

Magneto Trouble.

[?] I should be obliged if you could help me out of the following trouble with a 2½ h.p. two-stroke Ixion-Villiers. I cannot get it to start. It will fire the mixture when pushed along with the compression release open (a good blue flame), but will not do so with the release valve shut. Carburetter, Amac, 29 jet, taken down and thoroughly cleaned out. Petroil lubrication, 16 to 1 (mixture taken from the tank of a similar machine, which runs well on it). Ports clean, compression good. Tried various good plugs. Magneto, Dixie, taken to pieces and properly cleaned, contacts clean and square, and correctly adjusted. Tried various plug gaps and different timing (fixed) from T.D.C. to ⅛in. before T.D.C. By pulling the back wheel over smartly I can only get a spark 3/32in. long from the end of the high-tension wire. The magneto condenser seems all right, as the points do not get burnt. There is no high-tension brush or collector ring on this magneto. The pinion wheel is bronze. How can I test the magnets to know if they require remagnetising? Do you consider this magneto a first-class one? —H.E.N.

Without examining your machine, we should say that the magneto current was too weak to provide the spark under compression, and we should advise you to submit the magneto to an expert. There is no easy method of testing the magnets. The magneto is quite good of its type and should give no trouble, particularly as you have a bronze sprocket.

Improving Old Machine.

[?] I have bought an old 3½ h.p. single-cylinder Minerva. (1.) Will this engine take a lightweight carburetter? (2.) The total height of the engine is 17in. Could this be built into a lightweight frame? (3.) Could a pair of Druid forks be fitted to the present Minerva frame? If so, what measurements would be required? (4.) In the bottom frame there is a bracket with a spindle similar to a pedal cycle. No very long cranks could be fitted, as there is very little clearance. What was this probably used for? (5.) The engine is believed to be a 1913 one. How can I know for certain? (6.) The height from the top of the saddle to the ground is 33in. Would this be termed high, medium, or low? (7.) The B. and B. carburetter has a pipe screwed on the chamber where the slides are in. What is this for, and should the carburetter be pushed home on the induction pipe or just fastened on the end?—W.S.

(1.) The carburetter should be one made for a 3½ h.p. engine, otherwise you will not get full efficiency. In any case, we do not think the induction pipe union would be large enough on the lightweight carburetter. (2.) There is no fixed definition of a lightweight frame. The frames for various lightweights differ in many particulars, and the only way to judge whether your engine could be utilised in such a frame is to measure the height, and the distance between the plates at the bottom bracket. (3.) You could fit Druid forks. Measurements will be diameter of wheels and length of steering head. You should also give weight of the machine. (4.) The bracket in the frame may have been used for footrests. (5.) There was no Minerva engine made in 1913. The engine was made on the Continent, and there are no British agents, so that you will have some difficulty in determining its age. (6.) The saddle height is decidedly high. (7.) The pipe to which you refer may be intended to improve carburation by making use of the inertia of the gases. In fitting the carburetter, care should be taken that no air gets in the induction pipe joint. This should therefore be fitted on as far as possible and well tightened up.

EXPERIENCE WANTED.

"B.W.C." (Chelsea).—3½ h.p. Brough. Speed, reliability, consumption, etc.

"Scottite" (Eltham).—The substitution of the petroil system of lubrication for the standard oiling arrangement.

READERS' REPLIES.

The Low-tension Magneto.

I notice a correspondent in your issue dated May 5th is in trouble owing to the difficult starting of his N.S.U., which is fitted with a low-tension Eisemann magneto. As I have had, in the past, some years on the road with these machines I may be able to help him. His trouble is undoubtedly due to glaze on the carbon brush of the magneto. If he takes off the fibre cover on the left hand side of the magneto, he will find a flat spring about 1½in. long which can be moved upwards; under this spring, at the end furthest away from the centre, will be found the carbon brush: this should be taken out and rubbed up with a piece of emery paper. When replacing, care should be taken to see that the tongue on the end of the spring is fitted into the slot on the end of the carbon brush. I have often found that these machines will go through a long run perfectly, but, after being allowed to stand a few minutes, will require the brush to be cleaned before a restart can be made. It may interest your correspondent to know that Messrs. Eagles and Co., of Acton Hill, London, W., can probably supply spares for these machines. I have always found the above firm most courteous, they do their best to satisfy the most exacting requirements. I have no interest in the above firm otherwise than that of a satisfied customer.—H. E. PORTER.

In reply to "A.W.G.M.'s" query in your issue of June 12th, 1919, I beg to give my opinion. We D.R.'s use all kind of oils in our Triumphs, but the smell referred to is that of castor oil, which we use when we can get it. It is the best oil we can get for summer use, but we have to thin it down in the winter with a very thin oil which is issued to us as winter oil. Most D.R.'s were unable to get castor oil except those who were well in with some of the R.A.F. During the last eighteen months I was attached to the Tank Corps, therefore I was able to get a good supply of castor oil, which I used most of the time and found it quite A1. The tubing mentioned makes the finest grips for Triumph handle-bars. I may add that I specially brought two pieces of this tubing home with me for use on my own bicycle. I have it now fitted to my 1919 Trinmph.—W. J. COOPER.

Difficult Starting.

I notice in your issue of June 19th a question asked by "O.T.H." *re* difficult starting of his 5-6 h.p. Indian. It is possible for him to get high-tension current with the system he has mentioned, with the exception that he should have a small resistance in series with the battery, so as to prevent a dead short on the battery when the contact breaker was closed. The fact of the magneto being alternating has no bearing on the matter, as the high-tension current depends on the interruption of the primary circuit in series with the battery through the make and break of the contact breaker. This system is used on the Maxwell cars, and is termed "plain duplex."—AS 174609.

RECOMMENDED ROUTES.

MIDDLESBROUGH TO MARYPORT.—J.L.

Middlesbrough, Stockton, Darlington, Barnard Castle, Brough, Applehy, Penrith, Penruddock, Keswick, Cockermouth, Maryport. Approximately 115 miles.

BIRMINGHAM TO CAMBRIDGE.—J.P.

Birmingham, Coventry, Daventry, Dunchurch, Northampton, Bedford, Eaton Socon, St. Neot's, Eltisley, Cambridge.

NEWCASTLE TO EXETER.—T.W.R.

By the route previously given as far as Stamford, then through Kettering, Northampton, Brackley, Oxford, Faringdon, Swindon, Wootton Bassett, Chippenham, Bath, Radstock, Wells, Glastonbury, Durston, Taunton, Wellington, Cullompton, Exeter. Approximately 393 miles.

BRISTOL TO EDINBURGH.—P.V.J.

Bristol, Stone, Gloucester, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Wellington, Whitchurch, Tarporley, Warrington, Wigan, Preston, Garstang, Lancaster, Kendal, Penrith, Carlisle, Longtown, Langholm, Hawick, Galashiels, Stow, Edinburgh. Approximately 350 miles.

BRISTOL TO ALWINTON.—P.V.J.

By the route we have given above as far as Penrith, then branch off through Alston, Haydon Bridge, Hexham, Hamshaugh, Wark, Bellingham, Yellow House Inn, Otterburn, Elsdon, Alwinton. Approximately 320 miles.

RAMSEY (HUNTS) TO LLANDUDNO AND BANGOR.—R.W.W.

Ramsey, St. Mary's, Holme, Stilton, Norman Cross, Chesterton, Water Newton, Wansford, Duddington, Glaston, Uppingham, Leicester, Ashby-de-la-Zouch, Burton, Uttoxeter, Stone, Pipe Gate, Audlem, Whitchurch, Overton, Ruabon, Corwen, Cerrig-y-Drnidion, Bettws-y-Coed, Llanrwst, Llandudno Junction, Llandudno. For Bangor branch off at Bettws-y-Coed for Capel Curig, Nant Francon Pass, Bangor.

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

Alldays.

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [0017

ALLDAYS-VILLIERS, 1914, 2¾h.p.; 30 gns.—290, Brixton Hill, S.W.2. [5306

GEORGE SMITH has 1919 Allon latest model in stock.—268, Lavender Hill, Clapham Junction.

1916 Allon, as new, little used; 48 gns.—George Smith, opposite Arding and Hobbs, Clapham Junction. [4009

1919 Allon 2-stroke, just delivered, at cost; £70/19.—C. Burlingham, Rossyvera, Evesham. [X5116

ALLON, 2-stroke, 2-speed, new piston, belt, and tyres; perfect; £49; after 6.—Parritt, 14, Stanhope Gardens, Highgate. [4792

ALLDAYS-MATCHLESS 1914 2-stroke, 2¾h.p., splendid running order; £32.—104, Plough Rd., Battersea, S.W. [5474

1916 Allon, 2 speeds, speedometer, horn, pump, tools; condition perfect throughout; £45.—Howard, 11, Ruskin Av., Kew. [X4794

1917 Allon, 2-stroke, new rear tyre, horn, tools; in splendid condition; stored 2 years; £50, cash.—11, Melrose Rd., Gainsborough. [X5081

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2931

ALLDAYS Allon.—Orders booked now will ensure early delivery.—W. R. Sanders and Co., Ltd., Sanders' Garage, Buxton. [X3645

ALLDAYS 1914 3½h.p. Matchless, 2-speed, Binks, Bosch, good condition; 48 gns. After 6 p.m.—16, Alfred Gardens, Southall. [5121

1917 Alldays-Allon, 2¾h.p., 2-speed, H.C.C., perfect condition, head, tail lamps, speedometer, mechanical horn; trial; £55.—Jenkins, Shenley, Bletchley, Bucks. [X4994

1919 Allon 2-speed, like new, and grey coach sidecar, £72, separate; 3½h.p. Ivy-Precision 2-speed, engine overhauled makers, £37.—Box 4,219, c/o *The Motor Cycle.* [X4935

ALLDAYS Combination, 4h.p., 2-speed rock gear, handle start, with coachbuilt step pattern sidecar, needs repairs; as it stands, £55.—Marlboro' Motors, St. Albans. 'Phone: 159. [5359

ALLON 1919 2¾h.p., clutch model, leg shields, 2-speed, free engine, averages 108 to 112 m.p.g., good climber, mileage about 500, will take a light sidecar; price £60.—E. J. Melsome, Arden, Nether St., North Finchley, N.12. [X5071

Antoine.

ANTOINE Motor Cycle, twin engine, and wicker sidecar, Bosch mag.; £25.—Box L2,337, c/o *The Motor Cycle.* [4875

ANTOINE 5-6h.p., Amac, Bosch, wicker sidecar, running order, mechanically sound; trial; £35; will separate; evenings.—108, Leslie Rd., E. Finchley, N.2. [5031

Ariel.

CROW Bros., High St., Guildford.—Ariel agents since 1915. 1919 deliveries have begun. [5299

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [5269

ARIEL, 1914, 3½h.p., new tyres and belt, with horn and lamps, excellent condition; £55.—Vincent Jackson, Helpston, near Peterborough. [5078

ARIEL, 3½h.p., new heavy Dunlop tyres and belt, needs tuning up and one or two small repairs; £32.—Marlboro' Motors, St. Albans. Tel.: 159. [5371

3½h.p. Ariel, accumulator ignition, running order, spare accumulator; £15, nearest offer; must sell; disabled.—Hutchings, 14, Benbow St., Devonport. [5126

1915 3½h.p. Ariel Combination, 3-speed, in good running order; £65. Seen after 7, and all day Sunday.—E. Harling, 6, Toulmin St., Boro', London, S.E. [5331

5-6h.p. Ariel, July, 1915, in excellent condition, light roomy sidecar, 3-speed countershaft, all accessories, numerous spares; 90 gns.—Nott, Briars, Tennyson Rd., Harpenden. [X4988

3½h.p. Ariel Combination, 3 speeds, decompressor, horn, tools, head lamp, apron, etc., 2 new tyres, in first-class running order; first cheque £65.—Scott, 90, Brooms Rd., Dumfries, N.B. [X4930

1915 3½h.p. Ariel, 3-speed countershaft gear and kick starter, coachbuilt sidecar, lamp sets and horn, in good order; £95.—Walbro Motor Cycle Works, Saffron Walden, Essex. 'Phone 45. [X4875

ARIEL Combination 1917, 3-speed countershaft, electric lighting, horn, speedometer, 2 spare tyres and tubes, splendid condition; £96.—Osbourne House, 5, Willoughby Lane, Park Lane, Tottenham. [4884

OUTSTANDING FEATURES OF THE LONDON-EDINBURGH RUN—

The Magnificent Performance of

A.B.C.
Blackburne
Indian
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Levis

Motor Cycles.

Each supreme in its special class.

Each gaining golden opinions on the road.

Each gaining Gold Medals.

Each worth waiting for, and all

Represented by the Premier London Agents:

GODFREY'S

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208, Great Portland Street, London, W.1.

Telephone: 7091 Mayfair (2 lines).

MOTOR CYCLES FOR SALE.

Ariel.

ARIEL 1916 5-6h.p. Combination, Swan sidecar, countershaft, 3-speed clutch, overhauled at makers March, as new, accessories, lamps, etc.; any trial, any time; £120.—Card, The Green, Godstone, Surrey. [5076

ARIEL 1914 3½h.p. Combination, 3-speed, clutch, kick start, decompressor, Bates and Hutchinson tyres, Pedley belt, Phœnix cane torpedo sidecar, Chater-Lea chassis leaf and coil springs, weight 95 lb. with heavy Kempshall tyre, luggage carrier, trip cyclometer, 2 horns, lamps; 84 m.p.g.; enamel not scratched; in perfect condition; owner bought car; £70.—Grafton, Norman Rd., Sutton. [X4819

Arno.

ARNO, 3½h.p., clutch model, new Dunlop back, ride away; nearest £40.—1, Rectory Lane, Tooting. [5082

A.S.L.

1914 4½h.p. A.S.L., Precision, B. and B., Bosch waterproof, h.b.c., new belt, tyres good, very fast; ride away; best offer over £30.—Richardson, Park St., Uttoxeter, Staffs. [4878

Auto-Wheels.

WALLS Auto-Wheel, in perfect condition, not run 600 miles; £11.—53, Sun St., Hitchin. [4761

AUTO-WHEEL, Wall, tyre and engine good; £12/12.—24, Townley Rd., E. Dulwich. [5417

AUTO-WHEEL, almost new; what offers?—H. Nelson-Ward, Wicken, Stony Stratford, Northants. [X4910

AUTO-WHEEL, good condition, in perfect running order; £13/10.—Cowan, 32, Fitzroy Sq., W.1. [5223

WALL Auto-Wheel, pulls tandem splendidly; £13; after 6.—Arundel House, Main Rd., New Eltham, Kent. [4857

AUTO-WHEEL, Wall, complete with all fittings, in good order; £12.—Marlboro' Motors, St. Albans. Tel.: 159. [5370

WALL Auto-wheel, recently overhauled by makers, easy starter; £12/12.—Vincent, Cerne Abbas, Dorchester. [5334

AUTO-WHEEL, Wall, splendid condition, little used; evenings; 12 gns.—121, East Hill, Dartford, Kent. [5048

AUTO-WHEEL fitted to fine bike, in perfect order, oil bath, marvellous climber; £24.—Longport Motor Co., Stoke-on-Trent. X4560

WALL Auto-Wheel, perfect running order, new tyre, not used during restrictions; £10/10.—193, Upper Tooting Rd., S.W. [4992

Avus.

AVUS, 2¾h.p., 1917 model, splendid condition, little running, any trial; first cheque, £46.—Coombs, Junr., Farnborough, Nr. Bath. [5228

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and can give early deliveries. [5300

BLACKBURNE.—Sole agents. Book now for early delivery.—Chandler, Reyre and Williams, Sun St., Hitchin. [0999

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

Black Prince.

BLACK Prince.—2¾h.p. specification now ready; price 45 gns.; 2-speed; ⅓ deposit with order, balance delivery, or E.P. of £3/2 per month. Lists now open; delivery 3 weeks.—Black Prince Motors, Aekern. [5300

Blumfield.

BLOOMFIELD Combination, 4h.p. twin, 4-speed gear box, clutch and kick starter, underslung wicker sidecar; £70.—Marlboro' Motors, St. Albans. 'Phone: 159. [5360

Bown.

BOWN 3h.p. 2-stroke, as new, good machine; £50, or best offer.—R.G.S., 39, Bulwer Rd., Leytonstone. [4861

Bradbury.

BRADBURY Agents.—Bright and Hayles, 78, Church St., Camberwell, London. [5423

BRADBURY 4h.p., 2-speed, accessories; £39.—Conner, 86, Victoria Rd., Stroud Green, N.4. [X4844

BRADBURY Combination 4½h.p., countershaft gear, lamps, screen, etc.; £55.—Sargent, 4, Whitehill Rd., Crayford. [5236

BRADBURY, N.S.U. 2-speed, light Watsonian sidecar, splendid condition; £50.—605, Lord St., Southport. [X4998

BRADBURY.—For early deliveries of 1919 model, write W. R. Sanders and Co., Ltd., Sanders' Garage, Buxton. X3646

4h.p. 3-speed Countershaft Bradbury, coachbuilt sidecar; £75.—Particulars, Platts, 602, King's Rd., Fulham, S.W.6. [5239

1919 Bradbury, 6h.p., Milford sidecar, fully equipped; not run 200 miles; £150 lowest.—H. Wareing, 182, Portland St., Southport. [X4555

MOTOR CYCLES FOR SALE.

Bradbury.

BRADBURY, 4h.p., ready for anywhere; trial 2 up; bargain, £36.—Apply mornings, Box Villa, Mayback Rd., South Woodford, E.18. [4837

4h.p. 1912 Bradbury, single-speed, any trial, very powerful and reliable; £35.—Tom Batt, Turnden Farm, Bethersden, Ashford, Kent. [4997

BRADBURY and Sidecar, 4h.p., 2-speed F.E., Bosch; seen running; £54.—Speechley, 1, Gunnersbury Lane Acton, London. [5287

BRADBURY 1914 4h.p., 2-speed, coachbuilt sidecar, P.H. lamp set, splendid condition; ride away; £65 cash; after 6.—93, Vernon Rd., Stratford. [4896

BRADBURY, 4h.p., 1912, N.S.U. 2-speed gear, lamps, generator, horn, new tyres, in good order; £42/10.—Marlboro' Motors, St. Albans. Tel.: 159. [5377

1914 4h.p. Bradbury, Armstrong Mark VI. gear and clutch, machine nearly new, good tyres, everything guaranteed perfect; £75, or best offer.—Day, Okehampton. [5338

BRADBURY 4h.p., Grado gear, kick start, re-enamelled and plated, horn, new tyre, low, fast, reliable machine; £38/10.—16, Hoddesden Rd., Belvedere. [5136

1914 Bradbury 4h.p., 2-speed, clutch, wicker sidecar, stored 2½ years, splendid condition and running order; £56; without sidecar £50.—Homestead, Birchington. [5184

BRADBURY 4¼h.p., Bosch, Senspray, good tyres and belt, horn, toolbag, very fast machine; exchange for cycle car, or sell £42, or nearest offer.—The Stores, Leaden Roding, Dunmow, Essex. [5193

1¼h.p. Bradbury, N.S.U. 2-speed, Bosch enclosed, ball bearing engine, new piston gudgeon and connecting rod bushes; ride away; £35; after 6 p.m.—J. Norman, 187, Snowdrop Rd., Lodge Lane, Welling. [4756

Brough.

BROUGH 6h.p. Twin, 3-speed, Binks, Bosch, Ivy C.B. sidecar, wind screen, good condition; £96.—E. Thorpe, Swadlincote. [X4970

BROUGH.—South Lancashire, North Cheshire, and Isle of Man; buyers order now from Official dealers, J. Blake and Co., Liverpool-Manchester. [X4465

BROUGH, T.T., single-cyl., 4¼h.p., low, light frame, fixed engine, Miller's lamps, very fast; £37/10, or exchange.—Bunting, Mason's Av., Wealdstone. [5156

BROUGH, 1916 horizontally opposed twin-cyl. combination, with Canoelet sidecar, good condition; £80.—Lindhurst, 4, Petherton Rd., Highbury, N. [5469

Brown.

3½h.p. Brown, in good order, hand clutch, tyres good; £30.—T. Best, Leiston. [5238

BROWN 3½h.p., 1913, new tyres; £35; after 6.—16, Madrid Rd., Barnes, S.W.13. [5199

BROWN 3½h.p. B.S.A., new Dixie, re-enamelled; £23.—9, Albert Rd., Bromley Common, Kent. [5096

BROWN 3½h.p., adjustable pulley, Simms-Bosch mag., B. and B., in good condition, ride away; £30.—106, East Barnet Rd., New Barnet, Herts. [5320

B.S.A.

B.S.A. Combination, nearly new, fitted speedometer, etc.—Lambert, Goose Yard, St. John St., Angel, E.C.1. [5457

B.S.A. Combination, 2-speed hub gear, wicker sidecar; £55.—Marlboro' Motors, St. Albans. 'Phone: 159. [5394

B.S.A. 4¼h.p. Combination, chain drive, 1916 pattern, perfect condition.—Irwin, Robertsbridge Station, Sussex. [4769

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2919

1914 3½h.p. B.S.A., T.T., lamp, horn, knee grips, new back tyre, very fast; £48.—Agnew, Wellington, Salop. [X4944

B.S.A. Combination, 3-speed, S.A., F.E., splendid condition, ride away; £70.—320, High St., Poplar, E. [5140

T.T. B.S.A., perfect condition, spares, tools, lamps; 60 m.p.h. guaranteed; £65.—Downes, Home Place, Molt, Norfolk. [X4553

B.S.A., 4¼h.p., 3-speed, countershaft, kick start, lamps, etc.; done about 1,000 miles; £90.—Davis, 30, Paragon, Bath. [X5084

B.S.A. 3½h.p., 2 speeds and free engine, just repaired, and in good order; price 55 gns.—Brown, Kirbymoorside, Yorks. [X4845

B.S.A., 1919, with brand new Burbury sidecar, lamps and horn, splendid turnout; £120.—Jagger, Claughton St., Kidderminster. [5342

B.S.A. 1916 Combination, C.B. sidecar, 4¼h.p. 3-speed countershaft, first-rate condition; 95 gns., no offers.—17, King St., Watford. [4897

1916 4¼h.p. B.S.A. Combination, 3-speed, countershaft, clutch, all accessories, good condition; £90.—Tebb, Church St., Epsom. [5051

RECISTERED

HAH TRADE MARK

SPECIALITIES

Genuine Hellesen Dry Batteries

4½ volt. "FLASH," 6½in. high x 2½ x 4½, 13/6 each.
Delivery from Stock.

Carrying Cases for Batteries or Accumulators

Fig. 386.

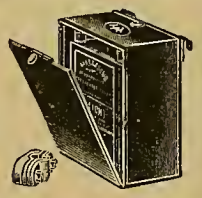

Fig. 387.

Fig. 385 For fixing to saddle down tube, 11/-
" 387 " " back carrier ... 11/-
Delivery from Stock.

H.A.H. Wiring Sundries.

Complete Sets as illustration.

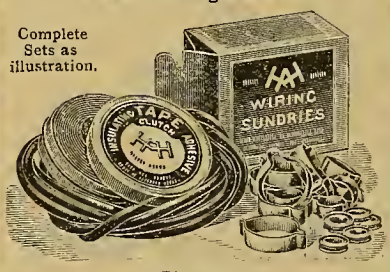

Fig. 255.

Set "A" for Solo Machines ... 4/3.
6 yds. single lighting wire, tape, clips, ring terminals, etc.
Set "B" for Sidecar Combinations, 6/6.
12 yds. single lighting wire, tape, clips, ring terminals, etc.
Delivery from Stock.

Fig. 245.

Sparking Plug Cover
Fig. 245 2in. ... 7½d.
Fig. 245 1½in. ... 6d.
Delivery from Stock.

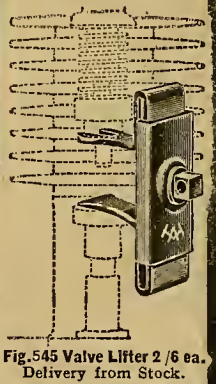

Fig. 545 Valve Lifter 2/6 ea.
Delivery from Stock.

A. H. HUNT, 115-117, Cannon St., LONDON, E.C.4.

MOTOR CYCLES FOR SALE.

B.S.A.

1917 B.S.A. 4¼h.p., 3-speed countershaft; £75; with coach sidecar, £90; good condition.—Cairns, Castlefin, Co. Donegal. [X5002

B.S.A. 3-speed Model H., chain, Mills-Fulford, coach, hood, screen, Jones. F.R.S.; £120.—Allen, 12, Rydon Crescent, St. John St., London. [5195

1919 4½h.p. B.S.A., Millford sidecar, only ridden 250 miles, guaranteed perfect, as new; £135, or nearest offer.—Black Lion, Stotfold, Beds. [5203

B.S.A. Combination, late model, 4¼h.p., 3-speed box, all-chain, K.S., perfect condition; any trial; £96.—Parkinson, 73, Clayton St., Wigan, Lancs. [X5073

B.S.A., single gear, all ready ride away; £40, or offer; also Tan Sad, Grado, kick start; after 6 p.m.—163, High St., Hampton Hill, Middlesex. [5072

B.S.A., 1913 model, not run 5,000 miles, and in new condition, 2-speed, a motor cycle to be proud of; price 55 gns.—Box L2,330, c/o *The Motor Cycle*. [4849

B.S.A. 1914 4¼h.p., all-chain, 3-speed countershaft, kick starter, new tyres, enamel unscratched; £68.—Ramsay, Lyndhurst Terrace, Barking Rd., East Ham. [4982

B.S.A. 1916 4¼h.p. Coachbuilt Combination, lamps, horn, etc., stored 2 years, condition and order perfect; £90.—Smith and Co., Gleagall Rd., Millwall, E. [4809

B.S.A. 4¼h.p. Combination, 1919 model, tools, lamps, Triple wind screen, etc., new condition; £120; any time after 6 p.m.—Garrett, 88, Biscot Rd., Luton, Beds. [5021

B.S.A. 1914 4h.p., 3-speed countershaft, all-chain drive, Lucas lamps, Watford speedometer, little used; 70 gns.; after 7 p.m.—Gilby, Wixoe, Bickley, Kent. (Near Station.) [5401

B.S.A., 1914, 4¼h.p., 3-speed, countershaft, clutch, and kick start, and coachbuilt sidecar, as new; £73.—J. Knight, 64, Walton Buildings, Mount St., Bethnal Green, E.2. [5080

B.S.A. 4h.p., 1914, with coachbuilt sidecar, 3-speed, countershaft gear, chain-cum-belt, lamps, and horn, tyres and belt good; £87. After 4.30.—Nuneham, Cranborne Rd., Barking. [5132

B.S.A., 4¼h.p., 3-speed, countershaft, chain drive, kick start, good Dunlops, lamps, generator, horn, trip speedometer, complete kit tools; any trial; £65.—21, Cumberland Park, Acton, W.3. (After 5.30.) [5273

1919 B.S.A., 3-speed, model K, maker's guarantee; Burberry sidecar to match; all accessories, lovely outfit, any trial; 115 gns. lowest, or sell machine alone.—Hynard, Draper, 116, Askew Rd., Shepherd's Bush. [X5034

B.S.A., 1917, 3-speed all-chain coach Combination, Cameo wind screen, speedometer, head lamp, Klaxon, and other accessories, excellent order; £110. Seen after 6.—Morgan, 80, Horsham Av., North Finchley. [5118

B.S.A., 4¼h.p., 1914, all-chain countershaft, P. and H. headlamps, Lucas rear, horn, speedometer, spare valve set, B.S.A. sidecar, luggage grid, windscreen, stormproof apron; mileage under 4,000; complete, £90.—65, Osborne Rd., Forest Gate, E.7. [5296

B.S.A. 1914 3½h.p. Combination, sporting Canoelet, 3-speed, kick starter, chain-cum-belt, lamps, horn, Binks, tools, spares, stored 3 years, absolutely perfect condition guaranteed; £85 lowest.—Maw, 1, Grosvenor Rd., Manningham, Bradford. [5197

B.S.A.—The Birmingham City agents and specialists who confine their business absolutely to B.S.A. manufactures always holds the most complete stock of motor cycles, sidecars, bicycles, etc., and can give immediate delivery of all replacements.—The County Cycle and Motor Co., 307-8, Broad St 'Phone: Midland 733. [7250

B.S.A., 3½h.p., C.B. sidecar, 3-speed, countershaft, chain-cum-belt, 3 new Dunlops, P. and H. lamps, Glorlaphone speedometer, wind screen, apron, luggage grid, done 4,000 miles, excellent condition; expert examination invited; ready ride away; write appointment; 87 gns.—55, Glenwood Av., Westcliff-on-Sea. [5208

Calcott.

2¼h.p. Calcott, Senspray carburetter, Bosch, spare tyre; £29.—King, Egrove Farm, Oxford. [X4954

2¾h.p. Calcott, 3 speeds, in excellent order, very little used, new in 1915; 52 gns.—Pater, 14, Bromham Rd., Bedford. [X5052

CALCOTT, 2¼h.p., waterproof Bosch mag., B.B. carburetter, lamps, generator, horn, nice condition; £38.—Marlboro' Motors, St. Albans. Tel.: 159. [5373

Calthorpe.

CALTHORPE Junior, 1915, new in 1917, 2-speed; £34.—Jenkins, 46, Rugby Rd., Leamington. [X5031

CALTHORPE-J.A.P., 1916, 2¾h.p., Enfield gears; splendid condition; £41.—33, Talfourd Av., Reading. [4780

CALTHORPE-J.A.P. 1915 2¾h.p. 4-stroke, Enfield 2-speed gear, original tyres; £50.—Pope, Staplehurst. [4924

CALTHORPE-J.A.P., 1916, 2¾h.p., tapered tank, Enfield 2-speed gear; £43.—Marlboro' Motors, St. Albans. Tel.: 159. [5372

MOTOR CYCLES FOR SALE.

Enfield.

ROYAL Enfield 6h.p. Combination, hood, lamps, guaranteed as new throughout; £120.—Lucas, 23, Thornton Rd., Barnet. [5088

3h.p. Enfield Twin, 1915, in first-class order, will take sidecar, 2-speed, Lucas lamps; £45.—Box 4,204, c/o *The Motor Cycle*. [X4817

1917 6h.p. Enfield Combination, perfect condition, 3 lamps, horn, speedometer, wind screen; any trial; £135.—14, Denmark Rd., Kingston. [4885

6h.p. Enfield and Coachbuilt Sidecar, good tyres, lamps; £85, or offer; would take solo part payment.—King, Egrove Farm, Oxford. [X4955

ENFIELD 6h.p. Combination, 1918, Lucas dynamo lighting set, perfect condition; £160.—Flat 5, 6, Ashburn Place, Gloucester Rd., S.W. [5226

1917 6h.p. Enfield Combination, hood, screen, 3 lamps, speedometer, horn, and mirror, new condition; £145.—Walter, Bridge St., Pioneer. [X5026

LATE 1915 6h.p. Enfield Combination, speedometer, screen, lamps, horn, etc., in new condition, very fast; nearest £125.—Pearse, Melrose, Brighton Park, Worcester. [X5044

ENFIELD Combination, 1916, 3 Lucas lamps, Cameo, wind screen, storm apron, grand outfit, completely overhauled; £145, no offers.—125, High St., Woolwich. [X3861

ENFIELD de Luxe Combination, Lucas dynamo, hood, screen, 2 horns, 8h.p.; best offer over 155 gns.—Harold Powell, Grey Friars, Portsmouth Rd., Kingston-upon-Thames. [X4885

ENFIELD 1917 6h.p. 2-speed Combination, £135; 1917 2¼h.p. 2-speed 2-stroke, £56; both include lamps, etc., and in excellent condition.—Arthur G. Daw, 114, Brixton Hill, S.W.2. [5335

ENFIELD Combination, 6h.p., 1914 or 1915, speedometer, lamps, horn, Enfield green wicker sidecar, enamel and plate good; £105.—Marlboro' Motors, St. Albans. 'Phone: 149. [5361

ENFIELD, 1918, 3h.p. twin, Enfield 2-speed, kick starter, Stuart mechanical horn, Cowey speedometer, Lucas lamps, generator, complete with kit of tools, new condition; £85.—Marlboro' Motors, St. Albans. Tel.: 159. [5376

ENFIELD 6h.p. Combination, 1917, with double-seated sidecar, complete with all lamps, condition perfect; 135 gns.—Longman Bros., Bond St., Ealing, and 387, Uxbridge Rd., Acton, W. Tel.: 1578 Chiswick. [5436

1917 Enfield 3h.p. Twin, 2-speed, kick start, lamps, tools, horn, and Klaxon, Watford speedometer, stored 12 months, just overhauled, perfect running order, owner purchasing car; £75, no offers; seen after 6, or by appointment.—Sawtell, Long St., Sherborne, Dorset. [X5095

ENFIELD 3h.p. (1914), in first-class order, engine just overhauled and rebushed where necessary, new pistons, 2-speed gear, perfect, tyres in excellent condition, very fast and powerful, petrol and oil consumption exceptionally good; this machine has been well treated and carefully used; £55.—Box 4,233, c/o *The Motor Cycle*. [X5117

Excelsior.

AMERICAN Excelsior 8-10h.p., T.T., 1914, Bosch, clutch, stored 3 years, very fast; 76 gns.—Apply, Gray's Garage, Child's Hill, Hampstead. [5265

AMERICAN EXCELSIOR.—Lancashire, Cheshire, North Wales, Isle of Man; residents order now.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [X4464

1916 7-9h.p. American Excelsior, 3-speed, kick start, clutch, and coachbuilt sidecar, for sale, or would exchange for lower power, cash adjustment either way.—Phillips, New Inn Farm, Staines. [4879

EXCELSIOR, 2-speed, hand clutch, 2-stroke, lightweight, lamps, horn, only ridden 800 miles, perfect; best offer over 46 gns.—Harold Powell, Grey Friars, Portsmouth Rd., Kingston-on-Thames. [X4886

AMERICAN Excelsior Coachbuilt Underslung Combination, 7-9h.p. twin, 1917, dynamo model, electric lighting, 3-speed, countershaft, kick start, etc., luxurious fast combination; guaranteed; £152.—R., 5, Victoria Av., Surbiton. [5046

1918 Excelsior 3h.p., special sidecar model, all chain drive, 2-speed countershaft, hand-controlled clutch, mileage not 500, Amac, E.I.C., Brooks B. 170, Dunlop heavys, P. and H. large lighting sets, condition as new, expert examination invited; highest cash offer; seen after 8 p.m.—Threlfell, South View, Timperley, Cheshire. [X5014

Fafnir

FAFNIR 3½h.p. Combination, splendid condition, any trial; £33.—24, Townley Rd., E. Dulwich. [5416

F.N.

F.N., 4-cyl., 5-6h.p., 2-speed; 47 gns.—Nurton, 29, Montpelier Vale, Blackheath, S.E. [5229

5-6h.p. F.N., Bosch, B.B.; exchange 2-stroke, or sell £22.—141, Broadway, Cricklewood. [5237

F.N., 1913, 4-cylinder, in excellent condition, new tyres; £70.—Williams Bros., 110, Wardour St., W. [4904

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F.N. 6h.p., 4-cyl., 2-speed and clutch, been rebored and new pistons fitted, dropped frame; £35.—74, Onslow Rd., Endcliffe, Sheffield. [X5045

F.N., 4-cyl., 2-speed, shaft drive, perfect, Dunlop tyres, Amac carburetter; £35; seen after 6 p.m.—25 Lushington Rd., Harlesden. [5101

F.N., 6-6h.p., 4-cyl., 2-speed, free engine, just overhauled, splendid condition, ride away; £45; before 2 p.m.—12, Courtlands Av., Lee, S.E. [5286

F.N. 2¾h.p., clutch, 2-speed, shaft drive, Bosch B. and B., top feed, new Dunlop 26×2 back; new condition; £38.—24, Whitmore St., Maidstone. [4752

F.N., 2¾h.p., 2-speed, F.E., clutch, Amac carburetter, just overhauled, excellent running order; £33/10; after 5.—17, King Henry's Rd., Chalk Farm, N.W.3. [5075

F.N., 2½h.p., just thoroughly overhauled and re-enamelled, new Michelin cover, Amac carburetter, Fischner magneto, new Dunlop belt; bargain, £25; call any time after 6.30 p.m.—42, Lancaster Rd., Stroud Green, N. [5162

F.N., 4-cyl., 1913, dropped frame, shaft drive, 2-speed gear, b.b.c. clutch, upright Bosch mag., 2 brakes, B. and B. 1919 carburetter, lamps, tyres, horn, and enamel like new; starts walking; £50, no offers.—Smith, 27, Prince's Av., Hull. [X4793

F.N. 4-cyl. 5-6h.p., Bosch, Amac, dropped frame, T.T.'s, shaft drive, mechanically sound, overhauled, re-enamelled, new front cover, back tube; £45; consider near offer; ride away; photo.—Sparks, 31, Broadwater Down, Tunbridge Wells. [5191

F.N., latest 5-6h.p. model ever turned out by makers, complete combination, 4-cyl., waterproof Bosch, 2 speeds, multi disc clutch, kick starter, enclosed shaft drive, dropped frame, lamps, speedometer; any severe trial; only 85 gns., worth 145 gns.—Wandsworth Motor Exchange, Ebner St., Wandsworth. 'Phone Battersea 327. [4494

Grandex.

GRANDEX Combination, believe 1914, 4h.p. J.A.P. engine, 2-speed Enfield gear, handle start, just been overhauled, with coachbuilt step pattern sidecar, repainted and varnished; £75.—Marlboro' Motors, St. Albans. 'Phone: 159. [5358

Harley-Davidson.

HARLEY-DAVIDSON 1915 7-9h.p., T.T. bars, 3-speed, electric, as new; £100.—McEwan, 47, Storey Sq., Barrow-in-Furness. [4988

HARLEY-DAVIDSON 1917 7-9h.p. Combination, perfect condition; £125.—Robinson, Ferndale, Midleton Rd., Guildford. [X5015

HARLEY-DAVIDSON Combination, 1915 electric model, in good order, ready to ride away; £130.—6, Clarendon Rd., Harrow. [4915

HARLEY-DAVIDSON 1915 Combination, 7-9h.p., 3-speed, windscreen, electric lights and horn; £125.—156, Browning Rd., East Ham, E. [5295

HARLEY-DAVIDSON 1915 Combination, 7-9h.p., owner too nervous to drive; sacrifice, £110; garaged.—462, Lea Bridge Rd., Leyton. [5456

HARLEY-DAVIDSON Combination, 1915-16, 3 speeds, electric model, fast and powerful; £125.—39, Wingfield Rd., Walthamstow, E.17. [5159

H.D. Twin, 1918, electric, S.C. model, imported N.Y. last week, perfect condition, mileage 1,500; offer.—Vale, 21, Westhampnett Rd., Chichester. [X4863

HARLEY-DAVIDSON 1916-17 Combination, electrically equipped, tyres, enamel excellent; £150, no offers.—Kermode, Wekiva, Blundell Av., Birkdale, Lancs. [X4561

HARLEY-DAVIDSON, 1915, electric model, 3 speeds, new Dunlops, powerful, good condition, £110 lowest; also T.T. bars for same; after 5.—767, Fulham Rd., S.W.6. [5215

HARLEY-DAVIDSON Combination 7-9h.p., 1915, just overhauled by Harleys, not done more than 6,000 miles; what offers?—Martin, Weybreak House, Harleston, Norfolk. [X4854

HARLEY-DAVIDSON 1919 Electric Combination, dickey seat in bulbous back, unscratched, only ridden 400 miles; best offer over 245 gns.—Harold Powell, Grey Friars, Portsmouth Rd., Kingston-on-Thames. [X4887

HARLEY-DAVIDSON, 1915 electric, L9664K, Mills-Fulford sidecar, 2 new tyres, one spare can be retreaded, electric sidecar lamp, absolutely sound mechanically; trial after 6; £125 cash; no offers.—5, Hayle Rd., Maidstone. [5408

1919 Harley-Davidson, fitted with Indian Model de Luxe sidecar and luggage carrier, wind screen, hood, electric head light, rear and sidecar lamps, battery ignition, Corbin-Brown rear drive speedometer, Klaxon horn; £215.—Horswill, 42, Bridge St., Chester. 'Phone 943. [5194

Hazlewood.

HAZLEWOOD-J.A.P. 1916 Combination, 4h.p., 3-speed countershaft, fully equipped, speedometer, etc., mechanically perfect; £90.—1, Priory Rd., Kew Green. [5269

MOTOR CYCLES FOR SALE.

Hazlewood.

5-6h.p. Hazlewood-Jap Combination, chain-cum-belt, 3-speed, kick start, Auto drip feed, duplex lighting set, cut-out, and mirror on handle-bar, Bosch magneto, pillion seat and footrest, family sidecar, 2 windscreens, cape cart hood and side curtains, tyre carriers and spare tyre on side of sidecar, all parts plated and re-enamelled, and sidecar painted last February; stand any examination, condition practically as new, engine taken down and thoroughly overhauled last week; horn, spare belt, tube, and all necessary tools; only wants seeing; £135.—Salsbury, 5, Jesson St., Coventry. [X5040

Henderson.

NEW 1919 Henderson, 4-cyl., mileage 400, equipped fine pillion, splendid S.C. machine; offers.—Stubbs, Westhampnett, Chichester. [X4862

1915-16 4-cyl. Henderson, large Henderson sidecar, lamps, numerous spares, little used, and in almost new condition; 125 gns.—Johnson, Newhall, Stocksbridge, Sheffield. [X5066

1915 Henderson, 4-cyl., disc wheels, electric lights, handle starter, guaranteed perfect; £100.—P. and A. Edwards, 25 and 27, The Burroughs, Station Rd., Hendon, N.W.9. [5248

HENDERSON 10h.p., 1915 model, 2-speed, with Canoelet sidecar, very powerful; £115, or exchange lower power.—Newnham, 223, Hammersmith Rd., W. 'Phone Hammersmith 80. [5153

Hobart.

HOBART 1915 2½h.p. 2-stroke, 2-speed gear; £43.—Marlboro' Motors, St. Albans. Tel.: 159. [5382

1915 Hobart, 2-stroke, 2½h.p., take 2 anywhere, any trial; £31.—Salmon, Hairdresser, Ashford, Kent. [4998

HOBART, 3½h.p. twin, 3-speed hub gear, clutch, pedal start, new tyres; £43.—Marlboro' Motors, St. Albans. Tel.: 159. [5379

HOBART, 1916, 2½h.p., 2-stroke, perfect condition throughout; £37/10.—2, Oak Villas, Station Rd., West Byfleet, Surrey. [4903

HOBART, 1915, 2½h.p., 2-stroke, just as new, small mileage, a real beauty; £45, or best offer.—T. M. Pearce, Bishop's Castle, Salop. [X5085

HOBART, 1919, 2½h.p., 2-stroke, complete with lamps and horn, very little used; owner bought car; £62.—Beastall, Somercotes, Alfreton. [4801

Humber.

HUMBER, 2¾h.p. twin; £48.—Marlboro' Motors, St. Albans. Tel.: 159. [5381

2¼h.p. Humber, condition like new, very reliable and powerful; £25.—1, Godington Rd., Ashford, Kent. [5000

HUMBER 3½h.p., Roc 2-speed gear, free engine, Bosch mag., handle starter, good order; £35.—Moss, Wem. [X5055

3½h.p. Humber, 2-speed, handle start; £40; trial by owner after 6 or week-end.—Webb, Sandycroft, near Chester. [X4960

1914 Humber, 3½h.p., 2-speed, handle start, clutch, tyres and belt good; £37.—48, Prince George Rd., Dalston. [5480

HUMBER, 3½-4h.p., 2-speed, Bosch, repairs needed; £32, offers.—Speechley, 1, Gunnersbury Lane, Acton, London. [5288

3½h.p. Humber Combination, 2-speed, handle start, just overhauled; £36.—1, Egerton Rd., S. Norwood, London. [5274

HUMBER 2h.p., good order and condition, good tyres and belt; £24.—Ward, 15, Forfield Place, Leamington Spa. [X5125

HUMBER, 3½h.p., coachbuilt sidecar, 2-speed, free, accessories, excellent condition; £59.—56, David Lane, Shadwell, E. [5180

1915 Humber 3½h.p., 3-speed, kick start, Bosch combination, condition as new; £80.—106, Millais Rd., Leytonstone. [5039

HUMBER, 3½h.p., and coachbuilt sidecar, 2 speeds, handle start; £45.—Apply, West Brothers' Garage, Cranbrook Rd., Ilford. [X4812

HUMBER Lightweight, 2¼h.p., Bosch, Grado gear, lamps, horn, etc., spendid condition; £30; after 6.30.—45, Ashen Grove, Wimbledon Park. [5067

3½h.p. Humber, Roc 2-sped gear, handle start, tyres perfect; fullest particulars; £30.—Ellingworth, 2, Hampden Av., Hampden Park, Eastbourne. [5091

HUMBER, 2¾h.p., twin, 3-speed hub gear, clutch, lamps, speedometer, etc., in nice condition; £62.—Marlboro' Motors, St. Albans. Tel.: 159. [5380

HUMBER 3½h.p., 1913, 2-speed, clutch, excellent condition and appearance, lamp, horn, and tools; £45.—Nimmy, 210, Whippendell Rd., Watford. [X5054

3½h.p. Humber, 2-speed, handle start, Bosch mag., plating and enamel as new; good tyres; in perfect running order; £35.—S. F. Darby, Mill House, Ely Rd., Sutton, Cambs. [X4815

HUMBER 3½h.p., 2-speed, free engine, adjustable pulley, coachbuilt sidecar, new belt, all new tyres, carefully stored 2 years, just overhauled, splendid condition; private owner; £55.—Hooker, 53, King Edward Rd., Rugby. [X4935

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MOTOR CYCLES FOR SALE.

Imperial.

1919 Imperial-Jap 8h.p. Combination, 3-speed gear box, clutch and kick starter, large coachbuilt sidecar, locker in back, spare wheel, run about 1,000 miles, fine combination; £155.—Marlboro' Motors, St. Albans. 'Phone: 159. [5368

Indian.

2¾h.p. Indian; £26; ride away, after 7 p.m.—15, Glynfield Rd., Harlesden. [4960

1914 7-9h.p. Indian, 2-speed, countershaft; £58.—170, Stapleton Rd., Bristol. [X4691

INDIAN 7-9h.p. 2-speed Solo; £65; exchange lower power.—49, High St., Kingston-on-Thames. [X4820

INDIAN 7-9h.p., clutch model, 1915, perfect in every detail; trial; £48/10.—215, High St., Lewisham. [4922

INDIAN, 1914, 7-9h.p., spring frame, 2-speed, Swan sidecar; £85.—29, St. Leonard's St., Bromley-by-Bow. [5310

7-9h.p. Indian, 1914, coachbuilt sidecar, clutch and 2-speed, just overhauled; 98 gns.—McGildowny Storrington. [4846

TWIN 5-6h.p. Indian, believed 1916, 3 speeds, mileage about 2,000; £87/10.—Leather, 2, Queen St. South, Barnsley. [5050

1913 Indian 7h.p., clutch model, mechanical horn, good tyres; bargain, £48, or near.—Agnew, Wellington, Salop. [X4945

INDIAN 1915 7-9h.p., sporting sidecar, very fast, splendid condition; £85.—Johnson, Dareath House, Cotts., Eynsford, Kent. [4856

INDIAN Combination, 1916, 5-6h.p., 3-speed, clutch, new condition; £120; exchange for 3½h.p., good make.—Fox, Walton, Peterborough. [4843

INDIAN, 1916, 3-speeds, 7-9h.p., electric lighting, new coach sidecar, lovely order; £125; guaranteed.—R., 5, Victoria Av., Surbiton. [5044

1914 Indian 7-9h.p., 2-speed, clutch, etc., in good condition, been stored, overhauled; £55; seen any time.—Atlantic Hotel, Exmouth. [4880

INDIAN, 1915, clutch model, 7-9h.p. Model D. road racer, disc wheels, perfect order and condition; £80.—Iggulden, 46, Vale Rd., Tonbridge, Kent. [4950

1915 Indian 3½h.p., 3-speed, clutch, kick start, stored 3½ years, beautiful condition; 75 gns., or exchange good combination.—Milner, Hawes, Yorkshire. [X4961

LATE 1914 7-9h.p. Indian, 2 speeds, clutch, kick start, lamps, horn, tools, etc., excellent condition, been stored; £69.—436, Whitehorse Rd., Thornton Heath, S.E. [5253

SPECIAL 3½h.p. T.T. Indian Twin, 3-speed, hand clutch, good order, speedometer, and lamps; bargain, 65 gns.—Lindfield, Post Office Rd., Crawley, Sussex. [5149

1915 Indian, 7-9h.p., spring frame, 3 speeds, kick start, clutch; 77 gns., or exchange with good Douglas 4p.h. combination.—Hartfall, 63, Copnor Rd., Portsmouth. [X5016

INDIAN 7-9h.p., 2-speed, clutch, coachbuilt sidecar, electric lighting, splendid condition throughout.—Mebes and Mebes, Motor Cycle Dept., 154-6, Gt. Portland St., W.1. [5428

INDIAN, 5h.p., 1916, 3-speed, clutch, with Canoelet 4-point sporting sidecar, excellent running order, 50/- insurance just paid; £90.—Penlee, Palmer's Av., Grays, Essex. [5161

1915-16 Indian, 3-speed, clutch, kick start, all accessories, just overhauled, as new; £85, no offers; seen after 8 or by appointment.—33, Granville, Rd., Stroud Green, N.4. [5170

INDIAN 7-9h.p., 1916, clutch model, lamps, in very good condition throughout, very fast, and easy to start, long copper exhaust pipes; £68.—Watson, 132, High St., Aldeburgh, Suffolk. [5092

1915-16 7-9h.p. Indian Combination, 3 speeds, Swan sidecar, electrical equipment, been replated and enamelled, smart outfit; £135; no dealers.—11, Bramshot Av., Charlton, S.E.7. [5160

1915 7-9h.p. Indian, 3 speeds, spring frame, Montgomery coachbuilt sprieg frame sidecar, all in very nice order; £135.—Walbro Motor Cycle Works, Saffron Walden, Essex. 'Phone 45. [X4876

INDIAN, 1915, 5-6h.p., with very comfortable coachbuilt sidecar, 3 speeds, clutch, kick starter, speedometer, excellent condition; price £110; seen weekends.—17, Frognal, Hampstead, N.W.3. [5466

POWERPLUS 7-9h.p. Indian 1917 Combination, Rally discs, new 3in. Dunlops, Lucas lamps, 3 speeds, hand and foot clutch, new condition; £140, no offers; after 6.30.—274, Green St., Forest Gate. [4991

POWERPLUS Indian, late 1916 model, 7-9h.p., 3-speed, clutch, kick start, lamps, horn, speedometer, tools, etc., in very fine condition all round; £100.—Box L2,333, *c/o The Motor Cycle.* [4871

1916 Powerplus Indian Combination, hood and wind screen, 3-speed, hand and foot clutch, kick starter, speedometer, and spares, fully equipped; £130.—Turnell, 93, St. Andrew's St., Lincoln. [5281

INDIAN 5-6h.p., 3-speed, late model, with Milliford coachbuilt sidecar, excellent condition; 100 gns., or exchange lightweight and cash.—Newnham, 223, Hammersmith Rd., W. 'Phone Hammersmith 80. [5151

MOTOR CYCLES FOR SALE.

Metro.

METRO-TYLER.—Sole agents for Hertfordshire, Chandler, Reyre and Williams, Sun St., Hitchin. [0998

METRO-TYLER 1918 Red 2-stroke, 2-speed, discs, long exhaust, very good condition; £58.—'Phone 888 Hammersmith. [5257

1919 Metro-Tyler, single speed, horn, over 40 m.p.h., just overhauled makers, guaranteed perfect; £49. —Neill, 15, Bolton Rd., Chiswick, W.4. [4919

1919 Metro-Tyler 2½h.p., 2-speed, disc wheels, long exhaust, lamps and horn, and lightweight sidecar to match, practically new; this is the sportiest machine; £90 cash, or near offer.—68, Union St., Torquay. [X4846

Minerva.

MINERVA, 3½h.p., old model, as it stands, mag.; £16.—Marlboro' Motors, St. Albans. Tel.: 159. [5387

MINERVA, B. and B., good tyres; £12; after 6.—Arundel House, Main Rd., New Eltham, Kent. [4858

MINERVA, 3½h.p., B. and B., m.o.v., less magneto, perfect condition, bargain; £8.—40, Wilmot St., Derby. [X4893

MINERVA, 2¾h.p., less magneto, carburetter; low frame, good engine; £10.—Hull, Confectioner, Buckingham. [X4747

3½h.p. Minerva, Bosch, Druids, good condition, less exhaust box; £25.—Goodall, Copthorne, Chase Rd., Epsom, Surrey. [5053

MINERVA, 3½h.p., variable gear, accumulator, tyres and engine in good condition; £25.—Cuba, Stantonbury, Bucks. [X4811

MINERVA, fast, powerful, m.o.v.; £19; requires little attention.—Bird, 13, Coleridge Rd., St. Thomas, Exeter. [X4907

MINERVA, about 2½h.p., new 20-amp. accumulator, 2 new inner tubes, m.o.v., re-enamelled, brakes require attention; £12.—15, Mount Rd., Hendon, N.W. [5070

MINERVA, 3½h.p., Bosch magneto, B. and B. carburetter, semi-automatic drip feed, oil pump, lamps, generator, adjustable pulley, tools, pump, horn; first cheque £40, or part exchange good lightweight. Over-Dale, Bletchingley, Surrey. [5086

Morris.

THE Morris, 3½h.p. M.M.C. engine, new tyres, belt basket sidecar, splendid condition; £25; accumulator and coil.—Fogden, St. Aldate's, Oxford. [X4799

Moto-Reve

MOTO Reve, 2¾h.p. twin; 20 gns., cheap.—290, Brixton Hill, S.W.2. [5305

2¾h.p. Lightweight Moto-Reve, Bosch, spring forks; £26.—453, Wandsworth Rd., Clapham. [4972

MOTO-REVE 2½h.p., Bosch, Amac, fair condition; £8. offers.—Andrews, Folly Farm, Alkham, Dover. [5145

MOTO-REVE, lightweight, twin, fast, reliable; £20, offers.—Barfield, Belmont, Fairfax Rd., Hamptonwick. [X4821

MOTO-REVE twin 3h.p., just overhauled, new Dunlop belt, tyres good; £25.—4, Orbel St., Battersea, S.W.11. [5230

MOTO-REVE 2¾h.p., mag., Druids, Amac, and enamelled; wants slight attention.—Bailey, Frome Rd., Trowbridge. [X4973

Motosacoche.

MOTOSACOCHE 2¼h.p., mag., Druids; £10.—T. W. Shaw, Wellington, Salop. [X4952

MOTOSACOCHE, Bosch, new Amac; running order; £15, or nearest.—A. Neville, Acrefair, Nr. Ruabon. [X4813

MOTOSACOCHE, just overhauled, new belt, Bosch magneto, in running order; £22.—Fish, 28, Bond St., Winnington, Northwich. [X5007

MOTOSACOCHE, lightweight, Bosch magneto, spring forks; just been overhauled.—Apply, Bewer, Baliol House, Gunthorpe St., Aldgate, E.1, London. [X4754

MOTOSACOCHE 2½h.p., change speed, head lamp, horn, Brooks saddle, patent exhaust valve, cyclometer, excellent condition, unused 4 years; £35.—839, Harrow Rd., Willesden Junction. [X4701

LADY'S Motosacoche, 2h.p., bought new March, 1914, not done 300 miles, free engine, variable gear, plating and enamel as new; £35, no offers.—Jackson, Jeweller, Fleet, Hants. [5210

New Hudson.

2¾h.p. New Hudson, 3-speed, clutch, new tyres; £38, offer.—King, Egrove Farm, Oxford. [X4956

1915. 2¼h.p., 2-stroke, 2-speed, New Hudson; £40, or offers.—46, Percival St., Goswell Rd., E.C.1. [5177

NEW Hudson Combination, 1914, 4h.p., 3 speeds, K.S.; £72, or near.—113, Rodney Rd., Walworth, S.E. [4936

1913 New Hudson-Jap, 2¾h.p., 3-speed hub, footboards fitted, good condition; £25.—Box 4,226, c/o *The Motor Cycle*. [X5003

DELIVERIES.

We regret that as it is quite impossible for us to obtain definite information from manufacturers regarding supplies of motor cycles, we in turn are unable to give our clients more than approximate delivery dates.

It follows, however, that quite apart from our desire to fulfil the wishes of our customers, we are most anxious, for our own benefit, to obtain new machines, and are therefore using every endeavour to get deliveries on the contracts we have placed.

Our arrangements were made in good time with the manufacturers, and we offer you the advantage in delivery that this entitles us to. The machines enumerated below are those for which we hold agencies or have placed contracts, and we shall be pleased to give prompt attention to your enquiries concerning them.

MOTOR CYCLES.

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MOTOR CYCLES FOR SALE.

New Hudson.

NEW Hudson, 3½h.p., 3 speeds, new tyres, J.A.P. engine; good condition; £46.—T. W. Anstin, 32, Wycliffe Rd., Battersea, S.W. [5314

2¾h.p. New Hudson, clutch, 3-speed, J.A.P. engine, B.B. carburetter, fully equipped; £62.—Apply, Livett, 249, High St., Borough, S.E.1. [4901

NEW HUDSON 1914 Combination, 4½h.p., Bosch mag., 3-speed, recently overhauled, any trial; what offers?—Apply, 329, High St. North, East Ham. [4767

3½h.p. New Hudson and Sidecar, 3-speed, clutch, excellent running order and appearance; £75; after 5 o'clock, or appointment.—George, Brookside, Bromham Rd., Bedford. [X5046

2½h.p. New Hudson, 1916, almost new, and runs to perfection, upkeep almost nil, for a fast, thoroughly reliable mount this cannot be excelled; will accept 38 gns., no offers, first money order secures. —West Sussex Motor Co., 41, Chapel Rd., Worthing. [4943

NEW Hudson Big Six, 1915, little used (not 2,000), 3-speed Armstrong, kick start, new Dunlops, lamps, horn, very powerful machine, perfect condition, with comfortable coachbuilt sidecar; would exchange for good 3½h.p. or 4h.p. combination and cash adjustment.—Box 4,225, c/o *The Motor Cycle*. [X4996

New Imperial.

CROW Bros., High St., Guildford, invite enquiries for latest New Imperials. [4056

NEW Imperial.—Caffyns, Ltd., Eastbourne, are booking orders for delivery shortly. [0018

NEW Imperial-Jap, 1914, 2 speeds, free engine, very fast; £41.—Fison, St. John St., Salisbury. [4959

NEW Imperial 2¾h.p., 1916, 2 speeds, wide bars, fast; £50.—Railway Garage, Staines. 'Phone 139. [4004

NEW Imperial-J.A.P., 1916, T.T., 2-speed, Klaxon, lamps; 45 gns.—Box L2,411, c/o *The Motor Cycle*. [5450

NEW Imperial 2¾h.p., 2-speed, perfect condition; £38.—Birch, Littlecot, Sutton-at-Hone, near Dartford. [4945

NEW Imperial 2½h.p., 2 speeds, almost as new; £49/10.—Collier's Motories, Union St. South, Halifax. [5355

NEW Imperial 1916 2¾h.p., 2 speeds, tools, lamps, horn, excellent condition; £42; Friday after 5 p.m.—167, Camberwell Grove, S.E.5. [4877

NEW IMPERIALS. Call and inspect the latest models.—Sole London agents, Roy's, 173, Great Portland St. 'Phone: Mayfair 879. [9677

NEW Imperial, 1914, 2¾h.p., 2-speed, new piston and connecting rod, and new gears; any trial; £38.—Atkinson, Crosslands, Endmoor, Kendal. [X4797

NEW Imperial-Jap, 2¾h.p., 2 speeds, free engine, new tyres, lamps, horn, perfect condition; £45.—Newland, 248, Alderminster Rd., Bermondsey, S.E.1. [5142

NEW Imperial, 1916, 2¾h.p., 2-speeds, semi-T.T., new tyres and belt, lamps, Klaxon, etc.; condition good, recently overhauled; ride away; £42.—Lt. Perry, Seaplane Base, Westgate, Kent. [5299

1919 T.T. Model New Imperial J.A.P., 2¾h.p. Jap engine, 2-speed countershaft gear, knee grips and horn, unscratched, only ridden a few miles; £56. —62, Huron Rd., Balham, S.W. [X5018

NEW Imperial, 2½h.p., 2-speeds, free engine, clutch, kick start, with trade side box attachment to carry 2 cwt.; guaranteed perfect running order; first offer over £70.—Capt. Salmon, Waltham St. Laurence, Berks. [X4782

NEW Imperial, 2½h.p., perfect order, just overhauled; £35.—28, West Side, Clapham Common, after 8 p.m. week-days, 2 p.m. Saturdays. [5054

New Ryder.

NEW Ryder 2-speed, Brand new, 1919 models actually in stock; price £60 nett.—Stevens, 184, Pentonville Rd., King's Cross. [5249

Norton.

JACK HEALY, Cork.—Norton official agent for the South of Ireland. [X8335

CROW Bros., High St., Guildford, Norton agents; let us reserve you one. [5301

BIG Four, 1912, Norton combination, in splendid condition, 2 speeds, lamps; £55.—Backhouse, Victoria Av., Thirsk. [5318

DAN BRADBURY, 224, London Rd., Sheffield, the well-known Norton exponent and agent, will give you earliest possible delivery of Nortons. [7269

NORTON 1916 3½h.p., T.T., Philipson pulley, and adjustable pulley, knee pads, very fast, just fitted pair 26×3 Dunlop cover and tube; £78.—Mason Motors, Letchworth, Herts. [5186

NORTONS.—We are now booking orders for the latest model Norton solo and sidecar outfits; £5 deposit; deliveries in strictest rotation.—Maudes', 100, Gt. Portland St., London, W.1. [5675

MOTOR CYCLES FOR SALE.

Norton.

NORTON 3½h.p., R.R.S., believed 1914, Brampton variable gear, tyres good, new Dunlop belt, perfect condition; any trial or examination, makes milestones look like a churchyard; £65, or part exchange for a good combination.—Back 647, Attercliffe Rd., Sheffield. [4977

1913 (No. 37,200) T.T. Norton, drilled piston, adjustable pulley, John Bull tyres and belt, Triumph horn; overhauled, re-enamelled (grey), and rebushed; mag. Simms; B.B., spare valve, tube, mag., chain; whole in excellent order, and exceptionally fast; best over £42 (K.S. lightweight) considered.—26, Ripon Gardens, Jesmond, Newcastle-on-Tyne. [X4741

N.S.U.

N.S.U. 1914 6h.p. C.B. Combination, in good condition; £75; seen after 7 p.m.—73, Ardgowan Rd., Catford. [5008

3½h.p. N.S.U., 2-speed, free engine, B. and B., good tyres; ride away; £25; after 6 o'clock.—47, Charlton Rd., Harlesden, N.W.10. [4764

2¾h.p. N.S.U., 2-speed, F.E., Bosch, m.o.i.v. spring frame and fork, lamp, horn, pump; splendid condition; £35; after 6.—9, Gibson Sq., N.1. [X4758

N.S.U., wants slight attention, overhead inlets, 2-speed, free engine, handle start, make fine bike; £26, quick sale.—Longport Motor Co., Stoke-on-Trent. [X4559

N.S.U. 4-5h.p. Twin, 2-speed, clutch, and Millford wicker sidecar (nearly new), 2 new tyres just fitted, in very fine condition throughout, ready to ride away; £45.—Watson, 132, High St., Aldeburgh, Suffolk. [5094

O.K.

1917 2½h.p. 2-speed O.K., perfect throughout, and like new; £40.—Lindfield, Post Office Rd., Crawley, Sussex. [5146

O.K. Lightweight, late 1916, 2-speed gear box, 4-stroke, good order and appearance; £48.—7, The Vale, Acton, W.3. [X5080

JONES' Garage, special agents for O.K. machines, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2922

1917 2¾h.p. O.K. M.A.G. engine, overhead inlet valve, lamp, new tyres; as new, very fast; £50.—Pamphlett, Gillingham, Dorset. [X4576

1918 O.K. 2¼h.p. 2-stroke, single speed, ridden 30 miles only, tools and pump; only £35, no offers.—Farmer, 73, Union St., Torquay. [4825

O.K., 2½h.p., 2 speeds, countershaft, Druids, Amac, lamps, horn, T.T. bars; perfect condition and running order; £38; after 6 p.m.—135, Cavendish Drive, Leytonstone. [4785

O.K., 2-stroke, 2-speed, countershaft gear, chain and belt drive, aluminium footboards; in good running condition; £40; South Lancashire District.—Box 4,200, c/o *The Motor Cycle*. [X4752

O.K., 2-speed, countershaft gears, under 500 mileage, as new, bought new this year, perfect everywhere; £50; very reliable, original Dunlop tyres, new Lucas lamps, aluminium footboards, spare belt, plug, tools, and bag; owner buying combination.—Wingrove Boot Stores, Fleet, Hants. [5211

Omega.

OMEGA-J.A.P., the king of lightweight motor cycles, 2¾h.p., 2-speed, 54 gns. We can deliver these famous machines now. Send for specifications.—Sole district agents, C.M.D. Motor Cycle Garage, 5, Tavistock St., Leamington Spa. [X2250

P. and M.

P. and M. 2½h.p., chain drive, 2 speeds; 30 gns.—Halifax Motor Exchange, Union St. South, Halifax. [5350

3½h.p. Phelon and Moore, nice machine, 2-speed; £50; bargain.—Wanchope's, 9, Shoe Lane, London. [5245

P. AND M., 3h.p., 2-speed, handle start, very good condition; £37, no offers; owner has car.—Apply, Flemming, 15, Felday Rd., Catford. [3486

1919 P.M. Combination, oversize tyres, accessories; cost £135; exchange late Enfield, or sell.—Palmer, 61, Commercial Rd., Waterloo, S.E.1. [4937

1914 P. and M., new Mills-Fulford combination, 2-speed, horn, tools, spare inner tube, smart turnout, good hill-climber; £95, or near offer.—Jones, 131a, Broad St., Coventry. [X4965

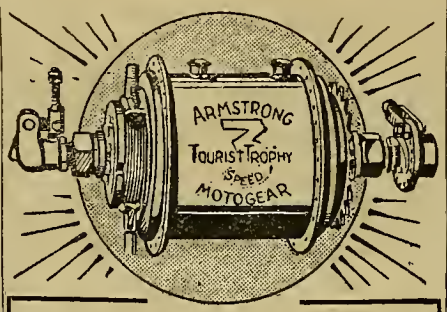
Peugeot.

PEUGEOT-N.S.U., 5-6h.p., low, sporty, comfortable; £32, cash.—5, Benares Rd., Plumstead. [X4882

PEUGEOT 5-6h.p., Druids, less tyres, mag., Amac, enamel good; £30.—Seen Wall, Wellhouse Lane, Barnet. [4844

3½h.p. B.B. Peugeot, Palmers, mag., Chater-Lea, lamps, fast, reliable; £26, offers.—Rev. Foreman, Cheshunt, Herts. [4909

PEUGEOT Twin 5-7h.p., Bosch, B.B., tyres, tubes new, fine condition; £38; after 6.—294, Southampton St., Peckham, S.E. [4943



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Peugeot.

PEUGEOT Combination, 6h.p., new tyres, lamps, etc. 50-mile trial run given if required; price £65.—Buckland, 28, Bartholomew's Rd., Reading. [X4690

PEUGEOT 6h.p. Twin Coach Combination, tyres good, clutch, lamp, horn, apron, spare valves; £70 f.o.r.; no offers.—Robson, 27, Peel St., Sunderland. [X6013

P.F.

7-9h.p. P.F. Twin Coachbuilt Combination, 2-speed Bosch, B. and B., Chater-Lea sidecar; bargain £45; trial London district.—Box L2,402, c/o *The Motor Cycle*. [6442

Precision.

3¾h.p. Precision Combination, B.S.A. 2-speed, kick starter, perfect condition; £63.—52, Hazellevill Rd., Hornsey Rd., N. [5001

PRECISION, 4h.p., Bosch magneto, B.B., Brampton variable gear, belt and tyres nearly new, T.T. bars, lamp and generator, etc.; £50, offers.—158b, Norwood Rd., West Norwood. [5161

Premier.

3½h.p. Premier, 1910, fixed engine, in running order; £25.—Brake, Southfarm Rd., Worthing. [5013

PREMIER, 2½h.p., 1914, splendid condition, ride away; £37.—129, Widmore Rd., Bromley, Kent. Tel.: 351. [4838

PREMIER, 3½h.p., 1913, clutch model, rebushed, ride away; £35; after 6.30.—13, Stuart Rd., Acton, W.3. [4819

PREMIER 2½h.p., Bosch, variable gear, new Palmer; £25.—Reeve, Roxwell, Squirrels Heath Av., Gidea Park, Romford. [4930

PREMIER, 4h.p., thoroughly overhauled, and in splendid condition, good tyres; £35.—Jackson, Jeweller, Fleet, Hants. [5209

3½h.p. Premier, 1913, with sidecar, pedal start, 3-speed, clutch, ride away; £54.—48, Prince George Rd., Dalston. [5478

3½h.p. 1912 Premier, wicker sidecar, Grado pulley, lamps, etc., ready to ride away, stored during war; £40.—223, Archway Rd., N.6. [X4257

PREMIER, 1916, 4h.p., 3-speed, countershaft; K.S., coach sidecar, all accessories, as new; £95, or offer; seen any time.—C.S., 14, Swaton Rd., Bow, E.3. [5062

1914 Premier 3½h.p., countershaft, 3-speed, handsome coachbuilt sidecar, lamps, horn, etc., turnout absolutely as new; £90.—Palmer, Nurseries, Worcester. [X5042

PREMIER, 1914, Bosch, 3-speed, clutch, lamps, all accessories, fine condition, including tyres, little used; £54.—23, Crockerton Rd., Wandsworth Common, S.W. [5472

PREMIER 1914 3½h.p., 2-speed C.S., complete with lamp and horn, original tyres, kick starter, very little used, beautiful condition; 55 gns., lowest.—Jenkins, 27, Gt. Darkgate St., Aberystwyth. [X5057

PREMIER 1914 7-9h.p. Combination, 3-speed countershaft gears, kick start, 2 new tyres, lamps, horn, 2-seater coachbuilt Bowser sidecar, seat 2 adults comfortably; £90.—Dykes, Laxfield, Framlingham, Suffolk. [X5020

PREMIER 1914 4h.p., 2 speeds, cane torpedo sidecar, perfect condition, stored during war, brand new tyres and belt, complete with lamps and all accessories; £75.—Oakes, Park View, Willow Grove, Chislehurst. [5110

NEW December, 1918, 3½-4h.p. Premier, W.D. model, 3-speed gear box, kick start, plate clutch, 2½in. Dunlops, mechanical horn, ridden 300 miles, and exceptional high-class Bramble coachbuilt sidecar, 4-point attachment, real first-class turnout; £110; bike £86.—40, Thorn St., Preston, Lancashire. [X4983

Quadrant.

QUADRANT 3½h.p., Bosch, good running order, reliable; £20.—T. W. Shaw, Wellington, Salop. [X4953

QUADRANT, Bosch magneto, Whittle belt, ready to ride away, 3½h.p.; £30.—Godfrey, 7, Canal Rd., Mile End Rd., E. [5073

1914 4½h.p. 3-speed Quadrant, just completely overhauled, splendid condition; any trial; £55, or best offer.—Day, Okehampton. [5339

3½h.p. Quadrant, B. and B., new Bosch, very fast, ready to ride away; £35.—W.V., 2, Lime Cottages, High St., Alperton, Middlesex. [4981

QUADRANT 1914 W.D. Model, 4½h.p., 3-speed, clutch, T.T. speedometer, red, fast, sporty, splendid condition; £50, offers.—158b, Norwood Rd., West Norwood. [5166

Radco.

RADCO 2¼h.p. 2-stroke, 1916, perfect order; £34.—124, St. Alban's Rd., Dartford, Kent. [5185

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2923

RADCO, 1916, 2-stroke, good condition; ride away after 7 p.m.; £30.—2, Eastbourne Rd., St. Ann's Rd., Tottenham. [5163

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH 3½h.p., 2-speed, F.E. clutch, splendid condition; 38 gns.—27, Bruce Grove, Watford. [5015

TRIUMPH, 1913, 3-speed, splendid condition, well equipped; £60.—1, Priory Rd., Kew Green. [5270

£40.—Triumph, 3½h.p., clutch, good condition.—3, Devonshire Row Mews, Portland Place, W.1. [4898

TRIUMPH, 1913, clutch, excellent condition; 40 gns. —Cory and Grundy, 384, Wandsworth Rd., S.W. [5340

TRIUMPH Combination, nearly new; what offers? —59, Town Rd., Edmonton (not Thursday). [5055

1913 Clutch Model Triumph, in first-class condition. —Mitchell, 5, Cross St., Farnborough, Hants. [5317

1911 Triumph, clutch model, 3½h.p., good condition; £35.—Box 4,227, c/o *The Motor Cycle.* [X5004

1915 4h.p. Countershaft Triumph motor cycle.—C. Kitchingman, 58, Garfield Rd., Lavender Hill, S.W. [4812

3½h.p. Triumph, good tyres, front and rear lamps, nice condition; £35, King, Egrove Farm, Oxford. [X4957

TRIUMPH.—Triumph spare parts supplied by Coventry Motor Mart, Ltd., London Rd., Coventry. [X0613

TRIUMPH, 4h.p., 1916, 3-speed, C.S., all accessories; 65 gns, near offer.—21, Glendale Rd., Erith. [5052

JONES' Garage, special agents for Triumphs, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2927

TRIUMPH, clutch, Bosch, guaranteed perfect condition; £50, first cheque.—Box 4,203, c/o *The Motor Cycle.* [X4816

1914 W.D. 3½h.p. Clutch Model Triumph, very fast, ready to ride away; £50.—King, Builder, Gordon Rd., Camberley. [4962

3½h.p. Triumph, Grado gear, Bosch mag., perfect order; £25, no offers.—7, Diss St., Hackney Rd., London, E.2. [4916

TRIUMPH 2-speed, countershaft gears, Bosch mag., lamps, good order; £55.—10, Paget Rd., Lordship Park, N. [5332

TRIUMPH 3½h.p., 2-speed, free engine, excellent condition; £50.—Wells, 55, Old Dover Rd., Blackheath, S.E. [4892

£35.—Triumph, running order, Bosch mag., good tyres, single speed.—Hazell, 127, Bedford Rd., Clapham, S.W. [5112

4h.p. 3-speed Countershaft Triumph, condition as new; accept 90 gns.—88, Redcliffe Gardens, Kensington, S.W. [X5019

TRIUMPH, 1912, free engine, adjustable pulley, fine order; £45; any examination.—Badcock, High St., Masham. [X4992

TRIUMPH. 3½h.p., 1915 renewals, 2-speed, clutch, kick start; £45.—2, Linden Villas, Princes Rd., Weybridge. [5204

TRIUMPH, Bosch, B. and B., Lucas lamp set, in very good running order; 36 gns.—65, Station Rd., Brixton, S.W. [5127

£30.—Triumph, 3½h.p., Bosch, new tyres, lamps, belt; ride away.—Shaw, 186, Trundleys Rd., Deptford, S.E.8; after seven. [4762

TRIUMPH, 1914, 3½h.p. engine, combination, coachbuilt, good order; £88.—Hill, 4, Shrivenham Rd., Stratton, Wilts. [4842

1911 Triumph, 3½h.p., clutch, and N.S.U. 2-speed, lamps; £45; after seven.—Elizabeth Lodge, Parkway, Gidea Park, Essex. [4765

TRIUMPH, 1914, 3-speed hub gear, clutch, needs repairs; as it stands, £53.—Marlboro' Motors, St. Albans. 'Phone: 159. [5392

1912 Triumph, 3½h.p., clutch, Bosch magneto, new tyre on back; £35.—Madgwick, Biltmore, Bromshott Chase, Hindhead, Surrey. [5175

3½h.p. Triumph, clutch model, new tyres, engine overhauled, lamps; £39/10; must sell.—27, Durham Rd., East Finchley. [5117

TRIUMPH 1919 Countershaft, ridden 300 miles; 115 gns., lowest.—Harold Powell, Grey Friars, Portsmouth Rd., Kingston-on-Thames. [X4889

1912 Triumph, 3½h.p., clutch model, fine going order, seen any time, any trial; £38.—Tom Batt, Turnden Farm, Bethersden, Ashford, Kent. [4996

TRIUMPH Baby, new, lamps, generator, horn, number plates, tools; £60, lowest cash; seen Balham. —Box L2,412, c/o *The Motor Cycle.* [5451

TRIUMPH 1912 Clutch Model, good condition, new tyres; may be seen any time; £40.—R. Swindell, The Collow, Ashbourne, Derbyshire. [X4697

1913½ Triumph, 3½h.p., 3-speed, clutch model, speedometer, all accessories, stored during war; £40.—160, Herbert Gardens, Willesden. [5111

TRIUMPH, coach combination, clutch, pedal start, splendid condition, all lamps, etc.; £60, or offer; seen any time.—C.S., 14, Swaton Rd., Bow, E.3. [5063

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Triumph.

1911 Triumph, clutch, brand new; horn, lamps, belt, tubes, thoroughly overhauled, perfect condition; 42 gns.—Rose Villa, Neasden Lane, Willesden. [4799

TRIUMPH, December 1914, 3-speed, scarcely used, mechanically new, new Dunlop belt, 68 gns.; another, 66 gns.—16, Hesper Mews, Earl's Court. [4913

TRIUMPH, 3½h.p., wicker sidecar, new condition, 2-speed, accessories, nice outfit; best over £45.—Cadel, Ivydene, Norwich Rd., Thornton Heath. [4758

TRIUMPH 3½h.p., 2-speed, wicker sidecar, P. and H. lamps, horn, comprehensive insurance, new belt and tyres; bargain, £60.—5, Headstone Rd., Harrow. [4893

TRIUMPH 3½h.p., clutch model, enamel, plating, and whole condition as new; £48. After 5.—H.E.H., 14, Camphell St., Edgware Rd., Paddington. [5328

TRIUMPH 3½h.p., 1913, clutch model, lamps, horn, tools, tyres nearly new, very little used, in excellent condition; £45.—Rhodes, Allandale, Altrincham. [4894

1919 Triumph, Millford combination (May), 1,500 mileage, Klaxon, Watford speedometer, £145; trial with owner.—Galt, Steyne Cottage, The Esplanade, Bognor. [X4685

1914 3½h.p. Triumph Pat. Engine, Amac carburetter, sloping back frame, Druid forks, less head and saddle, all as new; £12.—3, Milford Mill Rd., Salisbury. [4855

3½h.p. Triumph, 2-speed, free engine, countershaft, with Watsonian sidecar, modernised by Triumph Co. 1918; accept £48, bargain.—Rowe, 89, Well Hall Rd., S.E.9. [X5061

3½h.p. Triumph, coachbuilt combination, 3-speed, 1914, accessories, drip-feed, luggage carrier, unused 2 years, splendid condition; £79.—36, David Lane, Shadwell, E. [5178

TRIUMPH, 1912-13, 3-speed, clutch, Bosch, lamps, speedometer, horn, new belt, good tyres, accessories, spares with coachbuilt cane sidecar; £52/10.—Moss, Arrington, Cambs. [X5024

LATE 1913 3½h.p. Triumph Combination, coachbuilt, 3-speed, in fine condition, new belt, and 2 new outer covers on bike, all complete, for £75.—Letters to 29, Norfolk St., Coventry. [X4967

TRIUMPH, 3½h.p., Grado multi gear, free engine, heavy Dunlops, front, rear, both almost new, Bosch, new Dunlop belt, all accessories, spares; trial; £39.—Chesher, Rosedene, Forty Hill, Enfield. [X4777

4h.p. Triumph, countershaft, Gloria sidecar, spring wheel, lamps, horn, watch, luggage grid, tools; the whole as new and untouched, perfect; 145 gns.—Pater, 14, Bromham Rd., Bedford. [X5050

TRIUMPH, 3½h.p., clutch model, pedal start, clutch rod taken off, footboards substituted, new carburetter, new piston, good tyres, pulls well, reliable; £33.—Cairns, Castlefin, Co. Donegal. [X4551

TRIUMPH, 1916, 4h.p., 3-speed countershaft, kick starter, with coachbuilt sidecar, perfect condition and ready to ride away; any trial given; best offer secures.—Box 4,228, c/o *The Motor Cycle.* [X5005

BRAND new 1919 model 4h.p. Triumph, fitted with Montgomery coachbuilt sidecar, with screen, just taken out of crate; best offer over £140.—Charles Moxham and Co., 32, Torwood St., Torquay. [5307

TRIUMPH 3½h.p., clutch, late 1912, first-class condition throughout, unused during war, same ownership since 1912, horn, spares; after 5.30; £45.—Crutchfield, San Jouli, Coombe Lane, Kingston Hill. [5411

TRIUMPH Combination, 1916 4h.p., countershaft gears, kick start, 3 speeds, has been thoroughly overhauled, engine guaranteed in perfect condition; £110, or nearest offer.—Box L2,375, c/o *The Motor Cycle.* [4934

TRIUMPH Combination, 1913, N.S.U. gear, excellent solo mount, tyres practically new, perfect running order; first 38 gns. in cash rides away; owner buying light car.—Schoolmaster, The Mount, Grayswood, Haslemere. [X4818

TRIUMPH Combination, splendid condition, guaranteed perfect running order, new tyres, lamp, horn, speedometer; ride away; £55.—Budd-Budd and Fogden, Suffolk House, Lawrence Pountney Hill, E.C.4. Tel.: City 8111. [4883

T.T. Triumph, late 1914, clutch model, 4h.p., one of a special class, P. and H. lamps, etc.; been stored two years, owner with H.M. Forces; as new; £60; seen any time after 6 p.m..—Rodda, Oaklands Cottage, Oxshott, Surrey. [X4577

TRIUMPH Combination, late 1914, 3 speeds, Canolet de Luxe sidecar, Lucas lamps and horn, spare tyre, belt, and all accessories; condition perfect, any examination; price 85 gns., or nearest.— F. A. Grundy, Newhall St., Willenhall, Staffs. [X5030

3½h.p. Triumph Combination, clutch, new Grado gear, brand new tyre and tube, new C.B. sidecar, enamel and plating as new, lamps, horn, and pump, excellent running order, just overhauled; £75. —Ormerod, 7, Lancaster Rd., Pendleton, Manchester. [X4993

TRIUMPH, December, 1912, stored August, 1914, March 1919, Sturmey-Archer 3-speed hub, clutch, new tyres, tubes, belt, engine perfect, reliable sound proposition; £52/10.—Cracknell, 38, St. Thomas Rd., Brentwood. [5099

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TRIUMPH Junior 2¼h.p., 2-stroke, 2-speed countershaft, new 1916, and stored 2 years, absolutely perfect, and appearance like new, 2¼in. tyres; open to expert examination; best offer over 57 gns., or exchange with little cash for late model 4h.p. Triumph or Sunbeam; Lincoln district.—Box 4,208, c/o *The Motor Cycle*. [X4906

TRIUMPH Combination, 1914, 3-speed and clutch, decompressor, perfect condition, coachbuilt sidecar, Lucas lamps, speedometer, and tyres, as new, laid up during war; expert examination invited; £70; may be seen at 21, Coronation Terrace, Clitheroe, or write for further particulars to J. Harrison, c/o Mrs. Mason, 63, Moses St., Dingle, Liverpool. [4954

TRIUMPH Combination, 4h.p., late 1914, free engine, 3-speed, recently overhauled by Triumph Co., Gloria spring wheel sidecar, luggage carrier, 3 Lucas lamps, separate generators, speedometer, horn, mirror, tools, spares, tyres value £6; price £90. Seen Tuesday or Thursday after 5.30, Saturday 2 p.m.—Farraud, 364, Goldhawk Rd., W. [5324

Velocette.

1919 model Velocette, 2-speed, mileage 400, fitted with lamp set; £53.—Charles Moxham and Co., 32, Torwood St., Torquay. [5308

VELOCETTE, 1915, 2-speed, chain, accessories, spring seat; trial; £42, cash; after 6 p.m., not Sunday.—69, Auckland Rd., Ilford. [5294

Villiers.

1915 Villiers 2-stroke, single speed, 2½h.p., condition as new; £40.—B. Roberts, 22, Woodland St., Smethwick. [4863

VILLIERS 2-stroke, Bosch, Amac, fairly new Avon front, new Dunlop heavy rear, good belt, new P. and H. lamp set, Pedley grips, semi-T.T. bars, pump, in perfect condition; 39 gns.—65, Station Rd., Brixton, S.W. [5128

Vindec.

5-6h.p. Vindec Combination, 2-speed, Bosch magneto; £35.—29, St. Leonard's St., Bromley-by-Bow. [5311

V.S.

5-6h.p. Twin V.S., 3-speed, complete; £45.—Hewett, 315, High Rd., Chiswick. [4984

V.S. Combination, 3½h.p., Bosch, Amac, N.S.U. 2-speed gear, wicker sidecar, all good order, ride away; £38; after 3.30.—137, Fawe Park Rd., Putney. [5284

Wanderer.

WANDERER 5-6h.p. Combination, 2 speeds, free engine; £47, quick sale.—33, Stormont Rd., Lavender Hill, S.W. [4990

WANDERER 3h.p. Twin Motor cycle, mag., spring frame, in good mechanical and running order, a comfortable and handy machine; £23; after 6 p.m.—Sharp, 39, Langdon Rd., Highgate, N.19. [5011

Williamson.

FOR Sale, 8-10h.p. Williamson and Millford sidecar, just overhauled by makers; what offers?—Lamacraft, Dunster, Somerset. [4864

WILLIAMSON Combination, a.c. 8h.p. Douglas engine, 2 speeds, canoelet coachbuilt sidecar, hood, wind screen, lamps, horn, in lovely condition; £115.—Marlboro' Motors, St. Albans. 'Phone: 159. [5395

WILLIAMSON 1914 8-10h.p. Combination, water-cooled, hood, screen, 3 lamps, speedometer, spare tyre, tools, etc.; stored throughout war, total mileage 3,600; perfect order, trial by appointment; 105 gns. lowest.—Frisby, Broadway, Sandhurst, Berks. [X4571

WILLIAMSON Combination, O.B., 8-10h.p., water-cooled, 2-speed, clutch, bought new late 1914, stored since 1916, recently overhauled, splendid condition, too fast for owner; best offer over £115.—Vicarage, St. Leonard's, Tring, Herts. [X4574

Wolf

WOLF 1917 2-speed 2-stroke, lamps and horn, tyres and belt as new, done very small mileage; £42.—Watson, High St., Aldeburgh, Suffolk. [6093

Wooler.

JONES' Garage, special agents for Woolers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2928

EXCEPTIONAL Bargain.—Wooler 2¾h.p. 2-stroke (late 1915), variable gears, front and rear sprung frame, brand new condition, and perfect, stored 2½ years, fully equipped, ready to ride away; first cheque £57 secures.—11, May St., Newport, Mon. [5032

Zenith.

3½h.p. Zenith Combination; would separate; £45, lowest.—462, High Rd., Leyton, E. [X4985

ZENITH Combination, 3½h.p., variable gear; £50, offers.—35, Courthill Rd., Lewisham. [5061

ZENITH T.T. 5h.p. Twin, overhead valves, J.A.P. engine, Gradua gear, 2-gal. tank, excellent order; £68.—Slade, Penn, Bucks. [5220

3½h.p. Zenith-Gradua, J.A.P., good condition, take sidecar, new Dunlop; after 6; £35.—Brooks, 47, Royal Oak Rd., Woking. [5036

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ZENITH-GRADUA, 4h.p., military model, disc wheels, hardly used; 60 gns.—Matthews, 60, Redcliffe Rd., South Kensington. [4750

1919 Zenith, 8h.p., twin Jap, with Mills-Fulford sidecar, in perfect condition, done 300 miles; 140 gns.—36, Newport, Lincoln. [4768

1914 Zenith-Gradua Combination, 6-8h.p., clutch, kick start, accessories, powerful machine; £85, or best offer.—Lea, 33, Manthorpe Rd., S.E.18. [X4808

ZENITH, 4h.p. J.A.P., Gradua gear, B. and B. Pilot, new lamps, horn, 2 belts, sporty, bars perfect; £45 for quick sale.—Lockey, Red Lion, Salisbury. [X4851

1915 Zenith-Gradua Sporting Combination, 8-10h.p., lamps, horn, and new belt, good condition; £100.—418, Hertford Rd., Enfield Highway, Middlesex. [5005

ZENITH-GRADUA 1916 5-6h.p. twin, countershaft, clutch, excellent condition, lamps, tools, and spares; £78.—Write, Gordon, 193, Tulse Hill, S.W.2. [5115

6h.p. Zenith Twin Jap Combination, Mills-Fulford coachbuilt sidecar, tyre good, and lamps; ready to ride away; trial; £105.—Green, Green End, Whitchurch, Salop. [X4564

1914 Zenith, 90 bore, sporting C.B. sidecar, tyres (2), belt as new, speedometer, lamps, first-class condition throughout, very fast; £90.—20, Rowland St., Skipton. [X4902

ZENITH-GRADUA 3½-4h.p., good condition, new heavy tyres, lamps and horn, new belt; ride away; £55, or near offer.—Biffen, 61, Bridge Av., Hammersmith. [4888

ZENITH 4h.p. Twin, Grade gear, 1914, lamps, generator horn, last solo mount, in nice condition; £70.—Marlboro' Motors, St. Albans. 'Phone: 159. [5393

ZENITH-GRADUA, believed 1914, 6h.p. combination, large coachbuilt sidecar, luggage carrier, horn; in splendid condition; bargain, 85 gns.—Newell, 184, High St., Tooting. [X4756

ZENITH, 8h.p., T.T., late model, exceptionally fast, good tyres, belt, and spares, electric lights, knee grips, etc.; splendid condition; 70 gns.—573, High Rd., Tottenham. [5303

RECENT Model 6h.p. Zenith Combination, countershaft, clutch, K.S., speedometer, lamps, etc., splendid order; £97.—Nicholson, Hinstock, Market Drayton, Shropshire. [5343

ZENITH Countershaft 8h.p., just won gold medal London-Edinburgh, sidecar rough; best offer over 125 gns.—Harold Powell, Grey Friars, Portsmouth Rd., Kingston-on-Thames. [X4890

ZENITH Combination, Gradua gear, J.A.P. twin 6h.p., just been overhauled, coach sidecar, excellent condition; £80.—H. Smith, Bungalow, 1, Market Chambers, Enfield Town. [4969

ZENITH 1915 4-5h.p. Twin, J.A.P., drip feed, tyres and belt as new, excellent order throughout, recently overhauled; £90; seen any time.—25, Chase, Clapham Common, S.W. [5470

ZENITH 6h.p., countershaft, clutch, and kick start, Millford sidecar, with hood and screen, new tyres, absolutely perfect; £130.—Newnham, 223, Hammersmith Rd., W. 'Phone Hammersmith 80. [5152

FOR Sale, Zenith-Gradua motor cycle, with Mills-Fulford sidecar, 6h.p. J.A.P. engine, condition as new, tyres new, spare belt, tools, lamps, speedometer, etc.; bargain, £100.—W. L. Reedman, Sowerby, Thirsk. [4881

3½h.p. Zenith-Gradua C.B. Combination (1917), war model, taken out of crate two months, tyres one new, two practically, powerful, perfect everywhere, ride away; lowest £70.—Box 4,187 c/o *The Motor Cycle*. [X4503

ZENITH-GRADUA, 1914, 6h.p., with sporting cane torpedo sidecar, Bosch magneto, B. and B. carburetter; this machine has been stored during the war, and has new tyres and tubes fitted.—Darby, Wickford, Essex. 'Phone: Wickford 3. [4912

ZENITH, 6h.p., T.T., with brand new Swan streamline sidecar, grey, disc wheels, all accessories, very sporting and smart turn-out; £118.—'Phone or write appointment after 7.15, Hill, 40, Queen's Av., Muswell Hill, N.10. 'Phone: Hornsey 1780. [4831

ZENITH 6h.p. Combination, 1917, Gloria undersling coach sidecar, as new. The above is complete with large head lamps, speedometer, knee-grips, etc., had little use, tyres like new, petrol consumption 80 m.p.g., must sell immediately; would separate; £115.—49, Althorp Rd., Wandsworth Common, S.W. [5471

Ladies' Motor Cycles.

DOUGLAS (lady's), 2-speed, kick, clutch, splendid condition; expert examination; £65.—2, Linden Villas, Princes Rd., Weybridge. [5205

LADY'S Douglas, Nov. 1913, 2 speeds and kick starter; has been thoroughly overhauled throughout; best offer over £46.—Jones-Anfield, Mold, N. Wales. [X4801

PREMIER 3½h.p., lady's model, 3-speed, ready for the road, complete with Mills-Fulford coachbuilt sidecar; can be seen at 18, King's Mews, Theobald's Rd., W.C.; trial given; price £70. [5395

RUNABOUTS AND CYCLE CARS.

HUMBERETTE, 1914, A.C., acetylene lamps, speedometer, smart; £145.—Railway Garage, Staines. 'Phone: 139. [4741

FOR Sale.—Morgan, Grand Prix, 10h.p., overhead valve, J.A.P.; £170.—Lieut. Ivens, Horton War Hospital, Epsom. [4947

A.V. Monocar, C.A.V. lighting, Coan numbers, etc.; seen West End; £140.—Box L2,399, c/o *The Motor Cycle*. [5438

A.V. Light Cars.—Lancashire (except Fylde), Cheshire; residents enquire.—J. Blake and Co., Liverpool-Manchester. [X4463

MORGAN, J.A.P., 1915, hood, screen, newly painted, very fast; £170, or nearest offer.—Marsh, 38, Ferrers Rd., Oswestry. [X5074

MORGAN 1915, complete with hood, screen, lamps, etc.; £155.—Newnham, 223, Hammersmith Rd., W. 'Phone Hammersmith 80. [5154

CARDEN Monocar, discs, J.A.P., Binks, Bosch, 1915, electric lighting, horn, tools, etc.; excellent condition; 95 gns.—Treneh. 34, Milner St., Upper Chelsea. [4949

MORGANS.—We have several second-hand Morgans in stock; late Morgans; Morgan agents.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0552

A.C. 2-seater, splendid condition; any trial given; price £80, or near offer; no dealers.—Apply to A. Anthony, Friends Farm, Yelling, St. Neots, Hunts. [X4575

FAST Cycle Car, 8h.p., tandem seats, 90° air-cooled, perfect running order, excellent sprioging, chain-cum-belt, 6 speeds; offers over £70.—Write, Crowe, Ingleholme, Brockley View, S.E.23. [4505

CARDEN Monocar, 8h.p. twin, Jap, waterproof Bosch, Binks, acro screen, disc wheels, lamps, Klaxon; exchange combination.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town-Station). [5234

1915 Premier Motorette 3-wheeler, twin rear tyres, 5-6h.p., single-cyl, water-cooled, Bosch watertight, Binks carburetter, recently overhauled, fast, good hill climber, 2-speed, economical, seen evenings; £75.—Mackay, 107a, Wood St., Barnet. [5047

GLOBE 2-seater, 8-10h.p., Aster water-cooled, Claudel Hobson, dual ignition, 2-speed, reverse, tyres and tubes in first-class condition (1 new cover), Stepney, lamp, horn, hood, screen, overhauled last month, splendid mechanical condition and appearance; believed to be 1913 model; really a bargain, £125.—Allen, Excise, Keith, Scotland. [X4402

CARDEN Monocars.—1919 models; deliveries daily; the Railway Garage, Staines ('phone 139), sole concessionnaires. Specification 8h.p. J.A.P. engine in front, 3-speed Sturmey-Archer gear box, seat kick starter, removable scuttle; 105 gns.; accessories, tandem seat extra; delivery in strict rotation. Call and take trial run. [5460

MORGAN 6-8h.p., Jap a.c., U.H., B. and B. pilot, new rings, valves, tyres, tubes and chains; hood, screen, tool boxes, newly coach-painted purple, spares, 2 tubes, 2 chains, jack, plugs; been standing 3 years, stamp, photo, any trial, delivered any distance; half expenses. Also 4-cyl. Thomson-Bennett, as new; offers. —Payne, Bryo Hafod, Llandudno. [X4755

ENGINES.

5-6h.p. Twin, good condition; £6/10.—3, Vant Rd., Tooting, S.W. [5035

3½h.p. Brown Engine, brand new, mag. platform, and drive complete; £10/10.—9, Grand Parade, Streatham Rd., Mitcham. [5087

3½h.p. Rex Engine, a.i.v., B. and B., little use, 60/-; trembler coil, 14/-.—4, Jubilee Crescent, Thrupp, Stroud. [X4948

6h.p. Anto Engine, with brass radiator; perfect order, suitable for cycle car; £8/10.—Mugleston, Overseal, Nr. Ashby-de-la-Zouch. [X4694

4h.p. J.A.P. Engine, Bosch, in good condition, complete unit off 1912 Zenith; £18.—Hodkinson, 4, Devonshire St., Dalton-in-Furness. [X4980

ROVER 3½h.p. Engine, guaranteed order, m.o.v., £6; Hamilton engine, 4h.p., £5.—Butterworth's Garage, Mill Lane, Brixton Hill, S.W. [5355

V TWIN 6h.p. Peugeot Engine, B. and B. carburetter, £10; with Bosch magneto, £15; perfect.—32, Gracechurch St., London. Tel.: L.W. 6336. [4781

3½h.p. Ariel Engine, thorough condition, £6/10; new E.I.C. magneto, single, £4/10.—R. Hibbert, 55, Fontarabia Rd., Clapham Common, S.W.11. [4839

6-8h.p. Rover Car Engine, 4 speeds, Bosch, carburetter, cardan, back axle, differential complete, 4 wheels, steering complete; £15, offers.—Andrews, Folly Farm, Alkham, Dover. [5143

4h.p. 90° Twin, with outside flywheel, even firing, 66×80, 548 c.c., practically unused, with carburetter, spare cylinder, crankshaft, connecting rod, camshaft, tappets, valves, etc.; £30.—Box 4,238, c/o *The Motor Cycle*. [X5126

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PALMER'S Garage, Tooting.—15.9h.p. Shelsley Crossley chassis, new tyres; £550.

PALMER'S Garage, Tooting.—15.9h.p. Crossley chassis, detachable wheels; £400.

PALMER'S Garage, Tooting.—20-25h.p. Roehet-Schneider 2-seater, new tyres; £500.

PALMER'S Garage, Tooting.—20h.p. Cadillac 5-seater, hood, screen, detachable rims; £275.

PALMER'S Garage, Tooting.—25h.p. Withers landaulet, Aster engine, fast, powerful; £425.

PALMER'S Garage, Tooting.—30h.p. Vauxhall cabriolet, 6-cyl., wire wheels; £750.

PALMER'S Garage, Tooting.—15-20h.p. Ford delivery van, excellent condition; £170.

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PALMER'S Garage, Tooting.—12-18h.p. 1914 Unic torpedo 4-seater; £875.

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ROVER, single-cyl., mag., good running order; £50. —3, Park St., Wellington, Salop. [X4950

FOR Sale, White petrol motor car, 20-30h.p., in perfect running order.—Particulars on application to Box L2,334, c/o *The Motor Cycle*. [4872

HUMBER 2-seater, 8-10h.p., 2-cyl., hood, screen, speedometer, 5 detachable wheels, gate change; 95 gns.—51, Gilpin Av., East Sheen, S.W.14. [4829

BENZ 12h.p. Car, Bosch mag., Claudel-Hobson carburetter, 3-speed, reverse, Stepney, 6 lamps, tyres, engine in splendid condition; £96.—Cuba, Stantonbury, Bucks. [X4810

FLANDERS 16-20h.p., latest 5-seated flush-side body, dual ignition, good order, ready drive any distance, hood, screen, lamps; £160.—T. W. Shaw, Wellington, Salop. [X4949

1913 Ford, doctor's 2-seater, barely used during war, splendid condition; electric headlights, detachable wheels, shock absorber fitted, and oil gauges, etc.; £200.—Dr. Billings, Folkestone. [4771

1916 Sporting 2-seater Crescent, 8-10h.p., condition as new, not done 2,000 miles, torpedo body, electric lighting, spare wheel, speedometer; will take good combination in part exchange; price £200.—1, Leyton Rd., Stratford, E. [5481

STUDEBAKER, 6-cyl., 1913, goes and looks like new, not a scratch on paintwork, 7-seater, leather upholstery, just the car for touring and hire work; 295 gns., no offers.—West Sussex Motor Co., 41, Chapel Rd., Worthing. 'Phone: 272. [4852

CARS FOR SALE.

SALE. For sale. All for sale. And such bargains. Mine is not an iron yard, but ultra modern sales depot with a staff of 40 real first-class mechanics, experts all, to do anything that wants doing. Fair description and every date advertised guaranteed accurate. 5-6h.p. F.N. sidecar combination, 2-speed, clutch, 4-cyl., £60; 6h.p. 1914¾ Warrick box autocarrier, £60; 12h.p. Wolseley-Siddeley light lorry, twin monobloc, live axle, £85; 8h.p. De Dion 4-seater, side entrance, 3-speed, runs well, £95; 8h.p. Phanomobile vanetta, nice condition and runs splendidly, genuine funny mobile, £115; nippy little 15h.p. 15-cwt. Darracq lorry, solid tyres, spring wheels, ferocious clutch £120; A.C. streamliae cycle car, 4-wheel, £125; 12h.p. Swift 2-seater, gate, £135; 12h.p. 4-cyl. Star chassis, live axle, gate, 4-speed, £145; 14-16h.p. Darracq lorry, cab, £145; 12-18h.p. Riley van, detachable wheels, Zenith, £150; 12h.p. Unic lorry, £165; 15.9 h.p. 1911 Darracq 4-seater, Coronation type, suit peace night for burning (friend suggests), £165; 18h.p. Vivinus torpedo 3-seater, £185; 10h.p. Delahaye 10 cwt. van, enclosed valves, 4-speed gate, £185; 16-20h.p. Sunbeam van, £195.—Cox (below).

HIRE Merchants' Opportunity.—15h.p. Charron landaulet, roomy, 2 drop seats, 4-cyl. monobloc, £200; 18h.p. Maxwell van, Ford type, gate change, mag., monobloc, enclosed valves, £225; 10h.p. Hurtu 2-seater light car, scuttle dash, 4-cyl. monobloc, enclosed valves, gate, £235; 20-30h.p. Florentia chassis, live axle, 4-speed gate, runs nicely, £250; 10h.p. Lagonda light car, coupe 2-seater, dynamo lighting set, 4-cyl. monobloc, worm drive, Sankey detachable wheels, smart, £275; 11.9h.p. Briton torpedo, detachable wheels, enclosed valves, £295; 15h.p. 4-cyl. Buick torpedo, late type, gate, £315; particularly posh little 15h.p. 4-cyl. Standard torpedo, streamline dash, taper bonnet, Zenith, gate, £325; 11.9h.p. Colibri streamline torpedo, 4-cyl. monobloc, gate, detachables, £325; 20-30h.p. Brouhot racer, 70 m.p.h., wide 3-seat. touring body, streamline, £335; 1917½ 18h.p. Maxwell streamline torpedo, dynamo lighting, electric engine wangler, monobloc, gate, detachables, azure, particularly posh, £335; 1915 Studebaker torpedo, £350; 1915 Hupmobile Model K chassis, £375; 12-15h.p. Panhard landaulet, 4-cyl. monobloc, cloth interior, side doors, overhauled, £385; 15.9h.p. Standard 3-seater, dickey, monobloc, enclosed valves, worm drive, Saakey wheels, £385; 15.9h.p. Arrol-Johnston torpedo, enclosed valves, Sankey wheels, 4-speed gate, £385; 12-14 h.p. Sunbeam landaulet, detachable wheels, enclosed valves, 4-speed, £450.—Cox (below).

ULTRA Swish Little 11.9h.p. Baby Knight Daimler Coupe, low and sporty, dickey, 4-cyl. monobloc sleeve valve engine, worm, detachables, £485; 15h.p. Knight Daimler ¾ landaulet, misfit body, detachable wheels, worm, £485; 12-16h.p. 1913 Sunbeam chassis, monobloc, enclosed valves, detachable wheels, £500; 14h.p. De Dion super taxi, pass Scotland Yard, splendid thing, £575; 1913½ 14-20h.p. Leon-Bollee torpedo, luxurious Connaught body, detachable wire wheels, enclosed valves, 4-speed gate, particularly smart, £585; 1914 Knight Deasy chassis, worm, cantilever, overhauled, £650; exceptionally nice little 12-15h.p. 1913½ F.I.A.T. limousine-landaulet, round back, curved roof, monobloc, enclosed valves, Brainsby coachwork, £685; 1915 16-22h.p. Napier chassis, £700; 1917 15-20h.p. F.I.A.T. chassis, dynamo, £750; 1915 20h.p. Knight Daimler chassis, cantilever springs, thoroughly overhauled, £900.—Cox (below).

COMMERCIALS. Heavy commercials. Seventeen for sale, with twin solid tyres, 25 cwt. to 4 ton; £150 to £750; list free.—Cox (below).

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DOUGLAS S. COX, the absolutely straight motor man, 6c, Lansdowne Hill, West Norwood, S.E., has all the above actually in stock. Please call, hours 8 to 6.30, including Saturdays, no business Sundays. Established 1902. [5279

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4-CYL. Magneto, good fat spark; £7.—9, Wilson St., Battersea, S.W. [5476

E.I.C. Single, as new; £3/10, or offer.—145, Leander Rd., Brixton Hill, S.W.2. [4968

MAGNETO, Bosch twin, clock, powerful; £5.—J. Panes, Hyde Place, Llanhilleth, Mon. [X4848

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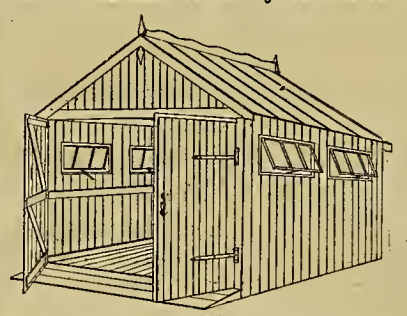

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MAGNETOS.—Quick, efficient repairs at moderate charges; rewinding and remagnetising.—The Wallace Magneto Repairing Co., 186, Walworth Rd., London, S.E.17. 'Phone Hop. 3506. [4953

THE Reliance Magneto Works.—Quick and efficient repair service to all types of magnetos, spares, etc.; satisfaction and quickness guaranteed.—15, Nelson Terrace, City Rd., London, N.1. [4006

50° Splitdorf L.H., 45° Dixie R.H., twin magnetos, brand new, £8/10; 180° L.H. C.A.V., £5; 50° R.H. U.H., £5/10; guaranteed overhauled and perfect.—Euston Ignition Co., 335, Euston Rd., N.W.1. [4979

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THE Magneto Repairing and Winding Co., Established 1912. Manager S. T. Boon, late from the Bosch works.—Magneto Repairs of every description. All repairs at lowest possible prices, and strictly guaranteed. We can mostly return them within 24 hours. We have several new and second-hand single and 2-cyl. magnetos in stock, all guaranteed.—Please note new address: The Magneto Repairing and Winding Co., 78, Hampstead Rd., Euston Rd., London, N.W.1. 'Phone: Museum 1158. T.A.: Kumognelec, Eusroad, London [1034

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TANKS Made and Repaired, re-enamelled from 10/6.—Bright and Hayles, 78, Church St., Camberwell. [5422

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TYRES.—See Bancroftian Advertisement under Miscellaneous. Stelastic, Pedley, Kempshall, Hutchinson; extraordinary prices. [0845

JOB Line.—New Beldam Bulldog tyres, 26×3 and ½, 30/-; others from 21/-; studded, 40/-; approval deposit.—Hicks, 17, High St., Epsom. [4755

26×2½ Quality-make New Rubber-studded Beaded-edge Tyres, 25/6; bargains; carriage paid; approval.—Arthur, 10, Hamilton St., Paisley. [X4242

WANTED.

SPEEDOMETERS and Parts, any condition; send or write.—97, Latchmere Rd., Battersea. [3127

WANTED, good sound combination and solo machine; full particulars.—Chaston, Blackwood, Mon. [4205

WANTED, Auto-Wheel, in good order, for cash.—9, Lovelinch St., Canterbury Rd., S.E. [4963

DOUGLAS or similar make wanted at once.— "Lonvant," Manorgate Rd., Kingston-on-Thames. [4810

CYLINDER, front, wanted for 2¾h.p. Centaur twin.—J.D., 102, Dalberg Rd., Brixton, S.W.2. [4805

LIGHTWEIGHT, 2-speed or clutch, good running order.—Greetham, Millom, Cumberland. [X4785

N.S.U. or similar gear to fit 3½h.p. Triumph, with clutch.—Bilby, Hill Top, Cwmbran, Mon. [4833

N.S.U. 2-speed Gear, in good order, to suit 1907 Triumph.—Box 4,218, c/o *The Motor Cycle.* [X4900

WANTED, good motor cycle or combination; spot cash.—C.S., 14, Swaton Rd., Bow, E.3. [5064

TRIUMPH, or other good make, late date, any distance.—95, Glengarry Rd., East Dulwich. [5414

SCOTT Combination wanted, new.—Rider, 37, Sutton Rd., Erdington, Birmingham. Letter only. [5283

MAGNETO Wanted, also N.S.U. gear or gear box, cheap.—Box L2,401, c/o *The Motor Cycle.* [5440

OLD 2-seater Car, battery ignition will do, about £25.—Box L2,413, c/o *The Motor Cycle.* [5452

MORGAN, or first-class Combination, any distance.—13, Mount Pleasant Rd., Lewisham, S.E. [5415

TRIUMPH. 1919, single-speed, wanted, new or nearly new.—Schafer, Cheadle Heath, Stockport. [X4053

TRIUMPH, 3-speed countershaft, 1919, or a late model.—Schaier, Cheadle Heath, Stockport. [X4055

T.A.C. Cylinder, for 60×60 4-cyl. engine, a.i.v.—Whinnerah, Field Broughton, Grange-over-Sands. [4964

PHILIPSON Pulley, flanges hardly worn, suit Triumph or Rudge; £4.—57, High Rd., Ilford, Essex. [5119

WANTED, pair front forks, suitable for 2¾h.p. Enfield.—MacDougall, Trees, Barrhead, Scotland. [X4859

SINGLE Cylinder Magneto required; also 2 Douglas magnetos.—47, Barrington Rd., Crouch End, N. [4814

PISTON and Gudgeon Pin wanted for 2¾h.p. 1914 Precision.—Box L2,319, c/o *The Motor Cycle.* [4817

WANTED, 1917 Scott, or Triumph combination, or Ford car.—Stebbings, Attleborough, Norfolk. [X4579

WANTED, inlet dome for front cylinder, 5/6; Indian.—Ashford, Grange, Broseley, Salop. [X4699

DOUGLAS Parts.—1910 crankshaft, connecting rod, piston, wanted.—Watts, Garage, Lydney, Glos. [4824

WANTED at Once, cylinder for 1914 Singer, bore 88 mm.—Mason, 47, Brunswick St., Leicester. [X4792

N.S.U. Gear, fit 1911 Triumph; good price if really good condition.—Ridler, Surveyor, Tewkesbury. (D) [X5078

WANTED, modern crock or old-timer, cash waiting.—Reply, Box L2,404, c/o *The Motor Cycle.* [5443

WANTED, first-class combination or light car.—Particulars, Veryard, 2, Newport Rd., Barnes, S.W. [5413

WANTED, rear cylinder for 5-6h.p. clutch model Indian, bore 70 mm.—Drye, High St., Marlow. [5276

WANTED, good motor cycle, lightweight or combination; spot cash.—36, David Lane, Shadwell, E. [5181

BEDELIA Cycle Car, 1915 model, 8-10h.p., good order; cash.—Railway Garage, Staines. 'Phone: 139. [4742

WANTED, 3-speed gear pinion for 1915 7-9h.p. Indian.—Bird, Craven House, Paddock, Huddersfield. [X5008

WANTED, James 3-speed gear box for big single, any condition if shell is sound.—7, The Vale, Acton, W.3. [X5079

WANTED, names of firms manufacturing motor cycle frames, tanks, and accessories.—Box 4,222, c/o *The Motor Cycle.* [X5065

AUCARS, 14, Fernbank Av., Harrow, purchase sound combinations, A.J.S., Enfield, Matchless, etc., 1915 onwards. [X5048

WANTED, 2¼h.p. F.N. engine, good price given.—Southern, 635, Sixth St., Trafford Park, Manchester. [X5039

WALL Auto-Wheel, good order, and reasonable price.—Particulars, Platts, 602, King's Rd., Fulham, S.W.6. [5240

WANTED, pulley side flywheel for 3h.p. Rex, Beehive silencer.—Brocklebank, Newby Bridge, Ulverston. [X5010

MOTOR Cycle, about £25, kick start preferred, and approval; deposit.—Box L2,373, c/o *The Motor Cycle.* [4932

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WANTED, Enfield, Harley, or Indian combination, or similar; spot cash.—C.S., 14, Swaton Rd., Bow, E.3. [5065

WANTED, water-cooled engine, 3½ to 6h.p., any date; state condition and price.—Friary Garage, Southsea. [X4690

WANTED, engine, Jap twin 2¾, 3½, or 6h.p., sound condition.—Moon, Harewood Grove, Darlington. [X4550

WANTED, Sidecar body to fit 4h.p. James chassis; good condition essential.—Whiteside's Garage, Clitheroe. [X4684

WANTED, A.J.S. interchangeable wheel, with or without tyre.—Grange, Rainhall Rd., Barnoldswick. [4952

WANTED, good combination or light car.—Particulars and time to view, 436, Whitehorse Rd., Thornton Heath, S.E. [5252

WANTED, motor cycle, 1912 upwards, condition immaterial.—Chaplin, 19, Winstanley Crescent, Ramsgate. [5227

WANTED, 3½h.p. combination, 1914 or later, Enfield or similar; no rubbish.—Devona, Salt Hill, Slough. [5171

N.S.U. or other 2-speed gear wanted, fit B.S.A. 3½ h.p. small engine shaft.—Griggs, Folly Av., St. Albans. [5098

HARLEY-DAVIDSON Combination wanted, not earlier than 1916.—25, Malpas Rd., Newport, Mon. [5345

GOOD Solo Machine wanted, 1915 or later, sound condition.—Loweth, 6, Mount Pleasant Rd., Ealing. [5271

CLYNO Kick-starter Pedal wanted for 6h.p. 1915 model; approval.—Stokes, 19, Claremont St., Glasgow. [X4039

100 Motor Cycles Wanted for cash.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [8582

WANTED, single-cyl. magneto, anti-clock, any make; cheap for cash.—Beale, Blagdon, Cranborne, Salisbury. [4865

WANTED, 3h.p. Enfield.—State year, condition, and lowest price to Pearce, 144, Victoria St., St. Albans. [X4775

WANTED, good H.T. magneto, anti-clockwise.—Price etc., to W. Watt, 44, Charlotte St., Fraserburgh, Aberdeenshire. [4941

WANTED, Lukin carburetter adapter, for Scott motor cycle.—Harris, 51, Upton Lane, Forest Gate, London, E.7. [5298

£40 Offered, lightweight Enfield, Triumph, or other well-known make.—Fullest particulars, 125, High St., Woolwich. [X3864

WANTED, Sprockets for American Excelsior; Douglas parts for sale.—Motorist, 7, Waterloo Rd., Ipswich. [5058

WANTED W.D. pattern handle-bars; 1in. stem off Triumph or Rover would suit.—Curtis, West Parade, Lincoln. [4763

WANTED, Bosch magneto, ball bearing type, for 3½h.p. single; also 180° twin.—Lloyd, 19, Essex St., Norwich. [X4570

WANTED, 4-cyl. F.N.'s, T.A.C.'s, T.M.C.'s, Hendersons.—Wandsworth Motor Exchange, Ebner St., Wandsworth, S.W. [5235

DOUGLAS, late model, T.T. preferred, must be in good order; no fancy price.—Schafer, Cheadle Heath, Stockport. [X4056

£2,000 Waiting.—Wanted, motor cycles, any make; good prices given; offers made unseen.—Booth's Motories, Halifax. [X5127

WANTED, fast combination, Harley, Indian, Henderson, Clyno preferred; good price given.—Else, Dimple, Matlock. [X4991

N.S.U., 6½h.p. twin, less engine, or with engine needing repairs.—E. C. Redshaw, Hallsannery Cottage, Bideford, N. Devon. [5002

COUNTERSHAFT Model Triumph, with or without sidecar, would consider 2-seater car.—65, Kinfauns Rd., Goodmayes, Essex. [X4106

WANTED, Triumph spring forks, complete, magneto, single, anti; 3½h.p. or 6h.p. engine.—Lee, 9a, Ada Rd., Camberwell. [4944

WANTED, clutch, bearings, and sprockets complete, for 1913 T.T. Indian.—West, Plumtree House, Draycott, Derbyshire. [X4563

WANTED, 6h.p. twin combination, any make; must be cheap, for cash.—Roberts, 26, Clarence Rd., Leighton Buzzard, Beds. [X4995

WANTED, 3-speed gear box, with kick start and back hub complete, for 8h.p. Clyno.—149, Rockingham Rd., Kettering. [X4979

£100 given for 1918 6h.p. Enfield Combination, A.J.S., or Zenith, fully equipped and perfect.—Apply, 23, Victoria Rd., South Shields. [X5001

CYLINDER, V Piston, wanted for Kerry motor, 2¾ h.p. a.o.i.v.; cash waiting.—64, Burnley Rd., Dollis Hill, N.W.10. [4766

WANTED.

WANTED, vulcanising plant, minor or multi press; state particulars and price.—Box L2,332, c/o *The Motor Cycle*. [4870

WANTED, crankshaft for 2¼h.p. F.N., shaft drive, or complete engine.—Howard, 5, Upper Grotto Rd., Twickenham. [X4776

LIGHT Torpedo Sidecar, wicker or very light coach-built; good condition.—Warwick, Wireless Squadron, Worthy Down, Winchester. [X4689

AUTO-WHEEL, Wall, B.S.A., good order, for cash.—Letters only, Hall, Estate Agent, Tally Ho Corner, Finchley, N.12. [4907

ENGINE, 7-9h.p. or 8-10h.p. twin, good condition, and complete, any make, m.o.v., and cheap.—Box 4,206, c/o *The Motor Cycle*. [X4852

WANTED, really good late model Grand Prix Morgan; good price paid for good machine.—49, High St., Saffron Walden, Essex. [X4880

WANTED, cylinder for 4-cyl. F.N. cycle, or old unusable machine, this make, purchased.—Proprietor, 9, Raglan Rd., Dublin. [4899

WANTED, Douglas, B.S.A., or any known make, not earlier than 1915; cash waiting.—E.T., 3, Hurst St., Herne Hill, S.E.24. [4939

WANTED, privately, good 2-seater combination, reasonable for cash.—Richardson, 2, Gardnor Rd., Hampstead. [5301

WANTED, magneto for 1916 Douglas, C.A.V. or Bosch waterproof preferred.—22, Crabtree Lane, Fulham, S.W.6. [5304

WANTED, privately, motor cycle, lightweight, twin preferred, modern.—Batchelor, 15, Prince's Av., Church End, Finchley. [5268

WANTED, 2-stroke, 2-speed, with footboards; price not over £30.—Mines, Brightholme, Little Sutton, Cheshire. [5337

WANTED Immediately, B.S.A. or Imperial-J.A.P., new or not earlier 1917, clutch.—Lundquist, Danbury, Essex. (D) [5406

WANTED immediately, 1916 Powerplus Indian combination, 3-speed, spring frame, electric lighting.—Capt. Hay, Cookham, Berks. [5089

BLACKBURNE, single geared, condition immaterial, Scarlet Runner type preferred.—Burney, Craigmount, Inverkeithing, Fifeshire. [X4753

WANTED, C.B. Sidecar for 3½h.p. Bradbury; good price given, no rubbish wanted.—Ross, Moorfield Av., Carleton, Poulton-le-Fylde. [X4751

WANTED, 5h.p. twin engine (complete unit) for cash or 3½h.p. Singer, on approval; full particulars.—"Units," 28, Gratton Rd., Bedford. [X4562

WANTED, Bosch magneto, single-cyl., new or second-hand.—State lowest cash price to H. Wright, Harbour Rd., Kilkeel, Co. Down. [X4161

ENGINE, 5-6h.p. or 7-9h.p. twin, or 4h.p. single, cheap; slight attention no objection.—H. Slack, Market Place, Chapel-en-le-Frith. [X4883

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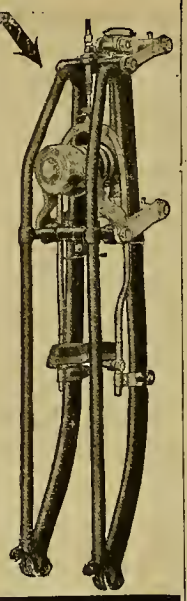

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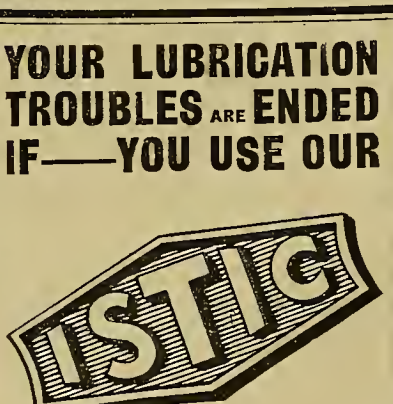

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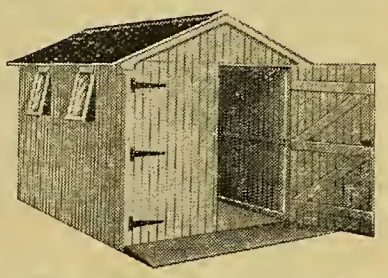

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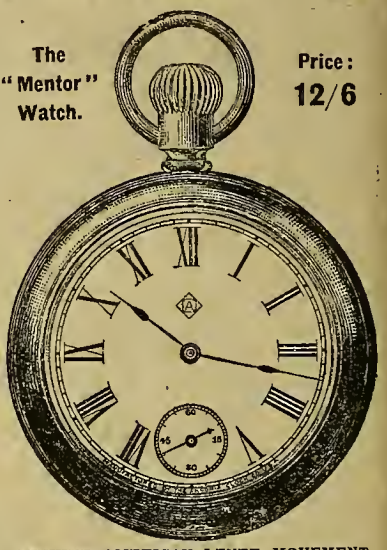

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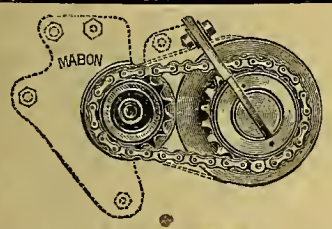
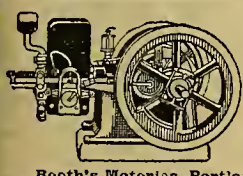


LONDON—EDINBURGH.
4 h.p. "MABON" and Sidecar fitted with MABON VARIABLE GEAR
AWARDED GOLD MEDAL.
MABON MOTOR WORKS,
Woodside Gardens, Bruce Grove, Tottenham, N.17



2½ H.P. PETROL ENGINES.
For Farm or other stationary work. Hopper cooled. Magneto ignition. Portable. Easy to start. Weight 8 cwt. Sent out complete with petrol tank, and mounted on wood skids ready for running.
Send for List.
Delivery from Stock.
Booth's Motories, Portland Place, Halifax.

3-PLY WOOD for
SIDECARS, CARS, Etc. LIST AND PRICES ON APPLICATION.
Builders & General Traders Co.,
83, Colmore Row, BIRMINGHAM.
'Phone: Central, 2836. 'Grams: "Gentradco," B'ham.

MISCELLANEOUS.

44 Cycle Rims, 50/-; J.A.P. cylinder, with overhead valves, 85×95, 16/6; 3ft. 6in. ⅝×⅜in. Renold chain, 10/-; Sturmey countershaft brackets, 10/-; No. 90 emery, 20/- cwt.; stamp, reply.—Millard, Motors, Belvedere. [4957

HOLAX Petrolproof Bright Black Enamel gives a finish equal to stove enamelling; 1/- per jar, 1/10 per tin, postage 3d. extra; trade supplied.—C. A. Holland and Co., 36, Giesbach Rd., London, N.19. [5468

SPEEDOMETERS.—Stewart, 84/-; Watford, 79/-. Indian semi-T.T. bars complete, 95/-; Lucas lamp sets, 75/-; horns, 19/- and 12/6; Klaxon, 30/-; F.R.S., 19/-; 6-volt accumulator, 39/-.—T. Stoner, 113, Cleveland St., W. [X4798

SMITH'S Speedometer, good order, 50/-; B.S.A. new parts, front wheel, handle-bar, mudguards, stand clips, engine valves; Sunbeam front mudguards, 12/6; exhaust pipe, 5/-; toolbag, 7/6; one Bosch magneto, £5.—Moss, Wem. [X5056

ACETYLENE Lucas Big King of the Road, No. 462, complete, condition new, £4/4; Lucas (big) horn, No. 38, practically new, 39/6; Lucas brackets, generator, No. 58, 39/6.—Richardson, Guildhall Buildings, Navigation St., Birmingham. [5003

GARAGES.—We can supply timber for building, cut to any lengths. Price list on receipt of stamped addressed envelope. We are also importers of plywood suitable for coachbuilding.—The City Road Timber Yard 227, City Rd., London, E.C.1. [1965

OFFICE Furniture.—Reliance Co. hold one of the biggest stocks of genuine second-hand office furniture in the city. The price is right every time. Call; it will save time and money.—Reliance House, Tram Terminus, Holborn, E.C. [4003

WHEELS, Wheels, Wheels.—Cycle and motor cycle wheels built to order; back wheels from 45/-, front wheels from 25/-; cycle and motor cycle frame repairs; stamp enquiries.—Pendleton, 28, Lonsdale Sq., Liverpool Rd., London, N.1. [5109

UP-TO-DATE 3½h.p. Frame, forks, etc., all new condition, just enamelled, ready for engine and wheels, £9/10; Matchless rear frame, plain countershaft and chain case, £2/10; B. and L., new, large, £1.—Box 4,230, c/o *The Motor Cycle*. [X4958

PULLEY Flanges Reaced; cones, spindles, bushes, tappets, and guide valves reseated, etc.; promptly executed. Motor cycles thoroughly overhauled and repaired. All small parts by return post.—1, Hillside, Stonebridge Park, Harlesden, N.W.10. [5356

INDIAN 5h.p., 1915.—Pair connecting rods, 25/-; 2 pistons, 20/-; carburetter, 30/-; front cylinder, 45/-; front inlet dome, 3/-; sprockets, 39 teeth, rear, 20/-; 18 teeth, engine, 5/-; all good condition; before 6.—14, The Ridgeway, Wimbledon, S.W. [X5013

TRANSFER Lines for motors, gold or colour, from 40ft. for 1/-; lines for cycles, complete set, panelled, gold or colour, 1/3; send stamp for list, samples, and instructions.—Transfer Specialist, 13, Riversdale, Glebelands Rd., Ashton-on-Mersey. [X2253

HANDLE-BAR Muffs.—Keep your hands warm. The finest value obtainable, waterproof and warmly lined, 7/6 pair; approval against cash.—Manufacturers, The Para Rubber Co., 27, 29, John Bright St., and 99, Station St., Birmingham. [X9935

CROWN Adjustable Pulleys, 5in. 12/-, plated 14/-, postage 9d.; Triumph, B.S.A., Precision, Bradbury, Humber, Premier from stock, other models to order; Douglas pistons complete, 28/6; rings, 1/4; gudgeons, 2/-.—Ridington's, 204, Southampton St., Camberwell. [3568

DISCS, Discs, Discs.—Best enamelled steel, light, strong, for 26in. motor cycle wheels, complete sets 33/-, for 2 wheels; sidecar wheel only, 16/6; carriage paid. All kinds of tinplate work undertaken; terms for quantities.—Acme Cycle Co., 4, Copinger St., Greenheys, Manchester. [4335

5,000,000 New Bright Steel Engineer's Hexagon Bolts, nuts, studs, metal screws available. Send 10/- for parcel of 250 assorted, useful sizes, Whitworth metric, B.S.F., B.A. threads, guaranteed perfect goods; sent carriage paid. Write for full catalogue.—Palmer's Garage, Tooting. [9188

4h.p. J.A.P., Bosch magneto, Amac, £15; Campion frame, tank, Druids, Roc 2-speed (incomplete), £7/10; Brooks 104, 17/6; front wheel, 12/6; handle-bar front brake, 17/6; 3½h.p. dropped frame, £3/5; back hub and free-wheel, 15/-.—S. Whitehead, Braunstone Gate, Leicester. [X4938

CYCLE Car, 3-wheeler, chain drive, requires assembling, 2-speed, 8h.p. w.c. engine, Bosch mag., B. and B., £30; 3h.p. De Dion engine, adjustable pulley, Bosch ZA1, B. and B., £8; 2½h.p. engine, B. and B., 50/-; Amac carburetter, 20/-; twin, 22/6.—143, Lowe St., Wolverhampton. [X5093

KLAXON Motor Cycle Horns, special purchase, 30/- each; Powell and Hanmer lamp and generator, 120 H.B., 40/- each; ditto, 125 H.B., 55/-; motor cycle gloves, unlined, 10/6, lined 12/6; Cameo wind screens, 60/- each; all good brand new.—Walbro Motor Cycle Works, Saffron Walden, Essex. 'Phone 45. [X4879

BRITINOL.—British-made Tinol, past solder with flux combined. Place in position while cold, apply heat, and a perfect soldered joint is the result. No mess, no trouble, no tools required. Tins 3/3, post free. Free booklet on soldering with each tin.—Bi-Metals, Ltd., 57, Lant St., Southwark, London, S.E.1 [3298

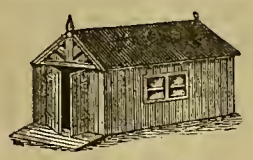
SIDECARS.
We are planning to supply an even better grade than in pre-war days, and shall be able to do so, our staff being more "au fait."
The "BOWSER"
(The Original) 2-SEATER, £34 10s.
EDWARD BOWSER, 50, Park Lane, Leeds.
'Phone: Leeds 21953.
Send for Lists of other Models

Clean Hands!!
You can keep your hands clean and free from grime and dirt, when on the road or in the garage, if you use our washable **ANTI-DUST GLOVES.** The cleanliness obtained will add 50 per cent. more pleasure to the sport.
Single Pair 8d., post free. Three Pairs 7d. per pair, post free.
P.O. or cheques should be crossed and addressed to—
NIBLETT & AUSTIN,
Walworth Place, East Street, Walworth, London, S.E.17.

MAGNETO REPAIRS & SPARES
for every known make and type
We absolutely guarantee to despatch to you your repaired machine within four days of receipt by us.
We also in every case send an estimate before proceeding with the repair, and will return you cash in full if you are not perfectly satisfied.
What better guarantee can you have?
H. ARROWSMITH & CO., 8, STEWART STREET, DEANSGATE, MANCHESTER.

WATTS BROS.
For—NEW MACHINES, TYRES, ACCESSORIES, REPAIRS, OVERHAULS, COMPLETE RENOVATIONS, EXPERT TUNING FOR COMPETITIONS.
135, MOTTRAM ROAD,
STALYBRIDGE.

ORTO WINDSCREENS, HOODS, AND APRONS.
The ORTOmatic Windscreen: No fumbling about with fixings when your passenger wishes to alight. You open the door, the Orto does the rest.
ATKINSONS, 306, Uxbridge Road, Shepherd's Bush, W.12.
'Phone: Hammersmith 140.



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TENANTS' FIXTURES.
Exceptional Low Offer.

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Long	Wide	High	Price	Strong Floor, extra.
8ft.	6 ft.	7½ ft.	£11 11 0	£1 14 0
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These houses are made in sections and bolted together, easily erected on arrival, constructed of well-seasoned imported ¾" tongued and grooved matchboard proof covered in addition with best quality felt, window to open, doors with bolts, lock and key complete. Any other sizes quoted on application.
Write for Free Illustrated Catalogue—
F. PRATTEN & CO., Midsomer Norton, BATH.

MOTOR and CYCLE HOUSES

of every description. Made in complete sections of best quality material only.

7ft.×5ft. £8 10
9ft.×6ft. £12 0
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Complete with floor, bolts, etc.

These houses can be supplied with double doors at 20/- extra. Write for list of other houses Estimates free.
James Holloway & Co., 457-459 Brixton Road, LONDON, S.W.9.

METAL DISCS for Wire Wheels to suit Triumphs, Harley Davidsons, Allons, Indians, Morgans, Fords, etc
Sporting Sidecars for 1914 Triumphs.
EARLY DELIVERIES.
OWEN DAVIES ENGINEERING Co., Ltd.
(E. Owen Davies, Managing Director),
Ballard's Lane, near Tally Ho Corner, FINCHLEY.
'Phone: Finchley 24.

MOTOR CYCLE HOUSES,
Ready-Built Series.

Splendidly made of selected materials, guaranteed weather-proof. Immediate delivery.
Prices from **£7 10s.**
Get particulars.
P. WHITE, Staines Road, Laleham, Staines.
Works: Kingston Rd., Staines. Established 10 Years.

Engines and Gear Boxes Promptly —— Overhauled and Repaired. ——
No job too large. No job too small.
H. TERRY,
16, GROVE PARADE,
HIGH ROAD, EAST FINCHLEY, N.2.

MOTOR CYCLE INSURANCE AT LLOYDS
INSURANCE
DREADNOUGHT MOTOR POLICIES AT LLOYDS
Low Premiums payable Yearly, Quarterly or Monthly
Write for Prospectus
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170 · GREAT PORTLAND STREET · LONDON · W · 1

MISCELLANEOUS.

RELIANCE Company, the Typewriter people, buy, sell, hire, and exchange all kinds of typewriters; they trade in reliable goods only, and have built their extensive business on the small profit and quick turnover basis. Machines sent on approval, get list.—Reliance House, Tram Terminus, Holborn. 'Phone: 2388. [3999

DOUGLAS 2-speed Gear Box, clutch, and kick starter, No. 3196, complete with clutch pedal and rod (no gear lever), only done 1,200, just returned from makers, been overhauled, fitted new gears, bearings, and mainshaft, kick startar, and clutch, practically unused, perfect, absolutely as new; £10/10; good reason selling.—Write, Spoor, The Hydro, Bristol. [X4892

FRONT Wheel, 26×2½, wired, 12/6; big new heavy Dunlop cover for above, 35/-, easy fitting; 6ft. ¾in. A.C. chain, 15/-; 5ft. Renold ⅝×¼ chain, 10/6; A.C. valves, 2/6 each; two 6h.p. J.A.P. valves, and one guide, new, and slightly used, 10/-; good wide drop back tank, £1; 6½ft. Lycett ¾ or ⅞ belt, 3/6; new starting handle, 6/6.—Letters only, 314, Gray's Inn Rd., London. [4955

1915 4h.p. Douglas Cylinders only, 30/- each; Douglas T.T. bars, 20/-; Stewart horn, new, 30/-; 26×2¼ Triumph back wheel, 25/-; twin a.i.v. engine, 80/-; 1911 3½h.p. Triumph power unit, all complete and perfect, £18; Top half 1914 B.S.A. chain case, 10/-; 3ft. of 1½in. exhaust tube, new, 6/-; quantity other items.—Chalkley, The Broadway, New Southgate. [5138

INDIAN 1914 7-9h.p. Spares.—T.T. bars, £3; 4 to 1 rear sprocket, 7/6; 4 used exhaust valves, 3/9 each 2 new inlets, 2/6 each; rear chain, 15/-; box spare chain links, 3/6; box spare nuts, valve springs, etc., 15/-; 5 12 c.p. electric lamps, 1/6 each; one 2 c.p., 1/-; mechanical horn, 15/-; inner tubes, 2 Kempshalls, used, 7/6 each; 1 new Dunlop, 13/9.—Logette, 5, Ashworth Mansions, Elgin Av., London. [5134

BARGAINS.—Look! Corbin Brown speedometer, brand new, with all fittings for 28×3in. wheel; 70/-; suit Indian or Harley-Davidson. Latest pattern B.S.A. variable jet carburetter 1⅛ outlet, nearly new, 35/-; 1914 pattern Indian kick starter, with chain, 15/-; rear sprocket, 1914 Indian, 27 tooth, new, 15/-; front and rear light, with brackets, 20/- pair; deposit system.—Price, Bridge, Canterbury, Kent. (D) [X4896

ZENITH Carburetter, £3; 1913 Triumph piston, concave, fitted with gudgeon pin and rings, 25/-; Thomson-Bennett magneto, turn 180, £5/10; 4-cyl. Splitdorf, brand new, £9; 1912 Triumph cylinder, £2; two electric car lamps, new, £3/10; one Dixie twin, £5; one 8h.p. J.A.P. cylinder, 1913, £1/10; pair of Chater-Lea 8h.p. spring forks, £3.—118, Raddle Barn Rd., Selly Oak, Birmingham. [X4947

TRIUMPH Engines, 1915 £12/10, 1914 £10; frames, 1914 £7/10, 1915 £9; tanks, 1914 £2, 1914 £2/10; back hubs 10/6, front 7/6; belt rims, 7/6; foot brake, complete, 17/-; spring forks, £2/10; front stands 7/6, back 10/-; carrier, complete, £1/2; 3-speed hubs, £6; all parts for 1914 and 1915 engine, and all parts for 3-speed hubs.—Hawkins, 455, York Rd., Wandsworth. [4986

TYPEWRITER Repairs.—Reliance Co.'s repair department is speeding up; all repair work is dealt with very promptly. If it can be done, Reliance can do it. Having on their staff a number of highly skilled mechanics learned in the actual factories that built the machines, the best possible work is put into all repairs and overhauls.—Ring up Holborn 2388, or rail to Reliance House, Tram Terminus, Holborn, E.C. [4002

TYPEWRITERS! For the one-man business Blick typewriters are very suitable, the writing is visible, the machine is portable and quite easy to manipulate, being overstocked with this make. We are pricing these at 20% below market value for the next 7 days. Get list.—Reliance Co., the Typewriter People, Tram Terminus, Holborn. 'Phone: 2388. [4000

SMALL 3-speed Oppermann gear box, suit 6 or 8h.p., £5/10; new modern 8h.p. Jap W.C. rear cylinder, £3/10 (perfect); set of fine oil lamps, light car, £3; 8h.p. water pump, 12/6; 90° twin Jap contact breaker, 6/-; new condition 4-cyl. car trembler coil, £2/10; another, 2-cyl., £1; complete sheet steel cradle for 8hp. Jap, 12/6; 8h.p. old pattern Jap A.C. rear cylinder, small flaw welded, 15/-.—Rance 81, Digby St., Scunthorpe, Lincs. [X4785

TYPEWRITERS that turn out satisfactory work at all prices: Densmore's, 7 gns.; Early Remington's, 7 gns.; Remington at 12 gns.; Smith Premiers, 12 gns.; Oliver's Visible, 16 gns.; together with a fine lot of the latest models all priced proportionately reasonable. On view in the windows and spacious showrooms, or sent on approval, of Reliance House, Tram Terminus, Holborn. [4001

KLAXONS.—60 still left, 36/-; Bowden carburetter levers, 12/6, motor cycle hubs, 16/- pair; lightweight Bowden inverted lever front brakes, 12/6; inverted lever exhaust lifts, 9/-; new Druid forks, for 2in. tyre, 9in. stem, not enamelled, 40/-; motor cycle chain wheel and cranks, 7/6; Da Dion engines, 8h.p. £8, 4½h.p. £6; heaps other goods; list.—Harris, 51, Upton Lane, Forest Gate, London, E.7. [5297

12½ft. Renold Chain, ⅝×⅜, 2/- foot; 6½ft. Coventry, ¾×7-16, 3/- foot; 6½ft. Brampton, ¾×7-16, 3/- foot; tricar back wheel, 2 sprockets, 650×65, 7/6; pair front wheels, axles, steering heads, 26×2½, 7/6; gear change countershaft, with 3 sprockets, 10/-; 6-8h.p. vertical twin w.c. engine, almost finished, £1; silencer, 5/-; two bucket seats, 5/- each; pedals, 2/-.—3, Cornwall Parade, Finchley, N.3. [5402

NOT A Record

But the usual result of advertising in "The Motor Cycle."

The following is an unsolicited letter from Lt. S. B. Potter, R.A.F., Peebles, Scotland.

I HAVE, on more than one occasion, seen references to the value of your publication as an advertising medium. My own experience may be of interest to you; in fact, I should imagine it would almost constitute a record, even in these days of keen competition for motor vehicles.

In your issue of June 11th I inserted an advertisement of a standard 3½ h.p. clutch model Rover for sale, giving my home address (Essex) for purpose of communications.

The same evening as "The Motor Cycle" appeared (Thursday) I received the following wire from my parents, whom I had just informed of the fact that the machine was sold—

"Inundated telegrams, letters, callers re Rover. Query hoax. Explain."

I wired instructions re acknowledgments, etc., since when I have had forwarded all the correspondence from prospective purchasers.

It consists of some dozen telegrams (mostly reply paid) and nearly sixty letters and postcards from all parts of the kingdom.

So many people called personally that my parents were finally compelled to affix a notice outside the house—

Re Rover Motor Cycle
THE MACHINE HAS BEEN SOLD

The majority of the telegrams were despatched between 9 and 9.30 on the *morning* of publication, i.e., immediately the post offices were open.

Two gentlemen called in a car before noon, to take the machine away with them.

Several wires said "hold machine, am coming over now."

Comment on the whole affair seems quite uncalled for.

H. F. EDWARDS,
7, Exhibition Road,
SOUTH KENSINGTON,
beg to announce they have opened showrooms at above address, and have in stock
2¾ h.p. Douglas, New Enfield Combinations, lateat Models. 1915 4 h.p. Triumph. 1914 4 h.p. Triumph.

For any make and h.p. fit **Juckes' Patent,**
COUNTERSHAFT GEARS
Clutch and K. Starter 2-3 h.p. 2 speeds, 3½-5 h.p. and 5-8 h.p. 3 speeds, 2-3 h.p. plain 2 speeds.
THE EFFICIENT MOTOR & ENGINEERING CO., East End Works, Bilston Road. WOLVERHAMPTON.

We are continually having
DELIVERIES
of some of the following Motor Cycles:
B.S.A., Rudge, P. & M., New Hudson, James, Clyno, Sunbeam, Sun, Velocette, Radco.
Before buying, write
SAM HEARD, LTD.,
50, Higher Eanam, Blackburn

Motor Car Houses
AND
Portable Buildings
of every description.
ILLUSTRATED LIST FREE.
SOUTH-WESTERN APPLIANCE CO.,
Felsham Road, Putney, London, S.W.

For the man (or woman) who :: :: looks after the car. :: ::
THE
MAINTENANCE
AND **REPAIR**
OF **MOTOR CARS**
by ERIC W. WALFORD.
Price 3/- net. By post, 3/4.
Home or abroad.
From ILIFFE & SONS LTD., 22, Tudor St. London, E.C.4; and Leading Booksellers.

TRANSFERS
FOR ALL PURPOSES.
Write for specimens and quotations
N.B.—We cannot supply makers' own transfers to individuals.
Iliffe & Sons Ltd., Transfer Specialists. **Coventry**

MISCELLANEOUS.

DOUGLAS Spares, brand new.—Footboards, 24/- pair; footrests, 15/- pair; upturned and semi T.T. bars, ⅞in. and 15-16th in. stem, 17/6; head clip, 7/6; mudguards, touring rear 18/6, front 12/6; T.T. type rear 12/6, front 10/-; number plates, 3/6; back stand 14/6, front 7/6; ball bearings, gear box, 12/6; lubricating glasses, 1/9; front stand clip, 1/6; rear, 2/-; 2 and 3-speed gears; kick start bolts, 6/6; springs, round 9d., flat 1/-; 1914-15 clutch spares; hub axles, 1913 5/6, 1914 5/6; cups, 3/9; lock ring, 2/6; petrol and drain taps, 4/6; armoured toolbags, 12/6; toolrolls, 5/6; with tools, 30/-; front brakes, 27/6; front shoes with pads, 5/6 pair; pads only, 1/- pair; rear, 2/-; foot brake spring, 1/-; spokes and nipples, 2d.; Douglas front wheel, 40/-; rear wheel with belt drum, 55/-; belt drum only, 15/6; rims, 8/6; exhaust wire, 1/6; outer sheaths, 3/-; grease injectors, 3/-; valve lifters, 2/-; Dnco, 4/6; pulleys, fixed 11/6, adjustable 17/6; Douglas pattern forks, complete, £3/15; fork springs, 3/6; links, 1/6; spindles, 1/6; tank caps, 2/6; glasses only, 6d.; magneto spanners, 9d.; exhaust ditto, 2/-; Renolds chain, 9/6; spare links, 6d.; stud extractors, 5/6; long exhaust pipes, 15/- pair; magneto, C.A.V., £8/5; Thomson-Bennett, £7/7/6; packing and postage extra.—Robinson's (below).

DOUGLAS 2¾h.p. Engine Spares. — Cylinders, 1912-18, 30/-; pistons, complete, 1912-16, 17/6; rings, 1/9; gudgeon, 2/-; copper ends, 2d.; connecting rods, 25/-; big end bushes, 5/6 set; small bush, 3/9; valves, inlet and exhaust, 4/-; springs, 6d.; collars, 9d.; cotters, 2d.; valve guides, 4/6; tappets, complete, 4/6; tappet guides, 4/6; spanners, 6d.; crankshaft ball bearings, 25/6 and 15/6; flywheel, 30/-; chain sprocket, 4/6; locking plate, 3/-; magneto wheel, 8/6; cam wheel, 30/-; crankshaft pinion, 8/6; compression taps, 4/6; jointings, asbestos washers, all sizes, for Douglas, 2d.—Robinson's (below).

AMAC Douglas Carburetters, 70/-; throttle and air valves, 9/- pair; floats, 2/-; needles, 2/-; springs, 6d.; jets, 6d.; caps, 2/-; gauzes, 1/-; handle-bar control, 17/6; wires, inner and outer, per pair 9/-.—Robinson's (below).

TRIUMPH Pattern Pistons, gudgeon and rings, 35/9; gudgeons only, 4/-; rings, 2/6; bushes, large 4/-, small 3/-; valves, inlet and exhaust, 1910-19, 6/6; valve springs, both sizes, 7d. each; filler caps, 2/6; spokes and nipples, 2d.; extra heavy covers, 35/-; tubes, 2/6; also large assortment second-hand Triumph spares.—Robinson's (below).

PREMIER Pistons, 3½h.p., gudgeon and rings, new, in stock; 35/-, plus postage.—Robinson's (below).

SIDECAR Mudguards, enamelled, with stays, strong, 12/6, postage 1/-; College mudshields, 16/6 each, 32/6, 36/6, plus postage.—Robinson's (below).

RENOLDS Chains, A.J.S., Sunbeam, 96-101 links, ⅜×⅜, 24/7; ditto, 56 links, 12/8; B.S.A., 88 links, ⅜×¼, 20/7; 54 links ditto, 12/9; Renolds stud extractors, 5/6.—Robinson's (below).

OVERALL Summer Suits, complete, dustwear, 27/6; lined gauntlet gloves, 25/6, 24/6, 17/6; postage extra.—Robinson's (below).

TYRES for Douglas and Triumph, studded extra heavy covers, sizes 26×2¼ 30/-, 2⅜ 34/-, 2½ 36/-; inner tubes, 9/6; guaranteed. Try one sample. —Robinson's (below).

PISTON Rings, high tensile cast iron, Douglas, Triumph, Sunbeam, Rover, A.J.S., Indian, J.A.P., Premier, Humber, Enfield, B.S.A., P. and M., 2/6 each; correct sizes in stock; no waiting.—Robinson's (below).

DOUGLAS Handbooks, either 4h.p. or 2¾h.p., descriptive illustrations your own repairs, 1/3 each. —Robinson's (below).

DOUGLAS Gear Boxes overhanled and repaired; all spares in stock, including secondary shafts.—Robinson's (below).

4h.p. Douglas Spares.—Cylinders, 45/-; pistons complete, 26/-; gudgeon pins, 2/6; rings, 2/6; connecting rods, 27/6; small end bushes, 3/6; crankshafts, 61/-; flywheels, 44/-; flywheel sprockets, 5/6; valves, 7/6; springs, 8d.; collars, 9d.; cotters, 2d.; valve caps, 6/6; asbestos washers (exhaust), 7d.; valve cap, 4d.; Renolds chains, 17/3; links, 1/-; brake pad complete, 5/-; pads only, 2/-; head clips, 11/6; extra heavy covers for 4h.p. Douglas, 36/-; postage extra.—Robinson's (below).

ODD Bushes, any size, any make, by return; send old samples when ordering.—Robinson's (below).

HANDLE-BARS, semi-T.T. Douglas pattern, ⅞in tops, 1in. stem, also touring pattern, 17/6; postage extra.—Robinson's, below.

DOUGLAS Accessories, reliable quality, latest B175 Brooks saddles, 45/-; B170, 35/-; springs, 2/6; handle grips, 2/6; knee grips, 14/6; rubber grips, 4/3, Dunlop heavy covers, 47/3; inner tubes, 10/3; belts, 11/5; belt fasteners, 1/6; belt punches, 2/-; Dunlop outfits, 3/- and 4/6; solution, 9d.; Lodge plugs, 6/-; weatherproof, 7/6; Sphinx plugs, 4/-; Bluemel's tyre pump, 7/-; pump connection, 1/3; good horn, 21/-; three tyre levers, 1/6; valve lifters, 2/-; grease injectors, 3/-; Lucas wrenches, 7in., 9/6; King Dick wrenches, 6/6; Rangraphine, 1/6 and 6d.; oil cans, 2/9; goggles, 3/-; Price's gear lubricant, 1/6 tunnels, 1/9 and 2/9.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 388. T.A.: Bicycles, Cambridge. [5433

F.R.S. LAMPS
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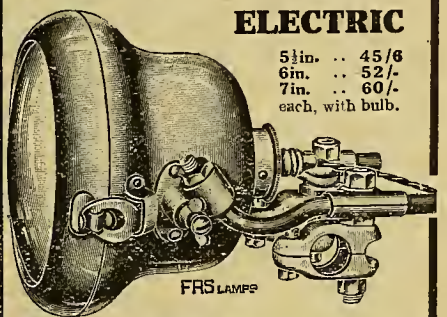

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Set lit from magneto, two lamps, 84/6.
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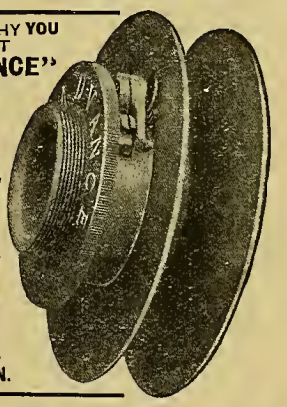

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MISCELLANEOUS.

KLAXON Mechanical Horn 25/-; Lucas largest lamp seat, cost £4/10, unused, 60/-; contact breakers, new Bosch standard, 15/- each; second-hand carburetters, Senspray, B. and B., Amac, from 20/- to 50/-, some really new; Druid forks, lightweight, 50/-; ball races, all sizes, very cheap; dozens of other parts; stamp for list; anything scarce quickly obtained; write me your requirements, I'll satisfy them; lowest price always.—Jack Lucas, 110, Willows Rd., Cannon Hill, Birmingham. [X5125

WE Specialise in Discs for motor cycles. Our patent Phybro discs are more suitable than metal, one-third the weight, and do not rust nor rattle. Our Phybro is specially made for discs, and we enamel them any colour, with a finish equal to metal. Prices, £1 per wheel, Grade 1. Phybro; 15/- per wheel, Grade 2 Phybro, finished black, any other colour 2/6 per wheel extra, lined, 2/6 per wheel extra, gold lined 3/6 per wheel extra; carriage paid. We have made discs for every type of motor cycle. Special sets for Rudge Multi wheels 2/6 extra.—Hill and Co., Disc Specialists, 1 and 3, Walmersley Rd., Bury, Lancashire. [X4908

CHEAP Lots.—Set of discs for Douglas 2¾h.p., beautifully made, stove enamelled aluminium end blue to match tank, look gorgeous, ready to fit, 45/-; Jones speedometer, 26in., up to 60 and total mileage, as new, small bevel lost, 50/-; Indian semi T.T. bars, with controls, bent slightly, 20/-; 6ft. 8in. Dunlop 1in. belt, not worn, with fastener, 15/-; three Hutchinson tyres, 26×2, studded, beaded edge, 10/- each, two tubes, as new, 26×2, 8/6 each; head lamp, plated, 4in. reflector, 10/-; rear lamp, 3in. glass, 3/6; another, Lucas, 2/6; A.K. knee-grips, 10/-; Douglas pulley, 8/6; Robi handle-bar muffs, waterproof and lined, 3/6; saddle pillar, ⅞ stem, 2/6; stamped envelope for reply.—Kiors, Eaton Rd., Coventry. [X5085

THE Cheapest House in the Trade for Accessories.—Powell and Hanmer lamp sets, 44/6; College mudshields, 16/6 and 36/6; wheel discs, 45/- per set; Bowden levers, 5/3; sidecar shackles, 3/6, 4/- pair; T.A.P. petrol pourers, 2/3; double purpose petrol cans, ½ gallon 4/6, 1 quart 3/-; black oilskin suits, 21/3; fawn waterproof leggings, 13/6 pair; seatless trousers, 21/-; T.T. handle-bars, 3 patterns, 14/6; Lucas lamp sets, 90/-; F.R.S., 97/6; brass foot pumps, 20in.×1⅛in., 10/6; lightweight pan seats, 26/6; Bowden mag. controls, 17/6 and 19/6; piston rings, various sizes, 1/4, 1/5; oilskin jackets, 23/6; and oilskin leggings, 14/6; motor cycle maps, in case, 4/6; Amac, B. and B., and Binks carburetters, 67/-, 72/-, 87/9; P. and H. generators, 11/9 and 18/6; handle-bar control for Philipson pulleys, 27/6; fawn waterproof suits, 57/6; coachbuilt sidecar bodies, 135/- and 165/-; F.R.S. big lamp set, 97/-; Splitdorf magnetos, £6/6; belt rims, 11/3; tanks made to order; Bowden single levers, No. 403 8/-, No 430 14/6, No. 434 10/9, No. 432 10/9, 426 14/6; valves 3/8 and 4/-. Accessories value £4 or over supplied on gradual payments.—M. Dept., Metropolitan Machinists' Co., Ltd., 248, Bishopsgate, London, E.C. [1069

THE
AUTOMOBILE
ENGINEER

A Technical Journal devoted to the theory and practice of AUTOMOBILE CONSTRUCTION.

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MISCELLANEOUS.

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3h.p. Bradbury Engine and Frame, forks, stan mudguard, less magneto, 30/- to clear; Trium piston, 84 mm., new, complete, 15/-; cylinder, 19 slightly scored, wants boring out, otherwise good, 9 Triumph adjustable pulley, 1909, 10/6; upturn handle-bars, 1in. stem and top, Triumph patte wants plating, 4/-; J.A.P. piston, only 4/-, y slightly damaged; ⅞ Whittle belt, 7ft. 6in., 6 Wanted, N.S.U. gear to fit J.A.P. 8h.p., 1912, cylin and piston for 1906 Triumph.—Davis's, Rufford, Or kirk. Tel.: 12 Rufford. [X5

ANOTHER Huge Purchase has come to our sto rooms. We hold a large quantity of A.J.S. p tern gear boxes, 2-speed, complete with clutch s kick start, chain-cum-belt, all brand new, £9/10; Albion 2-speed countershaft gear box, £6/10; one thorpe 2-speed ditto, £6; one brand new E.I.C. m neto, £4/17/6; one Splitdorf twin, 50°, £5/19/6; Bosch waterproof, clockwise, £4/19/6; one Bosch, s able for stationary engine, £2/15; one lightweight m neto, 2/19/6; one Bosch twin, 180°, £6/10; one C.A twin, 180°, £5/5; one E.I.C. twin, 50°, £7/10; Binks carburetter, as new, £3/7/6; 150 sidecar hu complete, 10/6 each; 200 large pan-seated sadd £1/2/6 each, list price £1/10; one only 4¼h.p. I cision cylinder, £4; grand line in sidecars, 1919 mod coach painted, and luxuriously upholstered, profiteering dodges with us, these are being retailed £10 each, our price is £6/10, delivery from sto limited number; car lighting dynamo, as new, Stepney spare wheel, tyre and tube, cover damag £2/10 the lot; 80 pairs mudguards, 12/6 the pa new delivery of footboards, with substantial l pieces, aluminium, 14in. long, 4½in. wide, 15/6 pa 17in. long, 4½in. wide, 17/6 pair; 500 toolkits, price 15/-, our price 7/6; 1,000 armoured pannier t bags, listed 18/- pair, our price 9/6 pair; han bars, 14/6; exhaust pipes, curved for all stand engines, 3/- each plated, 2/- unplated; tail pipes, length, 2/- foot. And now for something really go 250 famous T.D.C. engines, highly eulogised by t eminent authority Dr. Low in his treatise on 2-strol We are prepared, owing to scarcity of other mater to sacrifice these engines for the pre-war price of each, including exhaust pipe, silencer, magneto p form, and a variable gear pulley. This price is paralleled, and engines can be secured on instalme if so desired. Send for official report and illustrati Takes a sidecar anywhere. All carriage must be when ordering. Send stamped envelope for replies. Sunday business.—Note address, Motoralities, Sweetman St., Wolverhampton. [5

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The Autocar

Sectional Road Map
of
South-East England

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¶ This map will be found invaluable to those whose travelling is confined mainly to the Home Counties, and especially useful to motor cyclists and car owners resident in or near London. By its aid a large number of interesting short tours, or week-end trips, can be arranged.

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¶ The scale is four miles to the inch. Main and other first-class roads are distinctly marked in red, and the distances between towns are clearly shown. The contours of altitude are indicated in colours on each section.

¶ The area covered by this map embraces Aylesbury, Luton, and Colchester on the North; Portsmouth, Brighton, and Eastbourne on the South; Oxford and Winchester on the West; and Walton-on-the Naze and Broadstairs on the East.

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Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (five lines).

Editorial Offices.
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
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Northern Offices:
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The Transport Bill.

WE rejoice to notice that at last the failings of the Transport Bill, which proposes to place the roads of this country under the control of a man whose interest is admittedly in the railways, are becoming apparent to the general public. *The Autocar* and *The Motor Cycle* have pointed out the iniquities of this Bill with no uncertain voice more than once. Without going into the questions of the docks and the nationalisation of the railways, which subjects do not directly concern us, we may point out that motor transport, not only of goods but of the individual, has been important in the past, and is likely to become more important in the future, and that, without good roads, this transport is unnecessarily difficult, and in some cases impossible. Good roads, then, are of paramount importance, but we are doubtful whether the proposed Ministry of Ways and Communications will give them the consideration that is their due.

Pillion Riding.

THOUGH we do not consider that the taking of a passenger on a solo motor cycle carrier is either desirable or particularly safe, we cannot agree with the policy of several district councils in asking the Government to make carrier riding an offence under the Motor Car Acts.

As soon as the matter was announced in the press, we realised at once that the answer to the request was obvious, and were not surprised when the Ministry of Ways and Communications stated that it did not think that the carrying of a passenger on the carrier of a motor bicycle was a matter upon which legislation could be proposed at the present time.

To render this method of taking a passenger illegal would be distinctly interfering with the liberty of the subject. A motor cycle is a private vehicle, and there is no law to compel a passenger to ride on the saddle only. He or she is equally well entitled to ride on the tank, top tube, or handle-bar. Carrier riding on a solo machine is not a particularly safe method of progression, since, with a passenger on the carrier, the steering of the machine is slightly affected, and additional care should be taken by the driver, as a collision or sideslip may result in serious injury. On good roads, when reasonable care is exercised, the danger may be considered negligible, though the presence of a passenger may make a difference in a sudden emergency.

The Supply of Spare Parts.

SINCE our remarks upon the subject of spare parts three months ago we have had so many letters referring to this question that we feel compelled to return, albeit somewhat reluctantly, to the great importance of this branch of the motor cycle manufacturers' business. It is important, not to the rider only, but also to the manufacturer, that no machine should be laid up weeks (or months) for the want of some small item. A motor cycle running well on the road is a fine advertisement for its maker. A machine confined to its shed for want, say, of a valve rocker or some other trivial part, is very much the reverse. Moreover, the discontented owner is apt to make his voice heard in no uncertain manner amongst his friends and clubmates.

Many of the letters received are in praise of one firm or another for the prompt attention which they have given to small matters, but in the main we regret to say the letters are far from complimentary. This is not as it might be, for even with depleted staffs it should not be beyond the bounds of possibility to send a reply to a pre-paid telegram.

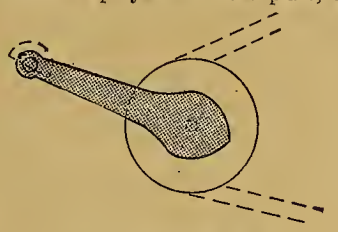
Competition will presently be keen in the motor cycle world, and then the firms who have earned a good reputation for the way in which they treat their customers, and for the excellence of their spare parts organisation, will reap a just reward.

An index to the advertisements in this issue will be found on the page facing the back cover.

IDEAS: Useful and Ingenious.

To Prevent Oil Spraying.

I AM the owner of a 1912 Triumph, and for some time was much troubled by oil spraying from the crank case release in the centre of the pulley. When one usually wears brown shoes this is most annoying. However, I cured the trouble in the following manner: From an old aluminium number plate I cut a piece of metal and shaped it as sketch, drilling a hole in one end A to allow it to be screwed on to the footrest. The metal shield was of such a length that the end B came exactly in front of the centre of the pulley. The oil now sprays on to the plate, and

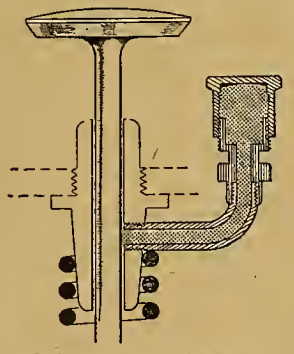


A shield for preventing oil spray from the crank case.

finally drops on to the road. The fitment, being of aluminium, looks quite smart, and has been much admired by many of my motor cycling friends.—JOHN A. HALL, Selly Oak.

Valve Stem Lubricator.

A SIMPLE method of lubricating the inlet valve stem to prevent squeaking and undue wear is by fitting an ordinary screw-down lubricator as follows. Procure the brass grease cup and a short length of iron tube. Bend the latter to a right angle, and screw

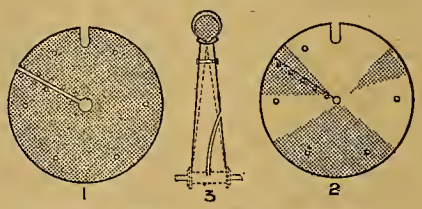


Lubricating the valve stem.

both ends. Drill and tap a hole in the valve guide to take one end of the tube, and screw the lubricator on the free end. The lubricant used is a dense mixture of oil and powdered graphite.—E. W. FLINT, Birmingham.

Wheel Discs at Low Cost.

THE sketch shown illustrates how I made very effective discs for my 3½ h.p. Premier motor cycle at an extremely low cost. Some sheet zinc was obtained and a circle cut and holes

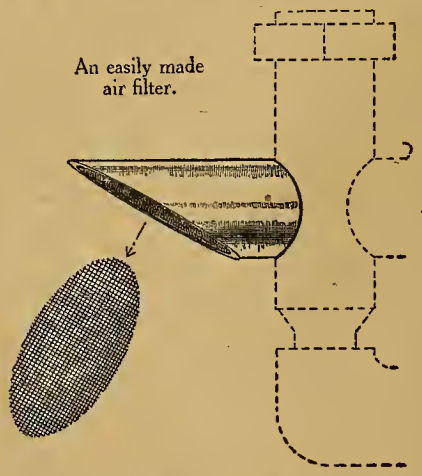


Illustrating method of making wheel discs.

drilled, as shown in the diagram. The piping in fig. 3 is brought to a hole in the disc to simplify oiling. On the belt rim side a small disc was made between the belt rim and the hub.—METRO.

Carburetter Air Filter.

AN easier method of fitting a gauze strainer to the carburetter air intake than making a cone is suggested by Mr. Buckley, of Stoke-on-Trent. His method is to saw off a piece of light gauge tubing, which will fit tightly over

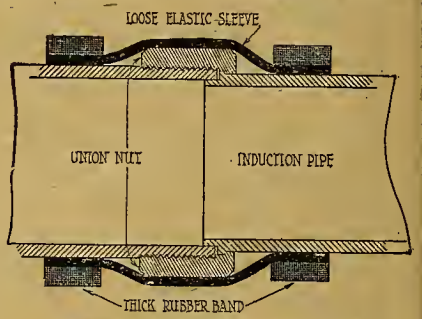


An easily made air filter.

the air tube, at an angle, and so obtain a larger area over which to solder the gauze. Moreover, this arrangement does not reduce the effective diameter of the pipe. This method has also the advantage of neatness, particularly if the attachment is plated.

Curing Air Leak in the Induction Pipe.

EVERY motor cyclist knows how annoying it is to have an air leak between the induction pipe and cylinder. Insulating tape does not last long, but a satisfactory substitute is an elastic sleeve, either end of which has a rubber band fixed to it. Thus one end fits tightly on to the induction pipe, and, having screwed up the union nut as tightly as necessary, pull the other end of the sleeve over by stretching it, and then

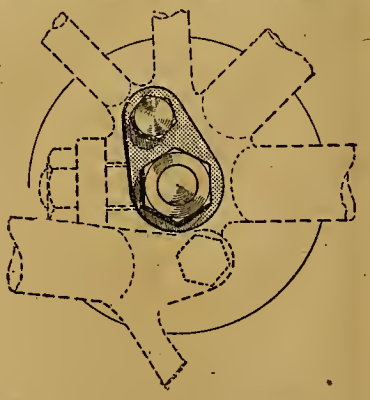


Preventing air leak in induction pipe.

put it so that it grips the cylinder part tightly. This would stop any air leak, and even vibration would not make any difference.—A. R. VICKERS, Mid. R.N.

Fixing the Wheel Spindle.

MR. R. F. MAYNE, of Harringay, makes the following suggestion for the benefit of those users of three-speed hubs who are troubled with the axle nuts working loose. The sketch makes clear the arrangement, which consists of a plate cut from sheet steel or brass to fit over the hexagon head of the axle nut. This is kept in position by the bolt which holds the carrier stays, and is usually adjacent to the wheel spindle.



Anchor plate for three-speed hub spindle.

Balls and Rollers for Me.

THIS paragraph is intended to demonstrate the unsuitability of phosphor bronze bearings for sale to the general public. The other day I set off on a trip of exactly fourteen miles out and home: twenty-eight miles in all. My brain being occupied with affairs of state, I neglected to verify the contents of my tanks. After seven or eight miles it occurred to me to glance at the sight-feed oiler. As every reader knows, this process entails (*a*) dismounting; (*b*) carefully dismantling a complex fitting constructed mostly of soft brass, with due care not to tear the stub unions in half; (*c*) wiping out the congealed filth from a glass tube with one's only pocket handkerchief; (*d*) praying for a miracle, *i.e.*, the reassembly of a brittle glass tube between two metal holders in such wise that there shall be an unbroken glass equipped with two large oil-tight joints; and (*e*) getting a peep at the rate of drip before the glass fouls itself once more. For once I performed the quintuple operation with success. There was no drip! I investigated the oil tank: contents nil! I opened the crank case drain: there was no oil, except for a faint greenery-yallery smear on the entrails of the engine!

I cheered my timid soul with the reflection that I could purchase oil at the fourteenth milestone. Arrived thereat, I found the garage closed and all the staff off joy-riding to a cattle show or some such local bean-feast. Problem: Should I engage a bed, and wait till the morrow, or chance twenty-eight miles with a dry crank case? Considering that there was not a single plain bush in my engine, I completed the trip without oil, and, so far from doing any harm, the engine positively enjoyed it.

Solos, Sidecars, and Gear Boxes.

IT would be very interesting to know how far the sidecar is responsible for the universal adoption of change-speed gears. From the point at issue between "Veteran" and "Sunbinks," it is fairly clear that the sidecar must answer for the low bottom ratios fitted to machines of 500 c.c. and over. There is no English hill—excluding the haunts of the precipice-questers—which a good rider on a good 3½ h.p. cannot make sure of with a bottom gear of 7½ to 1, but the emergency gears of standard 500 c.c. machines usually run into double figures; I myself have a four-speeder with a *second* gear of 9½ to 1. No doubt these freak ratios are partly a concession to the duffer type of solo rider, and may partly be inspired by the motive of affording an easy start from rest on the clutch. Nevertheless, one might argue that if the sidecar had never been invented, or had early been swamped by sound cycle cars, the average motor bicycle would have had a bottom gear of at most 8 or 9 to 1. Incidentally, it would certainly have weighed a great deal less. Until sidecars came into general use, 200 lb. was regarded as rather absurdly heavy; and I do not think the trade would have produced, or the public have accepted, machines scaling 3½ cwt. or more but for the needs of passenger traffic. If there is any sense in this argument, the sidecar has been a very powerful factor in the evolution of the motor bicycle; it first evoked emergency gears of almost infinite reduction; it led to serious weight increases; and, finally, double-figure gears converted undue weight into a question of secondary importance.

The Importance of Being Earnest.

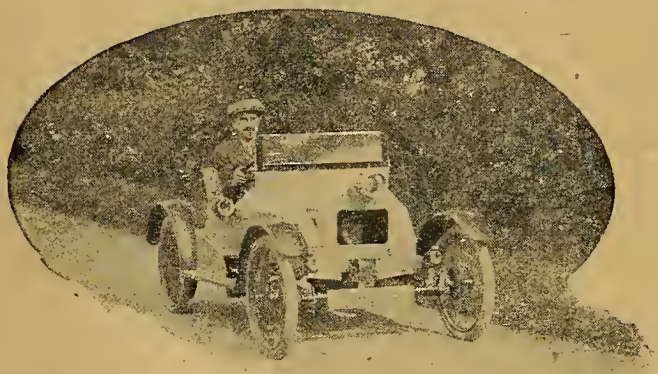
THE term "earnest" as applied to a motor cyclist includes nightly attention to every bolt and nut on the machine, according to Cocker (*i.e.*, "Motor Cycles and How to Manage Them"). I was never "earnest" in this sense, being born with an irresponsible instinct for chancing tiresome details. So it fell on a day that the industry was almost relieved of the impertinences of this giddy scribe. What with being demobbed, and the sun shining, and having just got over being jilted by Araminta in favour of a bloated munitioner, I was driving a trifle bluer than my wont: in fact, I was indulging in what might be termed a spiritual T.T. and seeing how little time I could waste round corners. The particular corner which nearly created a vacancy for a man of push and go on the staff of this journal approximated in plan to the elevation of a church steeple, and was fortified by an extremely forbidding stone wall. I roared up to it at full revs., and at the fifty-ninth minute of the eleventh hour I shut my throttle lever and stood on my brake. The engine maintained full revs., and ate up the brake as if it had been tissue paper. With great presence of mind I lifted the exhaust valve lifter. The engine maintained full revs. very cheerily. By this time my front mudguard extension was within a few millimetres of the above-mentioned stone wall, and the pace was terrific. Another brain wave—I stood heavily on the clutch pedal, having no switch, and applied the front brake with vim and vigour. The machine did a sort of shimmy-shake skid, and twisted itself round the corner fearsomely. I stopped the engine by turning off the petrol. Item: the throttle wire was looping the loop outside its casing, instead of going home to bed. Item: the exhaust valve lifter had shed two weeny screws into the road. Item: the clutch control depended on two microscopic nuts apparently intended to secure a sewing machine needle to its holder, and the sole survivor of the pair was hanging on the last whorl of its thread. I must have been born to be hanged.

Draw the inevitable moral, gentle reader. Motor cyclists should be "earnest" at all times, and inspect all nuts and control connections daily. It is even more important to be earnest when you receive your discharge and return home to bestride a neglected 'bus in somewhat light-hearted fashion. A tuft of grey now distinguishes my raven forelock.

THE Sidecar Alternative.

A Commentary on Tendencies in Runabout Design.

WITHOUT doubt there exists a certain demand for a sidecar alternative, and many manufacturers appreciate this. It may be said that for some time they have realised there is room in the world of motoring for a vehicle as efficient as the sidecar, but providing equal protection from the elements for driver and passenger. There are quite a large number of experimental machines on the road—every



A privately constructed runabout with a 3½ h.p. Triumph engine—a machine which approximates in cost, weight, and performance to a 3½ h.p. sidecar. Mr. H. T. Lloyd, who built the machine, is at the wheel.

week news comes of a new design by a motor cycle firm or by a newcomer to the ranks of makers graduating from the aircraft sundries industry. *The Motor Cycle* has illustrated and described many of them, and in the Editor's private diary there are references to many more; but in summarising impressions of the situation, a strong doubt exists as to whether the real sidecar alternative is yet in sight as a marketable proposition likely to menace the present popularity of the sidecar.

Often has the writer heard the opinion expressed that the sidecar, sooner or later, will have to give way to the reborn cycle car; as an enthusiast where both types are concerned—a keen builder of cycle cars and a buyer of sidecars—I see no signs that this will ever happen.

With very few exceptions the machines which are promised are not sidecar alternatives, but go one stage further and help to bridge the gap between sidecar and light car, and are just as much alternatives to the car as to the sidecar. In short, they form an intermediate class catering for an almost new class of buyer.

Not until a runabout is produced as good, as efficient, as compact, and at the same price as the sidecar will it menace the latter's popularity, and this, in the opinion of many designers, is impossible.

As there are at least three types of sidecars, according to their power, there must be three types of runabouts —(1) the first approximating in weight, power, and cost to the popular 3½-4 h.p. single-cylinder machine of to-day; (2) a machine lining up with the 5-6 h.p. twin; and another (3) with big twin engines with the same reserve of power as the 8 h.p. British and American machines.

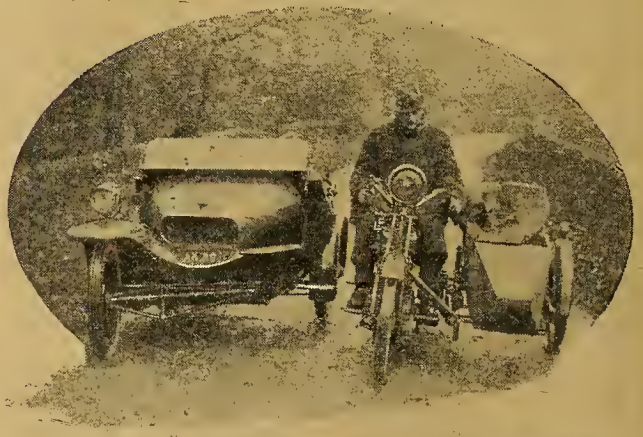
If the weight of a three or four-wheeler cannot be brought down to that of the sidecar, then the latter, power for power, will always score on petrol consumption, hill-climbing ability, and flexibility.

If a 5-6 h.p. cycle car can only give the same overall efficiency as a 3½ h.p. sidecar, and cost as much to run as an 8 h.p. sidecar, then the sidecar will retain its place as the leader in economical motoring.

No Revolutionary Designs.

But is it not possible to obtain *all* the advantages of the sidecar plus the advantages of the runabout? Is it reasonable to expect these results? The answer is in the affirmative in both cases, for this is an age of progress, and nothing has yet been done which cannot be improved. It *is* possible, but, for some time to come, very improbable. So far, no revolutionary designs are in sight as the production article. Most of the new designs which will be offered as sidecar alternatives are not of this class. Rather are they vehicles forming a step from the sidecar towards the car proper, and as such will find a large market awaiting them. The present price for a first-class sidecar outfit is about £150. The prices of the runabouts average about £200. It is a doubtful point whether some of them are not light cars. If they are, then they represent the bottom of one class while the luxurious sidecar is at the top of another.

Everything else being equal, the runabout of the immediate future will cost more than the sidecar, and for that reason can be regarded as a sidecar alternative only by those who can afford the extra price.

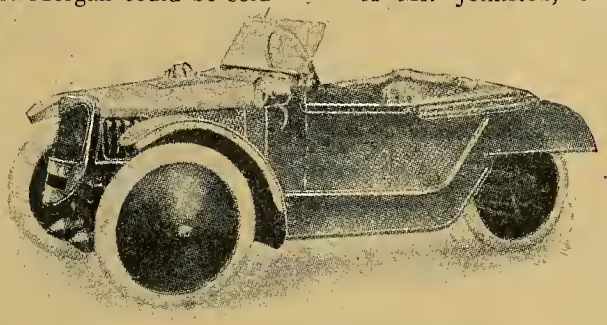


The Scott Sociable alongside a sidecar, showing how they compare in size.

The Sidecar Alternative.—

A study of three-wheeler designs, which are mostly attempts to improve upon the Morgan, will show that there appears to be a tendency to over-develop the type. Mr. H. F. S. Morgan, in designing his well-tried runabout, knew that, to produce his machine at a price approximating to that of the sidecar, simplicity must be the keynote of design. If the reader will compare the Morgan chassis with the motor cycle and sidecar (without body), he will find that the former is very much more simple than the latter. In fact, it is practically certain that, produced under identical conditions on a quantity basis, the Morgan could be sold at a lower figure than a sidecar outfit of the same power.

Not so, however, with the "improved" three-wheelers now being introduced to the public. Three speeds and reverse gear box, pressed steel chassis, and such items of specification considerably increase the cost, and, while they may be more refined mechanically than either the Morgan or the sidecar, to all intents and purposes they are three-wheeled light cars, and it is a questionable point whether the motor cyclist looking for a sidecar alternative requires a three-wheeled light car.

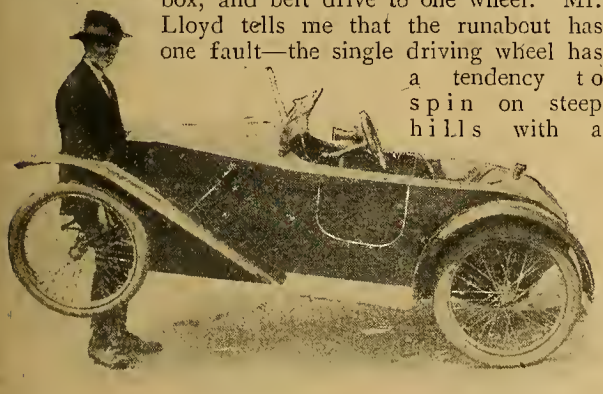


The latest Morgan Runabout, the machine which has kept alive the interest in sidecar alternatives.

An Alternative to the 3½ h.p. Sidecar.

Perhaps the nearest approach in cycle cars to the 3½ h.p. sidecar is the Lloyd runabout illustrated. This was built by a Triumph 3½ h.p. enthusiast several years ago, and is still in service. I have watched the performance of this little four-wheeler over a considerable period, and without doubt its general performance is equal to that of the 3½ h.p. outfit. At a recent trial in the Midlands I was able to compare its running with a 3½ h.p. sidecar of the same power. On Edge Hill the driver changed down to second at the same spot as a 3½ h.p. sidecar of well-known make, and to bottom even later.

The machine has a wooden chassis, a 3½ h.p. Triumph engine, Sturmey-Archer three-speed gear box, and belt drive to one wheel. Mr. Lloyd tells me that the runabout has one fault—the single driving wheel has a tendency to spin on steep hills with a greasy surface. This is due to insufficient weight over the back axle. Otherwise, Mr. Lloyd's machine can be said to be the true alternative to the 3½ h.p. sidecar.



The new Bleriot Whippet, a light four-wheeler embodying moto. cycle practice.

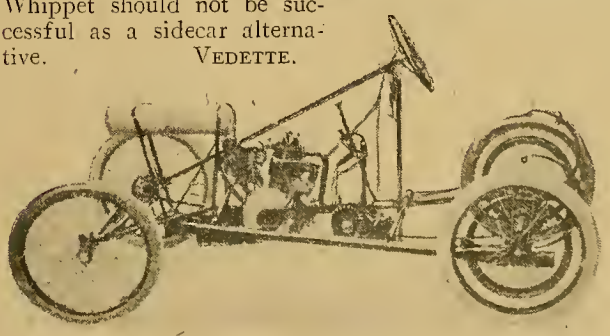
Others have endeavoured to make sidecar alternatives, of which the Scott Sociable is probably the best known. Although so far it has not been offered to the public, the time is not far distant when it will be put on the market in an improved form. In this construction we have an entirely redesigned sidecar machine with two-stroke twin engine, shaft drive, and a triangulated form of framework.

A Mr. Johnston, of Torquay, was another who made a well-thought-out attempt to provide a sidecar alternative. This designer used a triangular frame and placed the engine further aft than is usual, thus obviating the long primary drive chain which is never a desirable feature on a cycle car. This brings the engine nearer the centre of the machine, and altogether the layout is similar to the sidecar in this direction.

In an article on this topic, it would not be fair to omit reference to the G.N.—the only survivor of the earlier four-wheelers. In this light vehicle, with its shaft-cum-chain transmission, there is very little motor cycle practice embodied. The engine is an 8-10 h.p. 90° air-cooled twin, but beyond that the designers appear to have deliberately avoided both sidecar and car practice, and followed their own line of thought, and it therefore becomes one of the several attractive machines representing a stepping stone between the two.

There is one other little four-wheeler of which more may be heard, since its production is in the hands of a company capable of making a good showing in the industry. I refer to the Blériot-Whippet, which follows cycle car practice with its expanding pulley gear. This feature, however, differs from the acknowledged failures of the past in so far that the pulleys are of ample size and are used in conjunction with a clutch. In the old cycle car the belts and expanding pulleys were called upon to function as a clutch and change speed gear, and in the days when belts were not so good as they are to-day, it was asking too much. There appears no reason why the little Blériot Whippet should not be successful as a sidecar alternative.

VEDETTE.

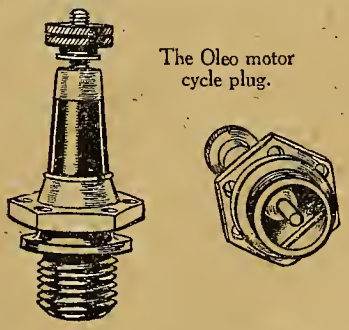


The Johnston runabout chassis. Note the position of the engine.

THE LATEST OLEO PLUGS.

OLEO plugs are now manufactured in England, a fact which should be noted as these plugs have been long associated with our French allies, having first of all been produced exclusively in their country.

The latest pattern Oleo plug is exceedingly light in construction, as can be seen



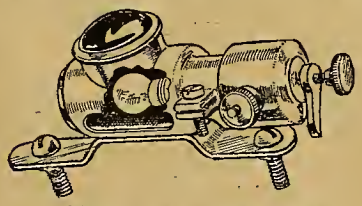
The Oleo motor cycle plug.

from the illustration, while the electrodes are substantial, and the plug should be reliable and free from sooting troubles.

We were to have used a pair of these plugs in the London-Edinburgh run but were unable to do so as, owing to the position of the hexagon, they could not be got into the cylinder. There is no doubt, however, that they will fit practically any standard motor cycle.

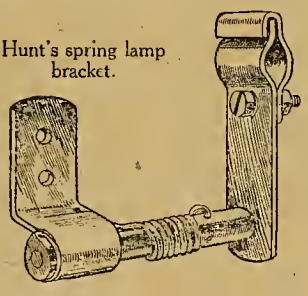
USEFUL ACCESSORIES.

WE lately inspected a useful little tail lamp on the occasion of a visit to the showrooms of Mr. A. H. Hunt, 115, Cannon Street, London, E.C.4. The tail lamp is well made, and is attached in the centre and at the top



A tail lamp and switch marketed by Hunts, of Cannon Street, E.C.

of the number plate. A slot is cut in the base of the body of the lamp which allows the light to shine on the number, while a good size red bull's-eye shows the correct red light to the rear. The lamp is of the two-terminal variety, and is provided with a switch and a locking device.

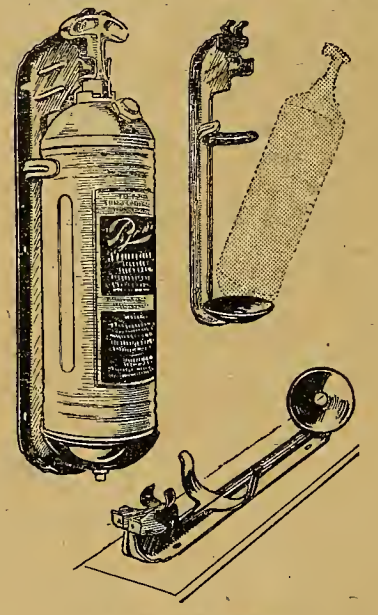


Hunt's spring lamp bracket.

We also saw an extremely neat and useful spring lamp bracket for the rear lamp, which should do much to prevent breaking of the bulb in an electric, or the jarring out of an acetylene lamp. One of the most interesting features of the bracket is the method of securing it. The detachable portion is bent to fit over the fixed portion, which renders the fixing quite secure and necessitates the use of one bolt only.

A FIRE EXTINGUISHER.

NO motor cyclist should be without a fire extinguisher of some sort in his motor cycle shed. Whenever petrol is present, there is always danger of fire, and, owing to the inflammable nature of petrol, it is quite easy for the shed and motor bicycle to be consumed in a very short space of time. It is not only neces-



The Pyrene fire extinguisher.

sary to insure the machine; insurance sounds very well, as the insured naturally thinks that his policy will entitle him to a new machine if his own is completely destroyed by fire, but, while the Insurance Company will pay the cost of damage, it will not undertake to procure a new motor bicycle, as machines are practically unobtainable at the present time. A good fire extinguisher is a necessity.

The solo machine cannot very well be protected by a fire extinguisher, owing to the limited space for one, but on a sidecar machine there is ample room for this, and it is not difficult to attach it by means of a special bracket, such as is provided with the Pyrene which we are about to describe, on to a convenient frame tube.

The Pyrene extinguisher is an ingenious form of pump, which consists of a couple of valves free to swing about the central tube, and so designed that one of the valves is always immersed in liquid, whether the device is held horizontally, downwards, or upwards. After the first two strokes, the liquid is ejected from the extinguisher at every stroke. Now, in the case of a small fire, one squirt of liquid is usually sufficient. On the liquid being subjected to a temperature of 200° Fahr. and over, it is instantly transformed into a heavy, non-poisonous gas, which, by excluding the air, puts out the fire. We may add that the liquid is non-poisonous and non-corrosive.

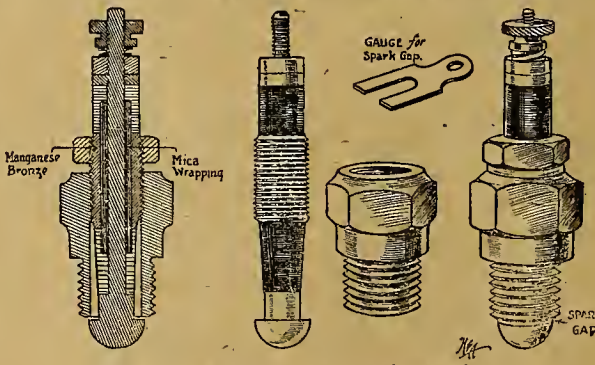
These devices are made by the Pyrene Co., Ltd., 19-21, Great Queen Street, London, W.C.2.

NOVEL SPARKING PLUG.

A SPARKING plug in which several novel features are introduced is the B.P., manufactured by Messrs. Barraclough, Parker, Ltd., Thornton, Bradford. The plug is of the mica variety and, externally, it does not show much departure from standard practice, except that it possesses a hemispherical solid nickel electrode. The centre portion is insulated by several wrappings of mica, over which is pressed a brass tube on which threads are afterwards chased. Washers of mica are then slipped over the whole and are compressed as tightly as possible.

A gauge is supplied which can be inserted between the central electrode and the plug body, so that before the gland nut is secured the correct spark gap can be obtained. These gauges are made in various sizes, so that any gap from a millimetre downwards may be made.

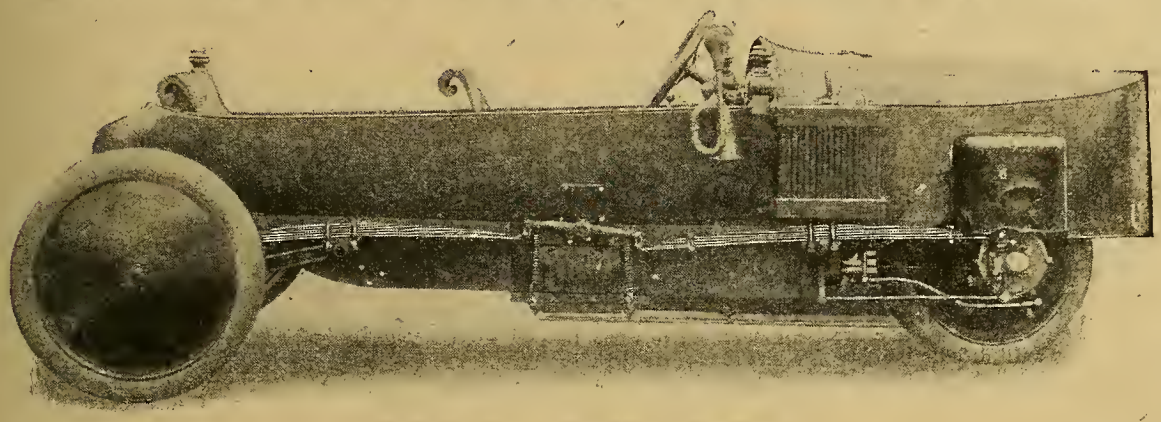
The B.P. plug is well finished and designed, and the following claims are made for it. The central electrode being a solid nickel steel forging gives an intensified spark, and provides an ample volume of metal to prevent incandescence, rendering the plug especially suitable for two-stroke engines. As the dome head is of larger diameter than the body of the plug it thus prevents the hot gases and oil from gaining access to the insulation. The plug can be detached and reassembled in two minutes, with the certainty that the spark gap is correct. After the plug has been fully tested it is guaranteed for twelve months.



The B.P. plug in section, parts, and external view.

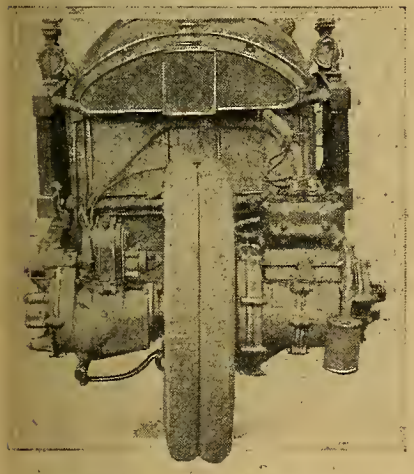
A FRONT WHEEL DRIVEN RUNABOUT.

The Trident Cycle Car, a French Design to be Produced in this Country.



The tandem-seated Trident front-driven runabout.

A THREE-WHEELED, two-seater runabout of unusual design has recently arrived in this country from Paris, which, in the course of six months or so, will be placed on the English market by the Federated Exporters, Ltd., 11, Haymarket, London, S.W.1.



The Trident cycle car, showing the twin-tyred front driving-wheel and the arrangement of the engine, gear box and magneto.

The design and construction of this little car are quite unique so far as three-wheelers are concerned. The complete power unit, transmission gear, steering apparatus and road wheel drive are in one unit, and contained beneath the tapered bonnet in front of the driver's seat. A *monobloc* two-cylinder engine, with cylinders 65 × 110 mm., is located on the near side of a twin-tyred wheel, the flywheel being enclosed. The power is transmitted from the crankshaft through a sleeve in the driving wheel to the gear box, returning again to the road wheel through bevel pinions. The position of the magneto is somewhat unconventional, for it is bolted to, and driven from, the gear box.

Many interesting features are incorporated in the construction of the Trident car, notably the "Cantilever" suspension. This consists of four semi-elliptic laminated springs, two on each side of the chassis. The front springs, which are bolted to a shackle pin on the gear box and crank case casting respectively, are attached, through a double shackle at their rear ends, to a pivoted arm which rotates upon a shaft bolted to the longitudinal chassis member. The rear springs are arranged in a similar manner.

A shock-absorbing device is provided by means of two spiral springs attached at their upper ends to each extremity of the pivoted arm, and the lower ends to bolts protruding from beneath the longitudinal member of the chassis. The centre of each leaf spring is attached to the frame by means of two "U" bolts, providing in all a six-point suspension, which, it is claimed, distributes the weight of the car evenly over all four springs.

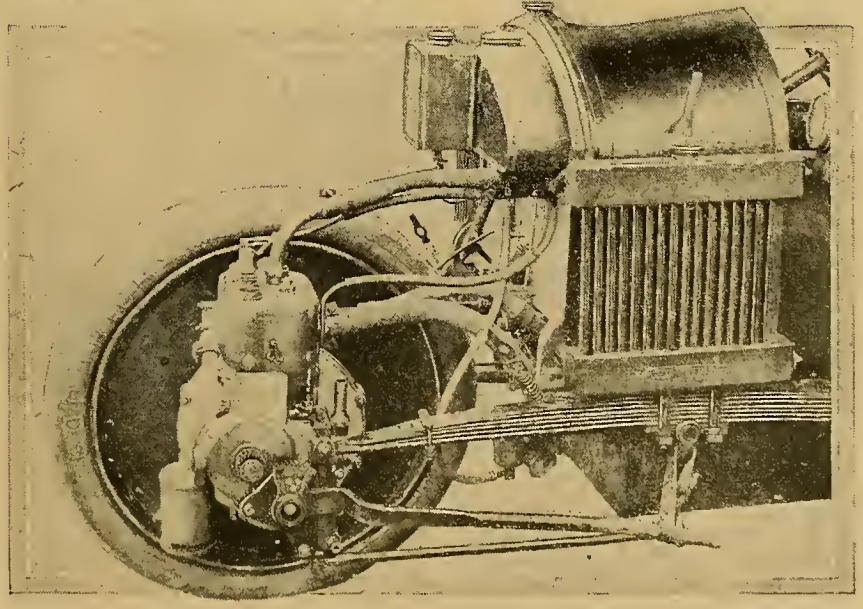
The driving wheel is provided with a form of universal joint, which allows the steering arm of the irreversible gear, attached to the hub of the wheel, to move it horizontally about its centre axis.

Should the tyres of the single driving wheel require to be removed, the complete engine unit, being pivoted on a bearing on the near side chassis member, can be swung round, and drawn away from the wheel, allowing the tyres to be easily removed. A starting device, somewhat similar to a motor cycle kick-starter, is employed.

The radiator on this cycle car is divided into two sections, and carried on either side of the dashboard. This design, however, may be improved.

Both front and rear brakes are provided, the former consisting of an external contracting band operating on the hub of the front driving wheel; the latter, however, adheres to the strictly conventional practice, being an internal expanding brake, as fitted to many standard motor cars.

This cycle car will be manufactured by Messrs. Vickers, Ltd., and will be placed on the market at £160.



Showing the curious situation of the vertical twin engine.

NO AGE LIMIT.

A Fourth Selection of Letters from Riders of Mature Years.

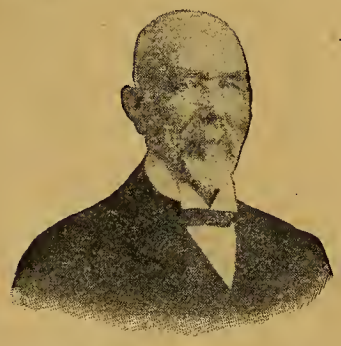
THERE is now ample evidence to show that no age limit exists where motor cyclists are concerned and that modern machines fulfil the requirements of all who desire to use them. In previous issues we have published letters from a dozen old-young readers, varying in age from sixty-three to seventy-seven, and the oldest motor cyclist, to our knowledge, is Mr. Robins, of Barnstaple, who is eighty-one years of age. Mr. W. Bray, of the Apex Cycle Works, Barnstaple, advises us that Mr. Robins rides an old 3½ h.p. single-geared Rex, which he manages without trouble. We have heard of other riders of mature years who are in the eighties, but until definite information concerning them reaches us, Mr. Robins stands as the oldest practical motor cyclist.

Perhaps other old-young readers who are riders will allow us to place their experiences on record, and we repeat our invitation to all riders who are approaching, or have passed, the sixty-year mark.

A 79-year-old Correspondent.

Writing from Stretham, Ely, Cambs., the Rev. J. Parnell says:

"I think I can compete with the old-young motor cyclist, as I was born in 1840, and if I live till the 18th of August I shall enter my eightieth year.



Rev. J. Parnell (age 79).

"I did not ride a bicycle till I was over seventy, and in 1912 I bought a motor cycle and sidecar to take out my invalid wife, and have used it more or less each year since, the best ride being during last June."

Mr. John Watson, of Burnley, is sixty-one years of age, and is a motor cyclist with a long experience.

"I have been a motorist many years," he writes, "my first mount being an old chain-driven Humber, accumulator ignition, with which I had some stirring times, including a trip to Lakeland, with my youngest son on the carrier. This machine cost me the fabulous sum of £6 10s. My next mount was a 3 h.p. Rex, to which I attached a sidecar. I think I owe my vigour and health to this combination, for I used to slip off the saddle and run alongside on hills until I became quite a sprinter. My next mount was a good old Lincoln Elk and sidecar, with which I have toured Wales several times."

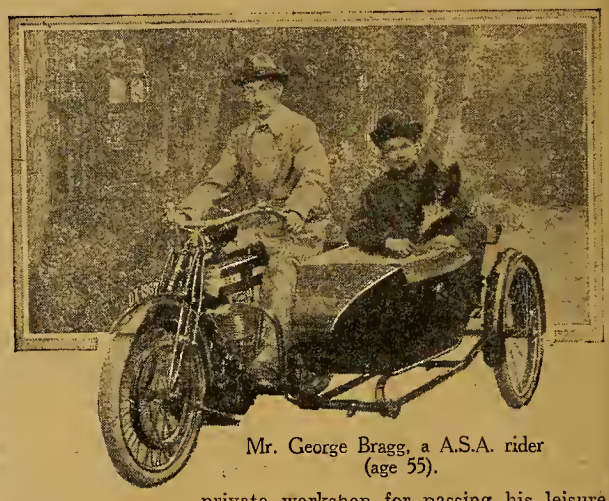
Mr. George J. Bragg, of Ipswich, is only fifty-five, and, therefore, a comparatively young man. There are many riders between fifty and sixty, but there are also a large number of hesitating would-be motor cyclists about this age who consider that they are too old to commence. Mr. Bragg has just taken up the pastime, and his remarks may assist others to come to a decision. He writes:

"I am in my fifty-fifth year, and I am fully aware I am not the oldest motor cyclist on the road. It is quite surprising how soon one can get efficient in driving at my age; I had not ridden or even examined a motor cycle until I received my B.S.A. and sidecar just under a month ago, since when I have driven it over 400 miles.

"Like many others, we have suffered a terrible bereavement during the war, having lost our two sons—all our family consisted of.

"I felt that my wife and I needed a change to take us from our solitary home, and, in this short time, we find it a great pleasure and comfort to us."

America, too, has her old-young riders—the photograph we reproduce depicts two veterans whose combined ages total 147. They are Capt. H. C. Hollenbeck and J. E. Jones, of Sawtell, California. They were old comrades in the American Civil War, and now travel in company on comparatively long journeys. Mr. Jones has used a motor cycle for three years, and maintains a private workshop for passing his leisure time in motor cycle engineering.



Mr. George Bragg, a A.S.A. rider (age 55).

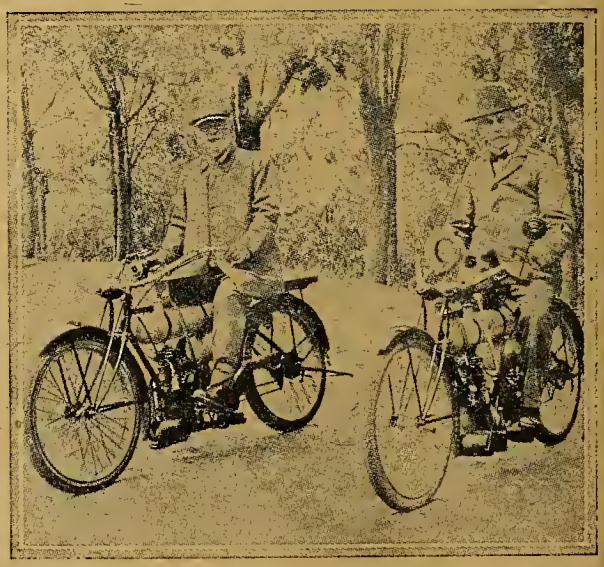
Young-old riders whose letters have already been published:

Mr. R. Wolstenholme, 4½ h.p. Excelsior	age 77
„ Jas. Scott, 2¾ h.p. Calcott	„ 75
Rev. E. W. Wilmott, 3½ h.p. Sunbeam sc.	„ 72
"An Irish Canon," 4 h.p. Triumph sc.	„ 72
Mr. J. R. Marsh, 4½ h.p. B.S.A. sc.	„ 70
„ R. Cumming, Baby Levis and Baby Triumph	„ 69
„ F. G. Hillyer, 6 h.p. Enfield sc.	„ 68
Rev. A. G. Stembridge, 3½ h.p. Triumph sc.	„ 67
Mr. W. Crooke, 3½ h.p. Rover sc.	„ 67
„ Sibley, 2¾ h.p. Allon	„ 65
„ S. Walker, Baby Triumph	„ 65
„ A. J. Hicks, Baby Triumph	„ 63

Building a Motor Cycle.

From time to time we have heard of quite a number of young-old men who, having retired from business between the age of fifty and sixty, have been at a "loose end" for lack of a hobby to occupy their time and mind. One reader, who retired from the Civil Service at the age of sixty, advises us that, with the aid of a small workshop, he has built a motor cycle from second-hand parts and derived great pleasure from the work. Having built the machine, he sold it at a profit.

Without any tuition other than a close study of "Motor Cycles and How to Manage Them" and the weekly numbers of *The Motor Cycle*, this "man of mature years" not only built this machine but learned to ride it.



Two American veterans who are owners of Cleveland two-strokes.

Motor Cycles.

Revised Prices.

Solo Machines.

3½ h.p. 3-SPEED - - £90

5-6 h.p. or 6-7 h.p. 3-SPEED £105

Sidecar Combinations.

3½ h.p. COMBINATION - £120

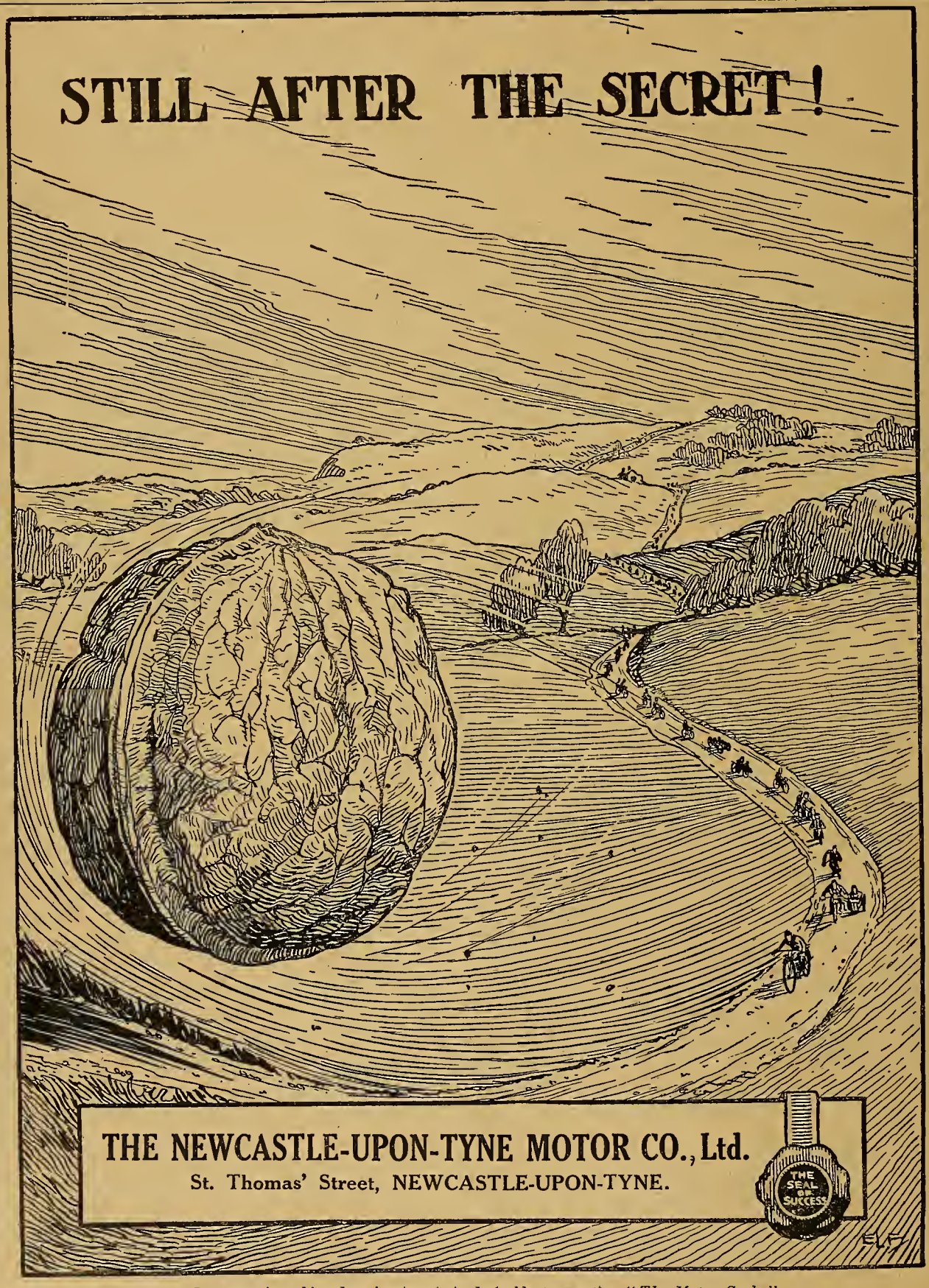
(*Coachbuilt Sidecar*).

5-6 h.p. or 6-7 h.p. Combination £135

(*Coachbuilt Sidecar*).

ARIEL WORKS LTD., 3, BOURNBROOK, BIRMINGHAM.

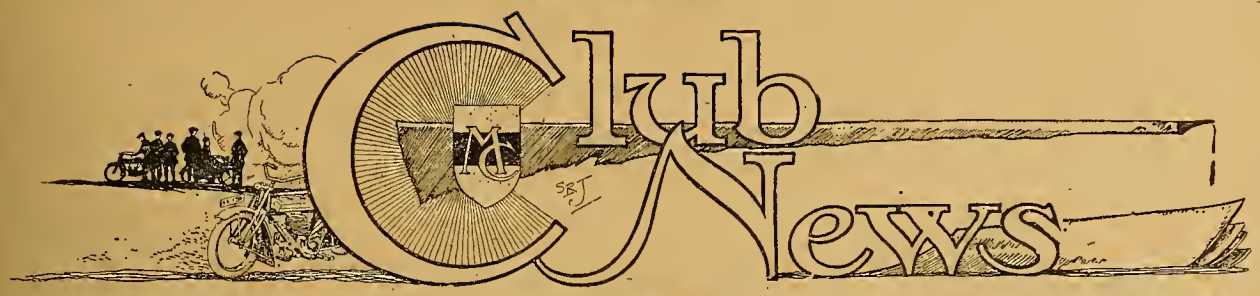
STILL AFTER THE SECRET!



THE NEWCASTLE-UPON-TYNE MOTOR CO., Ltd.

St. Thomas' Street, NEWCASTLE-UPON-TYNE.

In answering this advertisement it is desirable to mention "The Motor Cycle."



Birmingham M.C.C.

L. Baker (4¼ B.S.A. sc.) has to be included in the list of competitors bracketed as equal winners of the Lycett Trophy.

Ilkeston and District M.C.C.

Mr. W. D. Thornley, No. 1, Station Road, Ilkeston, has been elected secretary of the above club, with Mr. Trueman, Middleton Lodge, Ilkeston, assistant secretary.

Public Schools M.C.C.

The above club will hold a "touch nothing" competition on Saturday next, starting from Barnet at 2 p.m. The destination for the night will be at Newport Pagnell, the return being made on the following day.

Liverpool M.C.

Mr. S. W. Phillpott, president of the above club, recently organised a very successful afternoon series of impromptu competitions, which were held at Frodsham.

First event.—Petrol consumption trial. In this competition competitors were allowed to fill their carburetters, and then had to turn off the petrol tap from the tank. They were then started up a hill, and had to remain where they stopped, the competitor riding the greatest distance being the winner. Solo machines, six competitors: 1, N. C. Sclater (2¾ Douglas); 2, S. Parker (2¾ Conlson B.). Sidecars, ten competitors: 1, H. T. Williams (6 A.J.S.); 2, E. L. Boston (3½ Sunbeam).

Second event.—Slow hill-climb. The riders had to remain in one gear, and were not allowed to use the clutch. This event was run in heats, riders being side by side, moving start. Solo machines, six competitors: 1, T. Harben (3½ P. and M.); 2, S. Parker (2¾ Conlson B.). Sidecars on middle gear: 1, W. Brindle (3¼ Triumph); 2, R. H. W. Brown (6 A.J.S.).

The third event took the form of a competition uphill on a J.B. motor scooter, lent by Messrs. J. Blake and Co., the rider travelling the farthest to be the winner. Result: 1, E. H. Boston; 2, Noel H. Brown.

The results of the first club trial are now announced as under:

FIRST-CLASS AWARDS.

H. P. Sutcliffe (6 A.J.S.), H. G. Hague (Stellite car), J. E. Wilkins (3½ Sunbeam), R. H. W. Brown (6 A.J.S.), E. L. Boston (3½ Sunbeam), S. B. Reece (9.5 Stellite), G. Honeyman (4 A.J.S.), J. H. Bagnall, and G. S. Boston (11.9 Morris-Cowley).

RETIRED.

J. C. Ansonia (2¾ Metro-Tyler), H. Larkin (4¼ Triumph), Wm. Cottle (2¾ Calthorpe-Jap), R. Rose, T. J. Lane, L. Matthews, and E. Rose.

Future Events.

July 12.—Western M.C.C. Team Trial.
July 12.—Motor Cycling Club. Hill-climb.
July 12.—York and District M.C. Week-end Run to Lake District
July 12.—N.M.C.F.U., Portsmouth. Run to Lee-on-the-Solent.
July 13.—Wolverhampton M.C.C. Social Run to Stratford-on-Avon.
July 13.—Taunton and District M.C.C. Run to Lyme Regis.
July 13.—Woolwich, Plumstead, and District M.C. Competition for the Mayor of Taunton's Cup.
July 13.—N.M.C.F.U., Portsmouth. Run to witness sunrise on Hindhead; start at 3 a.m.
July 13.—Ilkeston and District M.C.C. Run to Edwinstowe.
July 13.—Rochester, Chatham, and District M.C. Run to Westerham.
July 14.—Troedyrhiw and District M.C. "Dis-arranging" Competition.
JULY 14-15.—M.C.U. OF IRELAND, ULSTER CENTRE. IRISH END-TO-END RELIABILITY RUN.
July 16.—York and District M.C. Reliability Trial.
July 17.—Taunton and District M.C.C. 200 Miles Reliability Trial.
July 19.—Middlesbrough and District M.C.C. Side-car Competition.
JULY 19.—SUTTON COLDFIELD AND MID-WARWICKSHIRE A.C. OPEN HILL-CLIMB AT STILE COP, NEAR RUGELEY.
JULY 19.—BIRMINGHAM M.C.C. MIDLAND CUP TRIAL.
July 19.—Western M.C.C., Glasgow. Week-end Run to Lake District.
July 19.—Manchester M.C. Hill-climb.
July 19.—Edinburgh and District M.C. Race Meeting at Lanark.
July 19.—N.M.C.F.U., Portsmouth. Run to Hunsdon.
July 19-20.—Cumberland County M.C.C., Carlisle. Reliability Trial to Aberdeen and Back.
July 19-20.—N.M.C.F.U., Coventry. Week-end Run through Wye Valley.
July 19.—Middlesbrough and District M.C.C. Side-to Donington.
July 20.—Woolwich, Plumstead, and District M.C. Run to Brighton.
July 20.—Rochester, Chatham, and District M.C. Secretary's Surprise Run.
July 20.—N.M.C.F.U., Portsmouth. Run to Corhampton Downs.
JULY 21-26.—SCOTTISH SIX DAYS TRIAL.
July 21.—Ilkeston and District M.C.C. Reliability Trial.
July 21.—Rochester, Chatham, and District M.C. Run to Whitstable.
JULY 23.—ESSEX M.C. SPEED TRIALS AT SOUTHEND.
July 23.—N.M.C.F.U., Portsmouth. Run to Blindworth Downs.
July 24.—Taunton and District M.C.C. Treasure Hunt.
JULY 25-26.—LIVERPOOL M.C. TWENTY-FOUR HOUR OPEN TRIAL.
JULY 25.—SUTTON COLDFIELD AND MID-WARWICKSHIRE A.C. LIGHTWEIGHT TRIAL FOR CALTHORPE CUP.
July 26.—Western M.C.C., Glasgow. Run to Lake of Monteith.
July 26.—N.M.C.F.U., Portsmouth. Run to Poole Park and New Forest.
July 26.—Public Schools M.C.C. Six Hours Night Reliability Run.
July 26-27.—Wolverhampton M.C.C. Reliability Trial to Aberystwyth for Stevens Cup.
July 27.—Streatham and District M.C.C. Picnic Run to Ashdown Forest.
July 27.—Ilkeston and District M.C.C. Run to Malvern.
Aug. 3.—Cumberland County M.C.C. Social Run.
AUG. 4.—YORK AND DISTRICT M.C. OPEN RELIABILITY TRIAL TO EDINBURGH AND BACK.
AUG. 16.—S.E. COUNTIES INTER-TEAM TRIAL.
AUG. 16.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL.
AUG. 30.—BRISTOL M.C. SPEED TRIALS AT WESTON-SUPER-MARE.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
SEPT. 5.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
SEPT. 15-20.—A.C.U. SIX DAYS RELIABILITY TRIALS.

Coventry and Warwickshire M.C.

An open hill-climb is being arranged by the above club to take place in August.

Nottingham M.C.

The winner of the Dennis Bayley challenge cup in the recent trial has been declared as S. S. Debenham (8 Campion), R. McPherson (Rudge Multi) being second.

Kidderminster M.C.C.

This club has now been revived, and there was a good muster of members for the recent opening run. Local motor cyclists wishing to join the club should communicate with the hon. sec., Mr. C. Brown, 12, Stourport Road, Kidderminster.

The Douglas Club (Nottingham).

The secretary of this club, Mr. Martin J. Wright, invites Douglas owners to join the Douglas club. He hopes to obtain a membership of forty or fifty. The subscription is only a nominal amount, the object being to form a sporting club for riders of Douglas machines.

A Motor Cycling Club for East Berks.

Motor cyclists residing in the districts round Reading, Maidenhead, and in East Berkshire who are interested in the formation of a motor cycling club in that part are asked to communicate with Capt. J. V. Hay, Coruisk, Cookham, Berks, who would like to hear from as many motor cyclists as possible.

York and District M.C.

The reliability trial through Whitby, Saltburn, etc., arranged for Wednesday, the 16th inst., is over a course covering some of the finest moorland, coastal, and dale scenery in Yorkshire.

Several prizes are being offered. Silver cups of different sizes are being given as first, second, and third prizes.

The trial will be open to motor cycles, sidecars, and cars, on equal terms.

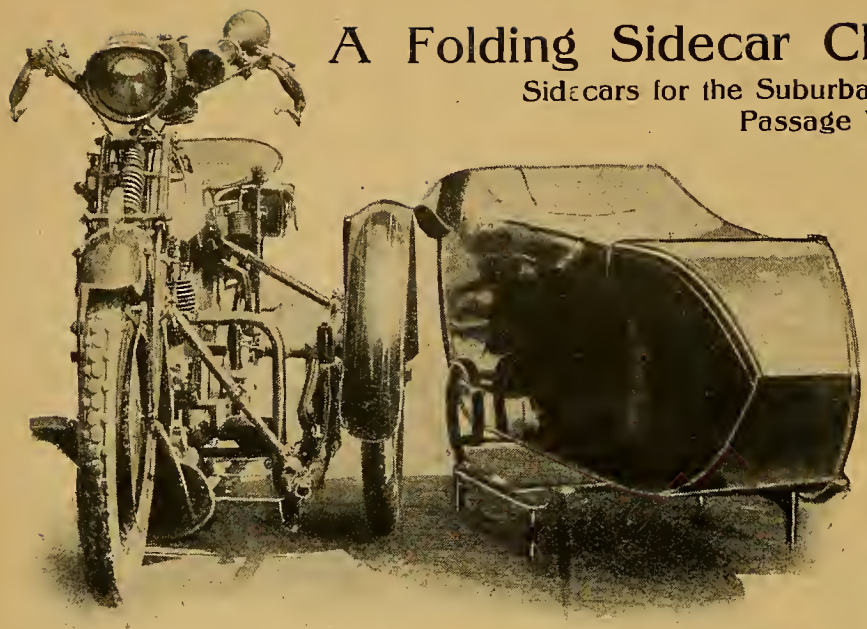
The entry fee, 3s., must be sent not later than Saturday, the 12th inst., to Mr. G. A. Reed, hon. sec., 6, Blake Street, York.

Motor Cycle Club of France.

The Paris-Rheims trial, organised by the Motor Cycle Club of France, was held on the 6th inst., over a distance of 182 miles. Twenty-eight competitors were entered, among them riders of Douglas, Rover, A.J.S., Harley-Davidson, and Excelsior motor cycles. Among the British competitors were Ball, Moffat, and Davis (junr.). The Rover riders were all of French nationality. F. G. Ball and P. W. Moffat rode the Douglas machines on which they competed in the London-Edinburgh run.

A Folding Sidecar Chassis.

Sidecars for the Suburbanite with Restricted Passage Way.



The Hop'ey sidecar, the body of which can be quickly detached from the chassis, the latter being of the folding type.

VERY little has been heard of folding sidecars since the revival of the pastime, and considering the acknowledged difficulty in obtaining garage accommodation, this is perhaps surprising. Usually, folding sidecars are not so pleasing to the eye as to make a strong appeal to the average motor cyclist, but the folding attachment illustrated certainly does not suffer on this score.

It is made by Frederick Hopley, of 38, Upper Highgate Street, Birmingham, and, as will be seen, the body is good design, and is made conveniently to lift off the folding chassis.

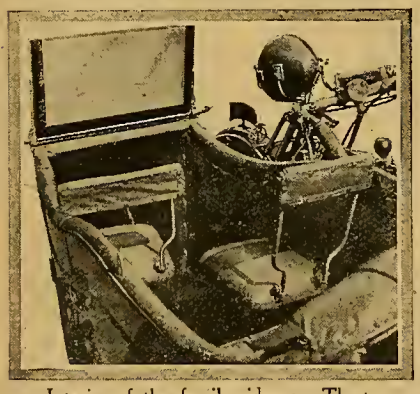
It is claimed that the body may be attached or removed in five seconds, and the chassis folds so that the machine and chassis are only 28in. wide. No nuts, bolts, or screws are used, the body being mounted on a rectangular frame having four vertical members which fit into sockets on the folding chassis, and by so doing lock it. The price, £25, is moderate, compared with the cost of sidecars to-day; or chassis only, less tyre, £12 12s.

The Family Sidecar.

A Handsome Multi-seated Attachment accommodating an Adult and Two Children.

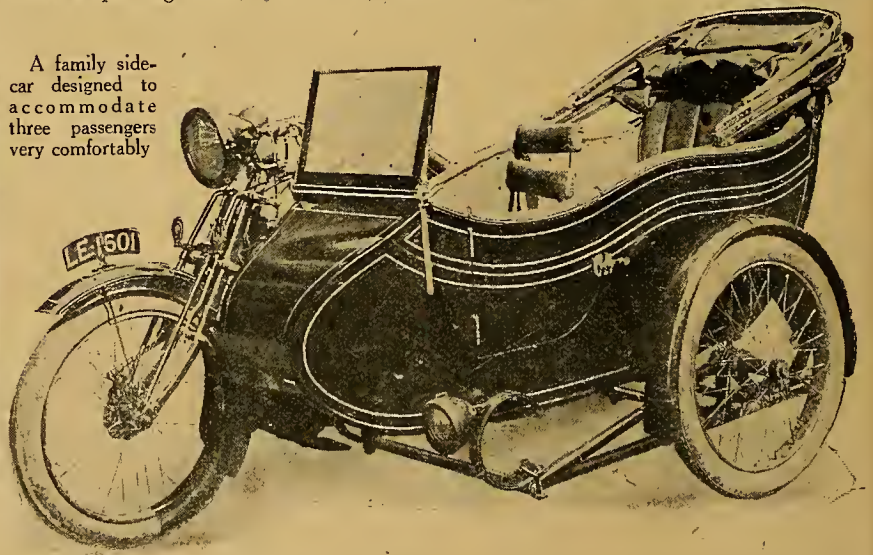
A FAMILY sidecar was recently demonstrated to us by Mr. W. J. Barker, A.M.I.A.E., which has been built by Messrs. Patey and Co., Ltd., Aeronautical and Motor Engineers, of 45, Horseferry Road, Westminster, London, S.W.1.

The body is specially designed for those who wish to take a passenger and two children in the sidecar. It has been built specially wide so as to allow plenty of room, and the seats will fold neatly away, and may be quickly placed in position. When both the small seats are occupied the passenger in the back seat has ample leg room, and Mr. Barker informs us that several very long journeys have been taken with the sidecar fully loaded. The motor bicycle to which the sidecar is fitted is an 8 h.p. Zenith with spring frame, which is quite satisfactory with the heavy load.



Interior of the family sidecar. The two small seats are easily removed, thus allowing plenty of luggage room inside the body when travelling with one passenger.

A family sidecar designed to accommodate three passengers very comfortably



READERS' ROAD REPORTS.

READERS in the Newcastle and Hexham districts inform us that the roads towards the Lake District and Carlisle are, with few exceptions, in very good condition. Newcastle to Heddon-on-the-Wall is bumpy and poor. From Heddon to Hexham is good; from Hexam to Alston fairly good, with some loose stones in parts; from Alston to Penrith good, with one or two short stretches of loose stones; from Penrith to Keswick, good; Keswick to Windermere and throughout the district, in first-class order; from Keswick to Carlisle and Dumfries, good most of the way; Annan to Longtown, fair; Longtown to Brampton, Haltwhistle, Bardon Mill, Haydon Bridge to Hexham, in first-class order.

A WEEK-END TRIAL TO WALES.

LAST week-end the Wolverhampton M.C.C. held a trial to Llandrillo, returning the following day. The start on each day was in the afternoon.

THE MOTOR CYCLING CLUB.

AS previously announced, the M.C.C. hill-climb is to be held on Saturday next, the 12th inst. Competitors should arrive at "The Buckingham Arms," Princes Risborough, at two o'clock. The timekeepers will be Messrs. F. T. Bidlake, A. V. Ebblewhite, and F. Straight. The best road from London is *via* Rickmansworth, Amersham, and Missenden.

THE LANARK RACES.

THE Edinburgh and District M.C. is organising a race meeting at Lanark Racecourse on the 19th inst. Five motor cycle races are included, as follow :

Five miles scratch race for machines up to 400 c.c.

Five miles scratch race for machines up to 600 c.c.

Five miles scratch race for machines up to 1,000 c.c.

Five miles scratch race for sidecars up to 1,000 c.c.

Five miles novice handicap for all classes of motor cycles, confined to Lanarkshire riders.

Three prizes will be given in each event. Full particulars and entry forms may be obtained from Mr. J. Watt Anderson, 6, Castle Terrace, Edinburgh.

AN IRISH TWENTY-FOUR HOUR TRIAL.

THE Dublin and District Motor Cycling Club held its 1919 twenty-four hour reliability trial on Friday and Saturday, the 27th and 28th ult. An entry of twenty-nine was obtained, and included the well-known cross-Channel riders, Hugh Gibson and A. G. Cocks, both of whom were mounted on 1919 model Clynos. The following twenty-seven competitors were despatched from Drumcondra Bridge at 8 p.m. :

W. H. Freeman (7-9 Indian sc.)
Maj. A. Waters (2¼ Triumph).
Dene Allen (3½ Norton).
G. Mayne (7-9 Indian).
T. Browne (2¾ Douglas).
H. Gibson (8 Clyno sc.)
S. J. Redmond (7-9 Indian sc.)
T. Woods (4¼ B.S.A.)
E. B. Russell (4 Triumph).
M. T. Doyle (7-9 Indian).
C. S. Kettle (4¼ B.S.A.)
J. P. Smith (7-9 Indian sc.)
A. G. Cocks (2½ Clyno).
W. J. Chambers (4¼ B.S.A. sc.)
J. P. Frost (2¾ Douglas).
J. A. Skehan (4¼ Campion).
C. W. Johnstone (7-9 Indian).
F. McDonagh (4¼ B.S.A.)
A. Carton (7-9 Indian sc.)
H. McAllester (4 Triumph sc.)
B. O'Brien (2¼ James).
T. Healy (4¼ B.S.A.)
T. Redmond (7-9 Indian).
— Grimes (3½ Norton).
J. White (4 Triumph).
T. Carton (2¾ Douglas).
W. J. Burney (6 Enfield sc.)

The course roughly included the northern half of Ireland, the route followed being *via* Dundalk, Belfast, Derry, Glengesh Hill, Donegal, and Cavan. During the Belfast-Derry portion of the run terrific weather was encountered, rain and gusts of wind alternating during the midnight hours. Many of the entrants went completely off the course, and arrived late (if at all) at the checks. McAllister (Triumph sc.) and T. Redmond (Indian) were among the unfortunates, while T. Carton had the bad luck to injure his controls.

Eighteen competitors arrived on time at Glengesh Hill—the crucial test of the trial—nine making clean ascents, Allen (Norton) and Chambers (B.S.A.) being particularly prominent.

Thirteen competitors checked in on time at Cavan, and the same thirteen signed in at Castleknock, Dublin. They were as follow :

Maj. A. Waters (2¼ Triumph).
Dene Allen (3½ Norton).
T. Browne (2¾ Douglas).
H. Gibson (8 Clyno sc.)
W. J. Chambers (4¼ B.S.A. sc.)
S. J. Redmond (7-9 Indian sc.)
T. Woods (4¼ B.S.A.)
E. B. Russell (4 Triumph).
M. T. Doyle (7-9 Indian).
A. G. Cocks (2½ Clyno).
J. P. Frost (2¾ Douglas).
T. Healy (4¼ B.S.A.)
W. J. Burney (6 Enfield sc.)

THE YORK M.C. OPEN TRIAL.

THE first annual open trial organised by the York and District M.C. will take place on August 4th, when a start will be made from York at midnight, and a return to York the following evening. Competitors will start in pairs at half-minute intervals. Particulars and entry forms may be obtained from the hon. sec., Mr. G. A. Reed, 6, Blake Street, York.

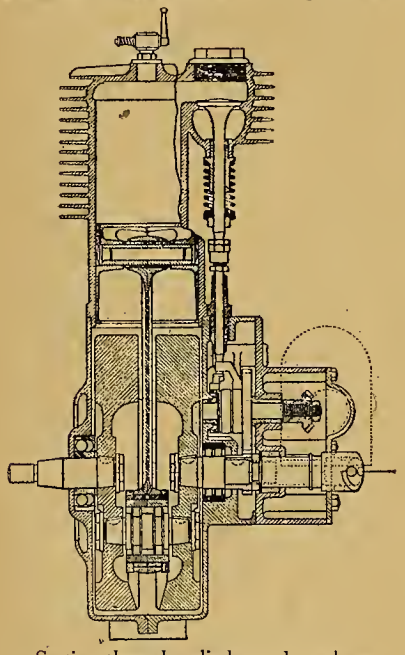
In America the sporting side of motor cycling is more frequently centred in track racing than in trials such as we hold. Pure speed work fascinates the Americans more than reliability, hence the numerous racing tracks in that country. The photograph gives a good impression of a sidecar race held recently in Wheeling, W. Va.

THE PRECISION "BIG" TWINS.

Three New Models:
Air-cooled 8 h.p., 85 × 85 mm., 964 c.c.,
Air-cooled 10 h.p., 85 × 96 mm., 1,096 c.c.
Water-cooled 10 h.p., 85 × 96 mm. 1,096 c.c

THREE new models of V twin engines, which will interest manufacturers of high-powered motor cycles and of cycle cars, have been introduced by Messrs. F. E. Baker, Ltd., makers of the well-known Precision engine units.

Two of the engines are intended for light passenger machines of the runabout type, but the water-cooled 10 h.p. model should be quite suitable for "light" cars,



Section through cylinder and crank case of the cycle car model, showing the magneto drive by bevel gear.

while the smaller unit no doubt will be found on many full-powered motor cycles when the Precision factory once more gets into full swing.

Excepting in size, cooling systems, and the magneto drive, the three engines are identical, and embody an entirely re-designed timing gear. Instead of the two cam wheels of the earlier designs, a single gear wheel is employed, which is integral with the three cams and shaft. One cam operates both exhaust tappets, the inlet valves being served by separate cams.

A Simplified Timing Gear.

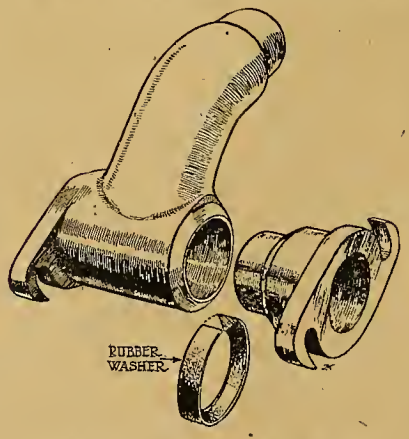
Four rocker levers of sturdy design are used. The two exhaust levers, which are carried on a shaft directly above the cam wheel, give an increase of movement to the tappet over that given by the cam, but the inlets have a direct lift. All rockers have semi-cylindrical ends where they meet the cams.

The exhaust valve lifting mechanism is enclosed in the case, and consists of two small cams, which operate on the undersides of the rockers. These cams are connected by means of levers and a long link, shown in one of the illustrations. The operation is by means of a plunger, which passes through the timing case, and which bears upon a lever actuated by a Bowden wire.

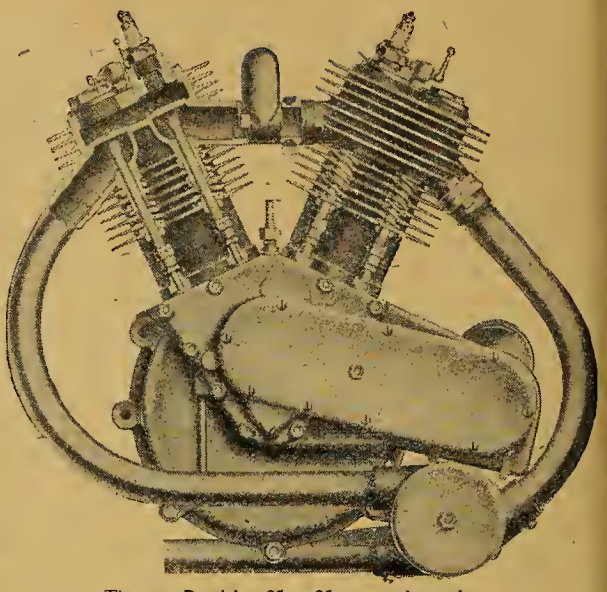
Particularly heavy flywheels are used—a desirable feature in cycle car engines—carried on shafts of ample dimensions. A Skefko radial bearing supports the driving side shaft, while a double row roller bearing is fitted in the timing side. The big end bearing, too, is of the latter type, employing two rows of rollers supporting the forked connecting rod, upon which the other connecting rod works on a phosphor-bronze bearing of good width.

Air Leaks Eliminated.

As on the majority of previous Precision engines, the cylinders of the air-cooled models have radiating fins cast square instead of concentric, which is more general practice. The valves are large and the pockets give an easy sweep for both incoming gas and the exhaust. A feature which will greatly facilitate easy starting and slow running is the "stuffing box" device on the intake valve stems. This consists of a cup having a flange at its upper end and a hole at the base through which the valve stem

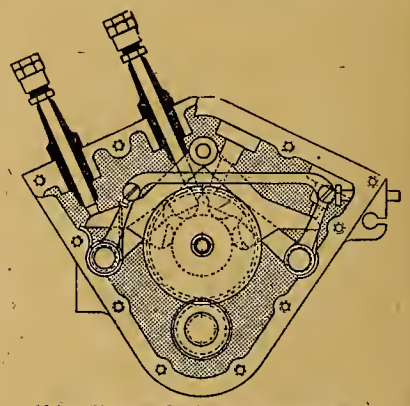


The induction pipe with the V sectioned rubber ring which makes an airtight connection.



The new Precision 85 × 85 mm. twin engine.

works. This is slipped on to the valve guide, and is held in position by the spring which bears against the flange mentioned. Between the lower end of



Valve lifter mechanism and timing gear.

the valve guide and the bottom of the cup there is a space which is filled with asbestos string to prevent air leaks.

Effective Crank Case Release.

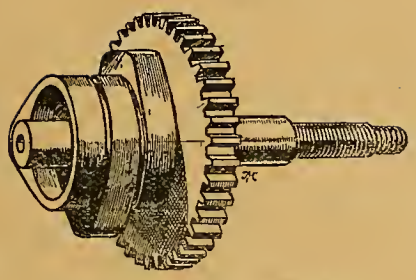
On the cycle car engines, the magneto drive is by means of a bevel gear on the half-time shaft, the magneto being carried on a platform which is cast integral with the timing case cover. The motor cycle model employs chain drive and the platform is also integral with the cover, and is further supported by a bracket which is part of the crank case casting. Lubrication is by splash system, and the crank case is fitted with a simple form of "breather," which consists of a small port, between the crank case and timing case. This is covered, on the upstrokes of the pistons, by a leather disc held in position by a light single leaf spring. The timing case cover has an oil vent which carries superfluous oil clear of the engine.

The induction pipe is quite short, and by means of slotted holes in the flanges

The Precision "Big" Twins.—

may easily be removed. The induction pipe is a casting, having an extension for the carburetter, which curves upwards, and the horizontal portion is made in two pieces, one telescoping into the other, an air-tight joint being made by a V-sectioned rubber ring, which fits into the diagonally cut walls of the pipe, and is held by a hose pipe tension ring. This feature allows the two flanges to be drawn up tightly against those on the cylinders, and air-tight joints can thus be made, which, with the inlet valve guide packings, secure an entire absence of air leaks seldom attained on V twin engines; easy starting and slow running are consequently assured.

There is little of a startling nature in these new model Precision engines, but, produced as they are by a firm of the widest experience, they impress us as being of sound commensense design, and of such construction that there is every promise of great satisfaction on the part of the user. We understand that several manufacturers are interested in the engine, and that shortly Precision-engined "big twins," cycle cars, and motor cycles will be offered to the public.



The half-time wheel with three cams and shaft integral.

Open Reliability Trial for Miniatures.

A Midland Trial for Motor Cycles of Less than 230 c.c.

SINCE a Levis of less than 200 c.c. capacity accomplished everything required of all competitors in the Victory Cup Trial, which included such hills as Rising Sun (Gamble's Lane), near Cheltenham, one may expect little difference in the course chosen for a lightweight trial and that planned for all types of machines. The Sutton Coldfield A.C. is organising a lightweight trial to take place on the 26th inst. for the Calthorpe Motor Cyclette trophy, valued at one hundred guineas. The course, which is not at all severe, will start at the George in the Tree Hotel, Berkswell, at 2 p.m., and will include Kenilworth, Warwick, and Sunrising Hill to Banbury. The return journey will include Edge Hill. On Sunrising there will be a stopping and restarting test on the outward journey, and competitors will be timed on Edge Hill on the homeward route. 200 marks will be credited to each competitor at the start, and deductions will be made for stops *en route* and failures on tests. The schedule time will be worked out at 20 m.p.h. for the orthodox machines; 15 m.p.h. for scooters, if such machines are entered. In addition to the premier award, gold medals will be awarded as second and third prizes, and to all making non-stop runs and obtaining full marks. A special gold medal will be awarded for the best performance on a scooter, if two or more enter. The entry fees are 21s. and 10s. 6d. for non-members and members of the Sutton Coldfield club respectively, and the entries of all competitors must reach the secretary, Mr. F. W. Finnemore, A.C.A., 122, Colmore Row, Birmingham, before Monday, the 21st inst.

Novelty in Competition.

ON the 25th and 26th inst. the Liverpool M.C. will hold an open twenty-four hour trial, starting from three points, *i.e.*, Liverpool, London, and the Midlands. The route will include Warrington, Acton, Tarporley, Whitchurch, Newport, Weston, Brownhills, Castle Bromwich, Stonebridge, Coventry, Daventry, Weedon, Towcester, Fenny Stratford, Dunstable, St. Albans, Chipping Barnet, Oldgate House, Highgate.

Competitors starting from Liverpool will ride *via* Stonebridge to London and back to Liverpool. Midland competitors will start from Stonebridge and ride to Liverpool, then to London, and return to Stonebridge, and the London entrants to Liverpool and back to Highgate, their starting point.

Different coloured number cards will be issued at each starting point to prevent confusion. White for the Liverpool entrants, red London, and yellow Stonebridge. Checks will be at Liverpool, Stonebridge, and London only, but competitors may be timed *en route*; any rider found fifteen minutes ahead of his schedule time will be disqualified.

The timing will be done on the competitors' own watches, which will be sealed, and a start will be made at 9 a.m. from St. George's Hall, Liverpool, Stonebridge Hotel, on the Coventry-Birmingham Road, and the Oldgate Hotel, Highgate. A 20 m.p.h. schedule will be arranged, due allowances being made for the various 10 m.p.h. speed limits to be met with on the route.

Entries close on the 18th inst., and forms may be obtained from the organising secretary, Mr. L. V. Barton, Shaftesbury Hotel, Liverpool.

HILL-CLIMB AT STILE COP.

IF only because it is the first important open hill-climb to be held in the Midlands since the signing of the Armistice, the Sutton Coldfield A.C.'s event on Saturday, the 19th, should attract a good entry. The venue, as before the war, will be Stile Cop, near Rugeley, Staffordshire, and seventeen classes will be catered for as under :

Class 1.—Singles and twins up to 230 c.c.
" 2.—Singles and twins 230 to 275 c.c.
" 3.—Singles and twins 275 to 300 c.c.
" 4.—Singles and twins 300 to 350 c.c.
" 5.—Singles and twins 350 to 500 c.c.
" 6.—Singles and twins 500 to 600 c.c.
" 7.—Singles and twins over 600 c.c.
" 8.—Scooters.
" 9.—Sidecars up to 400 c.c.
" 10.—Sidecars 400 to 600 c.c.
" 11.—Sidecars over 600 c.c.
" 12.—Three-wheelers.
" 14.—Light cars under 1,100 c.c.
" 15.—Light cars 1,100 c.c. to 1,500 c.c.
" 16.—Cars. Open to any member who has never won a prize in any hill-climb promoted by a club.
" 17.—Unlimited motor cars.

A competitor may only enter one machine in each class.

The formula used will be as follows :

$$\frac{\text{Weight}}{\text{Cubical capacity} \times (\text{time})^2}$$

Entry fees for Classes 1 to 12 : 7s. 6d. non-members, 5s. members; Classes 14 to 17 : 21s. non-members, 15s. members.

Entry forms may be obtained from Mr. F. W. Finnemore, A.C.A., 122, Colmore Row, Birmingham.

COAL—ITS WASTE AND POSSIBILITIES.

THE Automobile Association Fuel Department, combined with Messrs. Gaumont and Co., etc., have produced, and shortly will display publicly, a film illustrating most admirably the possibilities of coal if used scientifically. The film opens with a series of pictures of the extravagant, wasteful methods now in general use, then step by step follows out the manufacture of the by-products from coal. Benzole, tar, fuel oil, manure, saccharine, carbolic acid, ammonia, and coke are recovered; from them other things, such as pig-iron and steel, come; and the whole series is illustrated by pictures of battle cruisers, M.L.'s, destroyers, bridges, buildings, and lastly the motor car and motor cycle using benzole. Incidental to the latter is shown the first-aid motor cycle and box sidecar used by the A.A. for taking repair kit to stranded cars. Another scene portrays the scout helping a motorist to find his way in difficult country.

CURRENT CHAT

Times to Light Lamps.

SUMMER TIME.

July	10th	... ...	9.44 p.m.
,,	12th	... ...	9.42 ,,
,,	14th	... ...	9.41 ,,
,,	16th	... ...	9.39 ,,

U.S. War-worn Motor Cycles.

A report from Washington, U.S.A., states that very few, if any, motor cycles will be sold by the U.S. War Department at public sales.

Police Trap.

We have received information of a police trap worked as late as 9.30 p.m., at Cobham, on the road from Wisley Hut leading to the top of Pains Hill. This is the first trap we have heard of worked by the Surrey police for many years.

For Meritorious Service.

Congratulations to R. Bownass—ex-competition rider, who has been awarded the Meritorious Service Medal. Bownass was best known as a rider of Matchless and N.U.T. machines. He joined up in 1915 as artificer, through *The Motor Cycle*, in the Motor Machine Gun Service, and was with the No. 8 Battery, M.M.G.S. For two and a half years he has been a motor cyclist at Headquarters, Boulogne.

Two Hundred A.A. Road Patrols Wanted.

The Automobile Association has immediate vacancies for 200 additional road patrols. Preference will be given to ex-Service men with knowledge of first aid, ability to effect small roadside repairs to cars or motor cycles, and experience in removing and replacing motor tyres. Applicants should write in the first instance to the Road Manager, A.A. and M.U., Fanum House, Whitcomb Street, London, W.C.2, stating age, married or single, and previous experience.

The services of the patrols are widely appreciated. At the present time they are rendering valuable assistance in recovering stolen cars and motor cycles.

The patrols carry "first aid" outfits, and frequently render "first aid" services to the public. One patrol recently saw a child floating down a swiftly running river. He obtained the necessary assistance for rescuing the child, who was brought out of the water unconscious. He then utilised his knowledge of first aid, with the result that the patient was ultimately handed over to her parents little the worse for her adventure.

Trial Regulations on a Postcard.

The York and District M.C. has followed the example set by *The Motor Cycle* staff in the recent private trial, in having the regulations and route card printed for its trial on a card not larger than a postcard.

From an Exile.

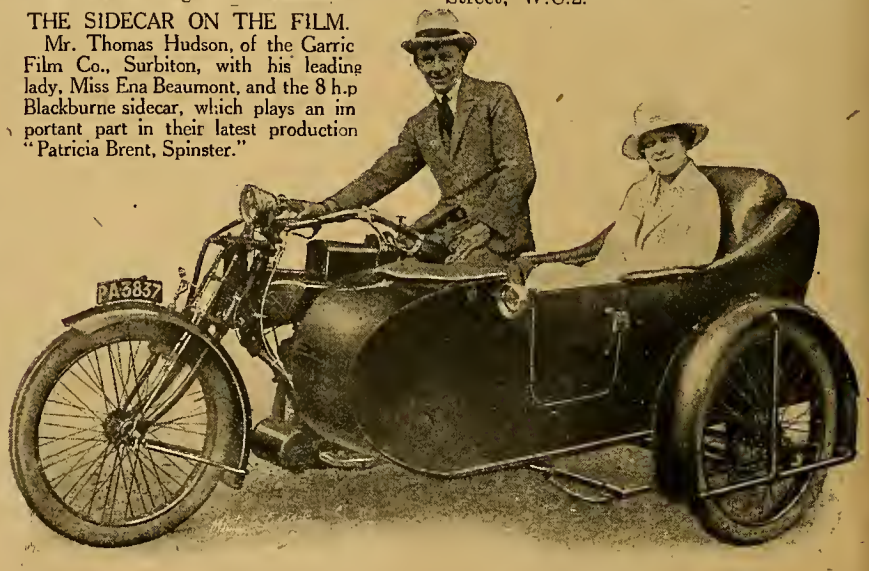
The trials secretary of the Birmingham M.C.C. has just received an entry form for the Easter Victory Cup trial from Cpl. Bourke, D.C.M., M.M., who is exiled in Batoum. Before the war Bourke was a competition rider, and he sent the entry form, together with entry fee (fifty kopecks) "just to keep his hand in."

Ferry Charges.

Our books department have been recently revising a list of ferry charges and tolls in connection with a new edition of *The Motor Cycle* Route Book guide. It is interesting to note that the Southampton, Isle of Wight, and South of England Royal Mail Steam Packet Co., Ltd., of Southampton, in revising their post-war charges for the carriage of motor cycles from Southampton to Cowes (I. of W.), charge five shillings for a sidecar with one seat, and ten shillings for a sidecar with two seats, the pre-war charge for a sidecar being one shilling and one shilling for a motor cycle. The revised charges will probably be of interest to tourists who may be contemplating a trip in the Isle of Wight this summer.

THE SIDECAR ON THE FILM.

Mr. Thomas Hudson, of the Garric Film Co., Surbiton, with his leading lady, Miss Ena Beaumont, and the 8 h.p Blackburne sidecar, which plays an important part in their latest production "Patricia Brent, Spinster."



Special Features.

THE SIDECAR ALTERNATIVE.
THE ARBUTHNOT TROPHY TRIAL.
THE CROSS-HEAD PISTON.

Midland Fire.

The Premier Motor Co.'s premises at Birmingham were burnt out last week.

French Import Tariffs.

The following import tariffs for motor cycles and bicycles have been fixed by the French Customs Authorities: Vehicles under 500 kilos (9 cwt. 3 qrs. 8 lb.) emanating from Europe (exclusive of the enemy countries—Germany, Austria-Hungary, and Bulgaria)—220 francs per 100 kilos (about 9d. per pound), plus 15% *ad valorem*. From U.S.A., 250 francs per 100 kilos (about 10d. per pound), plus 15% *ad valorem*.

Eleven Hundred Firms Supplying Benzole.

The Fuel Department of the Automobile Association and Motor Union have issued a decidedly useful handbook, giving the names and addresses of 1,100 firms stocking benzole. It is classified in geographical sections to facilitate quick reference, and will be appreciated by touring motor cyclists who desire to encourage the production of home-produced fuel. This can be obtained from the A.A. and M.U., Fanum House, Whitcomb Street, W.C.2.

Surrey M.C.C. Reformed.

The above club has been amalgamated with the Farnham and District M.C.C. The opening run will be a reliability trial, Guildford to Exeter, when the Triumph cup for the best performance by a single-cylinder machine will be awarded. The joint secretaries are Messrs. R. W. Watts and A. F. Bateman, Arundel Fairfield, Farnham.

A Redditch Open Trial.

The Redditch and District M.C.C. are organising an open trial to take place on August 23rd, when the B.S.A. challenge cup (value £75) will be the premier award. The Enfield Co.'s inter-team cup, to be won outright, and the Terry cup will also be among the awards. The hon. trials sec. is Mr. F. W. Viles, Headless Cross, Redditch.

Scottish Six Days Trial.

The following entries have been received for the Scottish Six Days Trial first ballot:—

J. A. Newman (3½ Sunbeam)
Jas. Beck (3½ Sunbeam)
A. H. Alexander (——)
H. Macrae (7-9 Harley-Davidson)
C. S. Burney (——)
J. Shepherd (5-6 Campion)
H. Alexander (——)
T. C. De la Hay (3½ Sunbeam)
J. Dudley (3½ Sunbeam)
J. R. Alexander (——)
D. S. Milne (3½ B.S.A.)
R. Spence (4¼ B.S.A.)
D. S. Alexander (——)
Hugh Gibson (8 Clyno)
Frank Smith (8 Clyno)
J. W. Willis (——)
A. G. Cocks (Clyno)
A. F. Knight (Clyno)
J. Robertson-Brown (10 Henderson)
H. Gold (——)
J. S. Holroyd (Blackburne)
P. J. Enticknapp (Blackburne)
T. Lennie (——)
L. B. C. Cunningham (10 Morgan)
J. A. W. Beaton (——)
C. Duncan (2¾ Douglas)
F. J. Hutchison (——)

Appropriate.

All who knew the late Sir Robert Arbuthnot, Bart., K.C.B., M.V.O., agree that last week's trial was one such as would have delighted the sporting admiral. Moreover, the trophy has been won on one of his favourite mounts.

Indian Prices.

We are in receipt of a leaflet referring to the latest model Indian Powerplus sidecar. In it the prices for 1919 are given; motor cycle only, £128; with sidecar, £158; sidecar only, 30 gns. The Hendee Manufacturing Company state that they hope to be able to maintain these prices throughout the season, but it must be understood that orders are only accepted subject to machines and sidecars being supplied at prices ruling at the time of delivery.

Irish Twenty-four Hours Trial.

The Committee of the Dublin and District M.C.C. has made the following awards in connection with its twenty-four hours trial mentioned on page 37:

SPECIAL GOLD MEDALS.—J. Brown (2¾ Douglas), Hugh Gibson (8 Clyno sc.), T. Woods (4¼ B.S.A.), E. B. Russell (4 Triumph), and J. Healy (4¼ B.S.A.).

CLUB GOLD MEDAL.—W. J. Chambers (4¼ B.S.A. sc.).

SILVER MEDALS.—Dene Allen (3½ Norton), J. P. Frost (2¾ Douglas), S. J. Redmond (7-9 Indian sc,), and A. G. Cocks (2½ Clyno).

SPECIAL AWARDS.—Unlimited sidecar prize: Hugh Gibson (8 Clyno), Hutchinson gold medal. Lightweight prize: Maj. A. H. Waters (Baby Triumph), club gold medal. Passenger machine under 600 c.c.: W. J. Chambers (4¼ B.S.A. sc.). Team prize: B.S.A. team (Messrs. Woods, Healy, and Chambers).

Edinburgh M.C. open hill-climb at Reastone Rigg on Saturday. A. H. Alexander (7 h.p. Indian), who made fastest climb of the day.

Speed Judging.

The Coventry and Warwickshire Club held a paperchase and speed judging competition last Saturday in which twelve riders competed. The first prize in the solo class was awarded to G. White (4 Triumph); sidecar class, H. Nelson (Rudge sc.); car class, M. Anderson (10 Humber).

Fire in Motor Cycle Works.

We learn that, in spite of the fire (see previous page) at the Premier Motor Co.'s premises recently, no delay will occur in the delivery of new machines to those who have booked orders. Spare parts, however, cannot at present be supplied for Rex-Jap machines, nor any repairs undertaken.

The War Motors Association.

In the issue of the 26th ult. we gave some particulars regarding the War Motors Association, 240, High Holborn, London, W.C.2, and we now learn that Mr. A. Armitage, a member of the committee of the R.A.C., and a gentleman who has long been connected with the automobile movement, has accepted the chairmanship of the Executive Committee of this body. Mr. Armitage is also the Chairman of the Central Committee for the Employment of Discharged Soldiers and Sailors, a body working in connection with the War Motors Association.

We talked over the work of the War Motors Association with Mr. Armitage recently, and he told us that the Association was doing an exceedingly good work, in that it was seeing that discharged service men could get motor vehicles necessary for their businesses at extremely moderate prices. The ordinary reader knows well enough the difficulty of purchasing a motor bicycle at the present time, and any scheme which will help the ex-service man to purchase a mount at a reasonable figure is deserving of every encouragement. The difficulty at the present time seems to be that of persuading the authorities to get on with the repairs of Army motor cycles with the utmost possible speed, as the demand for them is quite extraordinary. Until recently, some 2,000 applications had been received through the A.C.U. from ex-service men for Government machines.

So far, the authorities have decided to allot 25% of the vehicles at their disposal to the War Service Association, and under this arrangement the demand considerably exceeds the supply. The scheme, however, is an excellent one, because it enables the Government to get rid of its numerous unwanted motor cycles in a simple manner, and at small expense, as the cost of an auction and the cost of printing numerous catalogues and extensive advertising is saved.

We were told by Mr. Armitage that the machines are sold at their present ordinary value, not the inflated present market value, and only a small commission (2½%) is charged for administration expenses.

A Side Show.

Last Saturday the A.C.U. officials at the Arbuthnot Trophy Trial were shown over a submarine by Lieut. G. P. Glen Kidston, R.N., one of the competitors, who, during the war, served in this class of vessel.

THE ARBUTHNOT TROPHY TRIAL.

First A.C.U. Two Days' Naval Event a Success.

FIRST DAY.—Circular Run from Plymouth, 125½ Miles.

Plymouth, July 4th, 1919.

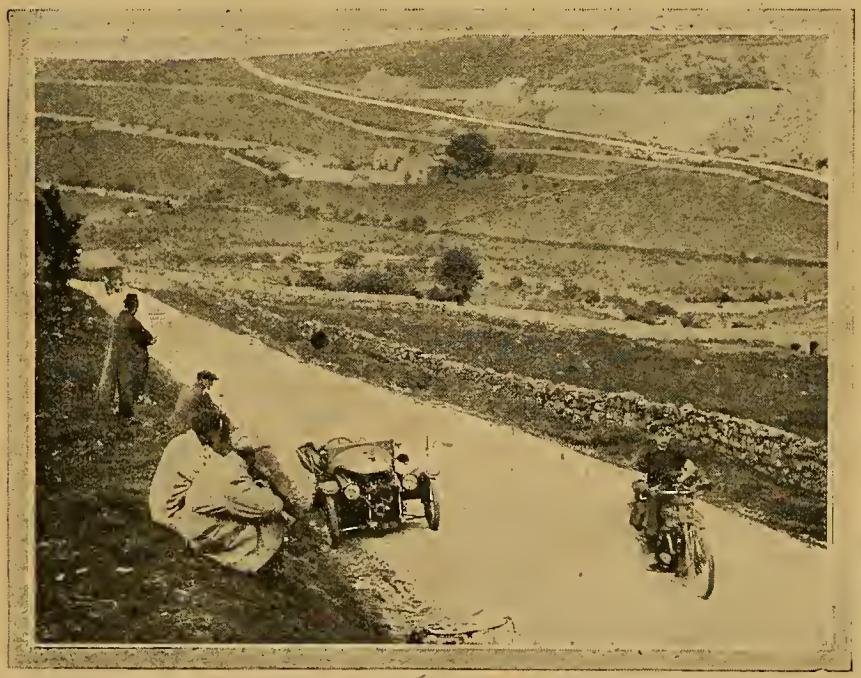
THE Arbuthnot Trophy, a statuette of the late Rear Admiral Sir R. K. Arbuthnot, Bart., executed by Lady Scott, is put up for competition amongst naval officers by the Auto-Cycle Union as a memorial of his gallant death in the face of a vastly superior force of the enemy in *H.M.S. Defence* during the early stages of the Jutland battle. The holding of this competition was first suggested by a member of the staff of *The Motor Cycle*. This is, of course, the first occasion of this trial being run, and it seems rather disappointing that, from the hundreds of officers of the Royal Navy, only twenty-two figured in the programme. The reasons for this are several. For some cause or other the nature of the trial does not appear to have been fully realised by naval officers. The mention of the trial in Admiralty orders was a trifle late, the holding of the trial so near to the signing of peace caused some difficulty in getting leave. Of the competitors, Major W. P. Arbuthnot, R.M.L.I., was a cousin of the late Sir Robert, and entered, so he told us, for the "honour of the family." Lieut. Terence Back, R.N., was nephew of the late Captain Back, R.N., who perished in *H.M.S. Natal* owing to an internal explosion with all on board. Sub-lieut. C. P. Glen-Kidston, R.N., served with Sir Robert in *H.M.S. Orion*, as a midshipman. There were six non-starters, and of these Lieut. H. C. Dains, R.N., had a fall on the way down to Plymouth on Thursday, and was too much shaken to ride.

Lt. W. Derek-Stephens (2¾ h.p. Douglas) and Sub.-Lt. C. L. Laurie (P. and M.) on a hill near Huccaby

The Start.

The start, at one-minute intervals, commenced at 9 a.m. from Andrews's Garage in perfect weather, and a different order of starting was instituted after lunch the first day, next morning, and after lunch the second day. The first early stage of the trial presented no difficulties, and starting early on a new make of two-stroke, complete with clutch and kick-starter, the 2¾ h.p. Villiers engined Ruffles, we made a good run to Merrivale, where we stopped each competitor and gave him his instructions as to the consistent driving test. Each man had to descend from this point to Mr. Loughborough, who sent him off when the road was clear. His time was taken from the crest of Merrivale Bridge, and his speed to a certain tarred line some way up the hill had not to exceed 10 m.p.h., while the remainder of the course, up to a flag almost on the summit, had to be covered at a speed of not less than 15 m.p.h. The same procedure is followed to-morrow, and the competitor who most nearly repeats his previous day's performance will be adjudged to be the winner. Even at this early stage of the trial some incidents had taken place.

Lt. Marriott (Norton) arrived with his face bespattered with oil, as he had forgotten to screw up the oil tank filler cap. Early among the competitors there arrived the Rev. E. P. Greenhill in one of the 1920 Matchless sidecar outfits, with C. E. Cuffe (a pre-war trials competitor) as passenger. Mr. A. V. Ebblewhite, who was a passenger in Mr. Loughborough's Morgan, took the times.



Sub-Lt. R. N. Everett (4 h.p. Triumph) in the consistent driving test on Dartmoor.

Across the Moors.

Beyond Two Bridges the course followed was towards Ashburton and on to Hexworthy (Huccaby in the programme), where three moor gates had to be opened. Plenty of sheep and cattle were encountered on different parts of the course, and near the last-mentioned point. Immediately after, followed one of the trickiest parts of the course, which was encountered in the Holne Chase district. This was a V bend, followed by a pitch of 1 in 6, which spoiled the hitherto clean sheets of several of the competitors.

Near Bovey, Sub-Lt. Pollock (Harley-Davidson) completely smashed up his mount on a down grade through the brakes failing to act. Fortunately, he

An involuntary stop on the moors near Holne.

escaped without injury. This news was brought by Rex Mundy, who was driving a Matchless outfit, and was supervising the arrowing of the course. Onwards from Moretonhampstead to the luncheon stop at Exeter all was plain sailing.

After lunch the road was rough and rutty, and there was an exceedingly tricky section between Tedburn St. Mary and Moretonhampstead. This consisted of Brook Hill, which necessitated the negotiation of a watersplash, a long steep ascent from Clifford Bridge, and a precipitous and very tricky descent with very rough surface before the main road was reached.

At Two Bridges we found Lt. Hamilton (Levis) in trouble with his rear tyre, while Lt. Thompson (P and M.) reported that he had retired owing to lubrication difficulties. More hilly country was encountered near Chagford, while the road near Lee Moor Clay Works was distinctly greasy. Here Lt. Derck-Stephens (3½ h.p. spring frame Douglas) had a bad side-slip, which was hard luck, as he damaged his footrest. This he was allowed to have made usable.

The following are the first day's results:

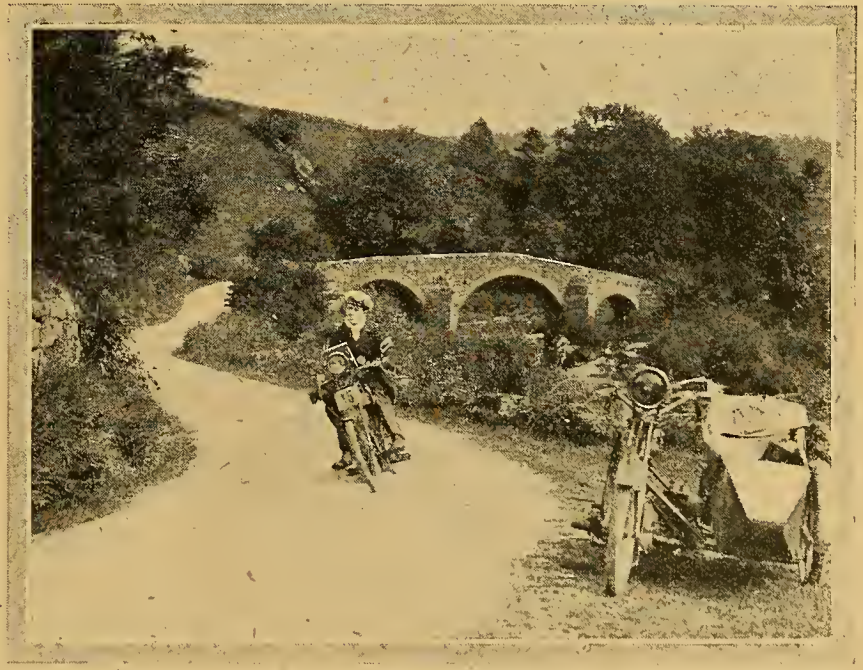
1. Sub-Lt. G. S. M. Pollock, R.N. (7-9 Harley-Davidson), retired, brake failure.
2. Maj. W. P. Arbuthnot, R.M.L.I. (6 Enfield), retired, lost way.
3. Sub-Lt. R. N. Everett, R.N. (4 Triumph), one stop.
4. Lt. Marriott, R.N. (4 Nortoo), one stop, failed Merrivale.
10. Lt. H. T. Back, R.N. (4 Triumph), non-stop.
11. Lt. C. J. M. Hamilton, R.N. (2¾ Levis), retired, puncture.
12. Lt. W. W. Jacomb, R.N. (5-6 James), 36m. late.
13. Sub-Lt. W. S. Jameson, R.N. (2¾ Diamond) one stop.
14. Lt. E. S. K. Evans-Greaves, R.N. (4 Triumph), non-stop.
15. Sub-Lt. C. P. Glen-Kidston, R.N. (3½ Sunbeam), non-stop.
16. Lt. W. Derek-Stephens, R.N. (3½ Douglas), two stops.
17. Sub-Lt. C. L Laurie, R.N. (3½ P. and M.), two stops.
19. Actiog-Lt. A. G. Elliot, R.N. (4 Douglas), four stops.
20. Lt. D. S. E. Thompson, R.N. (3½ P. and M.), retired, left route.
21. Lt. J. S. Bethell, R.N. (2½ Allon), retired, broken chain.
22. Engr.-Lt. B. Collinson, R.N. (2½ Allon), nine stops.

SECOND DAY.

This morning we waited to see the start, which was worth while, as for the first time in an A.C.U. trial the competitors were not allowed to run their engines before starting the day's run; consequently it was interesting to see how they would behave. Sub-Lt. Jameson's J.A.P.-engined Diamond started very easily. One of the favourites, Lt. E. S. K. Evans-Greaves, started with a very soft rear tyre, which had to remain soft till the end of the run. His engine was very stiff, but fired after a few attempts with the starter pedal. Eng.-Lt. Collinson's Allon fired very promptly, while Sub-Lt. Everett's Triumph started at the second kick. This officer, who looked, and probably was, the youngest competitor in the trial, stood a good chance in the early stages of having a clean sheet, as he rode consistently and well, but he made one mistake to-day; he took a corner too fast, and ran into the bank. Sub-Lt. Glen-Kidston (Sunbeam), a hot favourite, made a good start, as did Sub-Lt. Laurie (P. and M.). These two were notable as the only officers to ride in uniform. Lt. Terence Back (Triumph), the third favourite, started his engine after about the third attempt. Acting-Lt. A. C. Elliot (4 Douglas) returned to the garage a few minutes after he had started. The fibre shoe of his back brake swelled, and locking the back wheel on two occasions caused a couple of violent skids. This occasioned his retirement.

Stiff Gradients.

The gem of the morning proved to be Denham Bridge, a steep hill with a fairly good surface and a gradient of about 1 in 4½. It was somewhat like the Clifford Bridge Hill in yesterday's run. Most of the survivors made good ascents. The next portion of the journey included the ascent of Gunnislake Hill, on the main Bodmin road. This is an interesting ascent, and it is probably the longest on any main road in England, and is as steep as 1 in 5-6 on the stiffest portion. Needless to say, it caused no trouble to the survivors' machines, as it is well within the capabilities of the modern motor bicycle. Near Looe some steep hills had to be climbed; their surface was good, but on the summit of one there was a short patch of real grease, which fetched Laurie off his machine—his second fall that morning.



Sub.-Lt. G. P. Glen-Kidston (3½ h.p. Sunbeam), snapped on a pretty section of the course between Two Bridges and Huccaby.

The Arbuthnot Trophy Trial.

At lunch at the Royal Hotel, Bodmin, it was certain that the trophy would go to one of the two Triumph riders, Greaves or Back, and, provided neither had a stop, the award rested on the performance of the two in the consistent driving test. This afternoon's route lay over easy country, and only one tricky little hill was encountered out of Tavistock. After a splendid run from Bodmin we came upon the leaders, and were almost within hale of Merrivale, where the deciding test was to be held, when just on the moors our petrol supply gave out, but just afterwards a good Samaritan came along in a pony cart and asked our trouble. On hearing of our empty tank he volunteered to drive home and get the much-needed fuel, and in half an hour he returned mounted on the pony and with a two-gallon tin of benzole slung round his neck. We then set out for Plymouth through Horrabridge, and met the competitors again at Yelverton, whence they proceeded to the last check after a long down-hill run.

So ended one of the best and most sporting trials ever organised, a trial which was highly appreciated by the competitors and organisers The former, as one would anticipate, were the best sportsmen it was possible to find. Several were complete novices, and yet not one of them complained of the task set him—a task which was harder perhaps than was reasonable. Still, the survivors have the satisfaction of having come through a trial worthy of the most skilled experts.

The consistent driving test worked well, and is a happy solution of the difficulty of finding a winner It is fairer than the objectionable secret check, which is un-English. It was exceedingly difficult for a competitor to repeat his performance on the second occasion.

RESULTS.

1. Lt. E. S. K. Evans-Greaves, R.N. (4 Triumph), winner of Arbuthnot Trophy, silver medal, and special award offered by the M.C.C., no stops and fifth best performance in the C.D.T.*
2. Lt. Terence Back, R.N. (4 Triumph), silver medal, no stops and seventh best performance in C.D.T.
3. Sub-Lt. R. N. Everett, R.N. (4 Triumph), one stop and best performance in C.D.T.
4. Lt. Marriott, R.N. (4 Norton), one stop and second best performance in C.D.T.
5. Sub-Lt. G. P. Glen-Kidston, R.N. (3½ Sunbeam), one stop and ninth best performance in C.D.T.
6. Lt. W. Derek-Stephens, R.N. (3½ Douglas), two stops and third best performance in C.D.T.
7. Sub-Lt. W. S. Jameson, R.N. (2½ Diamond), three stops and sixth best performance in C.D.T
8. Sub-Lt. C. L. Laurie, R.N. (3½ P. and M.), four stops and eighth best performance in C.D.T.
9. Lt. W. W. Jacomb, R.N. (5-6 James), two stops and fourth best performance in C.D.T., but 36m. late in on Friday.

*C.D.T.=consistent driving test.

Glasgow M.C.C. Open Twelve Hours' Trial.

A Disappointing Event.

FOR their twelve hours' open trial, last held in 1914, the Glasgow club originally intended to go further afield than usual, and include in the route a part of the course to be covered by competitors in the forthcoming Scottish Six Days. It was ultimately decided, however, to revert to the 1914 course.

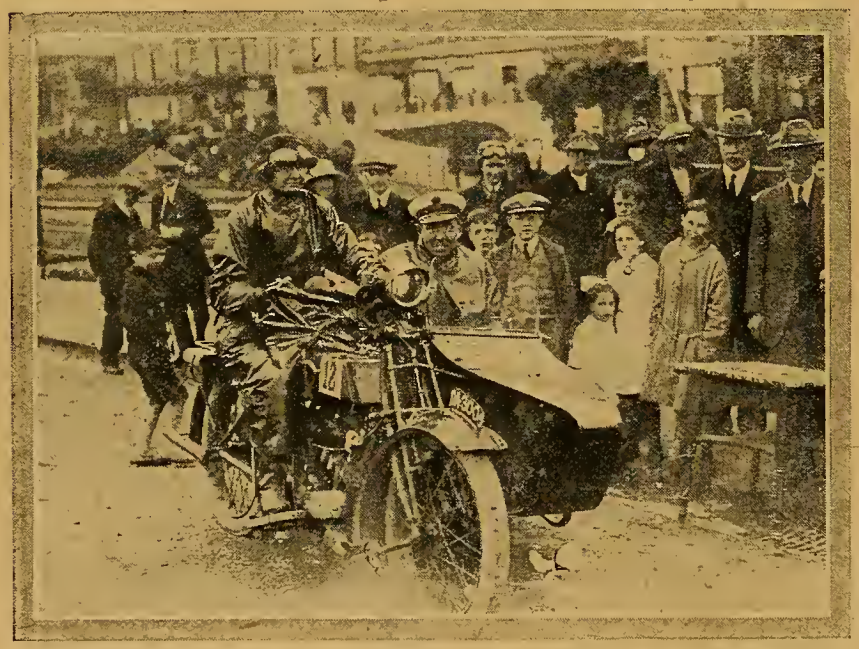
Whether it was due to the holiday season, or the counter attraction of the Edinburgh M.C. hill-climb, is hard to say, but only the very poor entry of fifteen, including a lady driver of a sidecar outfit, had been received by the secretary up to the time of starting.

The first part of the journey was comparatively easy, and the majority checked in at Arrochar to time. B. R. Parsons, who essayed to take a 2¾ Douglas sc. round the route, had a mix-up with a hay cart in Bonhill and retired.

Mrs. D. Bell (6 A.J.S.) put up a good show, and handled her machine with skill on the hairpin.

Just after leaving Otter Ferry all the riders left in the event went off the course, and found themselves in a farmyard. After losing valuable time, they regained the correct route, and proceeded to Dunoon. Needless to say, the road for the last few miles to this check was fast, but none of the riders checked in to time. Nine competitors arrived at this point, and complained of the lack of arrowing, etc.

All interest had completely evaporated, and several of the riders decided to go no further, preferring the joys of Dunoon to the more strenuous work of the trial. Of the six riders who left after the lunch interval, the following checked in at the finish: W. Deans (3½ Ariel), D. S. Alexander (8 Enfield sc.), Mrs. D. Bell (6 A.J.S. sc.), and I. Bell (6 A.J.S. sc.)



Glasgow M.C.C. open twelve hours reliability trial on Saturday last. Mrs. Bell (6 h.p. A.J.S.), only lady competitor, checking in at Dunoon. She was one of the four competitors to finish and made a very good performance.

M.C. and A.C. "Long Day" Trial, June 26th.

RESULTS.

THE JORDISON TROPHY FOR PASSENGER MACHINES.—L. Newey (4¼ Ariel).

GOLD MEDALS IN PASSENGER MACHINE SECTION.—F. W. Giles (6 A.J.S.), J. Stevens (6 A.J.S.), L. Newey (4¼ Ariel), and H. B. Denley (8 Morgan).

SILVER MEDALS.—F. Smith (8 Clyno), 95 marks; J. E. Greenwood (8 Sunbeam), 92 marks; F. J. Watson (3½ Ariel), 90 marks; and J. L Stocks (6-7 Ariel), 92 marks.

"THE TRADER" TROPHY IN SOLO SECTION OVER 350 C.C.—G. E. Stobart (4¼ James).

GOLD MEDALS IN SOLO SECTION OVER 350 C.C.—G. A. Strange (5-6 James) and H. Stretton Ward (4 Triumph).

SILVER MEDALS.—A. J. Dowler (3½ Sunbeam), 95 marks; J. A. Watson Bourne (4 Blackburne), 90 marks; J. Dudley (3½ Sunbeam), 97 marks; H. Minton (4 Norton), 92 marks; J. A. Newman (3½ Sunbeam), 92 marks; T. Peck (3½ Ariel), 92 marks; and G. Dance (3½ Sunbeam), 98 marks.

CLUB PRIZE.—T. Peck (3½ Ariel), 92 marks.

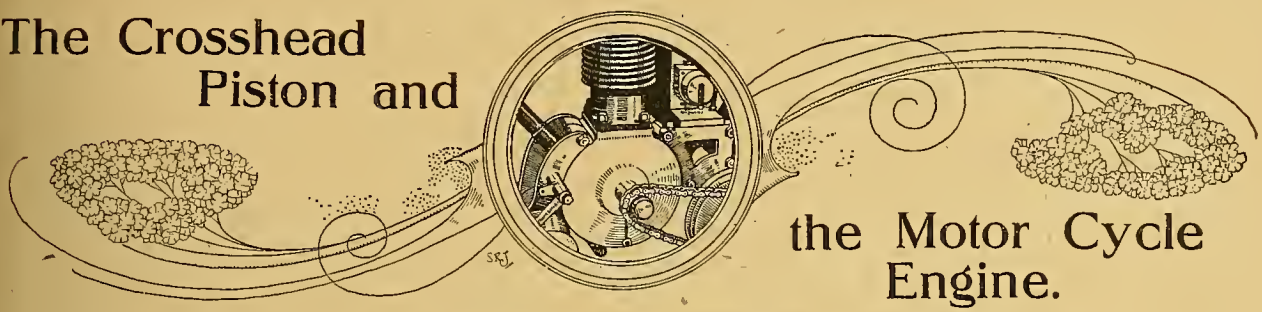
THE "B.N." BOWL FOR LIGHTWEIGHTS 350 C.C. AND UNDER.—Eric Williams (2¾ A.J.S.).

SILVER MEDALS.—H. Newey (2¼ Levis), 90 marks; A. H. Johnson (2¾ Allon), 90 marks; and W. R. Gibb (2¾ Douglas), 92 marks.

SPECIAL PRIZE FOR LIGHTWEIGHT MACHINE UNDER 275 C.C.—H. Newey (2¼ Levis), 90 marks.

The winner of the premier award—the M.C. and A.C. trophy—for the best performance of the day has not yet been decided.

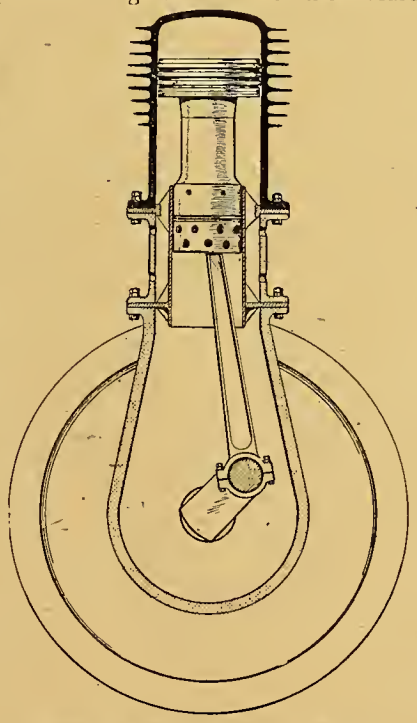
The Crosshead Piston and the Motor Cycle Engine.



An Epoch in the Progress towards the Ideal Machine.

PRACTICE has conclusively confirmed the theory on which the design of the Ricardo crosshead piston is founded, so that there is no need to labour the latter side of the question. It will suffice to summarise the points in which the great advantage is found before considering the applicability of the device to the engine of the motor cycle. The general idea may be outlined as follows:

In place of the usual combined piston and guide (ordinarily the "skirt"), a piston head is constructed of just sufficient depth to take the rings. This is attached to a stem of much smaller diameter, which joins it to the crosshead or guide. The crosshead normally works—*i.e.*, reciprocates—in a sleeve, and so keeps the head in line and prevents any side pressure on the cylinder walls. Advantages directly accruing from this are great reduction in internal friction (piston side pressure causes 80% of the internal friction with the ordinary forms of piston), better cooling and lubrication. These facts have been demonstrated over and over again, and the idea is decidedly not new. Automobile engines with crosshead pistons have been successfully used for tanks and other purposes, so that the theory is fully borne out in practice. Why then is not this type of piston more generally used—particularly with regard to motor cycle engines? The answer may be found in several reasons. First, the crosshead piston is of necessity longer than the ordinary type, which, of course, means a taller engine; secondly, the advantages may not be fully realised by designers who have become so used to the old type which gives a reasonable amount of satisfaction, besides which they fear problems of weight, balance, and complexity; and, lastly, the necessary radical alteration in the designs of years which would be inevitable, and is not favoured by the makers.



Being to scale, this section gives some idea of the proportions of a crosshead-pistoned engine.

Fortunately all these objections can be overcome, although *practically* the process may be a long one, and at present we need a bold pioneer who will put conventional methods and ideas aside, and give the proposition a proper trial

On paper, at all events, there appears to be every prospect of success for the pioneer.

Comparative Size.

An ordinary 3½ h.p. air-cooled four-stroke motor cycle engine with an outside flywheel measures approximately 20in. from the base of the crank case to the top of the cylinder casting. An engine constructed with the Ricardo piston and an outside flywheel, with a stroke of 88 mm., would only be 22in. from the flywheel rim to the top of the cylinder

We see then that the crosshead piston necessitates an engine but slightly longer than one with the skirted piston. The engine could, of course, be inclined similarly to the P. and M. power unit, and in such a position it should not at all detract from the appearance of the machine as a whole, or accommodated similarly to the 750 c.c. Rudge. This latter engine, with *enclosed* flywheels, is 2ft. over all.

Reciprocating Weight.

By far the greatest majority of crosshead pistons constructed so far have been of aluminium, and it is rather surprising to know that they are actually lighter than the ordinary trunk piston, so that they cannot be condemned on the score of excessive weight. At the same time it must be recalled that the principal reason why a heavy piston entails low mechanical efficiency is not, as is so often supposed by the non-technical reader, due to the increased loading on the connecting rod bearing, which is relatively light, since a large proportion of the inertia stresses never reach this bearing. As a matter of fact, it is the inertia forces which constitute a very great deal of the loading of the piston on the cylinder walls, and therefore of piston friction. In the crosshead piston, of course, this loading is transferred from the piston head to the amply proportioned crosshead, which works under ideal conditions of temperature and lubrication. The swept portion of the cylinder, and the piston head too, are adequately lubricated and internally cooled, so that deposit of carbon is practically impossible.

The Crosshead Piston and the Motor Cycle Engine.—

A comparison of the piston weights is given in the following table, taking the three types of piston in aluminium, and the ordinary cast iron piston.

	Aluminium Slipper Piston.	Aluminium Crosshead Piston.	Aluminium Trunk Piston.	Light Cast-iron Piston.
Weight, with gudgeon pin, rings, and crosshead sleeve	0.7 lb.	1.0 lb.	0.95 lb.	1.65 lb.
Weight of total reciprocating mass	1.0 lb.	1.3 lb.	1.35 lb.	2.05 lb.
Weight of total reciprocating mass per sq. in. of piston area	0.079 lb.	0.102 lb.	0.107 lb.	0.163 lb.

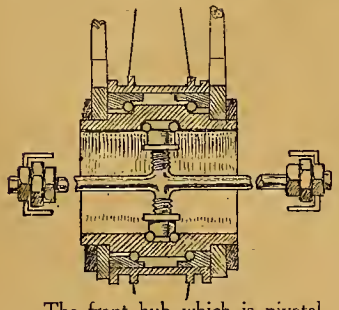
The figures are taken from actual samples in use, and are not theoretical. Of course, the weight of the piston alone is immaterial. It is the weight of the total reciprocating mass which has to be taken into account, and here the crosshead piston scores. A short floating gudgeon pin is used, and as the load is transmitted at points as close together as possible, the tendency to bend the gudgeon pin is reduced, and a shorter and smaller connecting rod small end bearing and gudgeon pin can be used with consequent weight economy.

What will most interest the motor cyclist, however, is a statement of the advantages of this type of engine over the ordinary kinds. First of all, the engine is much smoother running, and is so well cooled internally that overheating and seizing up should be impossible. This would apparently point to the engine being one of the slogging hard-pulling type, most suitable for sidecar work. By the lubrication system great economy of oil is obtained. As stated previously, the mechanical losses are much reduced, which means more power at the road wheel, and should result in a reduction in the fuel consumption. A great point in favour of the adoption of the crosshead piston is that it is a mechanically sound job, which should appeal to the idealist, then the great mechanical saving should recommend it to the engineer, even when the slight extra cost is taken into account. The more one thinks of the advantages of this piston, the more does one become convinced that the day of the old piston is gone if the motor cycle of the future is to be a truly mechanical job. MASCOT.

A Design Eliminating Bicycle Practice.

A Simple Single-track Machine on "Car" Lines.

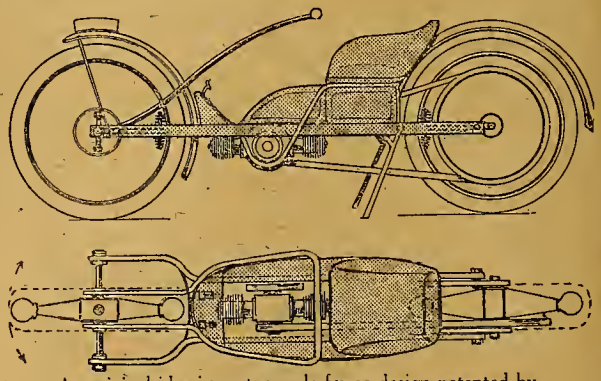
THROUGHOUT the evolution of the motor cycle many attempts have been made to design a single-track machine following car rather than cycle lines. We have from time to time illustrated several examples of such vehicles produced or designed in this country and the United States.



The front hub which is pivotal at the centre of a fixed solid axle.

The accompanying illustration depicts another British design, patented by Mr. L. Graeme Roberts, of Lewes, Sussex, which, it is claimed, gives the rider complete protection all weathers, by means of an "apron" formed by a double steering arm.

It is proposed to construct the frame of two side members of channel steel running from axle to axle, both wheels being sprung. The front wheel has a pivotal hub on a fixed solid axle, and is moved by two steering arms shown in the drawing.



An original idea in motor cycle frame design patented by Mr. L. Graeme Roberts, of Lewes.

Obviously the illustrations are not drawn to scale, and we think that with wheels of conventional size, the wheelbase would be unduly long. The steering, too, might be difficult to get accustomed to. However, the design is interesting as an attempt to get away from ordinary bicycle practice, but only an actual demonstration can decide its practicability.

THE PARIS SHOW.

THE fifteenth International Paris Automobile Show will be held from October 9th to 19th, this year, under the presidency of Baron Charles Petiet. At this exhibition there are usually a number of motor cycle exhibits, which are conveniently stalled, owing to the enormous accommodation of the Grand Palais, under the same roof as the cars.

Certain regulations have been added to those of previous years, which forbid the reception of exhibits by enemy countries, while it is pointed out that exhibitors of allied nations or nations associated with France during the war will be received on the same terms as those of French nationality if they have already taken part in three Paris shows, and provided the Customs duty in their country on French vehicles before August 1st, 1914, was not above 15% *ad valorem*, or the equivalent value. It is also pointed out that the cost of stands, suitably furnished, will be considerably raised. The Commissary-General is M. H. Cézanne, 51, Rue Pergolese, Paris.

LETTERS to the EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address

THE £100 RUNABOUT.

Sir,—Our attention has been drawn to the fact that the suggested name for the lightweight car designed by Mr. G. Slater Booth, of St. Alban's Road, Bristol, and for which we are the sole concessionnaires, has already been protected by the Aero-Car Engineering Co. We hasten to inform your readers that the name shall be changed forthwith, and we gladly express our regrets to the Aero-Car Engineering Co. for the oversight.

BEAUFORT MOTOR AGENCY.
(FRANK BOLWELL.)

GOVERNMENT MOTOR CYCLES.

Sir,—I notice amongst your chat paragraphs on June 26th (page 649) reference to the number of motor cycles purchased by the Government during the war.

These figures appear very short of the actual numbers, despite the official source. In our case alone, it is quite accurate to say that the number of Douglases supplied to the War Office and Admiralty was over 25,000; in fact, considerably more than the total of all makes, according to the figures in your paragraph. DOUGLAS MOTORS, LTD.

AGENTS CHARGING FOR CRATES.

Sir,—You recently published some correspondence relative to agents charging for crates when selling new motor bicycles.

We, as Douglas agents, have consistently charged for crates. In the first place they are non-returnable, and, secondly, the figure at which they are charged to us is very high indeed, and we consider we are justified in our action. Furthermore, in order to know exactly our position, we wrote Messrs. Douglas, Ltd., and they informed us that not only were we absolutely in order in charging for the crate, in addition to the price of the new machine, but we were also in order in charging carriage from Bristol to Cambridge.

ROBINSON'S GARAGE,
H. ROBINSON.

THE PETROL RING AGAIN.

Sir,—A few days ago the Press were good enough to publish a letter from me, stating that the National Benzole Association had informed the Automobile Association and Motor Union that the price of benzole conforming to the specification approved of by the A.A. and M.U. was 2s. 9d. per gallon in two-gallon tins, and 2s. 8d. per gallon in fifty-gallon drums in England and Wales.

This letter has brought up once more the way in which the motoring community is being treated by petrol interests. Letters are being received from all parts of the country, showing that the petrol companies who are distributing a product called "benzole" are charging a price that only enables it to be retailed at 3s. per gallon.

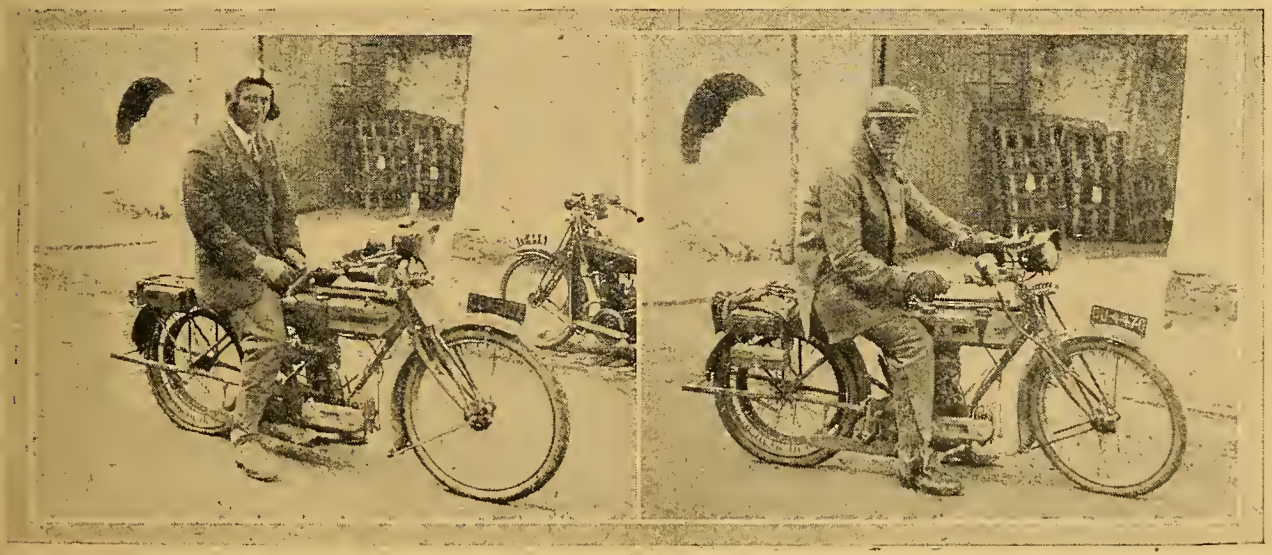
This "benzole" bears no guarantee whatever that it complies with the specification approved by the Association.

One is led to ask, how do petrol companies concerned justify the price of 4d. per gallon more for a fuel that is certainly no better, and often inferior to an article which is recognised as absolutely satisfactory.

The Automobile Association is giving all possible support to the National Benzole Company, which has been formed by the producers themselves, to distribute real benzole. It has been instrumental in getting the benzole company to fix a lower price than has hitherto ruled. It has every hope that this price will be still further reduced, and it now begs all motorists to help that company by insisting on getting benzole which is supplied by the N.B.A.

In order to help motorists to do this, the Automobile Association has prepared a complete list of firms supplying benzole, in which list are clearly marked those firms which supply benzole of approved specification. The Association is prepared, in the interests of the motoring community as a whole, to distribute this list to all motorists, whether belonging to it or not.

STENSON COOKE, Secretary,
The Automobile Association and Motor Union.



First and second in the Arbuthnot Trophy trial. (Left) Lt. E. S. K. Evans-Greaves (4 h.p. Triumph), the winner of the trophy. (Right) Lt. H. Terence Back (4 h.p Triumph), who made the second best performance.

SPARE PARTS.

Sir,—A few days ago I had the misfortune to find the primary screw insulating bush on my E.I.C. magneto broken. I wrote to the makers explaining that I used the machine every day, and asked them to send me a new one per return. By return of post I received a letter from them stating that they had forwarded a new contact breaker and asking me to return the one on my machine. Also there was no charge.

Liverpool. BROADGREEN.

Sir,—With reference to the recent complaints as to the difficulty in getting spare parts, may I suggest that the next time you publish a "Buyers' Guide" that you classify the makers as to their methods of supplying spare parts.

No doubt a good many firms would be A1, but, unfortunately, the makers of my machine are C3 in this respect.

I recently wrote to the makers of my machine for a starting handle, having lost mine. As I received no reply after fourteen days, I wrote again, when I received my letter back which had been written on in pencil: "Write to the makers of the gear box, Messrs. ——, and next time send a stamped addressed envelope." The latter request was borne out by their reply being insufficiently stamped.

If intending purchasers knew those firms who consider their liability has ceased when they have been paid, it would be a great help to your readers. F.L.M.

London, W.

AVERAGE SPEEDS.

Sir,—I was delighted to see Miss E. Manvell's very sensible letter in your issue of May 22nd. Like her, I have a 2¾ Colonial model Douglas, and, without special tuning, the highest speed has been 46 m.p.h. I have gone from Londonderry, through Coleraine, Ballycastle, and round the coast road to Larne—a distance of ninety miles—in exactly three hours—average 30 m.p.h. To do that time, I was going 40 m.p.h. and sometimes over that speed on every possible occasion, and, of course, on this route we have many opportunities for speed bursts—stretches of straight road and very little traffic. I should be keenly interested to read a few more experiences of your contributors on the same subject. GLENGESH.

Londonderry.

THE YOUTHFUL MOTOR CYCLIST.

Sir,—I have read with interest "Considerate's" criticism of the article headed "The Youthful Motor Cyclist."

In this letter "Considerate" states that your correspondent *advocates* fitting a noisy exhaust system. This is not the case. In that article the writer said that he fitted to his *first* machine a large copper exhaust pipe; but he does not *advocate* the idea.

Secondly, "Considerate" condemns "tinkering," showing that he is not blessed with a "mechanical mind" and the love of machinery. He has, therefore, no conception of the amusement that can be derived from "getting inside" a motor cycle engine.

Lastly, in no part of "The Youthful Motor Cyclist" does the writer state that he wears "racing helmets and other ludicrous atrocities," as "Considerate" describes. "Considerate" should not condemn other people's views simply because he differs, he does not represent the whole motor cycling public. J.M.S.

Edinburgh.

FLAT FOURS.

Sir,—It has occurred to me that a four-cylindered h.o. engine resembling, for example, a duplicated Douglas, might be practicable.

I am at present engaged on the preliminary experiments of such a model, but am not yet able to give any details as to its possibilities. So far, however, it seems to be favourably progressing.

My idea is to have the four cylinders arranged in two pairs, those in each pair being superimposed one above the other, or side by side; but while the former design would probably be more suitable for motor cycles the latter would be convenient for light cars, of course with the usual modifications.

I have not heard of this design being built, and so far have yet to discover the reason of the inventor's laxity in this direction. Looking at the matter from a general point of view, there is no apparent obstacle to its construction.

An engine of this design would, with four cylinders, develop, under ordinary circumstances, approximately 6-10 h.p., which would be quite ample for passenger work.

I shall be glad to see readers' criticisms on this matter.

Woodford. R.F.C.

[Engines of the type R.F.C. describes have already been shown in *The Motor Cycle*. The Foresti is an example of a four-cylinder engine, and was fully described on May 9th, 1918.—ED.]

A DANGEROUS HILL.

Sir,—I should like to draw your attention to Hickleton Hill, on the main road between Barnsley and Doncaster. In the centre of this hill there is a very bad blind corner, where numerous accidents have occurred between cyclists and motorists. Recently a really bad accident occurred here, and I think if the matter was mentioned it might do some good. E. SAYLES.

TWIST-GRIP CONTROL.

Sir,—In your issue of May 15th, "Ixion" states: "I wish I knew exactly why a large percentage of big twin buyers in this country prefer Yankee stuff." To my mind the answer is clear, the twist of the wrist control is the secret; I rode American big twins for four years before the war simply on account of this delightful method of control. If any well-known British makers of big twins decide to adopt this twist control, I am certain they will find a big market. CAPTAIN, R.H.A.

Egyptian Ex. Force.

SCOOTERS.

Sir,—A correspondent in your June 26th issue (and a very good number, too) tells us his scooter averages 5 m.p.h. "over vile roads." Yourselves, in your recent trials, found top speed to be about 15 m.p.h. While realising that the scooter is not meant for high speeds or great distances, the question of whether this is good enough (at the price) is rather obtrusive. I would remind you that:

1. A good walker does 4 m.p.h. for hours and hours on nothing but boots and beer.
2. A very moderate cyclist averages 10 m.p.h. (I myself, a motor cyclist since the beginning, and hating push-cycles like poison, can do it.)

Cycles cost £10 to £12, and only require moderate exertion, whereas holding on to a scooter on a bad road on a dark evening would be a considerable test of fortitude.

Let us have the skooter, scooter, skoota, or anything else that by running, rolling, skipping, or hopping with us on its back gets us to our destination, and, incidentally, causes us pleasure, but it looks very much as if the scooter is going to be merely a weapon of amusement. That is to say, one can do on a push-cycle a great deal more than on a scooter; and if speed is required we must get a *real* motor cycle.

The powers that be warn us against luxuries, and it looks as if the scooter is going to prove one.

Good luck to the cycle and motor cycle makers, and to the scooter makers, too, if they can plant their product on the foreigner, but it looks very much as if the scooter is just one more damfool luxury—and those of us who are not grocers or munition makers are not buying luxuries now.

Because the Americans started scooters, must we? They have a President Wilson, a Meat Trust, and "dry" legislation, too. Do we want them? I *don't* think. T.H.C.

Inston.

The above snapshot was sent by the owner of a 4 h.p. Sunbeam, who recently toured North Wales carrying the camp kit on the carrier of the machine.

Sir,—In *The Motor Cycle* of June 26th there is a printer's error in my letter describing the home-made scooter. The average speed is quoted at 5 m.p.h., and should have read 15 m.p.h. B. H. BAYLISS.

SIZE OF TWO-STROKE ENGINES.

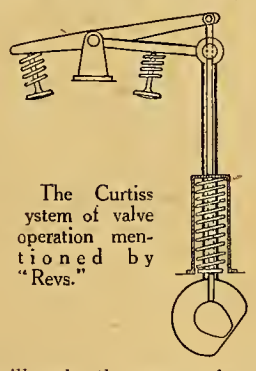
Sir,—Having ridden a number of two-stroke motor cycles, with engines ranging from 211 c.c. up to 339 c.c., I have come to the conclusion that anything under 339 c.c. is somewhat under-powered for fast and hard riding. I have ridden three different machines fitted with Villiers engines, all of which gave great satisfaction considering their size. Now, what I am waiting for is a Villiers engine of 2¾ h.p., about 350 c.c., fitted with a detachable head and also a phosphor-bronze bush in the small end. I should welcome the opinions of other riders regarding two-stroke engines of this size, as I think they are ideal for long distance work.

Now, just a word regarding gears to suit such an engine. I consider a two-speed countershaft clutch and kick starter is required, geared 4½ to 1 and 7½ to 1; present-day machines are geared much too low. With a gear of 4½ to 1 you could get a good speed without having to use full throttle, and, having an engine of fair power, you could climb some really bad hills on top gear, and, if for some reason you have to use low gear, you are not running your engine to bits as when you are using a low gear of 10 to 1. I consider a kick starter is required because plenty of riders, having done their bit in the war, are no longer able to run and jump on. My ideal lightweight is a 2¾ h.p. two-stroke engine with chain-cum-belt drive, and fitted with a tank that holds one and half gallons of petrol and half a gallon of oil. I might add that I have no connection with the Villiers Company. SPEEDY TWO-STROKE.

Sheffield.

VALVE OPERATION.

Sir,—Your correspondent, Mr. R. G. R. Pritchard, is thinking, I presume, of the Beardmore system of valve operation in his letter. The Curtiss system, which he mentions, employs two cams, two tappet rods and two valve rockers, but the system is interesting, as it is, as far as I know, unique in having two distinct springs for each inlet valve, the usual spiral spring of medium strength on the valve stem itself and another stronger spring on the pull rod, which, when the valve is required to open, is allowed to come into play by the *negative* inlet cam. In other words, the inlet valve opens when the *flat* side of the cam face meets the pull rod, which is forced down by the stronger of the two springs. The exhaust valve is opened in the usual manner by a comparatively small section push rod running up inside the inlet pull rod. I hope the sketch will make the system clear. In practice it worked most satisfactorily, especially as far as silence was concerned. REVS.



The Curtiss system of valve operation mentioned by "Revs."

PILLION RIDING.

Sir,—I was grieved, nay! disgusted, to read that the chief men of a township in the West of England had gathered themselves together into an inner room, and had there decided to send a petition to Parliament begging them to put a ban on the practice of carrying passengers on the carriers of motor cycles.

I sincerely hope that the men and women of England have not become so decadent that they are unable to take care of themselves. I have yet to hear of the motor cyclist who has compelled a passenger (whether male or female) to ride on his carrier. Since men and women do this of their own free will, surely it is not necessary for a law to be passed to interfere with this pleasant mode of locomotion merely because a few old men (who probably do not know the difference between an Auto-wheel and a motor cycle) think it dangerous. Many years ago, when I was at school, I frequently had it drummed into me that England was a free country. I now think I was being imposed upon. I will not discuss the case of the sportsman on a 3½ h.p. sporting single. That speaks for itself. Let us, however, think for a moment of the family man. Owing to the expense and discomfort of travelling in trains in these palmy days of "reconstruction," many men have taken their families for their summer holidays by means of a motor cycle. His wife and one child sit in the sidecar, while the second child sits on the carrier.

Wherefore I feel it my duty to request you to summon a meeting of sporting motor cyclists (of the super class), and to bear down upon this offending city from north, south, east, and west, and to seize the chief men of that city, and, before they have time to twirl their moustachios, to plant them firmly on the carrier and take them for a jaunt into the country. This, undoubtedly, would be a case of kill or cure. If, as they assert, it is a dangerous practice, they will be killed before they return, but if, as I think (and there are many who will agree with me), it is a safe and pleasant means of conveyance, they will be over-joyed and cured of their idiotic fancies. In the meantime, let us hope that there are enough sportsmen in Parliament to quash this ridiculous petition. BELLEROPHON.

Chobham.

GEAR RATIOS IN TRIALS.

Sir,—I am flattered that a rider of the calibre of your inimitable "Ixion" has not considered my suggestions regarding the A.C.U. Six Days' Trials beneath his notice.

May I trespass on your space and briefly deal with "Ixion's" well-meant criticisms?

I contend that it is an open question as to whether two trials would not be preferable to one, and I think the early future will decide this point.

As regards the vital question of "finishing condition," I considered that it was unnecessary to mention this, as I believe "finishing condition" already figures largely in the competition.

The chief point, however, is the condemnation of my suggestion that a low gear limit should be fixed. I cannot quite follow "Ixion's" chain of reasoning! He condemns very low gears, such as 18 to 1, as absurdities! He prophesies tree-climbing on gears of 30 to 1, and yet does not see that a minimum low gear ratio would put a stop to all this trouble.

I entirely agree when he says that the public need nothing better than an ascent of a hill like Sutton Bank at 20 m.p.h. on the last day of the trial, but I should not like to do this on an 18 to 1 gear.

My letter was purely from a rider's point of view. I contend that for a non-standard machine to gain a "gold" in a trial is no guarantee that the standard machine could do the same.

Nine out of ten riders never enter a competition, and they want a trial of standard machines. Then they know where to get their new mounts!

The remark that should my suggestion of minimum low gear ratios be adopted in any trial, the entire entry would be at the mercy of incompetent committees, is hardly relevant. I referred only to the A.C.U. Six Days' Trials. Surely the A.C.U. Committee cannot be regarded as incompetent!

I can say without hesitation, and with little fear of contradiction, that a strenuous trial for standard machines would do more for the pastime than a spectacular trial on freak machines. C. J. LEATHERBARROW.

Useful Books and Maps for Motor Cyclists.

	Price net.	By post
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"HINTS & TIPS FOR MOTOR CYCLISTS." Full of useful "wrinkles" and little items of sound advice on the management, repair, equipment, and general care of a motor cycle. It will be found invaluable to all those who are thinking of overhauling their machines. *Sixth edition (2nd reprint)*	2/-	2/2

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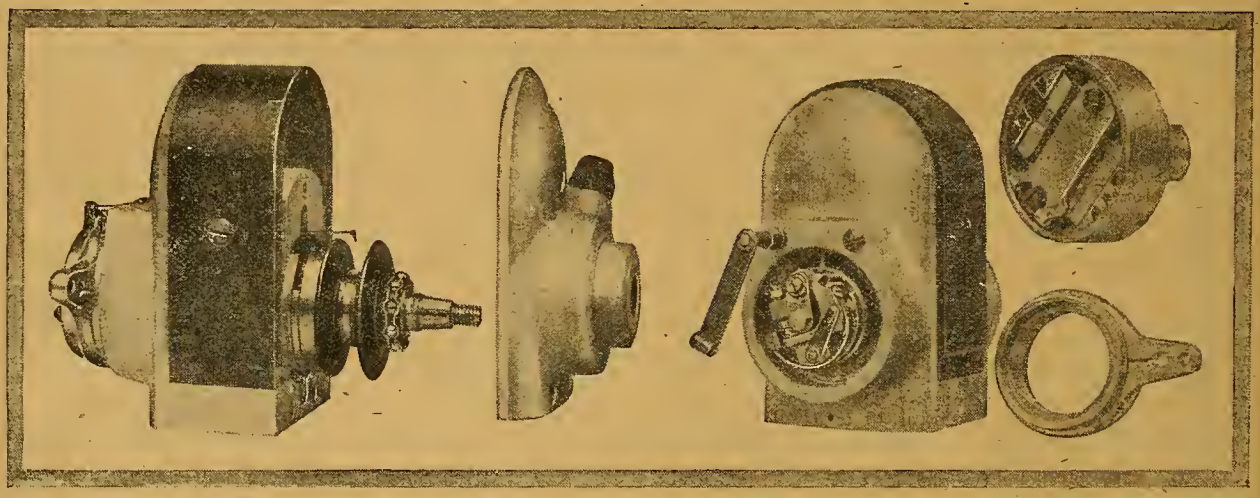
THE M-L MOTOR CYCLE MAGNETO.

A Successful Exponent of a Great British Industry.



The M-L magneto as constructed for motor cycles, with driving end plate removed. Note the safety spark gap terminal projecting over the slip ring, the aluminium extension forming the top of the armature tunnel and the unusual depth of the slip ring insulation. In the second illustration the cam ring is removed to show the design of the cam, which is formed by making an indentation in the one-piece ring of metal. The small upper photograph shows the condenser of the M-L magneto in its casing—the end plate of the armature.

THE improvements which British manufacturers have originated and adopted during the war have been of considerable importance and effect in increasing the electrical efficiency and the reliability of this type of ignition apparatus.

Among the firms which have during the war taken part in establishing a great British industry and in assisting towards the final victory of the Allies, by producing magnetos in immense quantities for aeroplanes and other war purposes, is the M-L Magneto Syndicate, Ltd., Coventry.

The improvements which have been embodied in the M-L machines during the war are included, so far as they are applicable, in the new K type machine for motor cycles. This machine is made for one, two, and V cylinder engines, the accompanying illustrations showing the single-cylinder type. Its smooth exterior will appeal to the user, for this feature should render cleaning a far simpler process than of yore.

Aluminium enters very largely into its construction, for the body consists of two castings of that alloy. The main piece forms the base plate, the contact breaker end, and an extension of the latter which serves to enclose the armature. The driving end plate is the other unit, and this encloses the slip ring and supports the armature at that end in a ball bearing.

The slip ring is notable for the depth of its flanges, which have been increased in diameter so as to prevent the current shorting to earth at this point.

The Condenser.

Two of the most important improvements consist of laminated pole pieces—in place of cast iron shoes—and the M-L patent condenser, which, incidentally, has been used with unqualified success in something like 20,000 aeroplane engine magnetos turned out by this firm.

The advantage of laminated pole shoes is that the eddy currents are considerably reduced, and this has the effect of increasing the electrical efficiency. As a result, a smaller and lighter machine as a whole will give a better spark than the pre-war German machine. The new M-L magneto will, it is claimed, give an intense ignition spark at armature speeds as low as 50 r.p.m., as compared with 100 r.p.m. with solid pole shoes.

The condenser, as designed by Bosch, and adopted almost generally by magneto manufacturers the world over, has been the cause of more magneto failures than probably any other part, but the weaknesses of the Bosch system have been eliminated in the M-L condenser, which does not, like the original, depend upon a packing of flexible insulating material to retain it in position and insulate it as a whole from its metal casing. It consists of alternate layers of tinfoil and mica, and while this is also the case in other condensers, the method of construction differs entirely.

Improved Insulation.

Square pieces of mica are used, some eighty in all, but each successive strip of tinfoil is laid at right angles to the preceding one, the strips being of such length that the ends project beyond the mica squares. One pair of opposing ends is secured in metal clips, while the other pair is pressed into a metal carrier. When the magneto is assembled in its casing the clips are in metallic contact with it, but the carrier is insulated by two simple washers of special material.

The whole unit is a thoroughly mechanical proposition, and the risk of bad insulation due to error in assembly is eliminated. In the contact breaker are several special points, one being the fact that the cam is ground to a carefully calculated profile on the interior surface of a continuous ring of metal; thus, there is no fear of the cam becoming loose. Its outline is such as to prevent that violent outward flinging of the rocker arm which results in the hammering of the points, and has been known to cause the breaking of the arm itself. The machine can be run at speeds from 4,000 to 5,000 r.p.m. for long periods without appreciable wear of the platinum points.

The rocking lever is supported in a bush of insulating material which is unaffected by water or a damp atmosphere, so that the trouble which motor cyclists have only too often experienced with magnetos will not occur with this machine. We refer to the sticking of the arm owing to a swollen bush.

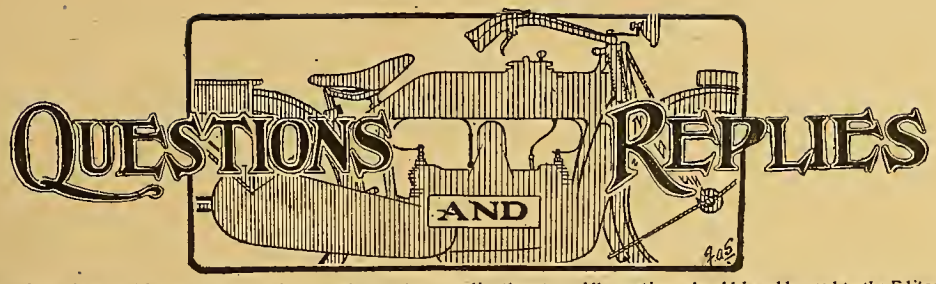
Absolutely Waterproof.

The contact breaker lever is secured to the cam ring in such a manner as to be adjustable to suit the coupling rods and levers, while an anchorage and screw for a Bowden control are provided.

The machine as a whole is made waterproof without the use of felt packing and without depending upon the fit of the magnet.

The high-tension terminal is an ebonite moulding screwing down on to a conical watertight seating in the end cover. In the socket of the moulding is an outwardly projecting threaded pin, on to which the high-tension cable can be screwed, during which process the rubber insulation is expanded within the socket, thus forming a watertight and secure fixing.

One other detail may be mentioned, and that is the safety spark gap, which consists of a bronze spring secured to the aluminium body and bent over the slip ring at right angles. When the end cover is assembled this spring is pressed down by the bore of the end cover itself, so that the correct gap between the tip of the spring and the slip ring is assured. When the end cover is removed the spring stands up clear of the slip ring flanges, and the armature can be readily removed.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

About Sparking Plugs.

(1.) Is an Aero sparking plug suitable for a motor cycle? (2.) Would the presence of oil on a sparking plug be sufficient cause for it not sparking?—A.H.B.

(1.) Yes, most Aero plugs are suitable for motor cycles. (2.) Certainly an excess of oil will prevent the plug from sparking.

Slow Running.

I would be glad if you could let me know the cause of the trouble with my 8 h.p. J.A.P. If I go slower than 15 m.p.h. the engine starts jerking. Some hills it takes on top, but going over the same hill again I have to drop into low. I may say I have an adjustable jet. I cannot shut it off any more or else the engine stops It does about 40 m.p.g.—A.G.W.

The cause of your trouble is rather obscure, but it would seem that either the magneto timing is too far retarded or the valve timing is wrong. Either of these would account for a high petrol consumption. The spark should occur in the rear cylinder, when the piston is about $\frac{1}{16}$in. down the firing stroke with the spark lever fully retarded.

Unsatisfactory Running.

I have a 2¾ h.p. Douglas which is not working properly, and I should be glad if you could suggest what is wrong, and tell me how it may be remedied. The machine is not a new one, and I do not know the date—I think probably 1912 or 1913. It seems in very good condition except that the rear cylinder does not work. The sparking plug is in order, and the valve caps are screwed down tightly. I think there is loss of compression, but cannot find just where. In starting (in which there is no difficulty) only the front cylinder works, but when some speed is attained the rear one begins to work. When climbing, however, the rear cylinder ceases to fire, and I cannot reach the top of a moderately steep hill. It seems that when the machine is moving at a considerable speed the cylinder works before the mixture has time to escape, whereas when the machine is moving slowly the mixture escapes before it has time to work the piston.—F.A.R.

You had better look at the carbon brush leading to the rear cylinder plug. Remove it, see that it is working freely and properly connected to the h.t. cable. Clean the magneto slip ring with a piece of clean rag moistened with petrol. See that your sparking plug gap is not too small, and that there are no air leaks at the rear cylinder induction pipe union. Examine your valve tappets, and note that the clearance when the engine is warm is equal to the thickness of the blue cover of *The Motor Cycle*.

Registration.

I owned a 2¾ h.p. two-stroke, which I bought from a firm in London in April of this year, and, so that I could ride the machine home, I paid 10s. for numbers to the firm. I have since sold the machine and have bought another one. Am I entitled to use the numbers on this machine, or must I get others?—F.P.

The machine you have bought must be registered, unless it is already registered, when, if the number has not been cancelled, it may be transferred to your name for the sum of 1s. Your present numbers cannot be used.

Magneto Mystery.

I have a Bosch magneto fitted to the engine of a cycle car which either refuses to spark altogether or only occasionally gives a poor spark. When the magneto is taken off the engine it sparks perfectly, but directly it is fitted on and the crankshaft turned it acts as stated above. It has been thoroughly overhauled twice by an expert firm, but no defect can be traced. It occurred to me that it might be caused by a defective high-tension return (viz., *via* the cylinder crank case, bracket, etc.), and suggested taking a lead (high-tension) direct from the body of the plug back to the base of the magneto; but I understand this has been tried and failed.—E.T.P.

The solution to your problem is very difficult to determine without actually examining the magneto, etc. Apparently, the magneto itself is in quite good order, but does not spark when in position on the machine. Two things may cause this. One, as you suggest, a break in the circuit, or else a short. The attaching screws are not likely to be so long as to come in contact with the armature, so that the other point is the armature spindle. There may be a leak between the collector ring and the spindle through the vulcanite ring, or the wire from the secondary winding to the collector ring may be shorting. See that there is no foreign matter in the armature tunnel and none of the wires exposed. Farther than this, we can only advise you to submit the magneto to a magneto expert.

Does not take Top Gear.

I have a new P. and M. After I have changed from low gear into top, the engine jolts for a certain distance. Would you kindly suggest any reason for this? I have had the carburetter down, and cleaned it.—G.H.

Probably you change up too soon; allow the machine to acquire a fair speed first. Also, you would find the engine would run more smoothly if you retarded the spark until the requisite speed has been attained.

An Auxiliary Exhaust Valve.

(1.) I have a 3½ h.p. Premier and there is an extra exhaust pipe leading from the cylinder direct, which is integral with what I presume is an extra air valve. What is the object of this? (2.) If I dispensed with this part, and made the hole in the cylinder a blank, would it affect the efficiency of the engine?—J.W.B.

(1.) The valve is the extra exhaust valve, designed to allow the exhaust gases to escape when the piston descends below the level of the valve port. (2.) No useful end would be attained by removing the valve. If you did remove it and left the hole bare you would lose a certain amount of oil, and the exhaust noise would be appreciably increased. By stopping up this orifice you might interfere with the efficiency of the engine slightly.

Starting a Two-stroke.

I have purchased a 2¾ h.p. T.D.C. two-stroke. It suits me spleudidly, but has the following drawback. It is a fixed engine, and as I have been wounded in the left knee I am unable to jump on from the left side, and I am not used to the right side. It starts easily enough with a run, but I was thinking that it may be possible to paddle it off. A free engine hub would solve the problem. I have tried the makers for one, but they have discontinued making. Is there anything in the way of a decompressor suitable for a two-stroke? The frame is too short for a gear box.—W.B.

We do not quite see why you require a clutch, as you should be able to start the machine quite easily by paddling off with the release valve open, dropping it when in motion. This is quite feasible if the machine is in good tune, and a clutch would only permit of your keeping the engine running while standing.

Using Benzole.

Last month I bought a new 1919 W.D. model Triumph, and, without altering the carburetter or fitting an extra air valve, ran it entirely on benzole. After 800 miles I took the engine down and decarbonised it, though this was found to be really unnecessary, because both cylinder and piston were not thickly coated with deposit. In France I broke in four new Triumphs on W.D. spirit, and on each occasion found that the over-oiling, when new, made decarbonisation absolutely necessary after the first 500 miles. Popular opinion states emphatically that benzole is dirty stuff, and soots up in no time. (1.) Is this a popular fallacy? (2.) If not, where is my experience misleading? I am running on Gargoyle T.T. oil.—D.M.W.

Yes; this is a popular fallacy. Given the correct mixture, benzole is just as satisfactory as petrol, though we prefer a mixture of the two spirits.

The Local Taxation Licence.

I am writing to ask for your valuable assistance. I had a 2¼ h.p. New Hudson two-stroke, which I registered at Norwich, and for which I have paid the £1 tax. In April last I decided to sell my 2¼ h.p. two-stroke and bought a 3½ h.p. New Hudson. I paid the 5s. fee and had the registered number transferred to the 3½ h.p. machine, and also changed my registered address from Thetford to London. Now the local taxation authorities in London have given me notice that I must take out a licence for the 3½ machine. Will you please inform me if I am liable for the £1 tax, or should the licence I took out for the 2¼ hold good for the 3½?—R.E.R.

This is quite incorrect. The same local taxation will do, provided, of course, it has not expired, and that you did not keep and use both machines at the same time.

Two-stroke Lubrication and Timing.

I have a Sun-Villiers two-stroke machine, and should be obliged if you would give me your opinion on the following points: (1.) Using the petroil system of lubricating the engine, what is the correct amount of oil to mix with a gallon of spirit? (2.) The machine runs satisfactorily up to 25 m.p.h. If I open out further it runs well for a mile or so, then ceases to fire, but picks up before stopping, then fires in bursts of a hundred yards or so, as though petrol supply were failing. This latter, however, is quite in order, my carburetter being an Amac in good condition. The jet is not choking. (3.) How should the magneto be timed to spark? This works satisfactorily, but as fully retarded, the spark occurs ⅛in. before top of stroke, it occurs to me that the timing may be a little out, though at 20 m.p.h. I can use full advance.—S.V., York.

(1.) Half a pint of oil to one gallon of petrol is the correct proportion. (2.) The trouble is due to pre-ignition, probably caused by the use of an unsuitable plug. This would account for the symptoms described. (3.) The magneto should be timed in the following way for variable ignition. Place the piston exactly on top of the compression stroke and connect up the magneto with the points just broken and the ignition lever fully retarded.

Leaky Accumulator.

I use a twelve-volt accumulator for lighting my motor cycle, but lately I have been troubled with the terminals of the cells breaking off, through the effects of corrosive green crystals forming over the terminals. Can you please tell me how to prevent this? What is the cause of these crystals forming on the terminals, as I have had this cell for nearly a year, and it is only lately that this has happened?—H.A.McQ.

The cell material must have cracked round the terminals, allowing the acid to creep on to the metal of the terminal studs. The remedy is to have new terminals fitted and the cell properly cemented up and made acid-tight.

Magneto Timing.

Would you kindly help me in the following matter? My Scott cycle, up to a month ago, ran evenly without mishap. I have just dismantled the gear box, and, on replacing in frame, I cannot get a single explosion from the engine. I have fitted new plugs, one of which gives a good spark, the other an intermittent one. Compression is good and carburetter floods freely. On turning the back wheel the result is nil. Is it the timing that is wrong? I have experimented with the wheel in different positions, but all to no purpose.—F.S.

You should certainly check the spark timing. The contact should be about to break when the piston is on top dead centre with the advance lever in midway position. Are you quite sure the weak sparking plug is sound?

Silencing a Two-stroke.

I want to silence down my 2½ h.p. two-stroke if possible. (1.) Will the fitting of baffle plates in the silencer be likely to cause any loss of engine efficiency? (2.) If not, how many plates would it be advisable to fit in each of the two silencers, and would thin aluminium sheet be suitable for the purpose? (3.) The machine is a new one and has now been ridden about 400 miles, and, until recently, has given no trouble, but after three or four miles now the crank case becomes very hot; that is, too hot to touch with the fingers. Can you tell me the probable cause and remedy? I have used plenty of oil of the brands recommended by the engine makers. (4.) About how many miles should such a machine run before decarbonising is necessary?—E.A.

(1.) Yes, you would undoubtedly get loss of efficiency and back pressure. The silencing of a two-stroke is a matter which has puzzled engineers for a long time, and no satisfactory solution has yet been found. (2.) Thin aluminium would not be suitable, as it would be liable to disintegrate under heat. (3.) The probable cause is the conduction of heat from the cylinder, but unless the engine loses power you need not worry about it. (4.) About 1,000 miles.

Removing Tar.

(1.) What is the best way to clean tar off the frame of a motor cycle? (2.) Is it in any way detrimental to the enamel to use paraffin for cleaning purposes?—J.G.

(1.) All you can do is to attack the tar with grease before it is dry. If it is left on to dry it will take the enamel off when an attempt is made to remove it. (2.) It is not detrimental to enamel to use paraffin for cleaning purposes.

EXPERIENCE WANTED.

"G.F." (Rotherham).—4¼ h.p. Norton. Reliability, tyre wear, and m.p.g. for both petrol and oil when ridden solo.

"L.P." (Catterick).—Grado gear fitted to a 1912 Triumph.

RECOMMENDED ROUTES.

Derby to Rhyl.—G.A.C.
Derby, Ashbourne, Leek, Congleton, Middlewich, Over, Kelsall, Chester, Mold, St. Asaph, Rhuddlan, Rhyl.

Rhyl to Blackpool.—G.A.C.
Rhyl, Rhuddlan, St. Asaph, Mold, Chester, Warrington, Newton-le-Willows, Wigan, Preston, Kirkham, Blackpool.

Blackpool to Derby.—G.A.C.
Blackpool, Preston, Wigan, Warrington, then through Knutsford, Holmes Chapel, Congleton, Leek, Ashbourne, Derby.

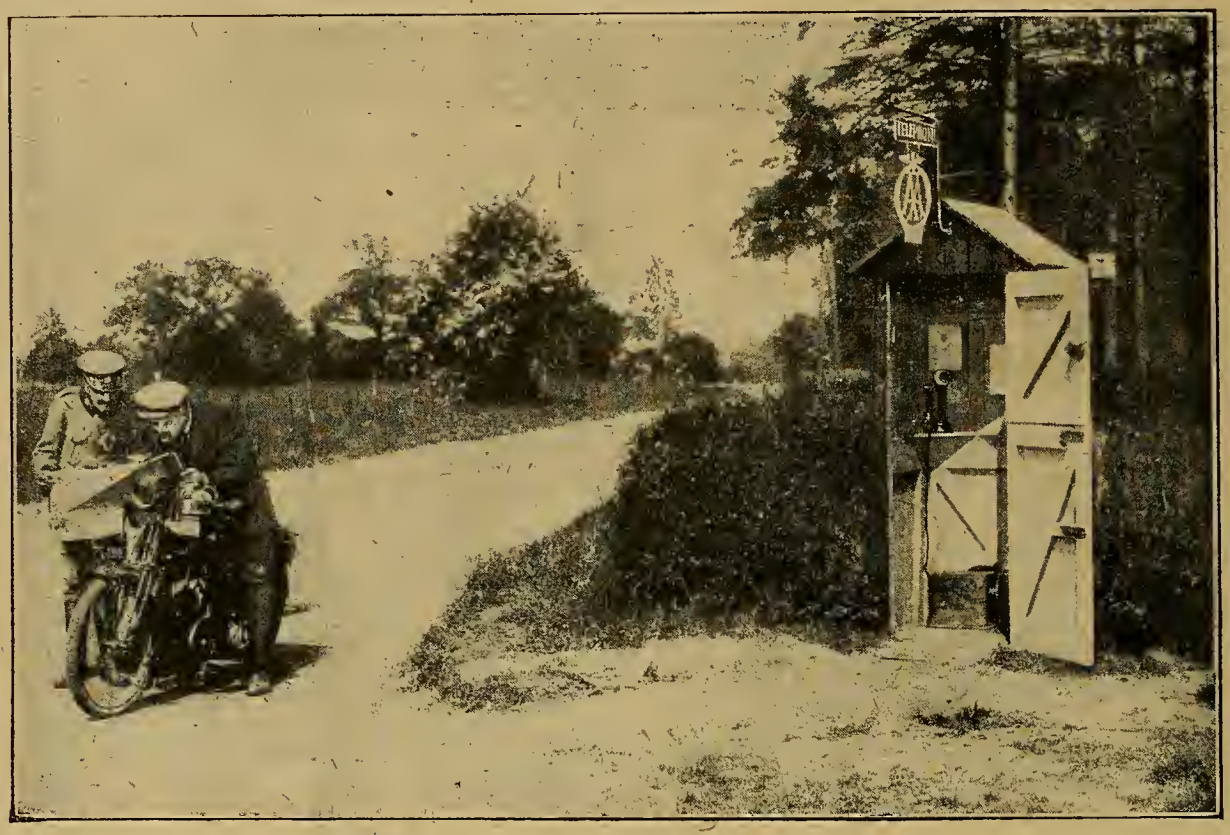
Budleigh Salterton to Betchworth.—R.W.B.
Budleigh Salterton, Colyford, Lyme Regis, Charmouth, Bridport, Dorchester, Wimborne, Ringwood, Cadnam, Romsey, Winchester, Alresford, Alton, Farnham, Guildford, Gomshall, Dorking, Betchworth.

Bedford to Margate.—F.E.H.
Bedford, Shefford, Henlow, Baldock, Buntingford, Bishop Stortford, Harlow, High Ongar, Brentwood, East Horndon, Tilbury, by ferry to Gravesend, Rochester, Chatham, Sittingbourne, Sarre, Margate.

London to Helston.—H.A.C.
London, Kingston, Esher, Cobham, Ripley, Guildford, Hog's Back, Farnham, Alton, Alresford, Winchester, Romsey, Cadnam, Wimborne, Bere Regis, Dorchester, Bridport, Lyme Regis, Charmouth, Colyford, Exeter, Okehampton, Launceston, Bodmin, Goss Moor, Ladock, Truro, Perranwell, Polgreen, Helston.

Glasgow to Northampton.—P.S.McK.
Glasgow, Hamilton, Lesmahagow, Abington, Beattock, Lockerbie, Ecclefechan, Gretna Green, Longtown, Brampton, Alston, Middleton-in-Teesdale, Barnard Castle, Scotch Corner, Leeming Lane, Boroughbridge, Wetherby, Aberford, Ferrybridge, Doncaster, Bawtry, Retford, Tuxford, Newark, Grantham, Stamford, Kettering, Northampton. Approximately 330 miles.

WORTH WAITING FOR.



THE BADGE.

WHAT IT MEANS AND SECURES TO MOTOR CYCLISTS.

The A.A. badge was originally adopted by the Automobile Association as an additional protection against malicious police persecution, and was the first symbol of its kind carried by motorists.

Since its adoption the Association has continuously widened its scope of activities, and every member—car, light car, or motor cycle—now enjoys the following privileges:—

Free Service of the A.A. Patrols, who will be found on nearly every main road in England, and render assistance to members in case of breakdown; obtain petrol, tyres, or other replacements; render first aid; give warning of roads under repair; indicate alternate routes, and are always at the service of members.

Roadside Telephones, which are installed in patrols' sentry boxes all over the country and can be used for all purposes, including messages to home or office, to hotels for accommodation or meals, and to garages for replacements or assistance.

"First Aid" Motor Cycles, driven by expert mechanics who, in the event of a breakdown, render assistance to enable members to continue their journeys.

Free Legal Advice on any matter connected with motoring.

Free Legal Defence in any police court in the United Kingdom to answer charges under the Motor Car Act.

Free Touring Information, including specially prepared routes for business or holiday tours, showing the best roads to any part of the United Kingdom.

Free Touring Assistance to members going abroad with car or cycle, including crating and shipping of vehicle, the supply of routes, necessary triptyques, and other documents.

Other privileges include Engineering Assistance, Special Insurance Facilities, Officially Appointed Agents and Repairers, A.A. Hotels, etc., etc.

Full particulars of the benefits which the Automobile Association extends to its members are contained in the booklet, "The Key to the Open Road," a copy of which can be obtained, post free, from the Secretary, A.A. & M.U., 21, Fanum House, Whitcomb Street, London, W.C.2. Send a postcard to-day. Motor cyclists in London who wish to join the Association without delay are invited to call at Headquarters, where a staff of experts is always in attendance ready to give information on any question relating to Motoring.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., & Co. and crossed. Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box ooo, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. ooo, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged; when under £10 the fee is 1s. All deposit matters are dealt with at 20, Tudor St., London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

CROW Bros., High St., Guildford, have contracted largely for the new A.B.C. Order now for earliest delivery. [5298

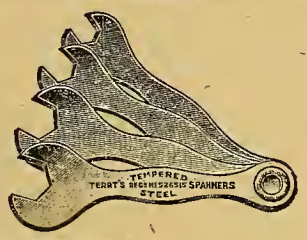
LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Parr St., Liverpool [0003

A.B.C. Distributors for Radnorshire. Book your orders now to ensure early delivery.—Owens, Bayeux Garage, Llandrindod Wells. [X5550

A.B.C.—Sole agents for these famous machines. Orders booked now for early delivery.—Chandler, Heyre, and Williams, Sun St., Hitchin. [0996

GET IT AT Taylor's

Sole London Agents for **A.J.S.** and **BRITISH EXCELSIORS.**



Terry's Folding Spanners:

Midget size	1/6
Cycle size	2/6
Motor size	5/-

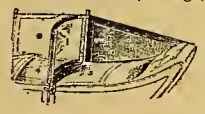
(Postage, 4d.)

Terry's One-minute Tyre Levers, 3 in one Set ..... price 1/6
Strong Single Tyre Levers, 6in. ..... 7d.
Ditto, 9in. 1/2
Ditto, 13in. 1/6
(Postage, 3d.)

Spanners:

4in. King Dick, genuine	4/6
6in. ditto	7/6
4in. King Dick pattern	3/6
6in. ditto	4/9
6in. Billings, genuine	6/-
7in. Billings, pattern	2/5
11in. ditto	6/9
Lucas Girder	4/6
Nut-grip Pliers	3/3

(Postage, 4d.)



Cameo Windscreens, light, strong, easily fixed, celluloid panel, nickel-plated fittings, price 65/-; or complete with side curtains made in stout waterproof khaki 60/-

Lodge Sparking Plugs 5/-
K.L.G. Sparking Plugs 5/-
Sparking Plug and Magneto Cleaning Brushes ..... 9d.
(Postage, 3d.)
Dunlop and Pedley Belts in Stock.

Motor Cycle Tool Kits.
Comprising one 4in. adjustable Wrench, Combination Pliers, Screwdriver, Tyre Levers, Nut-grip Pliers, Belt Punch, Steel Pin Punch, and Oilcan. In strong canvas case.
Price, complete 21/6
(Carriage paid.)

Leather Racing Helmets:

Lined	11/6
Unlined	10/6

GLOVES.

Tan Leather Gauntlet, lined fleece 17/6
Ditto, with wool wrists, less gauntlet 13/9
Tan Leather Driving Gloves, very durable 8/3
Cotton washable Cleaning Gloves, per pair ... 1/-
Ditto, with leather facings 1/9
Ditto, gauntlet 3/9
(Postage, 3d.)

H. TAYLOR & CO., LTD.

Showrooms: 21a, STORE STREET, W.C.1.
Wholesale: 36, ALFRED PLACE, W.C.1.

Garage: Tottenham Court Road. 'Phone—Museum, 1240. Telegrams—"Dynametro, Westcent, London."

MOTOR CYCLES FOR SALE.

A.B.C.

1913 T.T. A.B.C., 2 speeds, chain drive, a real gem; best offer, or exchange with cash for car.—Rigby, 5, Eckersley St., Kirkhall Lane, Leigh. [X5826

A.B.C.—Distributors for Scotland. Book your order now to ensure reasonable date for delivery.—Edinburgh Pioneer Motors, Ltd., 50, Grindlay St., Edinburgh. [X8301

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

ORIGINAL A.B.C. and Racing Sidecar, not been used for 4 years, just overhauled, and in perfect order; £80.—Stanley Russell, High St., Newport, I.O.W. [6105

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

1914 3½h.p. A.B.C. Racing Model, overhead valves, long exhausts, special frames, 4-gallon tank, tyres as new, foot-operated oil pump, very fast; bargain, £55.—Seen Central Garage, Reading. [6022

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

Abingdon.

ABINGDON, King Dick, 3½h.p., 1913, 2½ tyres, mechanical horn; 34 gns.—5, Eglon Mews, Primrose Hill, N.W. [5889

ABINGDON King Dick, 1914, 3½h.p., 2-speed, hand controlled clutch, good condition; ride away; £42.—Keable, Upper Bowden Farm, Pangbourne. [X5669

ABINGDON K.D., 1915, just fitted with new 4h.p. Triumph engine, clutch model, variable pulley, Bosch mag., in splendid condition; £52.—2, Fielding Terrace, Ealing Common, W. [5579

:: DEPOSITS ::

SPECIAL NOTICE.

The attention of Advertisers is called to the fact that Deposits are now dealt with at

20, Tudor St., London, E.C.4,

to which address all communications relating to deposits should be directed

Adler.

ADLER, 1913, 2-speed, like new, perfect order.—16, Southdean Gardens, Southfields. [6024

A.J.S

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [5601

JACK HEALY, Cork.—Official A.J.S. agent.—Garage and works, Drinan St. [X8336

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

A.J.S. 1914 6h.p. Combination, 3-speed, clutch, excellent condition; £125.—74, Philip St., Bedminster, Bristol. [5874

A.J.S. 1914 C.B. Combination, hood, screen, Klaxon, 2 generators; £100.—Pugh, 171, East Barnet Rd., New Barnet. [6114

A.J.S. 4h.p. Combination, 1915, absolutely as new, accessories complete sacrifice £130.—139, St. Michael's Hill, Bristol. [5948

A.J.S. Combination, splendid condition, speedometer, lamps, accessories; £90.—Holloway, 31, Commercial Rd., Hereford. [X5692

A.J.S. 6h.p. Combination, 1915, hood, screen, lamps, tools, in splendid going order; £145.—Robertson, 55, Broad St., Peterborough. 6079

A.J.S. 1914 2¾h.p., 2-speed, H.B. clutch, recently overhauled, in splendid condition throughout; 55 gns.—11, Crescent Rd., Ramsgate. [X5646

A.J.S., 2¾h.p., 3-speed, clutch, kick starter, Klaxon, lamps, as new; £85.—Walter, Willow Bank, London Rd., Bromley, Kent. 'Phone: 1041. [6136

A.J.S. Combination, spare wheel, Lucas accessories, discs all wheels, delivered May, 1919; what offers.—Eveson, The Dingle, Stourbridge. [5726

1915-16 6h.p. A.J.S. Combination, spare wheel, hood, screen; £135; accept 2¾-3½h.p. Sunbeam and cash.—2a, Queen St., Fenton, Staffs. [X5709

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., 1914, 6h.p., 3-speed, all accessories, excellent condition; seen after 6 p.m. Monday; 80 gns.—Apps, 12, Stanley Gardens, Hampstead, N.W. [6050

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries [000

A.J.S. 1913 Combination, 3 detachable wheels, steel sidecar, wind screen, Lucas dynamo set, splendid condition; £130; Worcestershire.—Box 4,281, c/o *The Motor Cycle*. [X5650

A.J.S. 6h.p. Combination, late 1914, 3-speed, clutch, kick starter, excellent condition, little used, lamp, horn, tools; £110.—Myrtle Cottage, Leintwardine, Herefordshire. [X5693

LATE 1916 6h.p. A.J.S. Combination, 2-seater sidecar, spare wheel, light car tyres, hood, screen, just overhauled, new frame, unscratched, in perfect condition, ready ride away; best offer over £165.—Box 4,245, c/o *The Motor Cycle*. [X5188

A.J.S. Combination, 1916, 6h.p., 3-speed, kick start, hand clutch, de luxe sidecar, spare wheel, speedometer, lamps, luxurious outfit, mechanically perfect, good appearance; bargain, £128; consider Douglas part; after 7.—20, Treen Av., Hogger's Corner, Barnes. [5689

2¾h.p. A.J.S., 1915, 2-speed countershaft, kick-start, hand clutch, all-enclosed chain drive, lamps, horn, tools, etc., tyres as new, unused for 3 years during war, like new throughout, perfect, any trial; £65.—Bond, Church Farm, Sutton Benger, Chippenham, Wilts. [5924

A.J.S. 6h.p. 1915 Combination de Luxe, wind screen, hood, curtain, apron, lamps, horn, tools, spare wheel (interchangeable), 3 speeds, hand clutch, kick starter, mileage 2,000, excellent condition; Southport district; price £160.—Box L2,593, c/o *The Motor Cycle*. [6221

A.J.S., 1919, 6h.p., peace model, 3-speed, interchangeable wheels, spare wheel, A.J.S. sidecar, hood, screen, side curtains, purchased from makers this month (July, 1919), ridden only 10 miles; best offer taken; seen here any time.—29, St. Leonard's St., Bromley-by-Bow. [6038

A.J.S. 1916 Combination de Luxe, screen, hood and side curtains, Lucas dynamo, electric and mechanical horn, luggage grid, Tan Sad seat, spare wheels and new Dunlop, 700×80, spring seat pillar, speedometer, spare clutch, chains, valves, absolutely perfect; Rhyl; 160 gns.—Box 4,244, c/o *The Motor Cycle*. [X5201

A.J.S., 1914, 6h.p., 1915 sidecar, hood, screen, detachable wheels, spare wheel, Lucas dynamo lighting outfit, Cowey speedometer, full set spares and tools, stored throughout war, condition perfect; best offer over £140.—Lieut.-Commander Phillips, R.N., Grove End House, Highgate Rd., London, N.W.5. 'Phone: Hampstead 710. [X5508

6h.p. A.J.S. Combination, late 1918, all black, spare wheel (once used), 700×80 extra heavy Dunlops all round, adjustable wind screen, perfect lighting set, namely, Miller light car generator with shaking grid, attached to sidecar, supplying 2 Lucas head lights and rear light (connected by copper and armoured rubber tubing, combination as new, owner bought car; £185.—F. Major, Cholmondeston, Winsford. [X4977

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

Alldays.

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [001?

GEORGE SMITH has 1919 Allon latest model in stock.—268, Lavender Hill, Clapham Junction

1916 Allon, as new, little used; 48 gns.—George Smith, opposite Arding and Hobbs, Clapham Junction. [4009

1918 Allon 2¾h.p., mileage 400, perfect; 49 gns.—4, Stockwell Park Crescent, S.W. [X5743

1919 Allon 2-stroke, just delivered, at cost; £70/19.—C. Burlingham, Rossyvera, Evesham. [X5212

ALLON.—All models; exceptionally good deliveries.—Enquire approximate dates, Parker's, Bradshawgate, Bolton. [X5756

ALLDAYS Allon, 2¾h.p., 2-speed, 2-stroke, in good condition; £45.—Elliston and Fell, Perry Vale, Forest Hill, S.E. [6137

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2931

ALLON 2-stroke, 2-speed, top-hole condition, ready to ride away; £55.—Smith, 268, Lavender Hill, Clapham Junction, S.W.11. [6205

ALLON, 1916, 2-stroke, 2-speed, new belt, piston, tyres, perfect, spare belt, horn.—316, Hornsey Rd., Upper Holloway, N. [6145

1919 Alldays Allon, new, with lamps; what offers? owner cannot ride same owing to wounds.—Griffiths, Southfield, Hinckley. [5643

1916 Alldays 2¾h.p. 2-speed 2-stroke, new heavy tyres and belt, lamp set, horn, etc., smart machine; £50.—475, Green Lanes, N.4. [6152

1918 2¾h.p. Alldays-Allon, 2-speed and clutch, E.I.C. mag., lamps and horn, to ride away; £58.—56, Silverleigh Rd., Thornton Heath, Surrey. [5551

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Alldays

ALLON 2-stroke, 1919, single speed, just received from works; best offer accepted.—Daws Timber Yard, adjoining tram sheds, Thornton Heath, S.E. [5787

ALLDAYS 2¾h.p., following brand new—saddle, belt, heavy studded tyres, rebushed, carburetter, Dixie mag., tube, mudguards, perfect; £26, no offers.—69, Old Church Hill, South Chingford. [5980

ALLDAYS Allon, 1919, brand new, just delivered; 2¾h.p., 2-stroke, 2-speed, splendid high-class solo mount; list price £70, what offers? seen after 6 p.m.—Saunders, 1, Grand Parade, 2nd Floor, High St., Teddington. [5745

ALLDAYS, Matchless 2-stroke Motor Cycle, less magneto, 22; Triumph 3h.p., less magneto and carburetter, £8/10; Advance engine, frame, wheels, and tyres, £4; large head lamp and generator, complete, £2; speedometer for 26in., £2/5.—Doe, Aylesford, Kent. [5935

Ariel.

ARIEL 3½h.p., good running order; £25; after 7 p.m.—30, Roseberry Place, Dalston. [5882

1919 3½h.p. Ariel, new, 3-speed, countershaft; £90.—Ross, 86, High Rd., Lee, S.E. [5706

CROW Bros., High St., Guildford.—Ariel agents since 1913. 1919 deliveries have begun. [5299

ARIEL 3½h.p., 1913, Dunlops, good condition; £30.—R. A. Matthews, Culverdene, Tower Rd., Worthing. [5681

ARIEL, 3½h.p., 1912, perfect order, stored since June, 1915; £35.—Husband, New Rd., Skewen, Glam. [X5517

3½h.p. Ariel, new tyres, tubes, belt, adjustable pulley, fixed gear; £25.—Patmann, Priory St., Hastings. [X5433

3½h.p. Ariel, nearly new cylinder and piston, magneto, believe 1912 or 1913; £24.—Ibbett, South St., St. Neots. [5510

ARIEL 3½h.p., Dixie mag., B. and B. carburetter, sound condition; £22.—75, The Vineyard, Richmond, Surrey. [5662

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey Manchester. [5269

LATE Ariel, 4h.p., 3-speed, countershaft gear, take sidecar, excellent condition; bargain, £68.—1, Wastdale Rd., Forest Hill, S.E. [6096

ARIEL 3½h.p., 3-speed, clutch, lamps, horn, etc., new tyres and belt, in perfect order; ride away; bargain, £58.—Churchill, The Grove, Dorchester. [5898

ARIEL, 1914, 3½h.p., 3-speed, kick starter, decompressor, coachbuilt sidecar, good condition, ride away; 65 gns.—Jones, 121, Lewisham Rd., Lewisham, S.E.13. [X5486

ARIEL 3½h.p. Solo Machine, drip feed, spring seat pillion, new tyres and belt, lamp, horn, in splendid condition; bargain, £36.—Butterworth's Garage, Mill Lane, Brixton Hill. [5855

ARIEL Combination, 1914, 3-speed countershaft, clutch, kick start, coachbuilt sidecar, smart turnout, spare belt, tools, tube; nearest offer to £80 accepted.—393, Wakefield Rd., Bradford. [X5562

3½h.p. Ariel, 3-speed, clutch, decompressor, lamps, horn, brand new Dunlop tyre and tube, fast, excellent condition, take sidecar anywhere; £65.—3, Otway House, Vena St., Clapham Common, S.W. [6249

Arno.

ARNO, 4h.p., Bosch, B. and B., powerful solo mount; accept £30 quick sale.—53, Rossell Rd., St. Ann's Rd., Tottenham. [6134

4h.p. Arno, T.T., 2-speed, Indian red, perfect condition, lamps, Klaxon, real sporting bus; £44.—Hyde, Barnside, Shere, Surrey. [5804

4½h.p. Arno, racing model, very fast, T.T., Sensspray, Bosch mag., speedometer, new tyre, tube, belt, splendid running order; £45.—Goodman, 90, Bower St., Bedford. [6886

Auto-Wheels

AUTO-WHEEL, in good condition; £10.—Jones, Garage, Droitwich. [X5178

WALL Auto-wheel, perfect condition, run 500; £10.—A. Jones, Oxbury, Sulop. [X5359

AUTO-WHEEL, 1914, in perfect order; £12.—66, Dalmeny Av., Norbury, S.W.16. [5661

AUTO-WHEEL, models de luxe, good running order; first m.o. £10; no offers.—Witts, Royston, Herts. [X5203

AUTO-WHEEL, 1914 model, complete; £12, unused.—Motor Garage, Albert St., Idle, Yorkshire. [X5691

AUTO-WHEEL, exceptionally good condition, very little used; 15 gns.—Box L2,543, c/o *The Motor Cycle*. [5608

AUTO-WHEEL for Sale, model de luxe, in excellent condition; £14.—Doctor, 53, Shoot Up Hill, N.W.2. [5737

2 Auto Wheels.—Wall, £7; B.S.A., £9; both in fine condition.—Garner, The Common, Saffron Walden, Essex. [6074

MOTOR CYCLES FOR SALE.

Auto-Wheels

AUTO-WHEEL, splendid order; £14.—Hall, Hockman Cottage, next to Green Man Hotel, Whetstone, near Finchley, N.12. [6026

WALL Auto-Wheel, powerful, just been thoroughly overhauled, splendid condition; £11, carriage paid.—Collins, Mount Pleasant, Fleet, Hants. [5438

WALL Auto-wheel, perfect condition, just overhauled by reliable firm; £15, carriage paid.—Watton, Chapel House, Pentre, Baschurch, Salop. [X5694

AUTO-WHEEL, B.S.A., first-class order throughout, on Triumph cycle, 26in. frame; £24, or near offer for quick sale.—Beard, 22a, South Bar, Banbury. [X5707

AUTO-WHEEL and Dingwall-Witham Invalid Carriage, 2-speed gear, and free neutral position, both as new, and in excellent order; £50.—Hucklebridge, 133, Sloane St., London, S.W.1. [X5187

Bat.

BAT, 4h.p., good tyres, overhauled, perfect condition; £25.—271, Beckenham Rd., Beckenham. [5512

B.A.T.-J.A.P. 5-6h.p., and green coach sidecar, chain drive, 2-speed, and clutch; £76.—75, St. Clement's, Oxford. [X5786

BAT-J.A.P., 1914, 6h.p., 3 speeds, lamps, horn, speedometer, in splendid condition; price £80.—Frost, Cotefield, Heath Rd., Leighton Buzzard, Beds. [6055

FIRST-CLASS 8h.p. Bat-Jap Combination, engine new 1917, fittings, etc., new 1919, 2-speed, Bosch, Amac; any trial; offers invited.—Box 4,283, c/o *The Motor Cycle*. [X5685

B.A.T.-J.A.P., 1914, 8h.p., countershaft, chain drive, new heavy tyres, new Bosch, less gear box, but temporarily fitted for belt; £55.—Hill, 21, Marlborough Crescent, Chiswick, W. [X5739

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and can give early deliveries. [5300

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [6104

BLACKBURNE.—Sole agents. Book now for early delivery.—Chandler, Reyre and Williams, Sun St., Hitchin. [0999

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

ADVERTISER had on order some months 8h.p. Blackburne combination, now guaranteed delivery July; what offers over £125? just bought car.—Box 4,256, c/o *The Motor Cycle*. [X5353

Black Prince.

BLACK Prince Motors.—See displayed advert. on page —Black Prince Motors, Askern, Doncaster. [X5558

Bown.

BOWN 3h.p. 2-stroke, as new, good machine; £50, or best offer.—R.G.S., 39, Bulwer Rd., Leytonstone. [4861

Bradbury.

BRADBURY 4h.p., single gear, good condition; £32. —59, London Rd., Coventry. [X5635

BRADBURY Agents.—Lists free.—Bright and Harles, 78, Church St., Camberwell, London. [5971

BRADBURY, 4h.p., splendid condition; £38.—Ransome, 2, Willow Grove, Chislehurst. [5742

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5606

1914 Bradbury, semi-T.T., thoroughly overhauled, sound throughout; 43 gns.—Gummerson, 9, Caxton Rd., Shepherd's Bush, W.12. [6127

4¼h.p. Bradbury, Bosch mag., B. and B. carburetter, 3-speed, clutch, lamps, horn, etc.; 38 gns.—69, King's Av., Watford. (Evening after 5.) [X5701

BRADBURY 3½h.p., engine lately overhauled, general condition exceptionally good; first £39 secures. —Lt. Norman, R.A.F., Goodleigh, Barnstaple. [5555

BRADBURY 4h.p. Clutch Model, in splendid condition, good tyres, P.H. lamp, all accessories; price £30.—Lambeshurst, Priory Av., Southend-on-Sea. [5626

4h.p. Bradbury, coachbuilt sidecar, 2-speed, free engine, perfect; £60.—335, Bethnal Green Rd., E.2. [5819

BRADBURY, 4¼h.p., Sturmey-Archer 3-speed and clutch, in perfect running order and condition; £50; after 7 p.m.—235, Beresford St., Camberwell Rd., S.E.5. [5947

1914 4h.p. Bradbury Coachbuilt Combination, 2-speed countershaft, free engine, kick start, splendid condition and running order; £58.—Virgo, 156, High St., Hounslow. [X5754

1913 (late) 4h.p. Bradbury coachbuilt Combination, 3-speed Sturmey Archer, J.S., clutch, two new tyres and tubes fitted, unused for 3½ years, overhauled and in splendid condition; will accept £65, or lightweight in part exchange.—593, Foleshill Rd., Coventry. [X5546

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BRADBURY 4h.p., 1913, Bosch mag., Binks 3-jet carburetter, new lamps, tyres and belt, will take sidecar, in excellent condition; trial; bargain, £47.—16, Trinity Sq., Brixton, S.W. [6245

BRADBURY, 4h.p., in excellent condition, with 2-speed, free engine, Bosch, B. and B. carburetter, horn, lamps, speedometer, just been overhauled; highest offer over £50.—Davies, Central Building, Skewen, Glam. [X5515

BRADBURY 1913 3½h.p. Combination, 2-speed, B. and B., Bosch, decompressor, lamps, generators, accessories, roomy sidecar, perfect condition, stored during war; £85, offers.—Rev. Kenny, Sharnbrook, Beds. [5590

Brough.

BROUGH 6h.p. Twin Combination, Mahon clutch, B. and B., ride away; £45; after 6 o'clock.—A.W. 9, Vicarage Lane, Stratford, E.15. [5735

BROUGH.—South Lancashire, North Cheshire, and Isle of Man; buyers order now from Official dealers, J. Blake and Co., Liverpool-Manchester. [X4465

Brown.

3½h.p. Brown, magneto, B. and B., Avons; 20 gns. —7, Gibson Square, Islington. [5815

BROWN, 3½h.p., good condition, engine, tyres, belt good.—Offers to Duly, Ewhurst, Surrey. [X5362

BROWN, 4¼h.p.; exchange 2¾-3½h.p., sell nearest £45.—66, Ellerton Rd., Totworth, Surbiton. [5957

BROWN Combination, 3½h.p., variable gear, Bosch, Binks, new belt and tyres; £25.—39, Parkgate Rd., Watford. [5975

B.S.A.

B.S.A.—Book now with Turner Bros., 134, Upper Thames St., London, E.C. [5750

1916 B.S.A., B. and C. drive, 3-speed; £66.—Ross, 86, High Rd., Lee, S.E. [5707

B.S.A. 3½h.p. Combination, N.S.U. 2-speed; £55.—Keene, Clyde Wharf, E.16. [X5548

B.S.A. 3½h.p., clutch model; £45. After 6.—21, Avenue Rd., North Finchley. [6016

B.S.A., 1914, 3½h.p., clutch, excellent condition; 60 gns.—33, The Vale, Golder's Green. [5616

B.S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5602

B.S.A.—Enquire prospects of delivery, solo or combinations.—Parker's, 245, Deansgate, Manchester. [X5765

B.S.A. Motor Cycle for sale, excellent running order, owner buying car.—Catliff, 1, Queen St., Maidenhead. [5931

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2919

1913 3½h.p. B.S.A., electric lighting, ride away; after 6.30 p.m.; £43.—4, Craven Rd., Harlesden, N.W.10. [X5717

B.S.A. 3½h.p., single gear, good tyres, accessories, perfect, trial; £30.—60, Palewell Park, East Sheen, S.W. [5563

B.S.A., all chain drive, with B.S.A. sidecar, in perfect order; any trial; £110.—A. Rossie, Wey Hill, Haslemere. [5772

1914 B.S.A., Mahon clutch, in real sound condition; £47.—Gummerson, 9, Caxton Rd., Shepherd's Bush, W.12. [6126

B.S.A. 3½h.p., clutch model, Bosch mag., B. and B., any trial, ready to ride away; £48.—Burnett, Rowsley, Derbyshire. [X5189

B.S.A. 1916 Model, 3-speed countershaft, sporting sidecar; seen and tested any time.—Dolphin Hotel, Faversham. [5570

B.S.A., 3-speed S.A., sporting C.B. sidecar, accessories, splendid condition; £70.—36, Mildenhall Rd., Lower Clapton. [5922

B.S.A., 1915, 4¼h.p., coachbuilt sidecar, 3-speed countershaft gear, splendid condition; 80 gns., no offers.—27, Park Av., Ilkeston. [X5440

B.S.A. Combination, 4¼h.p., 1917, chain-cum-belt, Cancelet sidecar, splendid outfit; £100; S.E.—Box L2,600, c/o *The Motor Cycle*. [6228

1916 B.S.A. Combination, 3-speed countershaft, lamp, horn, speedometer, under 3,000, just overhauled; £96.—Box 4,290, c/o *The Motor Cycle*. [5964

B.S.A. 4¼h.p. Combination, 2-speed, clutch, kick start, coachbuilt sidecar, easter wheel; £75; any trial.—Smylie, 82, Godstone Rd., Whyteleafe, Surrey. [5740

4h.p. B.S.A., 2-speed, all chain drive, perfect condition; £75.—Hardie, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [6179

B.S.A. 4¼h.p. Combination, chain drive, lamps, horn, Dec., 1917, little used, stored 1 year, very good order, lot of spares; £130; any trial.—P., Fair View, Tonbridge. [X5505

1913-14 B.S.A., all-chain, 2-speed, Millford C.B. sidecar, stored 2 years, lamps, speedometer, accessories, etc., mileage under 7,000; bargain, 71 gns.; ride away.—Harrison, 15, Albion St., Tamworth. [X5639

MOTOR CYCLES FOR SALE.

B.S.A.

3½h.p. B.S.A., 2-speed, P. and H., Comfy C.B. sidecar, Dunlops, heavily upholstered, topping condition; expert inspection; £80, or near.—Bowerman, Garden Suburb, Leicester. [X5779

1916 B.S.A. 4½h.p. coachbuilt Combination, countershaft 3-speed, kick-start, chain drive, spares, new tyres, perfect condition; £80; no offers.—Frost, South St., Bridport. [X5549

B.S.A. Combination, 1914, 3½h.p., 2-speed, kick start, new coachbuilt sidecar, all accessories, splendid condition; £70; bargain.—Apply, after 5 p.m., Ingram, 195 D, Munster Rd., Fulham, S.W. [X5784

B.S.A. 3½h.p., coachbuilt sidecar, Brampton variable gear, Bosch mag., B. and B. carburetter, Lucas lamps, Cowey speedometer, pump, tools, 80 m.p.g., owner going abroad; £65. After 5.30 trial.—101, Lonsdale Av., Wembley, Middlesex. [6018

B.S.A. 4½h.p., all-chain, and B.S.A. coachbuilt sidecar, perfect condition, mileage 4,500, oversize Palmer tyres, Autoclipse lamp, Lucas horn, Jones speedometer, spare tyre (new); £110, lowest; appointment.—Sachett, Oak Grove, Theydon Bois. [X5453

4¼h.p. B.S.A. Coach Combination, 3-speed, countershaft, kick start, all-chain driven, 1919 engine, spares, fully equipped, in fine tune, climb anything; cash offers invited, or prefer exchange, cash adjustment, reasonably modern light 2-seater car, mutual severe trial by appointment.—Stationmaster, Sinnington, Yorkshire. [X5812

Calcott.

2½h.p. Calcott, Bosch mag., Senspray carburetter; £23.—King, Egrove Farm, Oxford. [X5697

CALCOTT, 3½h.p., Bosch, B. and B., new condition, warranted sound, go anywhere; 36 gns.—136, Harrington Rd., Norwood Junction. [5531

Calthorpe.

CALTHORPE Junior, Precision, 2-speed, F.E., nearly new condition, ride away any time.—87, Truro Rd., Wood Green. [5752

CALTHORPE 2¼h.p., J.A.P. engine, Enfield 2-speed, in new condition; take £45.—P. Sumner, Wrenbury, Nantwich. [5673

CALTHORPE Junior, 2-speed; £24. Ride away or carriage passenger train paid.—H.R., 21, Norfolk Rd., Littlehampton, Sussex. [6017

4¼h.p. 1914 Calthorpe Combination, Precision engine, variable gear, new tyres and tubes; £58.—591, Lordship Lane, Dulwich. [5834

CALTHORPE-J.A.P., 1916, 2¾h.p., 2-speed, Dunlops, accessories, spare tyres; £45.—Neat, 35, Alfriston Rd., Clapham Common. [5724

CALTHORPE 2-stroke, 2¾h.p., Enfield gear, lamps, horn, mileometer, delivered in January; £50, no offers.—Durrington Lodge, Crescent, Surbiton. [5880

BRAND New Unused 1919 Calthorpe 2¾h.p. 2-stroke, 2-speed, Enfield gear, lamps, horn, accessories; what offers.—Davis, Crowthorne, Berks. [5687

CALTHORPE 2½h.p. Lightweight, 2-speed gear, spring forks stand carrier, nearly new; £40.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X5565

CALTHORPE, 1913 or 1914, 2-stroke, good condition, no accessories; £26, or nearest offer, highest cheque received secures.—Box L2,581, c/o *The Motor Cycle*. [6209

CALTHORPE-J.A.P. Late 1918 4-5h.p. Twin, coachbuilt sidecar, lamps, speedometer, horn, perfect condition, very little used; £110.—Duncan, Richmond Farm, Orford, Suffolk. [5508

CALTHORPE, 1915, 2½h.p. J.A.P., Enfield gear, Binks, 2 new oversize Hutchinsons, new belt, Miller lamps, horn, pump, all tools and spares; any trial; £40.—60, Morehall Av., Folkestone. [X5596

CALTHORPE-PRECISION 3¾h.p., 1911-12, new cylinder recently fitted, 2-speed countershaft, good tyres, new belt, Mills-Fulford chassis, C.B. sidecar, engine No. 2349; £55.—A.W., c/o 50, Bedlam Lane, Foleshill, Coventry. [X5634

Campion

CAMPION 2¼h.p., 2-speed, good tyres and belt, ride away; £30.—6, Hemstal Rd., West Hampstead. [X5604

CAMPION, 1915, 2¼h.p., 2-speed, good tyres and belt, ride away; £34.—6, Hemstal Rd., West Hampstead. [X5217

1913 4¼h.p. Campion-Precision, single, Bosch, B. and B., splendid running order; £38.—Bloodworth, 28, Austerby Rd., Bourne, Lincs. [X5705

1914 Campion-Jap, 6h.p., 2-speed, chain drive, first-class condition, not used during war, splendid sidecar machine; £85.—Miller, Scotby, Carlisle. [X5544

Centaur.

CENTAUR, 5-6h.p., 1913, 2-speed N.S.U., Bosch, B. and B., new belt, good tyres, good goer; £38.—12, Temple Sheen Rd., Mortlake, S.W.14. [X5184

Chater-Fafnir.

CHATER-FAFNIR 3h.p., Bosch mag., B. and B. carburetter, in good running order.—Gentry, 59, Aldenham St., St. Pancras, N.W.1. [5901

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CHATER-LEA, Fafnir 3½h.p., coil ignition, adjustable pulley, B. and B., requires new accumulator; £9, spares included, carriage paid, no offers.—Hammond, Whitstone Rd., Shepton Mallet. [X5439

Chater-Lea-Jap

CHATER-LEA-J.A.P. 4h.p., 2 speeds, F.E., Bosch B. and B.; £50; after 6.30, Saturdays 2.—Goodey, Brightview, Hadley Rd., New Barnet. [5829

CHATER-LEA, 3½-4h.p. Jap engine, Bosch, good tyres, lamps; only 29 gns.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [6111

CHATER-J.A.P. 4h.p., Armstrong 3-speed, B.B., U.H. mag., perfect running order, new back tyre and belt; £35.—Cooper, Brazier's Cottages, Ipsden, near Wallingford, Oxon. [5867

CHATER-LEA, 8h.p. J.A.P., round drop tank, semi-T.T. bars, disc wheels, long exhaust, pannier tool-bags, Lycett saddle, new Dunlop tyres and belt, electric lamps, horn, tools, enamelled grey, fast, sporting; £70.—The Ferns, Adelaide Grove, E. Cowes. [X5176

CHATER-J.A.P. 1915 6h.p., coachbuilt Combination, countershaft, 2-speed, handle start, all chain drive, 3 lamps, 2 generators, speedometer, Gloiaphone, recently overhauled, any trial to prospective buyer, seen by appointment, private owner; price 100 gns.—5, Murray Rd., Ecclesall, Sheffield. [X5806

CHATER-LEA-J.A.P. 5h.p. Twin, 1915, T.T. bars, free engine, clutch, Bosch magneto, B. and B., pilot jet, Druids, carrier, stand, lamps (Lucas King of Road), brand new tyres (Dunlop ribbed front and tubes, steel-studded Michelin back), footboards, in splendid condition; £63.—Royal Hart Garage, Ashford, Middlesex. [5492

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CHATER-LEA 3½h.p., splendid condition, ride away; £35.—Manor Farm, North Cray, Sidcup. [X5740

CHATER-LEA.—South Lancashire residents. Book orders with J. Blake and Co., Liverpool-Manchester. [X4466

CHATER-LEA 8-10h.p., 3-speed, clutch, sidecar, lamps, good condition; best offer.—17, High St., Camden Town. [5891

3½h.p. Chater-Lea, Bosch, new belt, good condition, wants tuning and adjusting; £18.—38, Grove Av., Twickenham. [5888

CHATER-LEA 4h.p., Bosch, B. and B., new tyre, new belt, in going order; a bargain; £30.—Cook, Broad St., March, Cambs. [X5870

CHATER-LEA No. 7 Combination, excellent condition, ready and fit for any journey; seen between 6 and 7.—117, McLeod Rd., Plumstead. [5830

CHATER-LEA, 3½h.p., and coachbuilt sidecar, White and Poppe free engine, Mahon variable gear, Bosch mag., fine condition; £50.—"Athlone," Stanwell Rd., Ashford, Middlesex. [5656

8h.p. Chater Combination, brand new, all oversize Palmers, 700×80, 3-speed, free engine, handle start, coachbuilt body, Lucas lamp sets, splendid machine, ready for the road; £160, no offers.—Motorist, 136, St. Ann's Rd., Tottenham. [X5514

CHATER-LEA and Sidecar, 8h.p., 3 speeds, and clutch handle start, in perfect running order, tyres almost new, Bosch, Binks (new), drip feed, large coachbuilt sidecar; £75/10; seen any time; trial here.—Alex. Jackson, Station Rd., Steeton, Keighley, Yorks. [X5367

Chater-Lea-Villiers.

1916 Chater-Lea, Villiers 2-stroke, 2-speed, P. and H. lamp and generator, horn, splendid order, £40.—Barton, Rock House, Chipping Sodbury, Glos. [X5542

Chater-Precision.

4½h.p. Chater-Precision, N.S.U., Bosch, Dunlops; £48.—42 Prince's Rd., Holland Park. [6078

Clement.

CLEMENT 2h.p. Lightweight, outside flywheel, overhead valves, Sturmey-Archer, new Hutchinsons, Bosch, Brooks, B. and B., overhauled, enamelled, like new; cash offers; stamp.—Middleton, William St., Blackwood, Mon. [X5724

Clyde.

CLYDE 3h.p., U.H. mag., B. and B., Saxon forks, good tyres; ride away; £16.—17, Ongar Rd., Addlestone. [5965

CLYDE, 3h.p., 4-stroke engine, M.L. magneto, Amac carburetter, Druid forks, T.T. bars, splendid running order, smart appearance; £28.—Bramlea, Charlton Rd., Shepperton-on-Thames. [5939

Clyno.

LATE 1914 6h.p. 3-speed Clyno Combination; £95.—Winn, Stainforth, Settle. [X5560

GROVER, Smith, and Willis, Basingstoke, Clyno Agents.—Deliveries in strict rotation; order now. [5778

2½h.p. Clyno, free engine, 2-speed, good order; £32.—Webber, Radley Rd., Abingdon, Berks. [X5865

CLYNO Combination, 6h.p., 1913, C.B., 2-speed, K.S., lamps, horn, new tyres, T.T. bars, ride away; £85, or offers.—35, Trewsbury Rd., Sydenham. [5623

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CLYNO 1914 6h.p. coachbuilt Sidecar, 3-speed, clutch, kick-starter, spare wheel, lamps, speedometer; £110.—103, Clifton Rd., South Norwood. [5823

1912 Clyno Combination, 5-6h.p., 2-speed, wicker sidecar; best offer over £40; ready to drive away. — Leysdown, Upper Hughendeo Rd., High Wycombe, Bucks. [6073

6h.p. Twin Clyno Coach Combination, countershaft gears, kick start, good condition, fully equipped, lamp, horn, spares, tools; bargain; £67.—43a, Arrow Rd., Devons Rd., Bow, E.3. [6252

CLYNO 6h.p. Combination, coachbuilt, hood, screen, 3 lamps, generators, new spare tyre, tools, foot pump, kick start, just overhauled, ride away; £75.—Birks, 702, Holloway Rd., London, N.19. [6118

5-6h.p. Clyno Combination, 3-speeds, countershaft, kick-start, interchangeable wheels, new tyres, spare wheel, tyres, tubes, lamps, horn, tools, reason for selling; £130.—Brown, 30, Hopwood St., Warrington. [X5805

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CONNAUGHT, 1916, 2¾h.p., 2-speed, perfect condition; £35.—101, Bath Rd., Swindon. [5524

2½h.p. 1915 Connaught 2-stroke, 2-speed, lately fitted new tyres (Dunlops), unpunctured, all in good condition; £42.—G. Taylor, Fruiter's Arms, Crockenhill. [5946

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1917-18 Coventry Eagle, Villiers 2¾h.p. 2-stroke engine, 2-speed gear, excellent condition; £55.—F. Chatterton, Stockwell Gate, Mansfield, Notts. [X5496

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Dayton.

DAYTON 2-stroke Lightweight, requires new carburetter, in running order, U.H. magneto, new belt and studded Dunlop back tyre; £15, no offers.—Seen, 125, St. Asaph Rd., Brockley, S.E.4. [5634

De Dion.

3½h.p. De Dion, magneto, good order; £20.—7, Gibson Square, Islington. [5316

Diamond.

DIAMOND, 1919 model, 2¾h.p. J.A.P., Enfield 2-speed, free engine, lamps, generators, and Klaxon, new last March, only ridden 500 miles, excellent condition; £60.—St. Valery, Uplands Park, Enfield. [5798

Dot

1915 T.T. 2¼h.p. Dot-Jap, 2-speed countershaft gear, new tyres, horn, and spare belt, condition perfect; £36.—89, Brock St., Macclesfield. [X5750

Douglas.

2¾h.p. Douglas, new tyres, perfect order; £26.—31, Stockdale Rd., Battersea, S.W. [5535

DOUGLAS, 2¾h.p., 2-speed, Dunlops, never used.—4, The Grove, Golders Green, W. [X5459

DOUGLAS, 2¾h.p., 2-speed, good condition; £40.—14, Church Hill, Leamington. [X5557

1916 4h.p. Douglas, little used.—Apply, 58, Garfield Rd., Lavender Hill, S.W. [5683

2¾h.p. Douglas, new W.D. model, in crate; 75 gns.—31, King's Av., Malden, S.W. [5782

DOUGLAS, 2¾h.p., new tyres and belt, guaranteed perfect; £30.—49, Medway Rd., Bow. [5489

DOUGLAS 2¾h.p., ride away, suit learner; £30; after 7.—80, York Rd., Battersea, S.W. [6036

1918 4h.p. 3-speed Douglas Combination; £105.—29, St. Leonard's St., Bromley-by-Bow. [6091

DOUGLAS 2¾h.p., W.D., new, Klaxon; 75 gns.; after 5, Saturdays 12.—54, Riverdale Rd., Erith. [6201

NEW 2¾h.p. W.D. Douglas, in crate; best offer over £72.—R. Winup, Fishmonger, Luton, Beds. [5833

DOUGLAS 2¾h.p. New Sporting Combination; 89 gns.—52, Thornhill Rd., Barnsbury, N.1. [5596

1916 Douglas, 2¾h.p., 2-speed, £58; also ditto, 1915, £53.—Ross, 86, High Rd., Lee, S.E. [5708

DOUGLAS 2¼h.p., 2-speed, excellent condition; £45 cash, ride away.—67, The Vale, Acton. [5896

DOUGLAS 2¾h.p., 1914, new Dunlops, lamps, horn; £42.—Hamilton, Burchitts, Ockley, Surrey. [5680

DOUGLAS.—We are doing our best for deliveries.—Moffat, Douglas Agent, Yeovil. 'Phone: 50. [1103

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DOUGLAS, 1916, 2¾h.p., T.T., 2 speeds, accessories, fast, powerful; £60.—5, Victoria Av., Surbiton. [X5684

DOUGLAS, 2¾h.p., just overhauled, ride away; £27.—53, Russell Rd., St. Ann's Rd., Tottenham. [6133

DOUGLAS.—All models. Book now for future 1919-1920 deliveries.—Parker's, Bradshawgate, Bolton. [X5757

2¾h.p. Douglas, W.D., just uncrated, seen after 7; 77 gns.—Danetree, Dagmar Av., Wembley. [X5594

DOUGLAS, 2¾h.p., W.D. model, recently uncrated; £78.—Robertson, 55, Broad St., Peterborough. [6082

DOUGLAS, 1911, extra good order; £26; after 6 o'clock.—64, Forthbridge Rd., Clapham Common. [5851

DOUGLAS 2¾h.p., 2-speed, clutch, T.T., smart; £38.—62, Plashet Rd., Upton Park, E.13. [5835

1916 Douglas Combination, 3-speed, in good running order; £110.—1, Gt. Titchfield St., Oxford Circus, W.1. [5831

2¾h.p. Douglas, 1914, 2-speed, excellent tyres, very good running order; £58.—Ghyll, Crowborough, Sussex. [X5463

DOUGLAS 2¾h.p., W.D. model, just delivered from makers; £80.—143, Petherton Rd., Highbury, N.5. [5790

DOUGLAS 1915 2¾h.p., 3-speed, horn, speedometer; £40. Seen 10 to 5.—Knapton, 4, Millbank, S.W.1. [5756

1919 Douglas Combination, 300 miles only, perfect; best over £130.—23, Broadway Rd., Bishopston, Bristol. [6068

NEW Douglas 4h.p. 1919 Combination, fitted out completely; £160, cash.—4, Hillside Mansions, Highgate, N.6. [X5198

DOUGLAS, 2¾h.p., 1919, W.D. model, done under 300 miles; £85.—A. J. Jarrett, 75, Mayor's Walk, Peterborough. [X5366

2¾h.p. Douglas, 1912, stored during war, excellent condition; ride away; £35.—27, The Gardens, E. Dulwich, S.E. [5873

1919 Douglas 4h.p. Combination, delivery May, splendid machine; offers.—12, Dalmeny Av., Camden Rd., N.7. [5585

DOUGLAS, 2¾h.p., just been thoroughly overhauled and in excellent condition; price £35.—Bates, Riverside, Chertsey. [5644

1919 2¾h.p. W.D. Douglas, new June 28th, ridden 10 miles; 79 gns. cash.—Rathmell, Heathgate, Golder's Green. [5618

DOUGLAS 2¾h.p., 1912, Bosch, ride away; £27 cash. After 6.30.—North, 116, Thurlow Park Rd., W. Dulwich. [5836

DOUGLAS 2¾h.p., late model, practically new, perfect order; sacrifice, 55 gns.; bargain.—21, Newton Av., Acton, W. [6255

1915 Douglas, 2¾h.p., 2-speed, lamps, horn, £4 of spares, as new; £57, or near offer.—Smith, Staines Rd., Bedfont, Middlesex. [5657

2¾h.p. Douglas, new, done 100 miles, head lamp and Klaxon; best offer over £83.—Janes and Adams, High Rd., E. Finchley. [6072

DOUGLAS 2¾h.p., 1914, and racing sidecar, dynamo lighting, 2-speed; £60.—Apply, King's Lynn, Ness Rd., Shoeburyness. [5534

1911 2¾h.p. Douglas, 2-speed, open frame model, good condition, Lucas horn; lowest, £24.—Bann, Penfold St., Macclesfield. [X5676

DOUGLAS, 1912, single gear, 2¾h.p., engine just overhauled; £35.—H.H., 104, Leigham Court Rd., Streatham, S.W.16. [6140

DOUGLAS 2¾h.p., late 1914, 2-speed, free engine, perfect condition; £45; any trial.—Lambton, Fern House, Corley, near Coventry. [X5638

DOUGLAS Combination, 4h.p., 1919, brand new, in perfect condition; £155.—126, Nightingale Lane, Wandsworth Common, S.W. [X5574

DOUGLAS 2¾h.p., brand new out of crate, W.D. model, lamps, horn, etc.; 60 gns.—14, Cyprus St., Globe Rd., Old Ford Rd., N.E. [6251

DOUGLAS, 1911 or 12, perfect running order, tyres and belt good, also enamel and plate.—Ward, 13, Forfield Place, Leamington Spa. [X5639

1913 Douglas, T.T. model, just been thoroughly overhauled, now in splendid condition, and very fast; £38.—257, Cavendish Rd., Balham, S.W. [5879

DOUGLAS 2¾h.p., 2-speed, brand new, splendid condition, model W.D.; £80; no offers.—20, Wyndale Rd., South Woodford, Essex. [5734

DOUGLAS, T.T., 2-speed, late model, just overhauled, excellent condition; £55.—88, Redcliffe Gardens, W. (near Earl's Court Stn). [5853

DOUGLAS 2¾h.p., 1914, 2-speed, clutch, lamp, 2 new tyres, speedometer, good condition; £40.—Jackman, 46, Normandy St., Alton, Hants. [5587

DOUGLAS brand new W.D. models (2¾h.p.) actually in stock.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green, N. [5840

DOUGLAS 2¾h.p. 2-speed, Bosch, Binks, new Dunlops, very fast; seen by appointment.—Lt. H. W. White, 19th Lincs., Rugeley Camp, Staffs. [5568

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DOUGLAS 4h.p. Combination, new June 20th, 1919, guaranteed perfect; best offer over £140 secures. —Bynorth, 2, Torquay Rd., Newton Abbot. [5584

DOUGLAS, 1913, 2¾h.p., 2 speeds, clutch model, speedometer, generator, and lamp, a nutty little mount; £45.—37, High St., Eltham, S.E. [5825

DOUGLAS 2¾h.p., 2-speed, excellent condition, new cyls., pistons, and big ends in 1916, lamps and accessories; £50.—Stirton, Holbeach. [5726

DOUGLAS 2¾h.p., 2-speed, lamps, horn, and spares, good condition, stored during war; £45, or near offer.—Farnes, 5, Park Lane, Ashtead, Surrey. [5786

DOUGLAS 2¾h.p., single-speed, 1911, excellent hill-climber, tyres good, spare belt and tube, tools; nearest 28 gns.—Marriott, Haines Hill, Taunton. [X5767

4h.p. Douglas, in extra good condition; any trial; £90; lightweight part entertained.—Gaydon, Upper Norwood, S.E.19. 'Phone: Sydenham 182. [5490

DOUGLAS 4h.p., 2-speed, clutch, coachbuilt sidecar, splendid condition throughout.—Mebes and Mebes, Motor Cycle Dept., 154-6, Gt. Portland St., W.1. [5427

1919 Douglas 2¾h.p. W.D. model, P. and H. lamps and generator, Klaxon horn; 80 gns.—Douglas, Omra, Regent's Park Rd., Church End, Finchley, N.3. [5546

DOUGLAS, 1913, 2-speed, T.T., Binks, knee grips, very fast, stored 4 years, condition excellent; £55; no offers.—Write, 270, Barry Rd., E. Dulwich. [6151

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DOUGLAS, about 1911, only ridden about 100 mile since re-enamelling, etc., new tyres and belt; best offer; stamp for reply.—142, Napier Rd., Gillingham, Kent. [5916

DOUGLAS 1915 2¾h.p., 3-speed model, recently overhauled, and new mudguards fitted, electric lighting. —Parker's, 245, Deansgate, Manchester; Bradshawgate, Bolton. [X5755

DOUGLAS 2¾h.p., T.T., late 1914, lamps, Klaxon, and all accessories, nearly new condition; 57 gns.; no offers.—E.A., 21, Market Place, Kingston, Surrey. [6156

1913-14 Douglas, splendid condition, 2-speed, footboards, long copper exhaust, T.T., lamps, take two anywhere; £45.—Parker, School House, Cromford, Matlock. [X5484

DOUGLAS 1916 4h.p. Combination, new condition, been overhauled; any trial; £90, or near offer for quick sale.—244, Mount Pleasant Rd., Tottenham, London, N.17. [6193

1913 Douglas 2¾h.p., running order, bnt wants overhauling, 2-speed, good tyres, lamp, horn, etc.; first £20 secures.—Gordon Barker, 35, Grange Rd., Luton, Beds. [5885

DOUGLAS 1914 2¾h.p., 2-speed, engine perfect, excellent condition, as new, new tyres, 2 lamps and generator, Klaxon; 59 gns.—18, Chesilton Rd., Fulham, S.W.6. [5925

2¾h.p. Douglas, 1915, speedometer, mechanical horn, splendid order; 65 gns.—Hardie, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [6178

DOUGLAS 2¾h.p., 1914, T.T., engine and machine just overhauled, footboards, new tyre, tubes, and belt; £60; seen by appointment.—Bird, Connaught Lodge, Chingford. [5581

DOUGLAS, T.T., 2¾h.p., late 1914, stored during war, 2-speed, long exhaust, Stewart warning signal, footboards, etc., excellent condition; £55.—Box 4,230, c/o *The Motor Cycle*. [X5647

DOUGLAS 4h.p. Combination, 1919, recently delivered from makers, aluminium disc wheels, Klaxon, P.H. lamps, generator, spare tyre; £150.—Box L2,603, c/o *The Motor Cycle*. [6231

DOUGLAS 2¾h.p., carefully stored during war, tyres, plating, enamel, etc., all very good, owner now unable to ride; £29, first cash secures; no offers. —Box L2,564, c/o *The Motor Cycle*. [5679

DOUGLAS, 2¾h.p., 2-speed, 1916 T.T., thoroughly overhauled, new C.A.V. magneto, in fine going order; £60.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station), N.W. [5599

DOUGLAS 4h.p. Solo, 1919, practically new, only used few miles, including accessories; £110.—Hardie, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [6177

DOUGLAS 2¾h.p., 1914, with Watsonian sidecar; £75, or exchange, with Clyno 2-speed, clutch, etc., for good 6h.p. combination, or sell lot, £110, quick sale.—Hardwick, Brockenton, Belmont, Surrey. [5564

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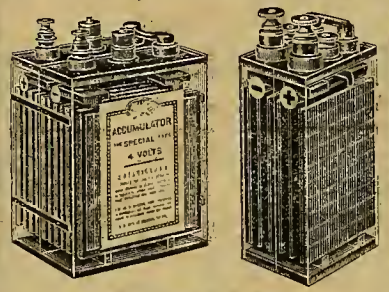
SPECIALITIES



H.A.H. Accumulators.

			Price.
Fig. 1162	4 volt, 40 amps.	..	31/-
,, 1166	4 ,, 60 ,,	..	41/6
,, 1182	6 ,, 40 ,,	..	48/6

Many other sizes

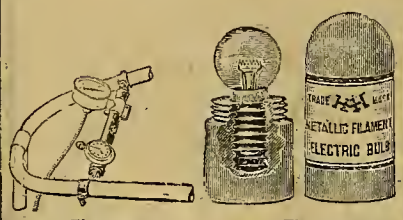


Fig. 390. **H.A.H. Crossbars.** Fig. 390 1" tubing 7/6 each, ,, 391 ⅞" ,, 7/6 ,,

Fig. 1220. **H.A.H. Bulb Box.** Price 4d each.

Fig. 150.
0-7 volts 12/-
0-15 volts 12/-
0-18 amps. 12/-
0-25 ,, 12/-

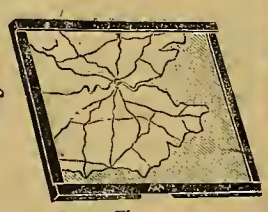


Fig. 395. **Rouse Card Holder.** Price 6/- each.

H.A.H. Wiring Sundries.

Complete Sets as illustration.

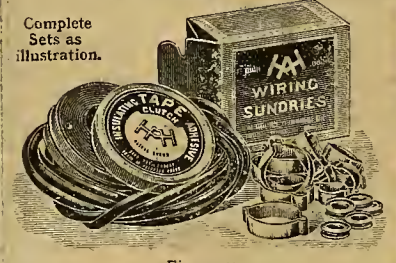


Fig. 255.
Set "A" for Solo Machines .. 4/3.
6yds. single lighting wire, tape, clips, ring terminals, etc.
Set "B" for Sidecar Combinations, 6/6.
12yds. single lighting wire, tape, clips, ring terminals, etc.
Delivery from Stock.

Note.—Postage extra on all the above.
Write for latest Catalogue of H.A.H. Complete Electric Lighting Sets.

A. H. HUNT, 115-117, Cannon St., LONDON, E.C.4.

MOTOR CYCLES FOR SALE.

Douglas.

1919 4h.p. Douglas Combination, just delivered from makers, splendid machine, fully equipped, any trial with owner; Hampshire district; price £150; no offers.—Box L2,518, c/o *The Motor Cycle*. [5541

DOUGLAS.—We have several new 2¾h.p. W.D. models in stock, 2-speed, T.T., at £78 and £80 each; carriage paid to any part of England.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

2¾h.p. Douglases.—We are not at present accepting further orders until such a time as we can obtain a sufficient number of 2¾h.p. Douglas machines. We shall still be pleased to send illustrations and information likely to help our many customers.—Robinson's Garage.

4h.p. Douglases.—We are not at present accepting further orders until such a time as we can obtain a sufficient number of these outfits. We shall still be pleased to send illustrations and information likely to help our many customers.—Robinson's Garage, 32-35, Green St. Tel.: 388. T.A.: Bicycles. [5432

DOUGLAS, March, 1917, 2-speed, buffer springs, Lucas lighting set and mechanical horns, tyres and belt excellent, easy of starting, slow running, speed and hill-climbing demonstrated; £58.—5, Eglon Mews, Primrose Hill, N.W. [5890

COLONIAL Douglas, late 1915, 2¾h.p., T.T., 3-speed, discs, long exhaust, speedometer, mechanical horn, tyres practically new, 2 lamps, generators, tools, spares, new chain and sprockets; any inspection; £63.—Bailey, jun., Ivydene, Tichborne St., Leicester. [5875

DOUGLAS 1914 3-speed 2¾h.p., Bosch ZA2 mag., adjustable pulley, electric lighting set, Lucas acetylene generator, Stewart magnetic trip speedometer, tools, enamelling and plating not scratched, mileage 1,800, made up to owner's specification; £74/10.—27, Melrose Gardens, Hammersmith. [6190

DOUGLAS Douglas.—Our experience and advice are at the disposal of all Douglas owners. 2¾h.p. W.D. model, price £72; 4h.p. combination, price £120. If you are interested, call and see us.—Vivian Hardie and Lane, Ltd., Douglas Specialists, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [6169

Edmund.

1919 Edmund-Jap, 2½h.p., spring frame, Enfield 2-speed, Avons, M.L., lamp, horn, fine condition; £56.—Seen, Market Harborough Motor Co. [5635

LATE 1916 2¾h.p. Edmund-Jap, Enfield 2-speed, chain drive, only run 600 miles, like new, in perfect running order, reliable, economical; what offers? —Stephens, Bideford. [5767

Elswick.

ELSWICK, 2½h.p., single speed, Precision, Bosch, perfect condition, good as new; what offers?—Winstone, Cirencester, Glos. [X5470

Enfield.

1916 6h.p. Enfield Combination; £120.—Ross, 86, High Rd., Lee, S.E. [5709

ROYAL ENFIELD 6½h.p., sidecar, just overhauled. —P. Sumner, Wrenbury, Nantwich. [5674

ROYAL ENFIELD Twin, 3h.p., chain drive, perfect order; £45.—Hill, Rathdrum, Co. Wicklow. [5497

ENFIELD 1916 6h.p. Combination; £130; seen any time.—29, St. Leonard's St., Bromley-by-Bow. [6089

1919 6h.p. Combination, New Enfield; owner bought car; £160.—Box 4,289, c/o *The Motor Cycle*. [X5696

1913-14 3h.p. Enfield, 2-speed, kick starter, good running order; £45.—Box 4,254, c/o *The Motor Cycle*. [X5438

8h.p. Enfield 1917 Combination, hood and screen, condition perfect; £175.—Sawyer, Wrentham, Suffolk. [5515

2¾h.p. Enfield, being broken up; write, stating requirements and offers.—White, Wireless School, Carnarvon. [X5579

ENFIELD 6-8h.p. Combinations, 3h.p. solo, 2¼h.p. lightweight models.—Enquire Parker's, Bradshawgate, Bolton. [X5758

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2920

ENFIELD 2¾h.p. Twin, single gear, needs slight repairs; £18, or nearest offer.—Jesse Hall, Music Seller, Louth. [5696

1916 T.T. Enfield Twin, 3h.p., 2-speed, i.e., lamps, excellent condition, fast; £76.—48, Berkshire Gardens, Bowes Park, N.22. [5930

ENFIELD 1914 6h.p. Combination, good condition, wind screen, speedometer, etc.; £110.—43, Wickham Rd., Brockley, S.E. [5848

ENFIELD 1919 6h.p. Combination, new, perfect condition guaranteed; best offer accepted.—Box L2,583, c/o *The Motor Cycle*. [6211

ENFIELD Combination, 6h.p., 1914, screen, lamps, luggage carrier, condition as new; £110.—54, Ashburnham Rd., Belvedere, Kent. [X5180

ENFIELD 3h.p., 1913, 2-speed, excellent condition and running order, horn and few spares; £35.—Smiley, Newlyn, Tutshill, Chepstow. [5701

2¼h.p. Twin Enfield, good condition, belt, new tubes cover, not done 4,000 miles; £20, lowest.—242, Sandwell Rd., Handsworth, Birmingham. [X5660

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (five lines).

Editorial Offices.
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
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Subscription Rates: Home, 17s. 4d.; all countries abroad, 19s. 6d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

COLONIAL AND FOREIGN AGENTS:
United States—The International News Agency, New York. Canada—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
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Finding a Winner.

NOW that club secretaries and others up and down the country are giving their attention to the problem of finding a winner in reliability trials, it should not be long before a satisfactory solution is discovered, though, as one of our contributors justly points out, it is an open question whether a single valuable award should be made in a reliability trial where so little separates the first few competitors. Of course, we get the same kind of thing in other sports; for instance, the winner of the King's Prize at Bisley gets £250, a gold medal, and a gold badge, while the second man, who may be only one point behind, that is about ⅓%, gets £60 only. In a case like this, however, it is possible to say definitely that one man's score is better than the other's, but, in a reliability trial, it is very difficult to decide which of a dozen or more performances is the most meritorious.

A fast and slow test on a hill or level ground can be used, but it is obvious that in this case the figure of merit should not be obtained by dividing the fast time into the slow, as was done at the Midland C. and A.C. trial recently. This, as was pointed out in our correspondence columns, gives the same figure to performances of very different merit. Subtracting the fast time from the slow is open to the same objection, and while encouraging the embodiment of four-speed gear boxes with a very low emergency gear, which is a feature advocated by many riders, it also tempts a manufacturer to fit a non-standard gear box in his competition machines. As a matter of fact, the winner of the premier award in the trial mentioned above had four speeds on a machine normally having two. We think entries in such trials should be confined to machines conforming to the makers' catalogue specification, or, in the case of experimental models, the public should be advised that such machines are not to standard specification. We suggest, as a simple means of obtaining a very satisfactory result, that double the slow speed should be subtracted from the fast speed. The formula would then be F—2S (F being the fast speed and S the slow).

Another method was used in the Arbuthnot Trophy. This was a test of consistency, not of flexibility, and it had much to recommend it, but the latter might be allowed to count in the event of the tie in the former, *e.g.*, a competitor whose speeds are 5 and 20 m.p.h. on each trial should be adjudged superior to one who was able only to do 8 and 16 m.p.h.

The brake test, to be used in the Midland Cup Trial (*vide* our "Correspondence" columns), has also much to recommend it. The conditions are simple and effective. But we do not think that this test should be used as a means of finding a winner, except in the case of a tie on all other points.

The Weight Factor.

SINCE events like the Six Days Trials have become rather an item of manufacturers' propaganda than mere sporting contests, we think that greater insistence should be placed upon the comparative weights of the competing machines, especially as regards sidecars, and that this question, in common with "finishing condition," should be made to bear upon the allocation of awards.

Thus, if two machines of equal capacity and similar specification survive a modern trial without penalisation, surely the designer of the lighter one deserves the encouragement of the premier award in so far as he has evolved, by economy and choice of material and skilful planning, a design inherently strong rather than one dependent upon sheer weight of metal.

We strongly urge Mr. Loughborough to ascertain *(and make public)* the weight of each machine, complete with spares and equipment, entered in the forthcoming Six Days Trial; such publication, we feel sure, will form an interesting comparison with "catalogue weights."

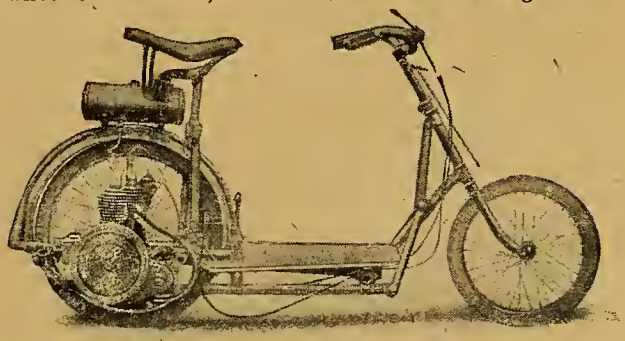
An index to the advertisements in this issue will be found on the page facing the back cover.

NEW SCOOTER DESIGNS.

Lightweight Motor Cycle Features embodied in the Latest Models.

THE L.A.D. SCOOTER.

WITH the main object of converting Auto-wheels into motor scooters, a new company, L.A.D. Scooters, has been formed, with works at Lower Bourne, Farnham. As will be seen from the illustration, the frame, which is registered, is of the open type with platform, and is fitted with a small wheel at the front, but in future models a larger size

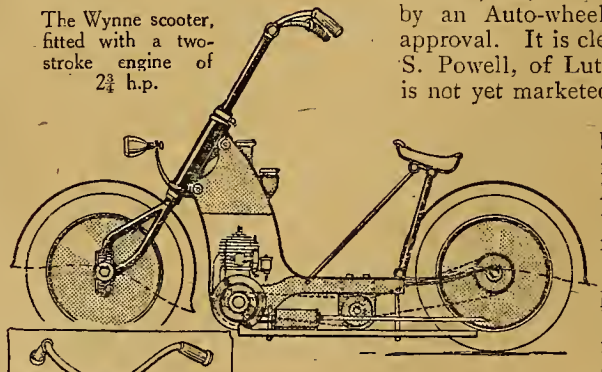


The L.A.D. scooter, embodying an Auto-wheel.

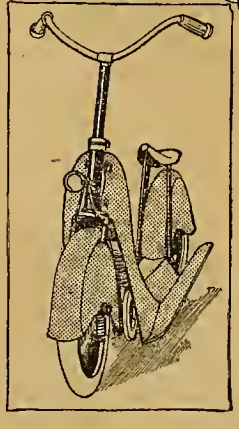
wheel will be fitted, probably of the same size as the rear Auto-wheel. The standard frame of the Auto-wheel appears to be used, but a rim brake is fitted to the wheel rim. The price for the complete scooter is £39. Fitted with a thoroughly overhauled second-hand Auto-wheel, the figure is £25. The company is prepared to build up customers' own Auto-wheels.

THE WYNNE SCOOTER.

The interest in scooters shows no signs of diminishing, and every day we hear of new propositions, designed, made, or projected. There is a decided tendency now for designers to embody a seat and so develop the machine into the miniature motor cycle as we have forecasted. The latest machine to be brought to our notice is the "Wynne" scooter, the design of Mr. J. W. Oates, Mona Terrace, Douglas, I.O.M., which appears to embody many desirable features.



The Wynne scooter, fitted with a two-stroke engine of 2¾ h.p.



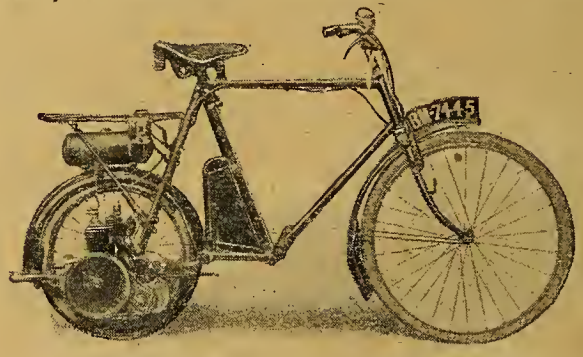
A light pressed steel frame carries a 2¾ h.p. two-stroke engine at its fore end which drives a countershaft clutch, by chain, at the rear, whence another chain transmits the drive to the rear wheel. The machine is sprung fore and aft, the forks by coil springs, the rear wheel by leaf springs; and both wheels are efficiently guarded by aluminium covers made in two halves to facilitate rem val.

Petrol and oil tanks are carried above the engine, and at the rear the frame supports long rubber-covered footboards, which are only a few inches from the ground. The whole is enclosed by a cover, which has convenient doors to give access to the engine, etc. 16 × 3in. disc wheels are fitted.

The gear ratio is 5¼ to 1; hence it approximates to a conventional two-stroke motor cycle in respect of power and speed, but weighs only 50 lb. It is the intention of the designer to embody a small dynamo for lighting front and rear lights, and the suggested price is £35.

A 50 lb. MOTOR CYCLE.

The designer of the machine depicted below evidently believes in the ultra-lightweight motor cycle, and



The 50 lb lightweight motor cycle in embryo.

does not deem either the "sit down" or the "stand up" type of scooter as covering his requirements. It is obvious, too, that the auxiliary power as supplied by an Auto-wheel did not exactly meet his approval. It is clear that this constructor—Mr. S. Powell, of Luton—wanted something which is not yet marketed; an ultra-lightweight motor cycle on which l.p.a. would be impossible, even if it were necessary. So he combined his pedal cycle with his Auto-wheel, and the result is by no means displeasing.

It will be seen that the pedalling gear of the cycle has been removed and a pair of footrests substituted, and the conventional back wheel was jettisoned in favour of the complete Auto-wheel unit, with the rear brake made to operate on the flywheel.

We are informed that the machine is quite roadworthy, and capable of 25 m.p.h. under normal conditions.

ESSEX M.C. SPEED TRIALS.

In addition to the classes already announced to compete at Southend on the 23rd inst., it has been decided to include events for any standard touring motor cycle under 250 c.c. and for motor scooters of any engine capacity.

Occasional Comments by "Ixion"

The Cautious Buyer.

I HAVE received a number of letters from would-be motor cyclists of the impecunious type. Transport necessities impel them violently towards purchase, but they are very "windy" about depreciation. As several of them shrewdly perceive, there are three special factors (if not four) which make depreciation rather a problem at the present moment, namely:

(1.) Machines made between 1913 and 1916 will cease to be worth from £50 to £75 as soon as the present famine terminates.

(2.) Machines turned out this year may depreciate at an unusual rate if Olympia produces a bevy of sensational new models.

(3.) Prices may come down with a run in the course of a year or two, if industry and finance settle down.

(4.) With so many new firms and production on a larger scale, an excessive number of machines may be manufactured during 1920-1921, and the less popular makes may ultimately be dumped on the market at a cut price, and pull down all second-hand values.

Consequently, people who command just sufficient capital to buy a machine and do not wish to drop too much when they sell are a little worried.

Some Possibilities.

IT is, of course, certain that machines constructed between 1913 and 1916 will depreciate very heavily next year. No sane man will buy such mounts at the fancy figures usually demanded nowadays unless he can afford a real loss, and faces this certainty in his eagerness to get on the road at once. A friend of mine has just disposed of a 1913 machine for £6 more than it originally cost him: it is as near as no matter worn out, and was something of a dud when it was new; its purchaser will drop at least fifty per cent. if he resells next spring, nor does he expect any happier fate. So far as the second factor in my last paragraph is concerned, I do not believe that second-hand prices will suffer by reason of revolutions in design. Manufacturers are very slow to injure their old clients by introducing sensational new models, which throw all previous patterns out of date and cause a slump in their market value. Moreover, the "newsters" have yet to beat the "oldsters." On the whole I see no reason why a genuine 1919 model should depreciate more heavily in 1920 than a 1911 model did in 1912.

Over-production?

FROM an amateur's standpoint a year of over-production would be a glorious lark. Over-production means cut-throat competition by the traders concerned. Once upon a time there was serious over-production by the steamer companies who convey tourists to the Isle of Man; and the rate-cutting grew so fast and furious that towards the finish one company took you over for nothing and gave you a fizz lunch on board, whilst the other—mindful of choppy seas and queasy tummies—took you over for nothing, and gave you a fizz lunch *the day after your arrival* (or words to that effect). If such a situation ever developed in the motor cycle trade, we might get brand new 6 h.p. sidecar outfits for £10, plus a free insurance policy and a ticket in a draw for a year's petrol. But it won't. The slogan, "Our works are organised for mass production at the rate of 100 machines per day," is not pure hot air; the stated quantity could be produced, and would be produced if the agents' orders at Olympia indicated that 30,000 machines could be disposed of. But every sales manager can estimate his year's output to a nicety when Olympia closes. If his machine is quite superbly good, or wins the T.T., he may be a few hundreds out, but not more. The trade is not so silly as some owners imagine. If it makes 250,000 machines during 1920, it will be assured a very rosy prospect of placing every one of them. So we shall not see makers dumping hundreds or thousands of machines on the market at cost price or at a very heavy loss; and we need not fear that second-hand prices will be cut to slivers by such a catastrophe.

No Depreciation Till You Sell.

THE timorous ones need reminding that there is a difference between mechanical depreciation and pecuniary depreciation. Mechanical depreciation is like a temperature graph—it undulates. The line goes up as you run the machine in; down again as the valves pit and carbon crusts form; up again when you decarbonise; down again as the bushes begin to go; but it need show no permanent mechanical depreciation in ten years. And if a machine is bought for use, it is running depreciation which matters; given proper maintenance, this type of depreciation may be ignored. On the other hand, pecuniary depreciation is remorseless and inevitable, being based on the passage of time. But it is like a tooth: it is bound to bother you some day, but you need not worry till it starts. Thus, if I buy a £100 machine *for prolonged use*, its money depreciation does not worry me. I intend to keep it ten years. If I have to give it to the dustman at the end of the tenth year, depreciation has cost me £10 per year, or just under 4s. a week. Why wear myself to fiddle strings at the thought that in its third year it may only be worth £40, when I have no intention of selling it till it is ten years old?

The Wisest Plan.

I AM tackling this topic at some length because I cherish a considerable sympathy for that silent army of riders who never enter a competition, and have to put off their weddings for two years if they buy a machine. They must buy to keep, for every resale implies a loss, unless one is prepared to prey upon fools. They must buy a real good machine, for the duds will not last ten years. They must buy from a firm which has a reputation for stocking obsolete spares. If the sport is tackled on these lines, the financial aspects admit a pretty close reckoning.

IMPRESSIONS AT THE ARBUTHNOT TROPHY TRIAL

Is the 20 m.p.h. Average Too Low? The Navy revises its Opinion.

By B. H. DAVIES.

IN "The Green Curve" Ole Luk Oie tells how the issue of a battle turned on a general's knowledge of the mind of his opponent. I do not doubt that the lieutenants who contested the Arbuthnot Trophy were up to all the wiles of Jerry, and could deduce volumes from the cock of a periscope. The trouble was that on the morning of the first day they failed to realise that Von Hipper and Von Scheer were babies compared to Secretary Loughborough, and that the modern reliability trial is founded on the strategic principles of Clausewitz. Thus, at the start, some of them complained bitterly that they were strictly limited to a schedule of 20 m.p.h. maximum. They informed sundry armletted officials that in naval motor-cycling circles legal limit riding simply is not done. Mr. Loughborough spread a pair of grimy and deprecating palms, and spoke vaguely of the law.

Slaughter of the Innocents.

Fuming but helpless, the "sporty boys," as W. H. Berry would term them, fidgeted along at twenty for an hour and a half along main roads. By this time Loughborough had accomplished his fiendish purpose. He had hoodwinked the innocents into fancying that a reliability trial was a tea party. So he now proceeded to switch them down an innocuous-looking little turn near Huccaby, and for the next 150 minutes all the riders were risking their necks in order to keep inside maximum time; and maximum time spelt no higher average than a measly 18 m.p.h. Even at this some of them were slow in tumbling to the situation. After a prolonged spasm of goat tracks, cat-crawls, chicken ladders, moor gates, river beds, and greasy aisles beneath arching trees, they emerged into lanes—well, quite 8ft. broad, with occasional straights of—well, quite sixty yards at a time.

Quoth the greenhorns to themselves, the arch-devil who planned this sporting course must have just about exhausted his supply of freak hills; presently I shall emerge into lovely main roads, when I will blind some, and catch up the twenty minutes I have dropped on schedule time. But the relentless minutes passed, and still the arrows led on down twisty lanes, and around blind corners, obsessed with carts of hay and eke of timber, with army corps of frisky lambs, and giant stallions and nervous bullocks. Finally, real anxiety was begotten, caution was thrown to the winds, and alarmed competitors commenced the usual A.C.U. T.T. stunt, with frenzied accelerations down every trumpery straight of a hundred yards, and crashing on of brakes at the next corner. Then Secretary Loughborough produced the ace and king of trumps, in the form of tempting straights leading up to unostentatious arrows which hauled us back round V corners to face vertical ascents loosely covered with metal, road, assorted, unrolled, samples. By lunch time the entire entry had conceived profound suspicions of the man Loughborough. All of them knew what the seasoned competition rider learnt under the same astute tuition years ago. Which precious knowledge may be summed up somewhat as follows:

1. Do 30 m.p.h. average while you can: roads are coming where no man may exceed 12 m.p.h. and live.
2. Blessed is the man who can drop from 50 m.p.h. to 3 m.p.h. in eight yards.
3. A quick gear change, yea from top to bottom, secureth a gold medal: but he of clumsy hands must be content with a parchment certificate.

Impressions of the Arbuthnot Trophy.—

4. The valley roads are pleasant; but their sides are fringed with fearsome precipices; and thither the next arrow will assuredly point.

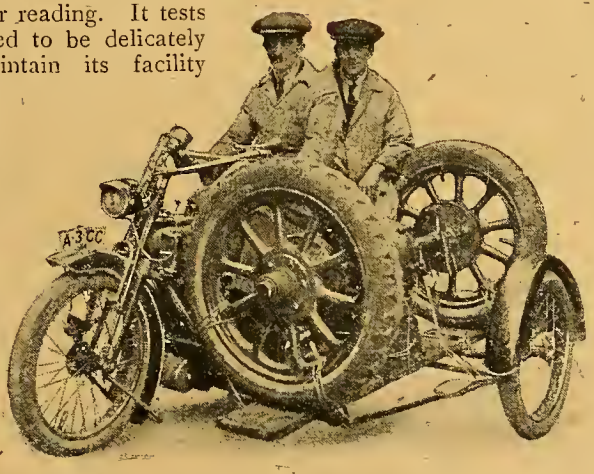
5. Good going never lasts in an A.C.U. trial.

6. Despise not the short straight; along it thou canst save seconds which may hereafter be precious.

7. But bear in mind that the next corner turneth back upon itself; and around it lurketh danger.

The Consistent Driving Test.

Secretary Loughborough received many congratulations on his patent method of finding a winner. As already reported, it consisted of setting a man to climb part of a hill on the first day at, say, 10 m.p.h., and another part of the same hill at, say, 15 m.p.h. and repeating the two stunts on the same hill during the following day; the non-stopper whose first and second day performances were most consistent was to lift the cup. This is a good system. It tests the rider, for he must be dexterous to climb to an exact speedometer reading. It tests the machine, for it is required to be delicately controllable, and must maintain its facility throughout the trial. Furthermore, the dodge throws the minimum of bother on the officials, and occasions the least possible delay in running off the event. It is obviously a long way ahead of secret checks and split-second timing, whilst it does not spoil the ride for the competitors, nor entail delay and organisation which a long series of driving tests demand. It is doubtful whether anything better can be devised. On the other hand, it need not damp secretaries who are still exercising their brains. In ordinary riding, no man attempts slow climbs to a set speedometer speed any more than a golfer takes his brassey on the greens. Moreover, the difference between the winner of the trophy and the best gold medal may not be more than one second. This is grossly unfair. I question whether the justification of valuable single awards to individual riders in reliability trials can be maintained nowadays.



A Chater-Lea sidecar combination with the body removed, being used to carry a back axle of a motor lorry. The weight is about 7 cwt., and shows again the utilitarian value of the motor cycle.

The Value of Test Hills.

Incidentally, the trial threw into high relief the climbing powers of the modern machine. So far as gradients of good surface were concerned, the 3½ h.p. models usually stormed up fast on second gear. One rider on a four-speeder never required more than one-third throttle on his second gear, whilst one of the official sidecar outfits (a Matchless) was almost equally oblivious of its bottom ratio. It does not follow that hours of freak hill-climbing have ceased to serve any useful purpose. They test everything about the machine. Bad lubrication systems tend to oil up plugs during long descents. The rough going, inseparable from freak hills, shakes loose any part which is not properly fitted. The high engine revs. form a substitute for extra mileage, which considerations of time would otherwise exclude. Moreover, as this trial, contested so largely by comparatively inexperienced riders, sufficiently demonstrated, freak hills test the rider.

There was not much really bad going in the event. The two gems were the rough hairpins at the bottom of Brook Hill and just over Denham Bridge. In each case a sharpish corner of stiff gradient was carpeted with soft loam and rough stone. Speed was impossible, and the best machine takes some handling when its back wheel is alternately spinning in soft mud or kicking and plunging on a miniature moraine. A tiny watersplash at the foot of Brook Hill proved rather severe on belts. For this reason watersplashes should figure in non-stop sections on all important reliability trials. If the belt is to survive, it must be developed to hold its own under all conditions where a chain gives no trouble.

In one respect the trial was especially interesting. It was run from beginning to end on the non-stop principle. The officers and gentlemen who formed the competitors were trusted to report their own stoppages on signed cards. Last week's report showed how completely the absolute non-stop eliminates most of the entry, even in 250 miles; on the other hand, it must be remembered that a more experienced entry, including the usual percentage of trade experts, would have suffered far fewer stops.

The Object of Trials.

Regarded as an exercise canter for the A.C.U. Six Days at Llandrindod Wells next September, the trial must have given the Competitions Committee plenty to think about. The main function of an A.C.U. trial in these days is not to advertise the sport, as once it was: the sport no longer requires advertisement. Nor is its function to distinguish between good and bad riders: broadly speaking, the British public is not interested to know that Jack Smith can scrabble up six stony hairpins, whereas Georgie Brown comes a cropper on three of them. *The Six Days are expected to classify different types of machine in order of merit*, it being taken for granted that all the riders reach a certain standard of ability. It will be very difficult to safeguard this function in 1919. A thousand miles is the maximum distance which is practicable; and, since the absolute non-stop cannot be adopted with a giant entry of mixed riders, a very indifferent machine can scramble through without dropping reliability marks. A stiff course is no longer a satisfactory eliminator; if the going is good, gradient will never stop a third-rate engine aided by a good gear box. If plenty of bad going, especially on hills, is included, the trial becomes a test of riders, and ceases

Impressions of the Arbuthnot Trophy.—

to be a test of machines. It seems evident that two principles, singly or in combination, can alone avail to safeguard the real function of the trial and concentrate its effort on the testing of machines. One is marking by teams instead of by individuals: the other is contrasting finishing condition with starting condition. In the past, teams have been limited to three machines, because manufacturers cannot furnish more than three riders whom they unreservedly trust; and teams of three are too small. The problem of awards by finishing condition is still more complex. Fundamentally, it requires a complete mechanical examination by a trained engineer: with perhaps 150 entries, such an examination is not practicable.

Finishing Condition.

On the other hand, some modification of Mr. Loughborough's Arbuthnot trophy system would constitute a test of finishing condition. If all the machines were subjected to a series of rather severe tests on the first day, and again on the last day, loss of tune would be shown up to some extent, especially if the tests consisted, for example, of a flying mile on Brooklands and a fast ascent of the Brooklands test hill. In conjunction with the reservation of the premier awards for teams of six riders—three trade and three amateur—we should get a real test of the machines, whilst a not-too-freakish route would save the trial from degenerating into a test of riders. Sporting rides should be reserved for amateur club fixtures and for the T.T.; the A.C.U. Six Days is as much a technical event as if it were held on the bench at Faraday House.

I sincerely hope Mr. Loughborough will publish a pamphlet embodying a map and route-finding directions for the Arbuthnot course. Many of our sporting riders travel west every summer looking for hills. The scenery is gorgeous to a degree, the route provides a magnificent practice ground for young riders who wish to complete their competitional education, and no man could find the way on his own.

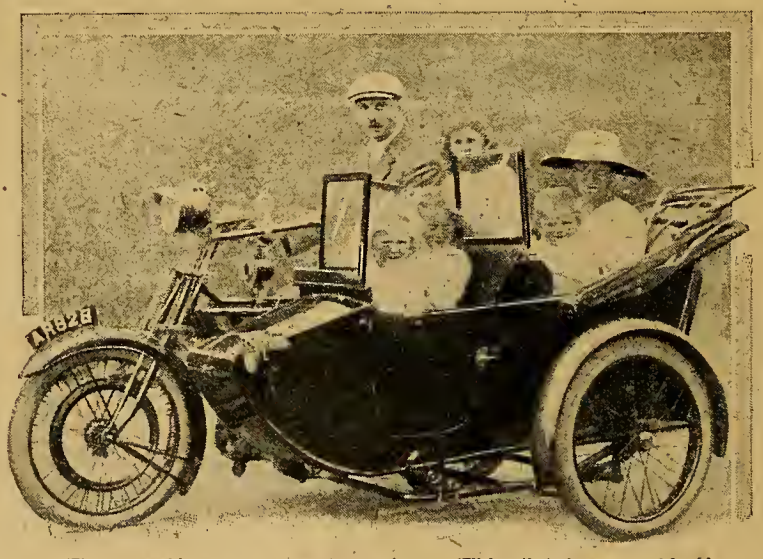
In conclusion, such a sporting fixture deserves extension. I should like to see Oxford v. Cambridge and the Army v. the Navy over similar courses, whilst any couple of provincial clubs would thoroughly enjoy an inter-club event under similar conditions. I commend the idea to club secretaries, with the reminder that sporting courses can be found almost anywhere. The signed non-stop card is probably fundamental in a 250 miles event of this kind.

THE FAMILY SIDECAR.

A 1919 8 h.p. Machine to Accommodate a Family of Six.

USUALLY the family man first buys his sidecar and then proceeds to find accommodation for his passengers. Judging from the number of crowded outfits on the road at the present time, the motor-cycling paterfamilias overcomes his difficulties with a fair measure of success, although in some cases the sidecarist who travels fairly light may consider that the machine is overloaded.

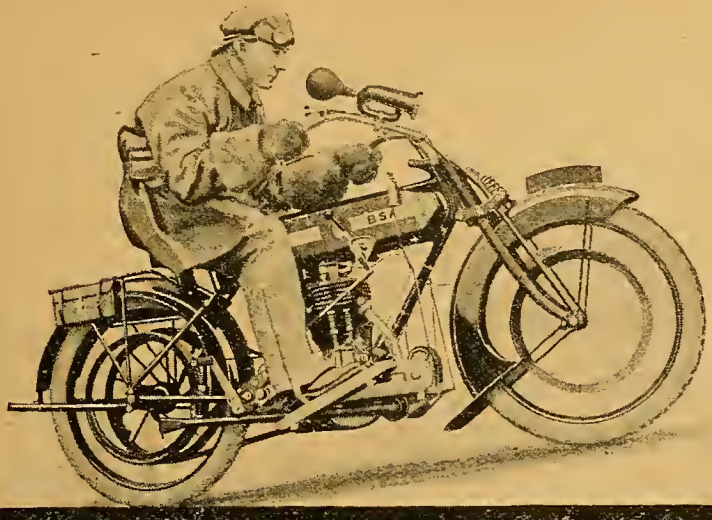
A Stevenage reader considered his problems before placing his order for his new machine, and the result certainly is a recommendation to other family men to give greater attention to the comfort of their passengers by a little foresight. The cycle chosen was a 1919 8 h.p. Enfield with the tandem sidecar fitted with a hood and screens. A Bradley pillion seat was fixed to the carrier, and, to protect the young occupant from draught, an apron was made which runs under the seat, behind the passenger's legs, and buttons up. The front seat of the sidecar supplied with the machine was discarded, and in its place two small seats were placed in a staggered position, which permitted the adult passenger to enter or leave the vehicle without disturbing the children. The rearmost of the two front seats is on the side nearest the motor cycle, which allows a long side screen to be fitted without fouling the handlebar. This seat is about 2in. higher than its companion, and both have back rests and arm rests which can be removed in a few minutes, and, incidentally, prevent the children opening the door when underway.



Where the sidecar scores over the runabout. With a little ingenuity, Mr. H. Woollard, of Stevenage, has adapted his sidecar outfit to carry in complete comfort a family of six. Such accommodation is impossible on any other vehicle with the exception of a large car.

To protect the rear passenger, the standard Enfield windscreen has been moved further back than the usual position, and the front screens are permanently fixed at an obtuse angle. The triangular space in front of the latter is covered in by waterproof twill, and the complete screen is made to fold down on to the fore "deck" of the body.

Our correspondent states that he has not found the load too much for the 8 h.p. Enfield, and that he attains speeds of 30 to 35 m.p.h.



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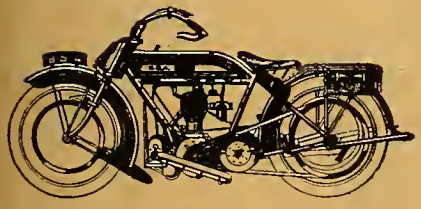

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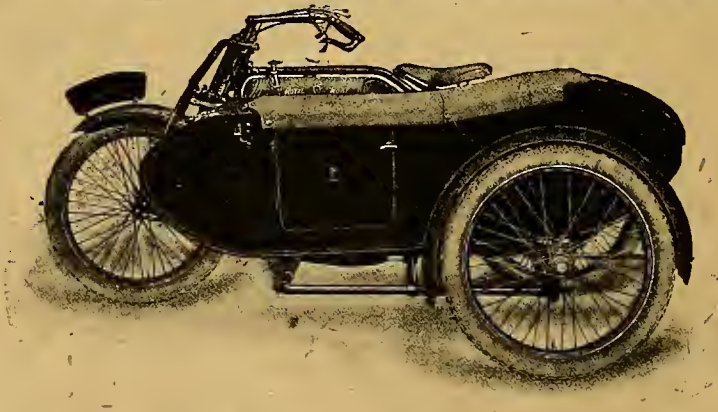

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THE T.T., THE TRADE, AND THE USER.

By CAPTAIN WILFRED GORDON ASTON, R.A.F.

ONE feels a little diffident about opening a discussion on the advisability or otherwise of the Tourist Trophy Race because it is one which is more or less perennial, and the best part of all that can be said either for or against it has already been said before, not once but many times. It may be, however, that a new point of view can be found from which to review the various *pros* and *cons*, but if one fails in this endeavour, at least it can be claimed that the war which has altered all things has had its effect, though possibly an indirect influence, on the T.T.

Who pays? It is quite commonly asserted by the parsimonious motor cyclist, who can see no further than pottering, that the T.T., together with all other races and competitions whatever, costs a great deal of money, which eventually comes out of his, the user's, pocket, and he is unable to see that, inasmuch as the T.T. tends above everything else to develop speed capabilities, which do not appeal to him, that he is getting any value for his money. This argument does not quite justify the epithet "fallacious," but from an economic standpoint it is, to say the least of it, unsound, since the cost of all schemes of this nature, especially when entry into them is a matter of choice on the part of the manufacturer, falls upon the people as a whole and not upon any particular section of them. Motor cycles are a commodity the value of which bears a definite relationship to that of other commodities, and an amount of money spent upon developing the practice of motor cycling must therefore influence all other commodities.

The T.T. as a Teacher.

Again, supposing that a manufacturer elects to support the race, and sets aside a certain appropriation for this purpose, such appropriation either comes out of his profits and is expended upon the T.T. as upon any other kind of investment, or else it has to be spread over all the machines which he turns out, so that any possible loss is recouped directly. In this case it is obvious that a firm of motor cycle makers which never went in for any competition work of any kind ought to be able to sell its productions at a less cost than its rival which year after year went bald-headed for the T.T. Everybody, however, knows that this state of affairs does not exist, and it is therefore quite clear that if there are disadvantages there must be rebutting advantages. And so indeed there are. First of all there is the very large volume of information which is obtained, and which renders the Isle of Man an extraordinarily efficient research laboratory. Secondly, there is the important advertisement, not necessarily for the manufacturers of the winning machine, but for the whole motor cycling movement. This is where our friend the potterer comes in. He derives a distinct benefit from the T.T., no matter what kind of machine he rides, because the T.T. tends to expand the motor cycling movement and to increase the number of motor cyclists and the number of machines turned out, and it is only by such expansion that he can ever hope to obtain better and cheaper machines.

Benefits for the Winner—and the Rest.

Even if one single firm won the race year after year and the others never had a "look in," the above economic conditions are by no means vitiated, or indeed altered in the least, for so strong an advertisement for this lucky firm must necessarily and inevitably be a gigantic inducement to the less fortunate firms to obtain a similar advantage by other means. Whether the T.T. is won by luck or by merit makes not the slightest difference. So long as one firm gets a lead on the others, even though it may be temporary only, the rest must strive to show that they have as much, or more, merit, though they may have less luck. Hence they *must*, infallibly, endeavour to increase their merit in the eyes of the buying public, and this they can do only by developing and improving their designs in what the public is pleased to consider the desired direction.

I do not think it is necessary to continue this part of the argument because enough has been said to show that any form of competition which makes one a winner and another a loser must have a vitalising influence. Such being the case, I am myself strongly in favour of carrying them on—I had nearly said at all costs.

The Waste of Time.

The argument enlarged above, being on an economical basis, postulates a certain economic uniformity in conditions which, I would be the last to pretend, we are enjoying at the present time, and I am not at all surprised to find many persons who in the past have been all for the Isle of Man Race, Scottish Trials, and so forth, now opposing the holding of any competitions on the grounds that these things involve an interference with the ordinary routine of production, and an expenditure of time on the part of motor cycle manufacturers which could be more effectively devoted to other and possibly more important matters. This is, of course, a mere accident arising out of the war, and in normal times would be very rarely advanced as a serious objection. As far as I can see this argument holds no water at all. If the T.T. is justified in normal times it is even more justified at the present time when organisation for large production has scarcely had a chance to get "run in." Having

The T.T., the Trade and the User.—

made little or no practice-tested progress in the last four and a half years, there is all the more need to push forward development at the highest possible rate and to compress the maximum amount of experimentation into the shortest possible time. Now no private experimental work can ever be so searching or so complete as a public speed competition. One may easily satisfy oneself about the excellence of one's own design, but it is quite another thing to satisfy Mr. J. R. Nesbit that one is legitimately "First past the post." Long may that excellent sportsman live to discharge his judicial functions!

But there is another important point. Either a manufacturer enters a completely new design for the race, or else he goes in with a specially tuned up and very slightly altered "standard" model such as he is in the habit of selling in fair numbers to his customers. In the former case the amount of time he has got to devote to the T.T. is a mere trifle compared to the total time he *ought* to devote to necessary experiments and tests. In the latter case, to get a motor cycle ready, if it is really to be what it claims to be, will take up very little time indeed.

But in any case, if his works cannot spare a managing director, the designer and a tester or two for a week or ten days, he can reckon that his organisation is so bad that he is bound to go "broke" anyhow, and a holiday in the Isle of Man will at least put him in good fettle to face a meeting of creditors.

Startling Departures.

I assume for the purpose of the above argument that when a startling departure from previous practice is made the object is primarily to try out a design which it is hoped to standardise for the following season rather than merely to win with a freak. It is a fortunate and a significant fact that freaks never do win the T.T., and rarely anything else, so that the title of "Tourist Trophy" is still not a misnomer. If a maker produces a freak merely for the race, having no intention of utilising the design afterwards, he is clearly a lunatic, for, however *outré* the machine may be, the mere fact that it won will give rise to a demand which it is, or ought to be, his pleasure to satisfy. If the machine *doesn't* win it merely shows that the freak merchant is a fool, because he could have got more *réclame* by losing the race on something less freakish. This is where the value of the T.T. shows itself so admirably. It encourages progress on reasonable lines, it is intolerant of stagnation, it severely punishes retrogression, and it puts a crown of glory on the combination of brilliance *and* reason in originality. For myself, there is only one way in which I think that the race could be improved. I would like to see a special class, which could run in both Junior and Senior events, reserved for machines guaranteed by the manufacturers and tested and certified by the officials to be absolutely standard in all respects as offered to the public in the ordinary way of business. To measure and inspect them would not be at all difficult, and they could be allowed to run either complete with *all* touring equipment or at the discretion of the race organisers; they could be stripped in the usual manner. My opinion is that this scheme would add considerable interest to the event, and that manufacturers would learn a great deal from it. They would not be expected to win, but they could at least show that their ordinary machine was capable of standing up to a bucketing, and the mere fact of their entering a perfectly standard model, free of all reinforcements and special gadgets, would show that they were not lacking in confidence in their own products.

A cheerful owner and passenger on a Norton "Big Four." In spite of protests occasionally heard against pillion riding, this form of passenger carrying is still popular.

Minor Advantages of the T.T. Races.

As to the other advantages of the Tourist Trophy, these are many and various. It is, to start with, a magnificent spectacle, well worth a journey twice as far. It is a form of combining business with pleasure for the manufacturer, which has everything in its favour, especially in that it brings friends into rivalry and makes rivals friends. As a health resort, the Isle of Man at T.T. time is ideal, and the race makes it a stimulant to enterprise as well as a stimulant to lungs or digestion. It gives the industry in general a "guid conceit" of itself, and sends it back to smoky Birmingham and relaxing Coventry with a better grip on things and a determination to get on with the job.

Of course, it costs money—but then all experience is costly, and experience gained in the I.O.M. costs less than the failures of inexperience for which sometimes the public pay highly. In the Isle of Man the maker comes directly in touch with the failings of others' designs as well as his own, and they warn him where to be careful in future.

Finally, it is a veritable picnic for the people who write about it. Lots of hard work, but lots of interest!

RECENT PATENTS.

REVIEWED BY B. H. DAVIES.

MR. C. K. SHEPHERD, of Birmingham, has evidently expended a great deal of thought upon the flat twin two-stroke, of which a vertical section is shown in fig. 1. The cranks are set at 180°, so that both cylinders fire simultaneously, and, as the pistons move inwards, they compress a charge of gas already admitted into the crank case by a rotary valve. This valve is located vertically above the crank case, and is operated by worm gearing, the driving member consisting of teeth machined on the disc of the central crank web; dogs in an extension of the valve sleeve are utilised to drive the magneto. Many of the minor details of the engine are interesting. Each cylinder is integral with half of the crank case. The details of the crankshaft compression caps, and for taking thrust and wear of the rotary valve, deserve attention. The transfer passage is unconventional, and the inset drawing indicates how the cylinder wall is ribbed within the passage to steady the piston rings. Fig. 1a indicates how the contour of the cylinder head co-operates with the deflector on the piston in scavenging out the exhaust. The rotary valve and its gearing are wholly enclosed in the crank case, and the exhaust stubs form the lower means of attachment to the frame.

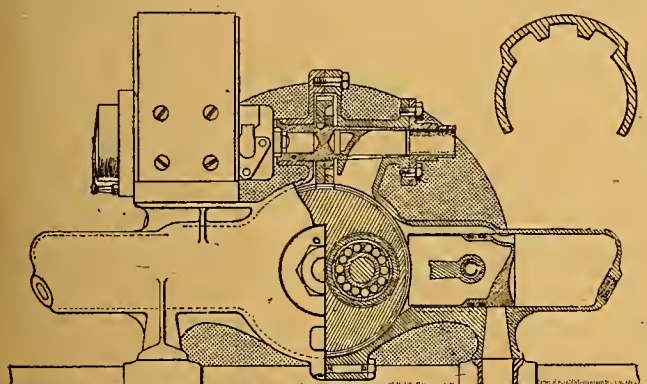


Fig. 1.—Part section and part elevation of C. K. Shepherd's flat twin two-stroke. For the sake of clearness the rotary valve is shown in fully open position, and one of the pistons at the bottom of the stroke. (Inset) Part cross section of one of the cylinders. No. 15,205. 26/6/14.

This patent is only one of many inventions concerning flat twin two strokes which have been brought to my knowledge recently. Designers of such engines appear to be more unanimous now as regards simultaneous firing, which shows they appreciate that mechanical balance is more important than splitting up the intervals of firing impulses.

Eliminating the Connecting Rod.

Capt. R. A. Yearsley (fig. 2) eliminates the usual connecting rod by using a trunk piston with a crosshead at its lower end: a block sliding on the crosshead provides a bearing for the crank pin. Many applications of this principle are practicable, and some of them are, of course, already patented; the inventor's claim is an arrangement under which a second piston may be fitted inside the trunk of the first piston. The following advantages are claimed:

1. Owing to the absence of gudgeon pin bosses, the interior of the piston can be machined, or the piston may even be formed of light steel tube.

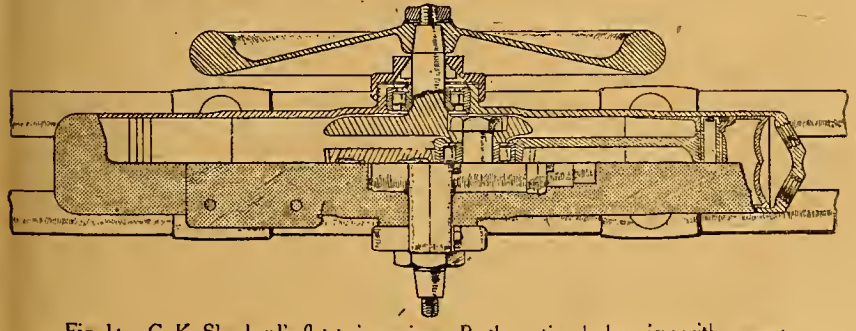


Fig. 1A.—C. K. Shepherd's flat twin engine. Partly sectional plan view with magneto removed.

2. The crankshaft can be mounted close up to the cylinder, and the overall height of the engine reduced.

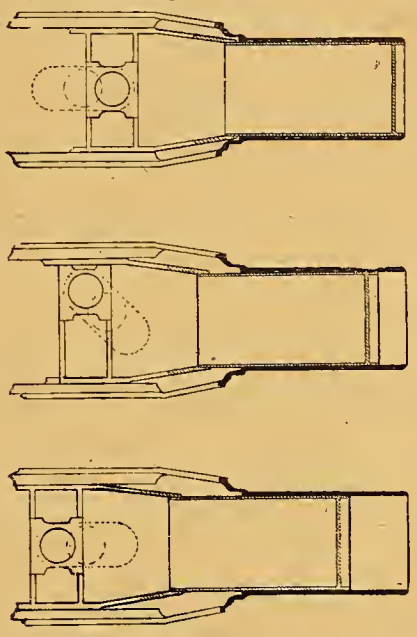


Fig. 2.—R. A. Yearsley's arrangement of opposed pistons and sliding big end device. No. 124,229. 22/11/17.

3. The thrust is taken "end on" by the trunk of the piston, and side strain is reduced.

As some readers may not be familiar with the crosshead and sliding crank pin bearing, this principle is illustrated in perspective. Fig. 2a shows the main piston and its connection to the crank pin in a series of diagrams, and how a second piston may be mounted inside the first piston, and coupled to a pair of narrow subsidiary crank pins (on the same crankshaft) by similar crossheads and sliding blocks. The basic principle is obviously applicable either to two-strokes or four-strokes, and to engines with horizontally opposed cylinders or of the "line ahead" type. The inner piston may be stationary, in which case the space between the two heads would serve as a compression chamber, the explosion occurring between crown of the top piston and the cylinder head: or the inner piston may be a working piston; or, again, the inner piston may be utilised to control the valve ports.

A Four-speed Gear.

The four-speed gear shown in fig. 3 is the invention of Messrs. Bagley and Bransom, who also protect modifications of a similar principle providing either two or three ratios. It forms rather a wide gear box, but this point is of no real import-

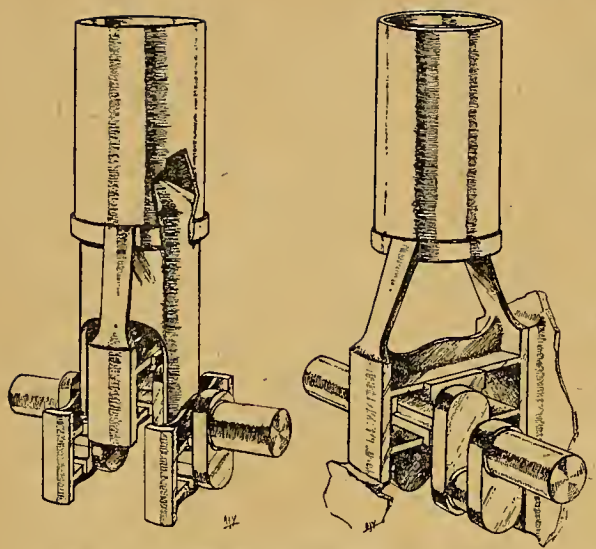


Fig. 2A.—R. A. Yearsley's pistons and cranks in perspective. No. 124,229. 22/11/17

ance, as the drive is always taken from a sprocket or pulley attached to the left-hand pinion on the main or upper shaft. The strong points of the design are that the gears are always in mesh, and all gear changes are effected by sliding the broad gear X: moreover, in any change, only one set of dogs is engaging or disengaging at a time. The various ratios are obtained as follows:

Top (direct) *via* X (moved to the left) and A. 2nd, *via* X (moved to the right), B, C, and A. 3rd, *via* X (moved further to the right), D, E, F, C, and A. 4th, *via* X (moved still further to the right), B, G, D, E, F, C, and A.

Note that the gear X is broad enough to engage with B in all its positions, and that the two dog clutches, H and J, on the layshaft are connected to the gear X, and always move with it. A suitable kick starter is included in the patent.

A Kick-starting Device.

Messrs Veloce, Ltd. (fig. 4), in conjunction with Mr. P. J. Goodman, have devised a kick-starter, which appears to be simple, well protected, and reliable. It incorporates a free-wheel, which has often proved unsatisfactory on such devices in the past, as ordinary free-wheels occasionally convert themselves into fixed wheels: little imagination is required to see that a kick-starter which waves its pedal without invitation is a sad nuisance. The salient features of the Veloce safeguard are the shoulder A on a rotatable disc which interacts with the rollers of the free-wheel, and the fixed shoulder B in the stationary cover of the starter.

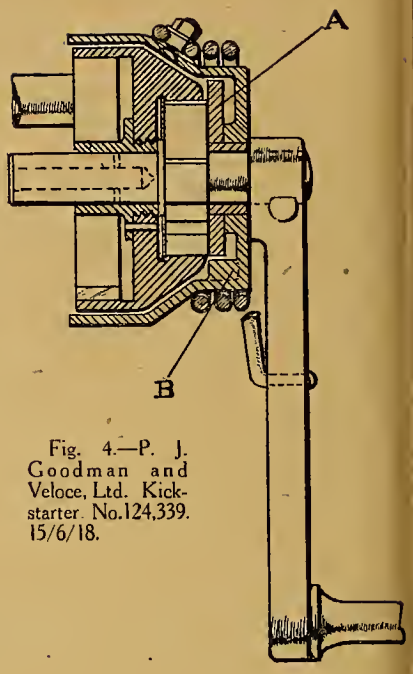


Fig. 4.—P. J. Goodman and Veloce, Ltd. Kick-starter. No.124,339. 15/6/18.

Springing the Rear Wheel.

Many designers of spring rear frames for motor cycles have puzzled over the problem of springing the rear wheel in such a fashion that its dips and rises do not affect the tension of the rear chain. The accompanying drawing (fig. 5) shows a solution propounded by the Coventry Acme Motor Co. and Mr. W. J. Robb. The system embodies a three-step drive: a countershaft fitted behind the gear box forms the hinge on which the radius rods, carrying the back wheel, are hinged. The other details are self-explanatory, though two minor points deserve attention. One is that this firm avoids the common blunder of making two chains share a single adjuster; the gear box is horizontally adjustable on an L shaped bracket, and this bracket is vertically adjustable on the crank case, thereby affording independent tension for the chain from the gear box to the countershaft. The other feature is that since no gear reduction is necessary in the rear chain, a neat and compact chain case is practicable. The springs and radius rods come outside the rigid rear triangle of the frame, and their freedom of upward movement is limited only by the stiffness of the springs and not by external considerations.

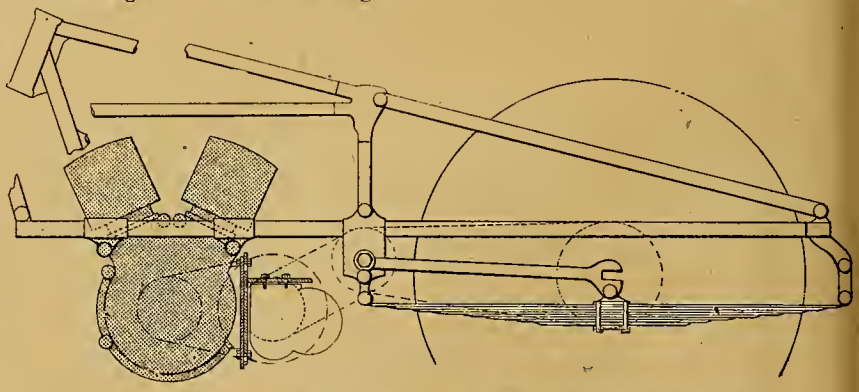


Fig. 5.—Coventry Acme Motor Co., Ltd., and W. Robb, patent spring frame. No. 124,094. 25/4/18.

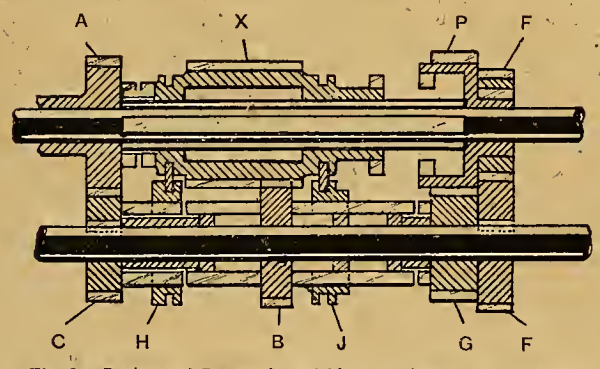
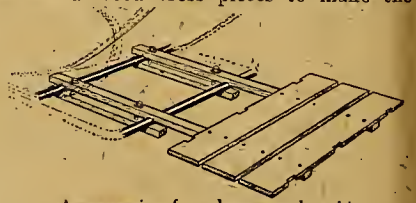


Fig. 3.—Bagley and Branson's variable speed gear. No. 124,602. 10/4/18.

A HOME-MADE SIDECAR LUGGAGE CARRIER.

THE sidecar luggage carrier, shown in the accompanying sketch, can be easily made at home. Two pieces of wood about 2ft. 6in. long are bolted to two shorter pieces about 12in. long, depending on the distance between the two parallel tubes of the sidecar chassis. On this wooden extension of the chassis are screwed wood cross pieces to make the



A suggestion for a home-made grid.

platform for the luggage. It is an advantage to cut slots in the two outer pieces of wood forming the platform, through which straps to hold on the baggage can be threaded.

Day Trips and Week Ends

BY CHAS. S. HARPER

I.

BIRMINGHAM TO BUILTH.

Some Delights of the Road into Wales.

The picturesque old bridge spanning the river Teme at Ludlow.

BIRMINGHAM is fortunate in being situated within such easy reach of the most delightful kinds of country; whether it be to Central Wales, on the one hand, or the great Midland regions on the other; while, of course, the Shakespeare country—that region which is the real true England—lies at its very door.

But I have no space for a disquisition at length upon these advantages; and will set forth at once upon this selected short trip to the gates of Wales. The tourist can do it comfortably in a day. You should start from Birmingham with pleasant anticipations, for the way out of the city is by Paradise Street and Easy Row; and if this does not quite look the paradise it is named, at any rate, the name, with that of Easy Row itself, is of favourable augury. I am not out to describe the Hagley Road, nor Beech Lanes, nor Quinton, and the little town of Halesowen does not, in fact, greatly appeal to me, even though the poet Shenstone lies in the churchyard; for he was the melancholy versifier who wrote believing that the mercenary welcome of hotels was the warmest reception the traveller was ever likely to meet:

"Whoe'er has travelled life's dull round,
Where'er his stages may have been;
May sigh to think how oft he found
The warmest welcome —at an inn."

I think perhaps Shenstone painted unconsciously a portrait of himself there. I picture a desolating, crabbed sort of person, who, when his friends perceived him approach, exclaimed, "D—n! Here's that perisher again"; or eighteenth century language equivalent.

And so we proceed to Kidderminster, not, I think, for Kidderminster's own sweet sake, but for Wribbenhall, where we cross the Severn at a picturesque spot, and come into Bewdley. All around spreads the so-called "Forest" of Wyre, a region of scrub-woods rather than of stately trees: a district which those who originally named Bewdley considered to be exceptionally beautiful; for the present name is a corruption of the French "Beau lieu." So our remote forbears had an appreciation of scenery; for not only Bewdley, but Beaulieu in Hampshire; Beaudesert, Staffordshire; Beaumaris, Anglesey; and Boscobel, Shropshire are named from the same love of their situation.

Bewdley town will strike a Birmingham man as a "has been" among towns. Its broad, empty street, with the parish church at the top of the rise, is empty enough as a rule to echo to the sound of the passing motor cyclist; and to afford a quiet spot in which a sleepy dog may go to sleep on a sunny afternoon. I daresay there may be busy times at Bewdley—only never have I happened upon them; and the stately old mansions seem to me full of memories and ghosts.

The Narrows and Buttercross, Ludlow.

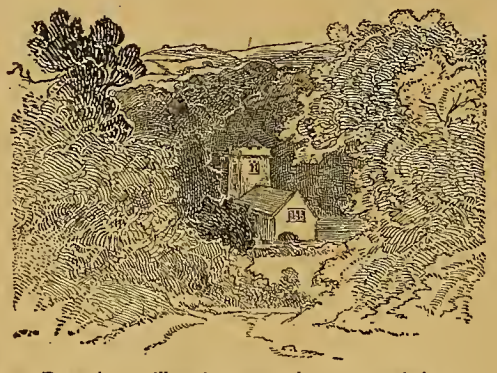
It is a long, long continuous rise out of Bewdley, up Gallow Hill; and even then you have by no means done with it, whichever way you elect to proceed to Ludlow, whither we are now bound. At the road fork, you keep right for the way by Cleobury Mortimer, and left for that through Mamble and Tenbury. To the right is the shorter route by 4¼ miles, but you have to go down and then up; very much up, past the village of Cleobury Mortimer, climbing to

Day Trips and Week-ends.—

Hopton Bank, which is very near the highest point of Titterstone Clee, that vast stony hill of basalt from which is quarried the "dhu stone" so largely used for "macadamising" roads. Plentiful evidences of that industry are seen on that stark and grim hill-top, as you pass. It is not a lovely spot. But you get it all back in the glorious run down Angel Bank, which brings you within two miles of Ludlow.

As for the other way (which I prefer), you must needs go over the crest of that other considerable eminence, Clowes Top, down to Mamble. Having done so, the pretty valley of the River Teme is reached, where the hop gardens are, and Tenbury on the other side of the river, looking at a distance much more beautiful than it really is. I could write something eloquent on places that look at a remove more lovely than they are, but I refrain.

Anyway, we don't go into Tenbury, and so run no risk of disappointment. Away on the left, the church tower of Burford is soon seen: a lovely little church, with the monument and heart-shrine of Edmund Cornwall, who, dying at Cologne in the reign of Henry VI., wished his heart sent to England. Here is also the monumental effigy of the Princess Elizabeth, sister of Henry IV. Passing Little Hereford, which is so little that it is scarce to be noticed, and then Wooferton Junction, you reach Ludlow in a further four miles.



Dyserth, a village in name only, now consisting simply of a church and a solitary house.

You come into Ludlow over the Teme, at Ludford; that tiny village with the old manor-house of the Charltons, the pretty old parish church with its red-robed effigy of Sir Job Charlton, Judge and sometime Speaker of the House of Commons, and the "Charlton Arms." Halt awhile on Ludford's ancient bridge and look up and down the river, with its foaming weirs.

The Marches of Wales.

Ludlow town lies displayed before you: the approach up Broadgate, with the old arch and gateway, surviving from the days when Ludlow, as well as its great castle, was provided with fortress walls; and, cresting the highest point in the town, the great church of St. Lawrence, of almost a cathedral dignity.

Under the archway, and up the Broad Street to the Buttercross, and you are in the centre of Ludlow, at the extremely cramped centre aptly called "The Narrows." The Buttercross, as seen by the accompanying illustration, is not a cross but an eighteenth century market building. Most of the streets just here are, more exactly, alleys. It is by an alley you come to the church, well worth a visit, with its noble choir, rich ancient stained-glass, and the quaint carvings of its *miserere* seats: one of them representing, with much humour, a man drawing beer from a cask.

Ludlow, of course, was of old the seat of government of the Marches, or borderlands, of Wales. Hence its stately aspect: hence also the old "Feathers" inn, in Corve Street. The castle, in ruins, stands on its wooded height at Dinham, overlooking the Teme, rather secluded from the streets, and silent, save for the cawing rooks, making gobbling and choking noises up in the branches of the tall wych-elms.

Dames of the Civil War.

Down Corve Street and to the left, for Bromfield, and thence along pleasant byways to the quaint village of Leintwardine ("Lantardine" locally), on the River Clun. Less than three miles beyond it is Brampton Bryan. I confess greatly to liking the name of the place. It sounds forceful: try it! And at least one forceful person lived there, at a comparatively late period. A lady, too; the famous Lady Brilliana Harley: one of those remarkable combatant dames who, in the Civil War between Charles I. and his Parliament, defended on one side or the other their absent husbands' castles better perhaps than could have been done had they been at home. She for a long while withstood a siege of Brampton Bryan castle, but had at last to surrender to the Royalists. The ivy-clad ruins remain in the park, readily accessible from the road.

At Knighton, some five miles on, we enter Radnorshire. It is a little town, of some amazingly steep streets; the "Norton Arms" Hotel, where anglers and golfers foregather; and the remains of Offa's Dyke on the hillside. If you have a mind for quaint places and ruined castles, Clun, worth seeing, is seven miles to the right. But straight ahead for Builth, by the grand and good mountain road past Monachty, Bleddfa, Llanvihangel - rhyd - Ithon, and Penybont. At Cross Gates, a left turn leads past Llanbadarn Fawr, into Llandrindod Wells, at this season of the year coming into its own, as the chief health, golfing, and motoring place of Central Wales.

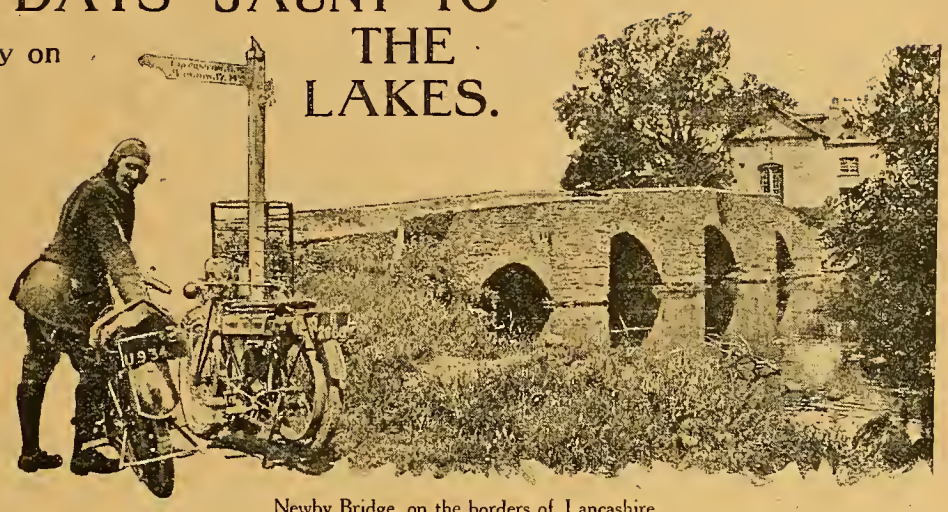
Really and truly, the typical Welsh villages are not beautiful. But Llandrindod long since ceased to be a village, and what there was of the little old-time place has vanished in the growth and rebuilding of the present town. There is scenery even in the very midst of Llandrindod; in the Rock Park, and at the craggy spot on the River Ithon called "Lover's Leap"; while all around are the mountains and the tiny villages. There, for example, is Dyserth, so tiny indeed that it is not even a village. Just a church and a house; and there are many others, which the explorer with a day or two to spare will discover for himself. And, high above the town, past the hillside lake and the old church, which is the only ancient thing in Llandrindod, are the golf links.

Not quite eight miles beyond the town, we reach the smaller and older town of Builth, which stands at a junction of roads whence you branch off for anywhere. But, probably, having reached that dull little place, you will feel inclined to return those eight miles to the brightness and cheerfulness of Llandrindod, to stay the night.

The chief distances are: Birmingham to Kidderminster, 17 miles; Bewdley, 20; Ludlow, 43¼; Knighton, 60; Llandrindod Wells, 78½; Builth, 85¾.

A TWO DAYS' JAUNT TO THE LAKES.

A Sentimental Journey on Sporting Mounts.



Newby Bridge, on the borders of Lancashire.

WE planned it many moons ago: in the dim days of Armageddon, when four thousand miles separated us. It was to be the celebration of our reunion: a dash to the Lakes!

I was surprised one evening by a visitor who drifted into the garage familiarly, and I turned, doubting. There, bronzed by the sun of the East, he stood—John!

What about a 'bus? What about the Lakes? What about it—generally?

Despite the shortage, we hoped. The local paper built our hope: "1913 T.T. Triumph," etc. We rushed, we viewed, we bartered, and bought it!

"When? Whitsuntide! Where from? Leeds."

"How long? Two days! . . . "

We started over the old familiar Otley Road. What a gay morning! On the moors by Clapham and the rising height of Ingleborough the Triumph burbled alongside. "I've been longing for these cool grey-greens of the Pennines after India's eternal glare," called my companion.

From Kendal to Windermere we took the main road through Staveley, and found it infested with motor chars-à-bancs: positive dangers on these narrow lanes.

Through Bowness we had quieter paths, photographed the inevitable Newby Bridge, then to Coniston, where I, perforce, did lurid cornering to catch and warn my friend of a sorrowfully remembered gate on a twisting hill. After gaining the lead I was "ponking" slowly upwards in a manner delightfully peculiar to my long-stroke Norton, with its Phillipson pulley, I heard a "blacksmith's song" from behind, and the call, "Either go on or let me!" I drew aside, and the Triumph accelerated: my warning was vain: he found the gate!

We cooled our ardour in a stream, then trickled side by side sedately *via* Grasmere into Ambleside.

"Shall we stay the night here?" I called.

Attractions on the side walk not peculiar to this district decided us.

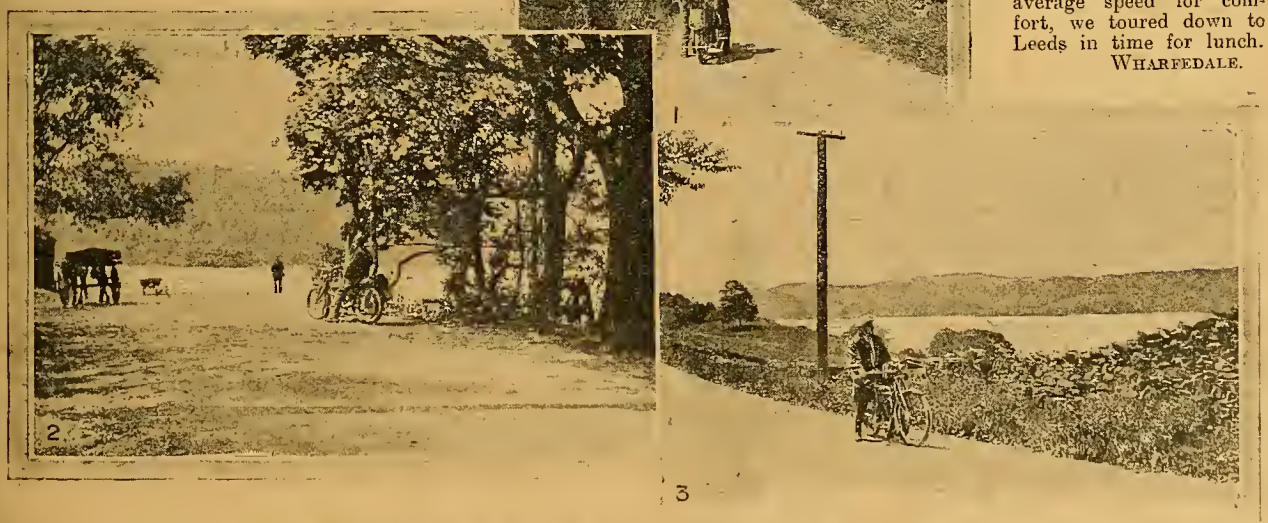
We stayed!

The lake and mountains shimmered in the haze of the evening sun, but the idyllic calm was shattered by the brazen music of a travelling show, a repertoire of one item being repeated continuously from seven till eleven!

However, Ambleside had its compensations, and the morning found us with light hearts. Rain had fallen, and mist rested on the hills when we left Ambleside at 8.35. Passing Windermere and Bowness, we dashed at the two-mile climb to Crook, and at full throttle thundered up side by side, the exhausts blending at times in a single harmonic note delightful to hear.

With the clock on nine we entered Kendal, and thereafter, sacrificing average speed for comfort, we toured down to Leeds in time for lunch.

WHARFEDALE.



(1) The road approaching Coniston Old Man. (2) The Hawkshead Ferry. Windermere.
(3) Windermere, from Storr's Hall.

CURRENT CHAT

Times to Light Lamps.

SUMMER TIME.

July 17th	...	...	9.33 p.m.
,, 19th	...	...	9.36 ,,
,, 21st	...	...	9.33 ,,
,, 23rd	...	...	9.30 ,,

Crippled Children's Outing.

A hundred and forty-five sidecars, runabouts, and cars recently conveyed 600 crippled children from Manchester to Sabley Park, Knutsford.

Scottish Six Days.

The ascent of Applecross is much better than in 1914, owing to the fact that the large tufts of grass, which so deadened the effect of the engine, have been removed. The competitors will encounter many stretches where the roads have been cut up by tractors hauling timber. These patches are almost impossible for the solo rider, and necessitate miles of low gear work, possibly with a toss or so into the ditch.

A High Average Speed.

An instance in which the speed and reliability of the motor cycle, in the hands of an expert, was employed in the service of the illustrated press is recorded in connection with the rapid publication of the Versailles Treaty photographs by a Scottish paper.

The plates were brought from Paris to London by aeroplane, and then carried to Glasgow by A. J. Sproston on a Lea-Francis. The journey was made with only two replenishment stops, and his average speed is reported to have exceeded 40 m.p.h.

Imports and Exports.

The Board of Trade returns for June show that motor cycles and parts to the value of £5,316 were imported during the month. For the most part, this represented parts and accessories, the value of the complete machines being only £366. The value of machines, parts, and accessories imported during June last year was £109.

EXPORTS.

Fewer motor cycles were exported during June than was the case in the corresponding month in either 1917 or 1918. The 1917 June returns show that 50% more machines were sent overseas, although export values remain pretty much the same as this year.

	1917	1918	1919
Number of machines	1,088	1,037	678
Motor cycles, parts and accessories ...	£80,957	£92,759	£79,070

Stolen Machines.

The theft of motor cycles is now so prevalent that we are becoming quite accustomed to a weekly batch of complaints. The following have been reported during the last few days :

B.S.A., 4¼ h.p., chain-cum-belt, 1919 model, registered number AW 4606, engine No. 28,606, frame No. 28,587, Dunlop non-skids, P. and H. lamps, oil filler cap of gear box missing. Information wanted by the Superintendent, Salop County Police, Shrewsbury.

Triumph, 1919, 4 h.p. solo, registration PA 3923, engine No. 62,313, frame No. 289,839, magneto No. 32,557. Was stolen from a closed yard at the Royal School of Mines, South Kensington. Information to the Editor.

B.S.A., 4¼ h.p., type K, registration BY 3851, engine No. 30,021, frame No. 30,393, with sidecar. £10 reward offered by Premier Motor Policies, Ltd., New Broad Street, E.C.2.

A 6 h.p. three-speed, chain-driven A.J.S. and sidecar, 1919 model, registered DA 3416, but no engine number, was stolen from Wolverhampton on July 2nd. Mr. Stevens, the owner, offers £10 for information leading to its recovery. The engine has extra long cylinder barrels and valve stems; the machine has a celluloid folding screen, Dunlop tyres, and Lucas dynamo lighting set.

A 1914 clutch model Douglas was stolen from the Royal Aircraft establishment, South Farnborough, recently. The registration number was AA 6827, engine No. 15,690. Any reader offered the machine should communicate with the police or the owner, Mr. W. Hopgood, High Street, Hartley Wintney, Hants.

This unwelcome interest in the unfortunate owners' machines should act as a warning to all uninsured riders to cover themselves fully against similar losses.

A challenge cup presented by the B.S.A. Co., Ltd., as the premier award in the Redditch and District Motor Cycle Club Reliability Trial, an event which takes place on Aug. 23rd.

Special Features.

THE T.T., THE TRADE, AND THE USER.

DAY TRIPS AND WEEK ENDS.

Government Sales at Birmingham.

Surplus W.D. machines have brought in as high prices when sold in the heart of the trade as elsewhere. The sale of used and unused motor cycles at Birmingham, on the 8th inst., was attended by some two thousand persons, and as the machines were sold singly the bidding was keen. The sale realised a total of £8,250. Unused Douglas 2¾ h.p. machines averaged £71 each, and accounted for £3,350 of the total; while "unfit" Triumphs averaged £21 each.

Edinburgh and District M.C.

The following are the results of the open hill-climb at Redstone Rigg :

CLASS 1.—HANDICAP FOR LIGHTWEIGHTS WITH ENGINES NOT EXCEEDING 400 C.C.

	Time, Secs.	Figure of Merit.
1. A. H. Alexander (2¾ Douglas)	41	2.8892
2. C. R. Duncan (2¾ Douglas)	46.2	2.8320
3. A. L. Downie (2¾ A.J.S.)	43	2.8019

CLASS 2.—HANDICAP FOR MACHINES WITH ENGINES FROM 401 C.C. TO 600 C.C.

1. A. J. C. Lindsay (3½ Rover)	39.8	2.8432
2. Jas. Beck (3½ Sunbeam)	46.2	2.7774
3. G. L. Stark (3½ Rudge)	50	2.7168

CLASS 3.—HANDICAP FOR MACHINES, UNLIMITED ENGINES.

1. J. R. Alexander (2¾ Douglas)	44.8	2.8451
1. A. J. C. Lindsay (3½ Rover)	39.8	2.8451
3. Geo. Grinton (7-9 H.-Davidson)	37	2.7690

CLASS 4.—HANDICAP FOR PASSENGER MACHINES UP TO 1,100 C.C.

1. A. T. Brash (7-9 H.-Davidson)	44.6	2.8279
2. A. U. R. Downie (5-6 Ariel)	47.8	2.8006
3. Geo. Grinton (7-9 H.-Davidson)	45.4	2.7754

CLASS 5.—HANDICAP FOR PRIVATE OWNERS.

1. A. L. Downie (2¾ A.J.S.)	42.4	2.8099
2. C. R. Duncan (2¾ Douglas)	48.4	2.8068
3. Jas. Beck (3½ Sunbeam)	46.4	2.7729

CLASS 6.—HANDICAP FOR RIDERS UNDER 18 YEARS OF AGE.

1. Allan Fairley (2¾ Douglas)	56.4	—
2. T. R. Bonnar (3½ Triumph)	62.2	—

CLASS 7.—SCRATCH FOR LIGHTWEIGHTS WITH ENGINES NOT EXCEEDING 400 C.C.

1. A. H. Alexander (2¾ Douglas)	39	—
2. A. L. Downie (2¾ A.J.S.)	44	—
3. C. R. Duncan (2¾ Douglas)	48.4	—

CLASS 8.—SCRATCH FOR MACHINES WITH ENGINES FROM 400 C.C. TO 600 C.C.

1. A. J. C. Lindsay (3½ Rover)	40.4	—
2. W. R. Feowick (4 Triumph)	45.4	—
3. Jas. Beck (3½ Sunbeam)	45.8	—

CLASS 9.—SCRATCH (UNLIMITED).

1. A. H. Alexander (7 Indian)	33	—
2. R. Boyack (8 Bat)	35.2	—
3. A. T. Brash (7-9 H.-Davidson)	38.2	—

CLASS 10.—SCRATCH FOR PASSENGER MACHINES UP TO 1,100 C.C.

1. A. H. Alexander (7 Indian)	39.8	—
2. A. T. Brash (7-9 H.-Davidson)	44.2	—
3. Geo. Grinton (7-9 H.-Davidson)	44.4	—

The Motor Cycle to the Fore.

When R34 landed at Mineola, Maj. Pritchard was the first to reach the ground to give instructions to the landing party. He was taken to headquarters in a motor cycle and sidecar.

Prize Draw for Motor Cycle.

A grand prize draw is being organised in aid of the Ravensthorpe Division of the St. John Ambulance Brigade, the sole prize being a 2½ h.p. Metro-Tyler motor cycle. The hon. sec. is Mr. W. Ledgard, 42, Broomer Street, Ravensthorpe, Dewsbury, Yorks.

Paris-Rheims-Paris Trial.

The following are the results of the recent Paris-Rheims-Paris trial, which are based on time errors at a secret check :

SOLO.—350 C.C. CLASS.

1. Colombel (Douglas), full marks.
2. Favart (Douglas), lost 19 marks.

SOLO.—500 C.C. CLASS.

1. Meurot (P. and M.), full marks.
2. Barthélemy (Rover), full marks. Ruet (Rover), full marks.

SOLO.—750 C.C. CLASS.

1. Delabre (Rover), full marks.
2. Isody (B.S.A.), full marks.
3. Bernard (Indian), full marks.
4. Mangis (Douglas), lost 1 mark.
5. Martiney (Triumph), lost 2 marks.

SIDECARS.—750 C.C. CLASS.

1. Le Pen (G.L. sc.), full marks.
2. Lacour (G.L. sc.), full marks.
3. Detruche (G.L. sc.), full marks.
4. Delauné (B.S.A. sc.), full marks.
5. Péan (Peugeot sc.), full marks.
6. Fasola (A.J.S. sc.), lost 6 marks.
7. Roger (G.L. sc.), lost 9 marks.

SIDECARS.—1,000 C.C. CLASS.

1. Conrelli (Indian sc.), full marks.

Memorial Service to Fallen Motor Cyclists.

A memorial service in memory of those motor cyclists who gave their lives in the great war 1914-19 was held at St. James's, Piccadilly, on Friday of last week. The service was taken by the Vicar of St. James's Church, and the short service was followed by an address by the Rev. E. P. Greenhill, M.A., Temporary Chaplain to the Forces. Among those present were Col. A. E. Davidson, D.S.O., one of the vice-presidents of the Auto Cycle Union; Mr. James Nisbet, chairman; Major T. W. Loughborough, secretary; Major Dixon Spain, assistant secretary; Messrs. H. P. E. Harding, E. M. P. Boileau, and Alec Ross, members of the committee. Among the congregation were numerous despatch riders in uniform.

The Arbuthnot Trophy.

A fitting termination to a unique and splendid trial was the small dinner given by the Auto Cycle Union to the winner of the trophy and the Motor Cycling Club's special prize at the Royal Automobile Club on Friday night. There were present Lt. E. S. K. Evans-Greaves, R.N., the winner; Mr. A. W. Torkington, a vice-chairman of the A.C.U. committee; the Rev. E. P. Greenhill, chairman of the A.C.U. Competitions Committee; Maj. T. W. Loughborough, secretary of the A.C.U., Mr. A. V. Ebblewhite, timekeeper; Mr. E. M. P. Boileau, *The Motor Cycle*, the originator of the suggestion for commemorating the gallant death of the late Rear-Admiral by means of a trophy, representing the Motor Cycling Club, and Mr. Selby.

The table was tastefully decorated, and Lady Scott's excellent statuette of the Admiral was the centre piece. The proceedings were quite informal, and the only toast was that of His Majesty the King. In the course of the evening, Lt. Evans-Greaves, the winner of the trophy, said he would like to present two small cups, one to Lt. H. T. Back, who came in second, and one to Sub-Lt. Everett, who performed so well in the consistent driving test. The latter was a real novice, and the Triumph he rode was his first mount. This was very keenly appreciated by the A.C.U. An excellent suggestion was made that in subsequent years the winners of previous Arbuthnot Trophy Trials should be invited to the dinner, which would be an annual affair.

Official Results of Midland C. and A.C. Motor Cycle "Long Day" Trial.

CHIEF AWARD FOR BEST PERFORMANCE OF THE DAY (M.C. and A.C. Trophy).—H. B. Denley (8 Morgan), flexibility figure of merit 2.78.

AWARD FOR BEST PASSENGER PERFORMANCE (Jordison Trophy and gold medal).—H. B. Denley (8 Morgan).

GOLD MEDALS IN PASSENGER CLASS.—F. W. Giles (6 A.J.S.), 102 marks; J. Stevens (6 A.J.S.), 102 marks; L. Newey (4¼ Ariel), 102 marks.

SILVER MEDALS IN PASSENGER CLASS.—D. S. Heather (4¼ B.S.A.), 92 marks; F. Smith (8 Clyno), 95 marks; J. E. Greenwood (8 Sunbeam), 92 marks; F. J. Watson (3½ Ariel), 90 marks; J. L. Stocks (6-7 Ariel), 92 marks.

AWARD FOR BEST SOLO PERFORMANCE OVER 350 C.C. (*Trader* Trophy and gold medal).—G. E. Stobart (4¼ James), flexibility figure of merit 1.38.

GOLD MEDALS IN HEAVY SOLO CLASS.—L. L. Sealey (4¼ B.S.A.), 102 marks; G. A. Strange (5-6 James), 102 marks; H. J. Stretton-Ward (4 Triumph), 100 marks.

SILVER MEDALS IN HEAVY SOLO CLASS.—A. J. Dowler (3½ Sunbeam), 95 marks; J. A. Watson Bourne (4 Blackburne), 90 marks; G. Dance (3½ Sunbeam), 98 marks; J. Dudley (3½ Sunbeam), 97 marks; H. Minton (4 Norton), 92 marks; J. A. Newman (3½ Sunbeam), 92 marks; T. Peck (3½ Ariel), 92 marks.

CHIEF AWARD FOR BEST SOLO PERFORMANCE, 350 C.C. AND UNDER (*B.N.* Bowl and gold medal).—E. Williams (2¾ A.J.S.), flexibility figure of merit 2.429.

SILVER MEDALS IN LIGHTWEIGHT CLASS.—H. Newey (2¼ Levis), 90 marks; A. H. Johnson (2¾ Allon), 90 marks; W. B. Gibb (2¾ Douglas), 92 marks.

WINNER OF SPECIAL PRIZE FOR LIGHTWEIGHTS OF 275 C.C. OR UNDER.—H. Newey (2¼ Levis), 90 marks.

WINNER OF SPECIAL PRIZE FOR PRIVATE OWNER.—H. B. Denley (8 Morgan), 102 marks.

WINNER OF SPECIAL PRIZE FOR BEST CLUB PERFORMANCE.—T. Peck (3½ Ariel), 92 marks.

Sheffield Trial.

The Sheffield and Hallamshire M.C.C. are holding a trial next Saturday for the Stacey Cup over a course including Sutton Bank. Secret checks have been eliminated, and awards will be made on a system of marking designed to find the best performance entirely on merit and efficiency.

To Welcome Home Demobilised Motor Cyclists.

A meeting of prominent Midland motor cyclists was held last Friday evening in Birmingham to consider the question of organising some form of welcome home for the many motor cyclists who had joined the Forces. Sir William Bowater was in the chair, supported by Messrs. E. Humphries and G. Williams. A strong committee was formed, with Mr. Humphries as chairman, and Sir William Bowater was elected president, and no doubt a successful event will be organised.

Scottish Six Days Trial (July 21st to 26th).

Additional entries, subsequent to the first ballot, are as under noted :

W. Deans (3½ Ariel)
B. Alan Hill (Morgan)
W. Westwood (4 Triumph)
R. Hendry (5 Indian)
W. Strettell Miller (3½ P. and M.)
H. Moir (3½ Sunbeam)
J. L. Stocks (6-7 Ariel sc.)
L. L. Sealey (4¼ B.S.A.)
George Wray (8 Clyno sc.)
Vivian Olsson (4 Douglas)
Geo. Grinton (Harley-Davidson)
A. L. Downie (6 A.J.S.)
A. Downie (6 A.J.S.)
A. Downie (5-6 Ariel)
J. Emerson (3 A.B.C.)
Walter Young (4 Triumph)
Jesse Baker (3¾ Scott)
Mrs. Bell (6 A.J.S. sc.)
D. Bell (6 A.J.S. sc.)
L. S. Fisher (3½ Norton)
W. Hoyland (3½ Norton)
Capt. Hay-Will (6 A.J.S. sc.)
R. Carfrae (6 Bradbury sc.)
D. Wright (3¼ B.S.A.)
R. Clark (4 Douglas)
H. E. Fairley (4¼ B.S.A.)
—. Choldcroft (——)
D. Balloch (8 Matchless sc.)
— Parsons (8 Enfield sc.)
Lt. Jamieson (——)

F. Jeynes (3½ h.p. Humber) restarting on Edge Hill in the Humber Co.'s staff trial last Saturday. (See page 69.)

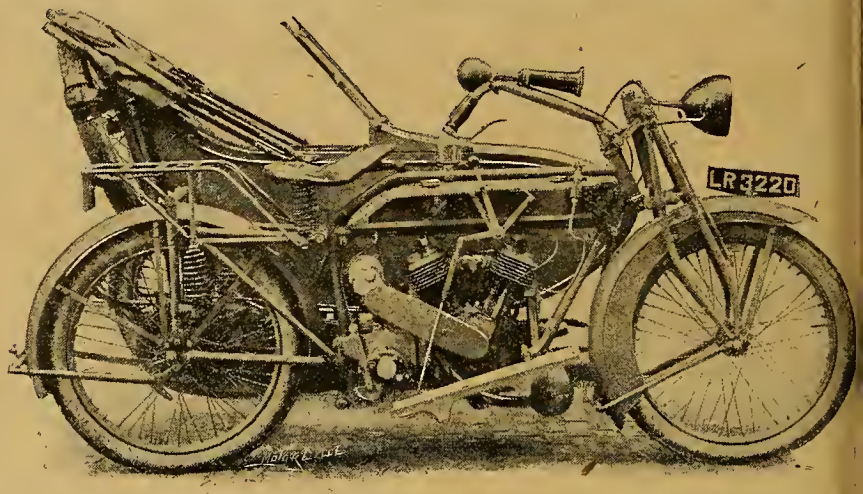
THE 1920 MATCHLESS.

Coil Spring Suspension, Kick-starter and Automatically Operated Exhaust Valve Lifter.

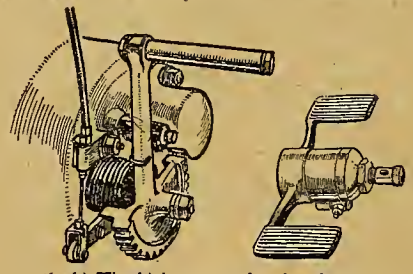
OUR last experience with a Matchless sidecar outfit was in the spring of 1918, when a military model, of the type ordered by the Russian Government, was placed at our disposal by Messrs. Collier and Sons, Ltd., Plumstead Road, Woolwich. The 1920 outfit is a very different proposition, and though it has still a "war finish" and a sidecar body which is not standard, it is a vastly superior affair. It possesses three very notable innovations—the spring frame, the kick starter-operated exhaust lift, and a single-lever carburetter, all very important features in motor cycle construction. It is the first motor cycle we have driven since 1903 which has not had an exhaust lifter on the handle-bar. The engine is controlled by the throttle spark alone, and the exhaust valves are raised for starting by means of a cam on the inner side of the kick starter quadrant, which, on the pedal being depressed, comes in contact with a trip on the exhaust lifter arm, which is hinged on a bolt at the base of the gear box. The valves remain raised during one-third of the quadrant's travel, the trip then slips off the cam, and the valves are dropped just at the correct moment. Also the engine may be stopped by depressing the pedal.

The 8 h.p. J.A.P. engine only departs from standard in one special feature, and that is the leading of an oil pipe directly from the J.A.P. automatic oiling system to the clutch bearing. The Claudel-Hobson single-lever carburetter renders the engine delightfully flexible and gives ample power. There is an item in the construction of the frame which is worthy of mention. The saddle tube is extended below the level of the bottom bracket and terminates in a lug from which runs a short stay to steady the forward chain case, while the other side of the lug serves to hold one of the six sidecar connections.

As regards the springing of the frame, this is particularly well carried out. To explain it briefly, the sprung portion forms practically a triangle, and, what is most important, it includes the luggage carrier, while the unsprung portion forms practically a rectangle, the base forming the chain stays, which are hinged at their forward ends. The rear vertical members are hinged top and bottom, and are braced by a tube across their top ends, the inner one of which terminates in a joint for the rear diagonal sidecar stay. Vertical coil springs take the road shocks between the sprung and unsprung portions of the frame. Every joint in the spring frame is provided with lubricators situated at convenient points, and the tubes are drilled to conduct the oil directly to the bearings.



The spring frame Matchless fitted with 8 h.p. J.A.P. engine.



(Left) The kick-starter showing the automatic exhaust valve lifting mechanism. (Right) The clutch pedal.

Control, as previously stated, is carried out mainly by the throttle, which, with the front brake lever, are the only two on the handle-bar. There is a spark lever on the tank. The clutch is actuated by a rocking pedal, which is peculiar to Matchless motor cycles, while the excellent internal-expanding brake is controlled by two pedals conveniently placed one on each of the two spacious and comfortable footboards. In our opinion, it would be very much better to separate these two pedals, and arrange for the near side one to withdraw the clutch. The clutch is smooth in action and requires no effort, and, being indestructible, can be freely used.

A very comfortable 175 Brooks saddle is fitted, the forward end of which is linked to the top tube, while the rear end is suspended on coil springs, the lower ends of which are attached to the frame.

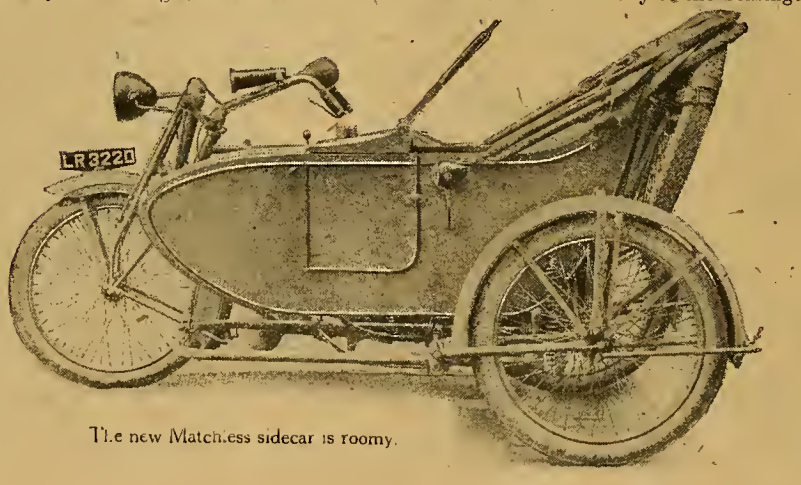
It is almost unnecessary to say that the sidecar wheel is also sprung, and that a coil spring is employed. The wheel is carried in horizontal forks hinged at both ends, while lubricators are supplied to all moving parts.

The front forks follow Messrs. Collier and Sons' usual design, but are improved by the fitting of adjusting nuts for taking up any side-play which may develop through wear.

A Lucas combined magneto and dynamo is fitted, and we can say from experience that it works excellently in its dual capacity. We took the machine for its first drive in the dark, and the lamps gave a splendid light. The controlling switch, however, is not very conveniently placed. It is quite easy to reach, but is attached to the inside of the tank in just the position where the rider's knees grip.

On the whole, however, we are immensely pleased with the latest Matchless production, which is the result of the labours of two practical motor cyclists.

We hope to say more about our road experiences with this superb outfit at an early date; but the short drive in the dark to which we have referred gave us an excellent idea of its springing, flexibility, and speed.



The new Matchless sidecar is roomy.

A NOVICES' TRIAL IN THE MIDLANDS.

Successful Event organised by Motor Cycle Firm for Employees.

ON Saturday last the Humber Co., Coventry, held the first of what may be many trials organised by large manufacturers to encourage their workmen to become motor cyclists and to foster goodwill between employer and employee. Such events should have far-reaching effects, for they bring the men, who actually make motor cycles, into direct touch with the conditions under which they are developed.

We commend the excellent idea to other large employers of labour, and such events need not be confined to manufacturers of motor cycles.

The organisers of the Humber trial, three of them (Messrs. M. Anderson, J. F. Crimdall, and S. Wright) old competition riders themselves, took into full consideration the fact that the majority of the entrants were absolute novices, hence nothing in the nature of freak hills or other strenuous tests were imposed. Although the stopping and restarting test on Edge Hill may have been considered a trying manœuvre by some of the novices.

The start of the Humber staff trial on Saturday last. Mr. Alec Ross sending away the first of the sixty competitors.

Sixty Competitors.

Fifty motor cycles and ten cars competed, the latter driven by officials of the company, Col. Cole, the managing director, competing on the new 15.9 h.p. model Humber. Of the fifty motor cycles thirty-seven were of Humber make, and included several machines of the old 3½ h.p. single two-speed type, but the majority were all-black 3½ h.p. flat twins. Several other makes were included, however. We noticed a rejuvenated single-cylinder Rex looking very smart in its all-black finish and gold lines, a 1919 3½ h.p. Sunbeam, several Triumphs, countershaft, three-speed hub, and single gear models, and a 3 h.p. Enfield.

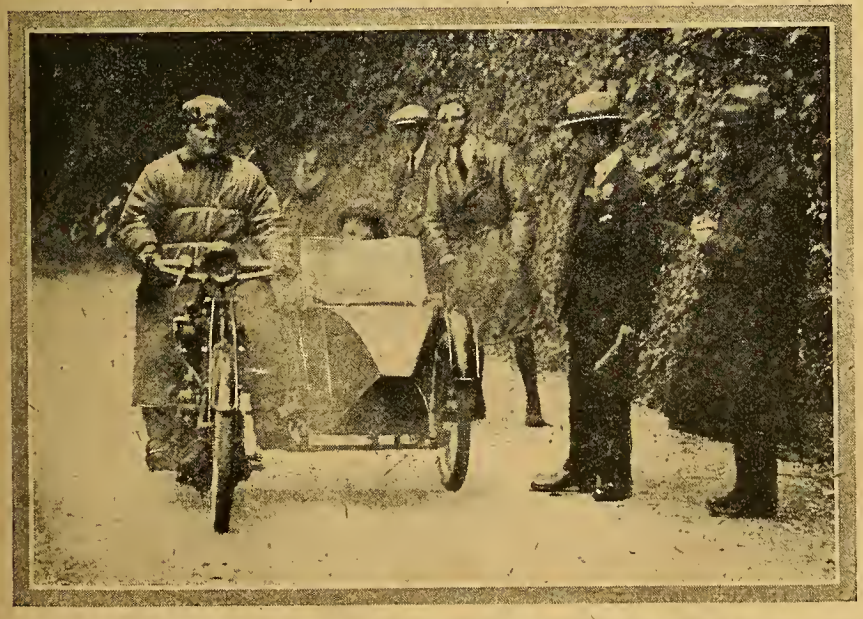
The course was seventy-seven miles in length, and included Edge, Priors Marston, and Newnham Hills. The start and finish were at the Humber works, where the officials were entertained to lunch, Sir Arthur Whitten-Brown, one of the Atlantic flight heroes, also being a guest. The tea stop was at Newnham, to which place the Humber band was sent in a lorry to render musical selections on the village green.

As was to be expected, the majority of the competitors failed, through inexperience, in the stopping and restarting test on Edge Hill, but it was pleasing to see the sporting spirit prevailing among both officials and riders. Among the several excellent restarts we witnessed may be mentioned Sharp, E. V. Gilliatt, and F. C. Brown on 3½ h.p. Humbers, and C. Horsfield on a 6 h.p. water-cooled model. Among the sidecars F. Yates, S. G. King, and W. H. Turner on the 3½ h.p. model, and A. Whittaker on the 6 h.p. Humber all did well.

Several competitors were already out of the trial by the time they reached Edge, but finished the course.

From Edge, the competitors were taken *via* Warmington and Avon Dassett to Priors Marston, where a surprise hill had been included to test the competitors' skill in gear-changing; but the great majority performed quite creditably. A further nine miles brought them to Newnham for 1½ hours interval.

The thirty-mile run to the finishing point commenced with the ascent of Newnham Hill, which most of the solo competitors climbed steadily on middle gear. The riders of older type of single gear machines were among the exceptions, although F. W. Baker, on the modern three-speeder, made a good ascent on his top gear. A. H. Bagley, on a 1912 two-speed single-cylinder Humber, also made a good climb, as did P. White on a slightly more modern machine of the same type.



F. Yates (3½ h.p. Humber sidecar) in the stopping and restarting test.

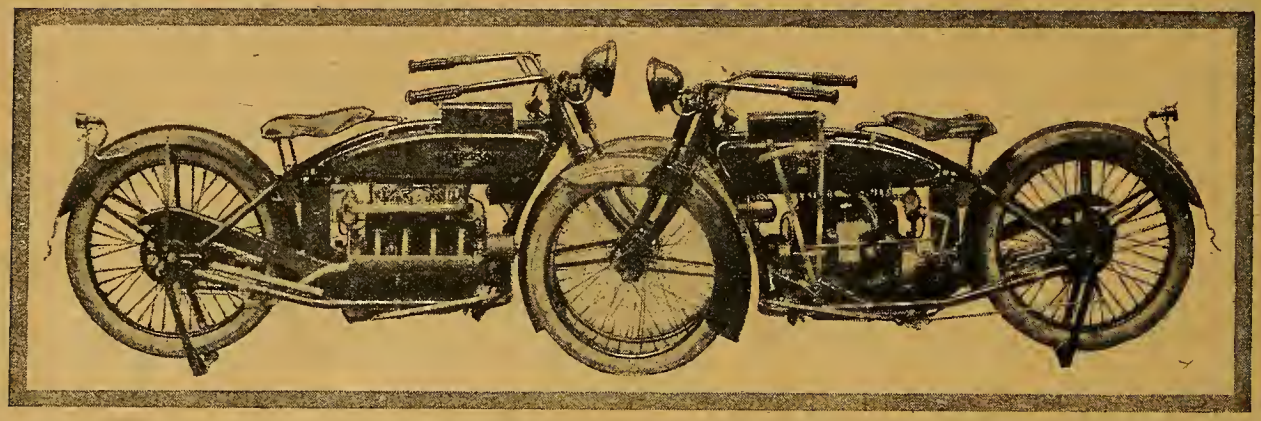
Sidecars on Newnham.

A. Whittaker (6 h.p. Humber sc.) made a fast climb, but J. A. Gill on an old type single-cylinder sidecar decided to relieve the machine of his weight. A. Tutchings, S. G. King, J. Idiens, W. H. Turner, and F. Griffin, all on 3½ h.p. flat twin Humber sidecars, did well, as did A. Edwards on a 4 h.p. Triumph sc.

Altogether it was a good trial, upon which we congratulate Mr. H. L. Davey, the chief organiser. We also congratulate the motor cyclist element of the Humber works for such an excellent entry.

Four-cylinder Motor Cycle Construction.

Some Particulars of the Latest 10 h.p. Henderson.



The model Z2 electrically-equipped Henderson.

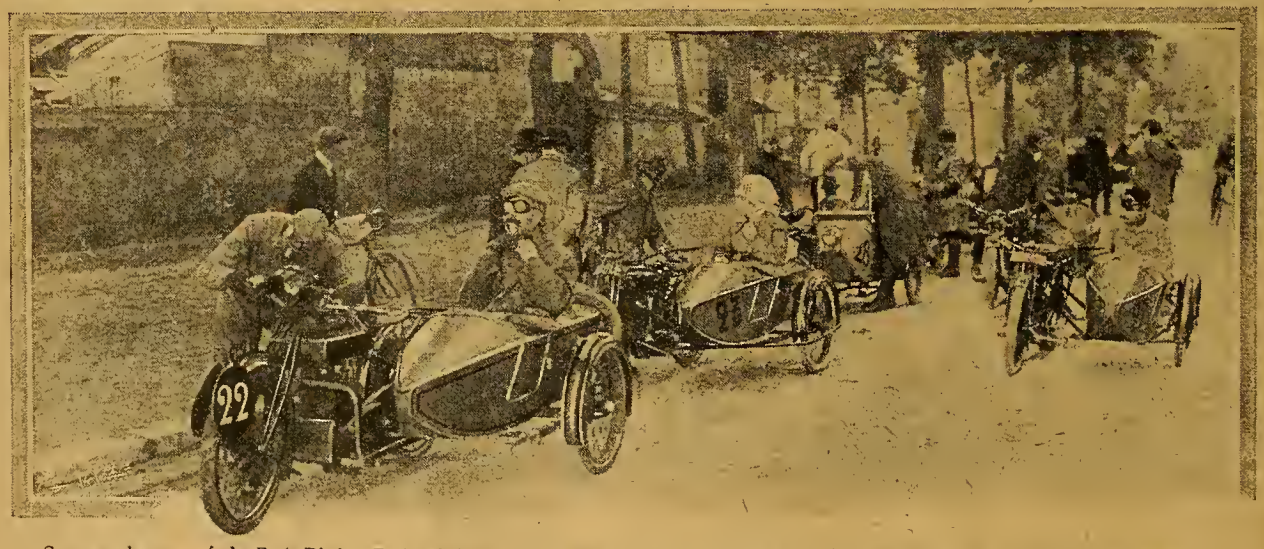
OUR experiences of the four-cylinder Henderson motor bicycle of the 1914 and 1915 models have been so delightful that it was with considerable pleasure that we heard that the first batch of 1919 models had arrived in this country, and were to be seen at Messrs. Robertson's, 157b, Great Portland Street, London, W.1. The Henderson stands almost alone; it is the first real novelty in motor cycle design which has come over from America. It is so fast that when the rider suddenly opens the throttle he has to grip the handle-bars tightly to stop himself from shooting off the back of the saddle, and yet it is so docile that it can be driven with comfort in the thickest London traffic.

Ignition and Lighting.

The new model is of extremely attractive design, being finished in khaki and having little plating work about it. As regards novel details mention must be made of the excellent spring forks, which are provided with a triple crown of immense strength. The Berling ignition system is quite separate from the dynamo lighting set. The former is compact in design, and carries a cut-out switch on the contact breaker cover. The lighting equipment is a direct current dynamo manufactured by the General Electric Co. The dynamo is driven from a timing gearshaft and generates from two to four ampères at 20 to 35 m.p.h. The commutator is mounted on a ½in. shaft running on ball bearings, which can be removed by taking out two screws, and the storage battery is carried in a neat case under the saddle, which can be swung sideways to allow the engine to be removed from the frame without disturbing the electrical equipment or disconnecting the battery switches or wires. The battery is of the well-known Exide pattern. A genuine Klaxon horn and an ammeter complete the equipment.

Most of the detail work is extremely good; for instance, the overhead inlet valve rockers are provided with spring clips, over the lubricators, ensuring adequate lubrication and preventing dust and mud from reaching them through the oil holes.

A much larger flywheel with a multiple-disc clutch built into it running in oil is now fitted, and the three-speed gear box is integral with the crank case. The change-speed gear is provided with an interlocking device, which prevents the lever from being moved until the clutch is disconnected—a very common practice on American motor cycles. The interesting part of the arrangement is that the clutch lever, the longer of the two, when moved farther than is necessary to withdraw the clutch, applies the internal-expanding brake. The clutch can also be operated by a pedal on the left, but this has no effect upon the brake. Another pedal on the right brings the external-contracting rear brake into action. The frame is of great strength, and is provided with substantial lugs for sidecar attachment.



Scene at the start of the Paris-Rheims-Paris reliability trial organised by the Motor Cycle Club of France. British motor cycles figured prominently, carrying off nine of the ten awards in the solo class, the remaining one being taken by an Indian.

M.C. and A.C. Trial.

The name of L. L. Sealey (4¼ B.S.A.) has to be added to the new gold medal winners in the recent M.C. and A.C. Long Day Trial.

Redditch and District M.C.C.

The results of the recent speed trial are as follow :

EXPERT SOLO CLASS.

1. H. Poole (4¼ B.S.A.)
2. L. L. Sealey (3½ B.S.A.)
3. — Bicknell (3 Enfield).

GENERAL SOLO CLASS.

1. W. G. Woodfield (4 James).
2. S. Bright (2¼ Enfield).
3. W. E. Smith (O.K. Junior).

EXPERT SIDECAR CLASS.

1. F. W. Viles (4¼ B.S.A.)
2. J. Doshier (6 Enfield).
3. H. T. Guise (8 Enfield).

GENERAL SIDECAR CLASS.

1. J. Sheppard (6 Enfield sc.)
2. L. George (4¼ B.S.A. sc.)

Fastest times in the solo and sidecar classes were made by H. Poole (4¼ B.S.A.) and F. W. Viles (4¼ B.S.A. sc.) respectively.

North Cheshire M.C.C.

Despite the very unfavourable weather there was a very good attendance at the opening run of the above club. The run to Rudyard was a great success. After tea the sporting members of the club organised a hill-climb, which was won by W. R. Eadington on his 7-9 h.p. Indian. The slow hill-climb also provided much amusement. T. Lawton won this event on a very smart Triumph. The chairman's prize for the smartest turn-out on the run was won by O. E. C. Carter on his well-known A.B.C. There were twenty-seven machines present, which, considering the bad weather, was a very good turn out. The membership of the club is now very large, but there are a few more members to be enrolled yet. Those desirous of membership should communicate with Mr. W. R. Eadington, hon. secretary, London Road, Alderley Edge. Further events will be announced in these columns.

Abersychan and District M.C.C.

This club is now re-formed, and interested motor cyclists in this district who desire to join the club should communicate with Mr. W. Gist, 169, Manor Road, Abersychan, Mon.

The above club recently held a successful speed-judging competition over a distance of seven and a half miles, which had to be covered at an average speed of 15½ m.p.h. The winner proved to be C. Williams (2¾ New Imperial), whose time error was only 15s. Watches and speedometers were not allowed. The second prize winner was G. Oliver, 30s. error; W. Griffin, 45s. error, was third.

A slow hill-climb has been arranged for to-day, Thursday.

The secretary of the club is Mr. Walter Gist, 169, Manor Road, Abersychan, Mon.

Future Events.

July 17.—Abersychon and District M.C.C. Slow Hill-climb.
July 17.—Taunton and District M.C.C. 200 Miles Reliability Trial.
July 19.—Middlesbrough and District M.C.C. Sidecar Competition.
JULY 19.—SUTTON COLDFIELD AND MID-WARWICKSHIRE A.C. OPEN HILL-CLIMB AT STILE COP, NEAR RUGELEY.
JULY 19.—BIRMINGHAM M.C.C. MIDLAND CUP TRIAL.
July 19.—Western M.C.C., Glasgow. Week-end Run to Lake District.
July 19.—Manchester M.C. Hill-climb.
July 19.—Edinburgh and District M.C. Race Meeting at Lonark.
July 19.—N.M.C.F.U., Portsmouth. Run to Hunsdon.
July 19-20.—Cumberland County M.C.C., Carlisle. Reliability Trial to Aberdeen and Back.
July 19-20.—N.M.C.F.U., Coventry. Week-end Run through Wye Valley.
July 19.—Middlesbrough and District M.C.C. Sidecar Competition.
July 20.—Woolwich, Plumstead, and District M.C. Run to Brighton.
July 20.—Rochester, Chatham, and District M.C. Secretary's Surprise Run.
July 20.—N.M.C.F.U., Portsmouth. Run to Corhampton Downs.
July 26.—N.M.C.F.U., Leeds. Run to Beckett's Hospital: Soldiers' Outing.
JULY 21-26.—SCOTTISH SIX DAYS TRIAL.
July 21.—Ilkeston and District M.C.C. Reliability Trial.
July 21.—Rochester, Chatham, and District M.C. Run to Whitstable.
JULY 23.—ESSEX M.C. SPEED TRIALS AT SOUTHEND.
July 23.—N.M.C.F.U., Portsmouth. Run to Blindworth Downs.
July 24.—N.M.C.F.U., Leeds. General Meeting, Green Dragon Hotel.
July 24.—Taunton and District M.C.C. Treasure Hunt.
JULY 25-26.—LIVERPOOL M.C. TWENTY-FOUR HOUR OPEN TRIAL.
JULY 26.—SUTTON COLDFIELD AND MID-WARWICKSHIRE A.C. LIGHTWEIGHT TRIAL FOR CALTHORPE CUP.
July 26.—Western M.C.C., Glasgow. Run to Lake of Monteith.
July 26.—N.M.C.F.U., Portsmouth. Run to Poole Park and New Forest.
July 26.—Public Schools M.C.C. Six Hours Night Reliability Run.
July 26.—N.M.C.F.U., Portsmouth. Run to Warsash.
July 26-27.—Wolverhampton M.C.C. Reliability Trial to Aberystwyth for Stevens Cup.
July 27.—Streatham and District M.C.C. Picnic Run to Ashdown Forest.
July 27.—Ilkeston and District M.C.C. Run to Malvern.
July 27.—Troedyrhiw and District M.C. Reliability Run.
July 27.—N.M.C.F.U., Leeds. Run to Malton and Castle Howard.
July 27.—Woolwich, Plumstead, and District M.C. Vice-captain's Surprise Run.
July 27.—Birmingham M.C.C. Social Run and Picnic.
July 29.—Rochester, Chatham, and District M.C. Inter-club Meet with Woolwich and Streatham Clubs.
AUG. 4.—YORK AND DISTRICT M.C. OPEN RELIABILITY TRIAL TO EDINBURGH AND BACK.
Aug. 10.—Birmingham M.C.C. Social Run to Monsal Dale.
AUG. 16.—S.E. COUNTIES INTER-TEAM TRIAL.
AUG. 16.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL.
Aug. 16-17.—Wolverhampton M.C.C. Reliability Trial to Barmouth for the Eric Williams Shield.
AUG. 23.—BIRMINGHAM M.C.C. OPEN HILL-CLIMB.
AUG. 30.—BRISTOL M.C. SPEED TRIALS AT WESTON-SUPER-MARE.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
Aug. 31.—Birmingham M.C.C. Social Run.
SEPT. 5.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
Sept. 6.—Birmingham M.C.C. Reliability Trial for Sangster Cup.
SEPT. 15-20.—A.C.U. SIX DAYS RELIABILITY TRIALS.

Wolverhampton M.C.C.

The results of the reliability trial to Llandrillo are as follow :

1. W. O. Ford (2½ Diamond), 12¼m. error.
2. M. Broatch (4¼ Matchless), 14m. error.
3. Miss Manley (2½ Diamond), 16½m. error.
4. A. Mee (2½ Diamond), 17m. error.
5. H. Taylor (10 Matchless), 19¾m. error.

N.M.C.F.U. (Leeds).

Nearly 200 members have promised to turn out on the 20th inst., when the Leeds branch of the N.M.C.F.U. will give an outing to the wounded soldiers at Beckett's Park Hospital. It is proposed to parade in the centre of the City, and after picking up the guests, to proceed to Harrogate, where tea will be provided. The cost will be borne by each member, and the secretary, Mr. S. W. Lancaster, 7, Evelyn Street, Leeds, will be glad to hear of other Leeds motor cyclists who will help.

Taunton and District M.C.C.

A meet of motor cyclists has been arranged to take place at Wellington Monument on Thursday afternoon, the 24th inst., at which it is hoped all motor cyclists from Somerset and Devon will make an effort to attend. Given fine weather, the view from this elevated position is superb. The Monument is a well-known landmark, and can be reached from Taunton *via* Blagdon or Leigh hills, from Wellington by the direct road or Wrangway, from Hemyock direct, or from Exeter *via* Beambridge and Wrangway or by Culmstock. It is hoped that the Exeter, Sidmouth and Yeovil clubs will be well represented. It is proposed to hold an impromptu hill-climb and other sports.

Leven and East Fife M.C.C.

The results of the open speed trials recently held on St. Andrews Sands are as follows :

CLASS I., NOT EXCEEDING 350 C.C.

1. O. G. Braid (Christie-Jap).
2. J. W. Hewitt (2¾ Douglas).
3. Lt. Jones (2¾ Douglas).

(Ten-mile race.)

CLASS II., 350 C.C. TO 600 C.C.

1. J. W. Adamson (3½ Triumph).
2. Lt. Ronksley (3½ Norton).
3. Capt. Walker (3½ Triumph).

(Six-mile race.)

CLASS IV., 600 C.C. TO 1,000 C.C.

1. G. L. Sawer (American Excelsior).
2. R. J. Braid (Zenith).
3. A. J. Carlow (Zenith).

(Ten-mile race.)

CLASS V., TWO MILE FLYING START.

1. J. W. Adamson (3½ Triumph).
2. Lt. Ronksley (3½ Norton).
3. Capt. Walker (3½ Triumph).

CLASS VI., TWO MILE FLYING START. ANY MACHINE ABOVE 600 C.C., AND NOT EXCEEDING 1,000 C.C.

1. G. L. Sawer (American Excelsior).
2. R. J. Braid (Zenith).

RELAY RACE, SIX MILES.

Leven and East Fife M.C.C. *v.* Crail R.A.F., which was won by the former by A. J. Carlow (Zenith).

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

FINDING A WINNER.

Sir,—I am pleased to learn that the Open Passenger Trial for the Midland Cup on July 19th, organised by the B.M.C.C., is to be run in a manner that will certainly minimise the only objection to a non-stop trial, that is, the possibility of a machine being disqualified owing to tyre trouble—largely a matter of luck, so-called. The course will be divided into sections, each of which will be under observation by patrols, whose duty it will be to investigate each stop. If this be due to a puncture, it will, as far as practicable, be repaired under observation, and the competitor be given a time allowance at the next check. Competition rules permitting stops anywhere; and for any purpose, are a farce so far as reliability trials go, even as it is unfair for the accident of a puncture to cause a machine to be designated unreliable. Brake tests form part of the Midland Cup Trial, but whilst brake tests are useful, the relative retarding effect of the brakes of various machines is not determined by asking competitors merely to stop between tapes: speed of approach to the point of application of brakes and distance required in which to pull up should be taken into account when determining brake efficiency, and a method devised by Mr. Eggington—the club's secretary—appears to do this in a very simple and effective manner.

A hill will be descended with gears in neutral, clutch out, and engine idle. The time of descent over a distance between two tapes will be taken, at the second tape brakes will be applied, and the distance required for the machine to come to a standstill will be measured. (To simplify matters, the road for a short distance past the tape will be spaced out.) The number of feet or yards required for deceleration, added to the time in seconds taken over the free running section, will be the figure of merit, the smallest figure representing the best performance. Not a scientifically perfect test, perhaps, but a step in the right direction.

JAS. L. NORTON.

BRAKE TESTS AND ALT-Y-BADY.

Sir,—In your very excellent report of the M.C. and A.C. trial of June 28th, you mention that the braking test was on the lower portion of the hill. Perhaps it would be well to explain that the objective of the committee in printing the drastic rule, that failures on the brake test would disqualify, was *not* with a view to knocking competitors out, but with the distinct object of impressing upon every competitor the necessity of seeing that his brakes were rather above the average in power and control.

After going down Bache-Canal and Glyn-Ceiriog hills, the competitors would, no doubt, be feeling glad that we had hammered on the brake qualification so emphatically.

Perhaps it *would* have been better to have taken the brake test higher up the hill. As a matter of fact, the official in charge of that section was rather tender-hearted, and wanted to give the competitors as good a chance as possible. He felt, and the committee agree with him, that the original object had been already achieved, and competitors had been driven thoroughly to test and inspect their brakes before starting.

Another point in your report. I am inclined to agree with you that if there is a worse hill in England and Wales than Alt-y-Bady, it must be indeed a bad one.

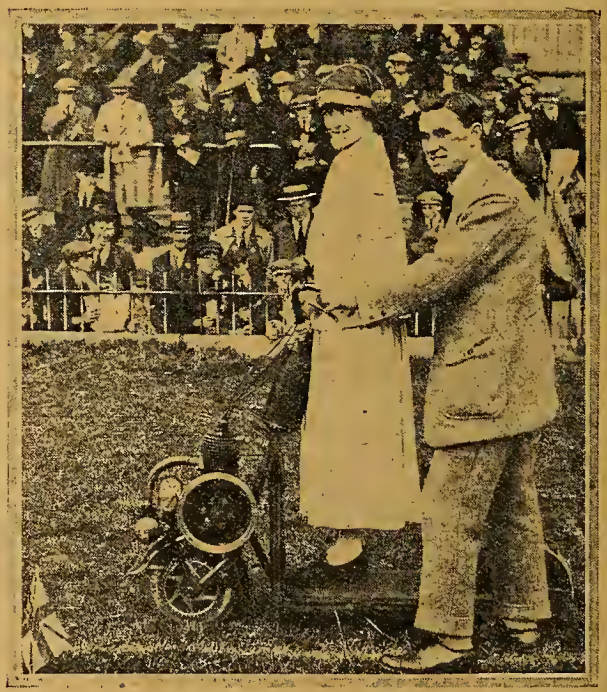
We feel grateful for your frank ruling that the hill was a justifiable inclusion, because it *is* a main road hill, steep as it is. The Michelin Guide-book describes it as "impossible to motors," so the twenty competitors who climbed on June 28th have the gratification of knowing that they have achieved the impossible.

But, in common with many others, you have laid down the dictum that the hill would be unclimbable in wet weather. Strange to say, the surface of this hill is not so affected by wet as one would suppose. The material of the surface is so vastly different from that of, say, Porlock (wet upon Porlock makes deep sticky mire). I have only seen Alt-y-Bady on one wet day, and on that occasion the wet appeared to run off as from a slate roof, streaking away at once in rivulets in the gutters on the extreme side of the road.

As a matter of fact, what, perhaps, was the first climb of this hill, by a motor bicycle, was on a drizzly summer day, seven years ago, in 1912, by a Douglas.

Whilst on this subject, may I respectfully suggest that any motor cyclists, whether as individuals or as clubs in a competition, who should at any time be tempted to try Alt-y-Bady, will show the utmost consideration for the authorities and inhabitants of Llangollen and its neighbourhood? The M.C. and A.C. were on the friendliest terms, and approval of the arrangements was expressed by the police, by members of the local council, and by the inhabitants generally. But any blind rushing up the hill by parties of machines, without marshals and without arrangements for removing the debris, will run the risk of causing trouble, and most particularly should any Sunday attempts be avoided in view of the strict Sabbatarian views of the Welsh people (a point that many English people cannot understand after the more lax observance in their own districts).

FRANK WHITWORTH.



The Autoglider, a new scooter manufactured by Townsend and Co., Birmingham, seen at the charity sports in that city last week.

PROFITEERING.

Sir,—I note with satisfaction in your Correspondence columns in July 3rd issue that at least one firm is taking steps to prevent its agents charging more than the published retail prices of its goods.

Unfortunately, however, as the following experience of mine will show, "there are others."

I was desirous of obtaining a certain sidecar which was stocked by a local agent. Imagine my surprise and disgust when this agent asked five guineas more than the makers' published price for that particular model.

I wrote to the makers about the matter, but although they were "sorry" they could do nothing, not even supply me direct.

Why does such a firm publish the retail prices of its goods at all, when it allows its agents to "profiteer" to this extent? DISGUSTED.

Ipswich.

A RIDER'S DESIGN.

Sir,—The photograph I send is of a sidecar outfit I built myself some time ago. The lamp also is an example of aluminium metal beating, fed by a copper pipe running under the floor of the sidecar to a gas generator. The machine is a 1913 Bat-Jap. I noticed in a recent issue that mention was made of the 1919 big twins, Clyno and Enfield,

A sidecar designed and built by its owner, H. C. Barwick.

etc., running silently at 28 m.p.h. Allow me one word for the Bat-Jap. Mine is a 1913 model with same engine, valves, etc., as were put on the machine, absolutely nothing new since that date. I guarantee that usual conversation is quite easy at 30 m.p.h. There is a lot in *driving* a machine; some drive noisier than others, and on the throttle. I shall be glad if you will insert the letter just to give an impression that quiet running was in "vogue" six years ago.

Norwich. H. C. BARWICK.

PILLION RIDING.

Sir,—I quite agree with "Regular Flying Officer's" views on making the practice of pillion riding illegal. I frequently take a passenger on the carrier of my motor cycle and have never had the slightest difficulty in controlling the machine. I do not think pillion riding is more dangerous than flying. Why not make flying illegal? Perhaps our "windy" town councils will tackle this next.

Personally, I have never seen an accident to a pillion rider, although I have heard of such: but accidents happen to sidecar and solo machines.

One should certainly be more cautious with a passenger on the carrier, and make sure that dresses, etc., cannot be caught in the wheel. QUIRK.

Sleaford.

Sir,—In your issue of July 3rd "Pilot" remarks that the average man "demobbed" certainly will not make use of a sidecar.

I have motor cycled for nine years, and find most people pass through the big-twin-solo-stage, and "Pilot" will find that craze will pass with youth when he is no longer so "full of beans"!

Personally, it seems the rest and comparatively easy handling of a sidecar combination is mostly what will appeal to the average man "demobbed."

By driving and sitting in the sidecar alternately, much ground can be covered by two people with a minimum of fatigue.

Pillion riding is safe for those who really understand what they are about, but of what percentage of present day riders could that be said. PILOT '15—'19.

Edinburgh.

Sir,—I should like to add a word or so to endorse the views, given in a letter signed "A Regular Flying Officer," on the safety of pillion riding. As one of the thousands of ardent motor cyclists who have *not* made a substantial pile out of the war—and who, in these days, cannot afford the £25-£30 now asked for sidecars by the leading makers—I recently took up a pillion passenger as a necessity and experiment; "experiment" no longer, but a joy. There are thousands like me—so pillion riding is now booming—of course, with the attendant critics—people, in the most part, I firmly believe, who speak from absolute lack of practical experience. May I place my experience under three headings?

1. *Danger.*—My wife and self have travelled many hundreds of miles in this way, and I have no hesitation in saying there is no greater element of danger present than in practically any other outdoor sport, whether riding through towns or on the open road. *Careful driving* at all times is the secret, as compared with reckless driving and rank carelessness which are solely responsible for the pillion riding accidents apparently now troubling a few town councils throughout the country, which causes are the characteristics of the majority of fatal accidents on the roads and elsewhere.

2. *Comfort.*—Make up a nice soft seat on a substantial carrier, and, for a young person, where is the discomfort? Also, we have found it much easier to converse with one another in this way than from bicycle to sidecar.

3. *Necessity.*—Sidecar prices swollen from £25 upwards, and indefinite deliveries at that. The price now asked for the solo mount alone leaves the poor middle-class man no balance for the additional cost of a sidecar; and, after all, motor cycle enthusiasts know well the truth of the old maxim, "Two's company."

I trust some of your other readers will give us their real unbiased views on this matter, and let us trust the petitions which a few town councils are thinking of presenting to Parliament on the great "danger" of this pastime will meet with consideration in the hands of some authority who has really studied this matter from experience, and will not condemn such a delightful, joyous pastime, because of a few fatal accidents, caused *solely* by reckless and careless driving. A.R.H.

Portsmouth.

Sir,—I have just read the letter signed "Regular Flying Officer (Pilot)" in your issue of 3rd inst.

While I agree that pillion riding is very convenient when taking a friend to the station, or a partner to the golf course, I am afraid that "R.F.O. (P.)'s" arguments in favour of its continuance are somewhat weak.

Passing over the remarks regarding the "sporting demobbed," high gears, and big twins, your correspondent's statement that he has exceeded 50 m.p.h. with a passenger astern appears to be a very strong argument against the practice. Fortunately, I do not think this sort of thing is common.

Then, does your correspondent suggest that riding on the step of a push bicycle is more dangerous than pillion riding? Surely not!

Personally, I had a serious sidecar accident recently. I have never had an accident when driving with a passenger behind. Therefore, following "R.F.O. (P.)'s" reasoning, sidecaring is more dangerous than pillion riding. As it happens, I know the contrary to be the case.

I believe most motor cyclists will agree that, occasionally, whether owing to carelessness on the part of the "other fellow," or through some other combination of circumstances, even the most careful driver finds himself in a tight corner. Anyone, therefore, who makes a practice of exceeding 50 m.p.h. with a passenger astern, is asking for trouble, with everything in favour of his finding it.

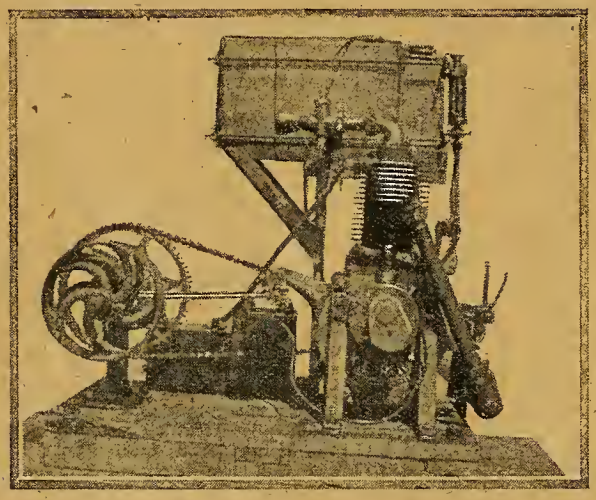
Glasgow. DEMOBBED.

THE ARBUTHNOT TROPHY.

Sir,—May I be permitted to address a few remarks with reference to the Arbuthnot Trophy. Could it not have been possible for the trial to have been open to both officers and men of the Royal Navy? The sight of a sailor astride a motor cycle is not often witnessed I know, but amongst the hundreds of men in the Service there are many who are interested in the pastime, and to whom, I am sure, the event would have greatly appealed. Perhaps it may be found possible for the motor cycle men of the R.N. to compete next time. If so, I myself hope to take part, provided the "exigencies of the Service permit." B.F.C.F.

MOTOR CYCLE ENGINE AS STATIONARY POWER UNIT.

Sir,—Replying to your correspondent "C.E.C." (France), who requests experience of a motor cycle engine used as a source of power for stationary purposes, I have used with success an old air-cooled engine for this purpose.



A ten-year-old 2¼ h.p. Kerry engine used as the power unit to drive lathe and drilling machine. (See letter B. Richardson Billings.)

The power unit drives the various appliances in my workshop. (I would here mention that I am a mere amateur mechanic.) The engine is an old "Kerry" 2¼ h.p., at least ten years old. It drives by means of a cycle chain an intermediate shaft, which carries a fifty-two teeth chain wheel at one end and a 3in. Ford fan pulley at the other. From the latter is taken an inch Balata belt to the overhead countershaft. From this countershaft I can run belts to lathe, drilling machine, and grinder.

The reason why an intermediate shaft was adopted was to reduce the pulley speed, and also to give more facility to alter the gear ratio whenever I wish to.

As it is so geared, it is easily started by pulling on the Balata belt, giving, I should estimate, about ten revolutions to an average pull.

The whole unit is so made as to be self-contained, and is ordinarily bolted to the cement floor of the workshop. But I propose using it occasionally next winter for some pumping that will doubtless have to be done, for, I regret to say, my inspection pit acts as a drain for miles around!

As the machine seems to have an easy load, and is never all out, I have not fitted a fan, but will probably do so later on. There is provision made, if need be, from a small pulley the other side of the chain wheel.

Anyway, the labour spent on this has been much better than that of treadling a lathe.

B. RICHARDSON BILLINGS.

SECOND-HAND PRICES.

Sir,—In your weekly budget of high second-hand prices, it is refreshing to find one man who sets his face against the practice. This is the advertiser who asks anything over £257 for a 1919 Harley-Davidson combination.

The price of the 1919 solo Harley-Davidson is £140 from the Harley-Davidson agents, Newman Street, London. The machine advertised, having done 400 miles, should be worth quite £130 in these times, so in letting the bulbous-backed sidecar go for a mere £127 I think Mr. P. is neglecting his own interests.

I have often wondered at queues in different parts, but I now understand that it must be through people eager to make bargains, such as the above, in these profiteering times.

H. IBBOTSON.

HOT OR COLD INDUCTION?

Sir,—Your contributor, H. J. Poole, Int.B.Sc., does not appear to realise the great difference between his laboratory experiments and the actual working conditions.

In an engine running at 2,000 r.p.m. the vaporisation of the charge, if it is to occur before entering the cylinder, must be completed in $\frac{1}{4000}$th part of a minute.

If Mr. Poole will take into account the latent heat the fuel must absorb in this very short time in order to vaporise, he would probably alter his conclusions, at least in regard to No. 3 petrol.

If it is argued that vaporisation may be completed inside the cylinder, it would, of course, apply equally to paraffin.

M. GLEGHORN.

PRICES AND PRINCIPLE.

Sir,—In reference to the letter from your correspondent "A Buyer" in July 3rd issue of *The Motor Cycle*, we should like to observe that, in the first place, the A.B.C. motor cycle was never offered to the public at any other than its present price, namely, £85.

Speaking for ourselves, we should very much like to make the A.B.C. machine to sell for £70, and only regret that, owing to circumstances outside our control—the aspirations of labour, for instance, and the depreciation of the value of currency—we are unable to do so. At the same time we are perfectly aware that at £70 it would have more purchasers than at £85. Our policy is to set up a new standard in motor cycle excellence, which cannot be pursued by effecting retrenchments either in workmanship or material. We believe that this policy is one with which the bulk of riders are in entire agreement, and we also believe that the majority of them will realise the present-day difficulties in the fixing of a price for a revolutionary new design, especially when it has been adopted with a view to providing a more complete and efficient machine than has ever been produced.

We realise, and sympathise with, "A Buyer's" disappointment. He would, however, hardly have taken the action he did without some sufficient reason, which, we assume, was grounded upon knowledge of the conditions of motor cycle manufacture. Such being the case, we hope he will accept an invitation to come to our works, and thoroughly investigate the manner in which the A.B.C. is made. If he will then indicate any direction in which practical steps can be taken to reduce the selling price of our motor cycle, we shall very gratefully adopt them, and not scruple to accord him the public credit he deserves.

May we remark, in conclusion, that our prices are first, last, and all the time based exclusively upon the cost of labour and material, and are not, nor are they likely to be, influenced by the price of other motor cycles?

We regret to conclude, on carefully reading your correspondent's letter, that, so far as new machines are concerned, he proposes to renounce motor cycling altogether.

THE SOPWITH AVIATION AND ENGINEERING CO., LTD.

ALAN R. FENN, Sales Manager.

Useful Books and Maps for Motor Cyclists.

	Price net.	By post
"THE MOTOR CYCLE" ROAD MAPS. England and Wales, Scotland, London (showing roads into and out of London and avoiding London). Mounted on linen. Set of three, complete in case	4/6	4/11
"HINTS & TIPS FOR MOTOR CYCLISTS." Full of useful "wrinkles" and little items of sound advice on the management, repair, equipment, and general care of a motor cycle. It will be found invaluable to all those who are thinking of overhauling their machines. *Sixth edition (2nd reprint)*	2/-	2/3

Obtainable by post (remittance with order) from ILIFFE & SONS Ltd., 20, Tudor Street, London, E.C.4. or of leading Booksellers and Railway Bookstalls.

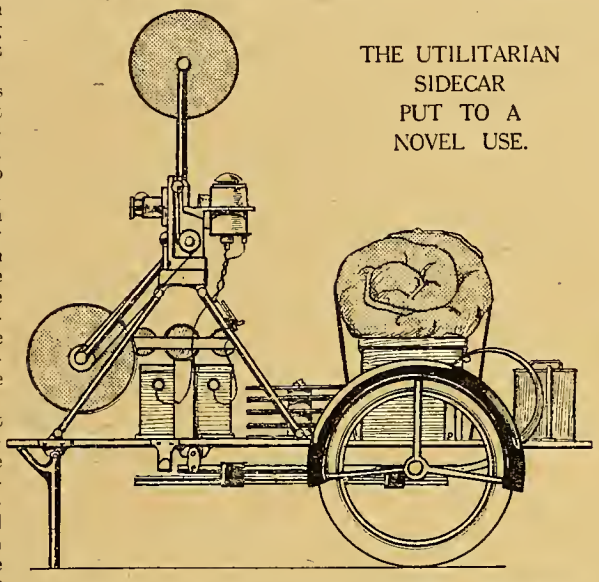
A SIDECAR CINEMA.

THE sidecar has been used for many purposes from mounting machine-guns to moving furniture, but it is not often that one hears of a sidecar travelling cinema. The drawing below depicts the sidecar used by Mr. Harold T. Towner for this purpose during an eight months' "tour" in the summer of 1916 along the banks of the Suez Canal.

The sidecar chassis was of the conventional light type, which had to be reinforced with 2in. × 1in. channel section iron to give it the required stability. The cinema machine was a Baby Gaumont, mounted in such a position that it could be operated from the saddle of the machine, or instantly removed from the machine altogether. Although the cinema machine was quite small, Mr. Towner advises us that it was possible to get a picture about 10ft. square quite easily. The accumulators were mounted beneath the cinema, and suffered very little from the road shocks. These also supplied current for the head light, which served as a "hall light" while the films were being changed. A front stand was found necessary to steady the apparatus when showing, and the back, too, was generally shored with an empty box or timber when procurable. The screen was carried in the operator's kit, and the frame, composed of short rods which fitted together, was strapped to the chassis. The whole outfit was attached to a 1916 B.S.A., chain-cum-belt model, which, our correspondent says, did excellent work, and had to pull the "whole thing" through any amount of sand and over tracks up the sides of hills, and, in some cases, over wire netting laid on the soft sand.

While travelling from camp to camp a linen cover was fitted over the equipment.

THE UTILITARIAN SIDECAR PUT TO A NOVEL USE.



Complete cinema outfit mounted on a chassis. The lamp is 18 volt 3 amp., with a 100 c.p. metallic filament bulb. The film box is shown above the axle and beneath the operator's blanket and kit. Empty spools, rewinding gear, and the 18 volt 80 amp. accumulators are also shown.

No doubt this novel cinema brought many pleasant evenings to those who were on the ever scorching desert defending the frontiers of the Empire.

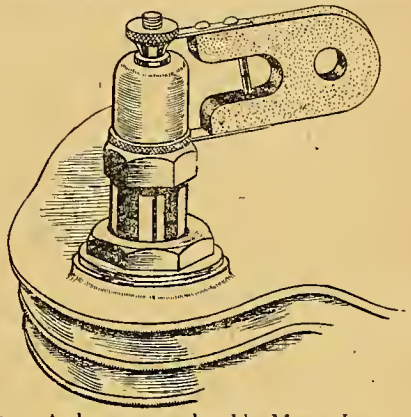
This illustrates how universally the war called in all forms of industrial activity, automobilism not least among them.

MOTOR CYCLES AS A GRANDSTAND.
French soldiers put their Triumphs to a novel use on the arrival of the Plenipotentiaries at Versailles to sign the Peace Treaty.

A NOVEL PLUG TESTER.

CONSIDERABLE inconvenience is frequently caused when applying some kind of tool in order to determine if the cause of a sudden breakdown is due to a faulty plug.

To obviate this practice Messrs. Leo Ripault and Co., 1, King's Road, St. Pancras, London, N.W.1, have produced a simple device, marketed at 2s. 6d., consisting of two flat terminals screwed



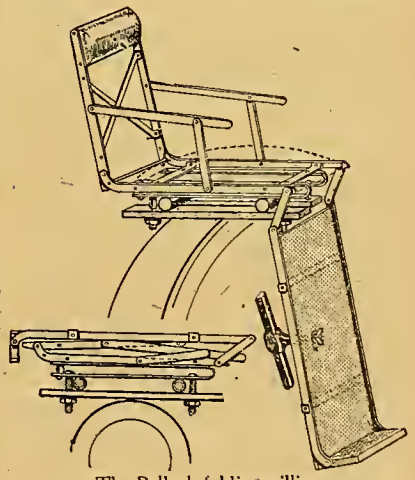
A plug tester marketed by Messrs. Leo Ripault and Co.

to a fibre holder, which, when applied to the plug terminal and any part of its metal body, will, if the plug is functioning correctly, produce a spark between the two electrodes contained in the centre.

A FOLDING PILLION SEAT.

WE have received preliminary details of a useful folding pillion seat which is to be sold by J. H. M. Pollock, 22, Surrey Street, Strand, London, W.C.2.

The seat possesses the advantage of having a comfortable back, and is suspended on a U spring with a spiral spring at the rear. A protected leg rest



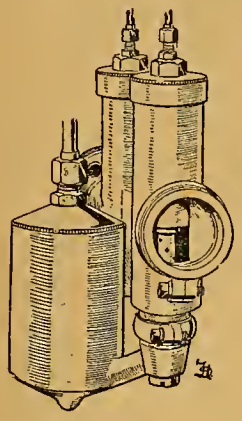
The Pollock folding pillion.

is also fitted, which should be extremely useful in the event of the seat being used by a lady, adequately protecting the dress from the spokes of the rear wheel. When out of use the seat folds neatly away, and the leg rest, folding over the top of the whole, forms a luggage platform.

The Latest Everest Carburetter.

Multiple Jets, Automatic Action. Additional Air Lever Fitted.

HITHERTO the Everest carburetter has been known as an automatic instrument having a single lever. In common, however, with most motor cycle carburetters (even those which are fully automatic in operation), it has been found desirable to provide a means of admitting extra air for temperature compensations as is sometimes necessary on occasion, therefore, while the former attribute remains, a second lever has been added for starting purposes and for the occasional control of the air supply. As before, the jet consists of an upright cylinder having a number of tiny holes in it. These holes used to be placed in a vertical line facing the engine, but it was found that their position with regard to the engine was a matter of small importance, and they are now placed in a spiral at equal distances, so that it does not matter what position the jet takes up when screwed home. This tends to ease in fitting. The holes are bored with a $\frac{1}{16}$in. drill until they are nearly through the cylinder wall, and then finished to measure $\frac{5}{1000}$in. The object of this method of boring is to give a very shallow hole which cannot possibly retain any solid matter and so become choked.



Exterior of the latest pattern Everest automatic carburetter, the jet of which consists of an upright tube pierced with tiny holes.

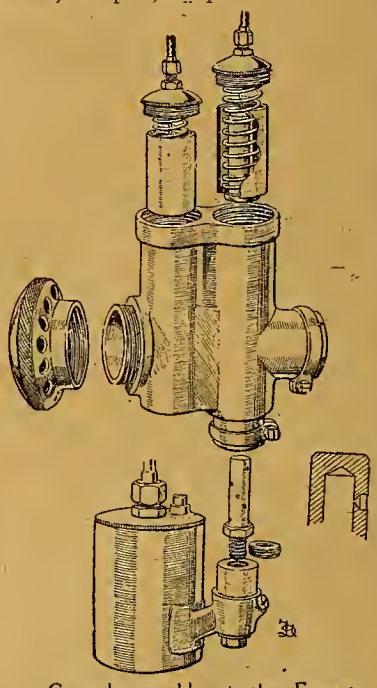
Inside the throttle barrel is a loose sleeve, which covers all the holes when the throttle is closed and opens them one by one as the throttle is raised. As this sleeve is a loose fit, a certain amount of suction is felt by the hole which is next to be uncovered. Thus petrol is drawn from it to a gradually increasing extent as the sleeve rises until the hole is uncovered.

Effective Adjustments.

The inflow of air is straight through the carburetter, but the opening where the throttle works has vertical sides, so that a certain movement of the throttle lever corresponds to practically the same amount of throttle opening whatever may be its position.

Adjustment to suit any particular engine can be carried out by varying the size of the holes, *e.g.*, at small throttle openings they may be reduced to a minimum, and the upper holes enlarged for speed and power. Further adjustment can be made by removing or adding washers below the jet, thus altering the height of the holes so that they come into action sooner or later with reference to the throttle opening, and so vary the strength of the mixture. The air slide works in a separate cylinder. This and all other details of its construction can be plainly seen in the accompanying illustrations.

In use the carburetter is most effective, but we hope to have more to say on this point later. The maker is Mr. E. P. Everest, Newport, Salop.



General assembly of the Everest carburetter, the small inset showing how jet is drilled to prevent clogging.

Standardisation of Chains.

THE unprecedented demands of the Allied Governments for driving chains for all purposes during the period of the war made it necessary for the British driving chain manufacturers to collaborate in order to use the whole of their resources to the best advantage. As a result, the needs were met, both as regards quantity of production and quality of product. The benefits accruing from co-operation were so marked that a permanent association has now been formed.

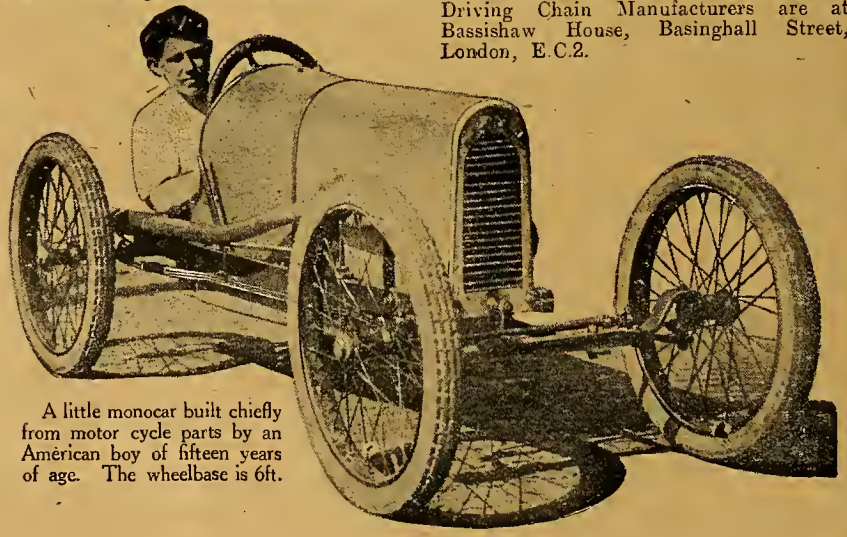
The main object of the association is to foster and develop the use and application of chain gearing. In view of competition with other forms of transmission, it is the policy of the association to keep down the cost of chain driving to the user. This will be attained by:

(1.) Standardisation of chains, wheels, and chain wheel cutters to ensure interchangeability. (2.) Elimination of unnecessary sizes of chains, which have been a source of confusion and difficulty to the user. (3.) The increase in output resulting from the above. (4.) The more comprehensive research made possible by co-operation.

Further, it is confidently anticipated that the policy of the association will enable British driving chain manufacturers and their customers to secure a larger share of Overseas business than hitherto.

The following firms are co-operating: Alfred Appleby Chain Co., Ltd., Tilton Road, Birmingham; Brampton Bros., Ltd., Oliver Street Works, Birmingham; "The Coventry" Chain Co., Ltd., Spon End Works, Coventry; and Hans Renold, Ltd., Didsbury, Manchester.

The offices of the Association of British Driving Chain Manufacturers are at Bassishaw House, Basinghall Street, London, E.C.2.



A little monocar built chiefly from motor cycle parts by an American boy of fifteen years of age. The wheelbase is 6ft.

The Tankette "Scooter" now a Tricar.

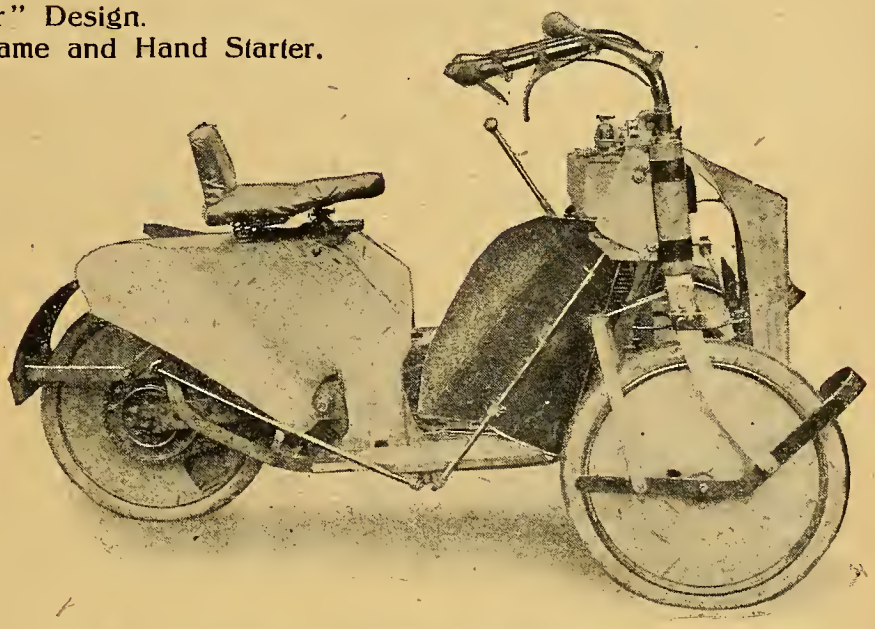
An Ambitious "All-weather" Design. Steel-strip Frame and Hand Starter.

REFERENCE has already been made in these pages to the Tankette, and we were recently enabled to see a rough preliminary model of this extremely unconventional vehicle at the works of Messrs. Ronald Trist and Co., Ltd., 229, High Street, Watford.

The frame is of peculiar design, being built up of mild steel strips bolted together with a cradle for the engine in front.

The forks are of the spring variety, employing laminated springs, but in future models the more conventional type of motor cycle fork will be employed.

The engine is a 2¾ h.p. Union two-stroke (70 mm. × 85 mm.) situated well in front of the frame. The drive is by chain to two cone clutches on the countershaft, thence by two chains to the rear wheel. The disc wheels are 20in. × 2in. The twin rear wheel is carried on quarter-elliptical springs, while radius rods are fitted, enabling the chain length to be kept constant. The hub is provided with a hollow spindle, so that it is easily withdrawable.



Side view of the Tankette. A hand starter is provided, and on future models a hood and screen will be fitted

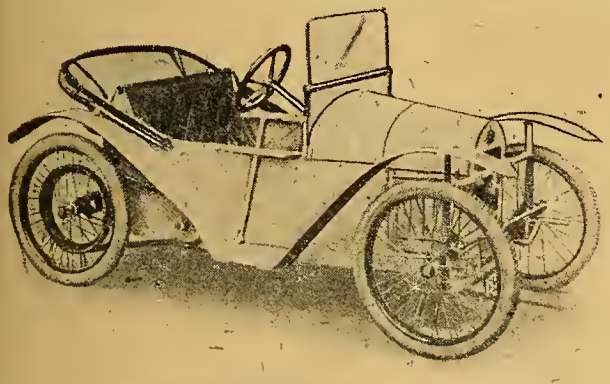
An Experimental Model.

As we have said before, the present Tankette is a rough model, and this accounts for certain crudities in its appearance. We are given to understand, however, that the final model will be considerably improved in many details. For instance, a cylindrical form of petrol tank will be employed, and a hood and screen will be fitted, while the method of mudguarding will be altered for the better.

The vehicle showed itself to be quite a good hill-climber. Its performance up Bushey Hill, near Watford, though slow, was extremely sure, and its behaviour on rough roads quite satisfactory. We drove the machine for a short distance, and found that it steered well at low speeds. Though it can be accelerated to 25 m.p.h., the engine vibration was noticeable after about 17 m.p.h. had been reached, on account of the gear ratio being, of necessity, somewhat low.

The Sicam Runabout.

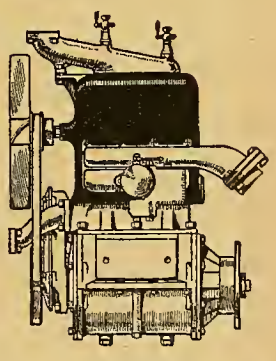
New French Belt-driven Cycle Car with 500 c.c. Two-stroke Engine.



The Sicam runabout manufactured by M. Violet, Paris. It is fitted with vertical twin two-stroke engine.

IT may be remembered that M. Violet, of Pantin, France, competed in the pre-war cycle car Grand Prix on a Violet-Bogey. This designer has now introduced a new vehicle of the runabout type, which is known as the Sicam, and which is fitted with a 7 h.p. two-cylinder two-stroke engine, having cylinders 65 × 75 mm. = 500 c.c. Both air and water-cooled models will be marketed, the former having a fan which forces a draught of air through a tunnel which encloses the cylinders.

A clutch is mounted on the engine-shaft, and the power is transmitted to a transverse countershaft by means of a propeller-shaft and bevel gear. The countershaft carries two variable pulleys. The front suspension is similar to that of the Morgan Runabout, while at the rear a transverse leaf spring is used.



The two-cylinder two-stroke engine used on the Sicam runabout

THE PRICE OF PETROL.

AT a meeting of motorists and others interested in motor transport, held by the Automobile Association at Luton on the 7th inst., a resolution was passed calling on the Government to stimulate the use of the home-produced fuels—power alcohol and benzole—by immediately giving effect to the Departmental Committee's recommendations on the utilisation of power alcohol, and also the Fuel Research Committee's recommendations on gas standards, providing that all gas companies be required to extract the whole of the benzole from their gases.

Mr. Hughes Cumberland, presiding, said that fuels as good as, and infinitely cheaper than petrol could be produced in this country which would not only cause financial benefit, but be of enormous importance otherwise to the motoring industry

QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Rising Prices.

I ordered a 3½ h.p. motor cycle some weeks ago. Delivery was promised in July, and I was informed that the price was 95 gns. I received a letter recently stating that the makers had raised the price to 105 gns., and that if I did not want to pay the extra they had another customer who would do so. Am I liable to pay this extra amount?—C.F.

New machines are mostly being sold at prices ruling at time of delivery, and unless you had a definite contract to supply at the lower figure we fear that you will have to pay the increased price if you desire the machine.

Valve Timing.

I recently bought a 3½ h.p. Brown engine, which I fitted into a Rex motor cycle, two-speed frame. This engine has been rebushed and new rings fitted, and compression is good. (1.) On taking the machine on the road a speed of 20 m.p.h. is attained, and this seems the limit. After travelling four miles the machine overheats and comes to a stop. I have oiled freely, and set the points to break, viz., piston on top dead centre two-thirds retarded. (2.) When the crank case was dismantled it was necessary to take off the small timing pinion which drives the valve gear. The shaft carrying this pinion has one key and the pinion two slots set parallel to each other. This allows the pinion to be placed in two positions. (3.) I cannot get the machine to fire in any of the marked positions, and am absolutely beaten with it. (4.) I might add that I have fitted two new springs to the valves, and these seem a little longer than the old ones, but the valves are receiving their correct lift.—G.R.P.

As your timing seems all mixed up, the best thing to do is to retime entirely both valves and ignition. Leave the main pinion on the engine-shaft and remove the other two. Revolve the engine till the piston is about $\frac{1}{16}$in. down the stroke, and replace the exhaust cam so that the exhaust valve has just closed. Replace the inlet valve cam so that the inlet valve is commencing to open, *i.e.*, the valve is very lightly eased off its seat. This is a good average timing, and may require to be adjusted a tooth either way. Then turn the engine-shaft till the piston is about $\frac{1}{16}$in. down the firing stroke, with the lever fully retarded, and the magneto points about to break. Overheating may be caused by too rich a mixture, too high a gear, or an obstructed silencer.

Gear Ratios.

My machine is a 1913 4 h.p. J.A.P. engined Matchless with P. and M. two-speed gear and cane sidecar. The gear ratios at present are 6 to 1 and 8½ to 1. (1.) Do you think these are too high for riding with a passenger in the sidecar and an extra passenger on the pillion? (2.) The engine does not pull as it should. Would the fitting of new valve springs make an appreciable difference? (3.) Would you give me the most suitable valve and ignition timing for passenger work as above, hill-climbing being the most important consideration?—S.H.B.

(1.) The gear ratios seem to be about correct, and certainly not too high. (2.) The fitting of new valve springs would effect an improvement. (3.) The engine should be timed as follows: Valves: Set the exhaust valve to close just after the completion of the exhaust stroke. It will then commence to open when the piston is about one-seventh of the length of the stroke from the bottom of the firing stroke. The inlet should commence to open as the exhaust closes, and remain open for rather more than one complete stroke of the piston, or while the flywheels turn through about 200°. Ignition: Remove the compression tap. Rotate the engine slowly until the piston is within a quarter of an inch of the top of the compression stroke. (This point can be found by inserting a pencil or piece of wire through the compression tap opening.) This is the position the piston should be in when the igniting spark passes, which in turn takes place when the contact breaker points on the magneto just separate. It remains, therefore, to arrange that both these operations synchronise. Loosen the magneto sprocket, which is usually held on to a taper spindle by a threaded screw. Rotate the magneto armature in its proper direction until the contact points just separate. Take note that the piston is still in its proper position. Now fix the sprocket tightly, taking care not to move the armature in doing so, and again verify the position. In the case of magnetos which give a variable point for ignition, the lever should be set in the fully advanced position prior to timing.

The trophy presented by the Palmer Tyre Ltd., which was competed for in the Irish End-to-end Reliability Run on the 14th and 15th inst

Carburetter Extension Pipe.

(1.) I have a 1919 Triumph. I am told that if the cap on the carburetter air port is cut off, and a piece of metal tubing (or funnel) is fastened on instead, it increases the suction, and hence gives better m.p.g. and higher speed. Do you recommend this? (2.) Where can I buy petrol in bulk (not cans), so as to get it cheaper?—J.C.

(1.) An increase in speed as a result of fitting an extension to the air port of the carburetter is problematical, but no doubt some slight improvement in petrol consumption will result. (2.) Unless you are a large consumer and have special facilities for storage, we cannot recommend the purchase of petrol in bulk.

A Loose Ball Bearing.

I have the same gear box trouble as "Ixion's" correspondents (in *The Motor Cycle* of May 8th, page 457)—a ball race loose in its housing. Will you please let me know (1) whether it is safe to use the machine at all while this is loose? Is it possible for the race to leave its housing altogether and foul with the gear box mechanism (in which case the danger would be very real, of course)? (2.) Please tell me exactly how to "tin the outside" of the ball race, as "Ixion" suggests. I have no tinning plant. The machine is a James 4¼ h.p single three-speed.—A.L.M.

(1.) You had better secure the ball bearing as soon as possible, as it might cause trouble, though this is not very likely. (2.) If the ball bearing is free on the shaft it is easy to take it up in the housing with a thin sheet of paper, which should wedge it in position quite satisfactorily. We expect he means to run a little solder on the outside of the ball race, so as to increase the thickness thereof, and wedge it more securely in the housing, but the method we have suggested should be good enough.

Use of Benzole.

I am expecting delivery of a 8 h.p. Campion-Jap in a few days, and, as I am to use the turnout for pleasure, I do not wish to spoil the appearance for a few coppers saving on the running expenses. (1.) Will the use of benzole mixture (half petrol, half benzole, which, I suppose, improves the running) injure the appearance of the enamel if splashed on to the tank, etc.? (2.) Best plugs to carry for spares for the above machine? (3.) How long will the F.R.S. battery last with three lights burning; also, after newly charging, without lighting? (4.) One charge of oil to start, how far to travel with heavy or light load before oiling again? (5.) Will benzole mixture injure the inside of the tank or any other working parts of machine? (6.) The best insurance company that will insure against accidents, damages, fire, burglary; also to include the A.A. and the M.U.—G.V.F.

(1.) The benzole mixture is very satisfactory, but will attack the enamel if carelessly splashed about. (2.) Any plugs of first-class manufacture will be satisfactory on your machine. (3.) If you are speaking of an accumulator, the lighting duration will depend upon its capacity and the lamps used. The outfits normally supplied give about ten hours' light. Accumulators, when not in use, should be regularly recharged about every six weeks. (4.) One charge of oil every six or eight miles according to load and speed. If engine smokes continuously, cut down oil supply slightly. (5.) Benzole will not injure the tank internally. (6.) If you desire your insurance to include A.A. and M.U. membership, write to the secretary, 21, Fanum House, Whitcombe Street, London, W.C.2.

Army Huts as Garages.

From time to time in your paper there are advertisements for the sale of wooden huts, to be used as motor garages. One of these I have ordered—general Army hut, 40ft. × 20ft., with the alteration of double doors at one end, suitable for holding four light cars or taxis, and to be situated on the main road 4ft. from the wall alongside footpath, and at least 40ft. to 50ft. from any surrounding property. On submitting my plans at the Borough Surveyor's Office, Town Hall, Bradford, for permission to erect this, I am informed that such cannot be used as a motor garage unless it be lined both inside and outside with asbestos and also has a concrete floor, the cost of which would be as much as, if not more than, a proper brick building. Can the vendors claim anything from me, or should they refund my money in full, delivery not being promised for about another week or more?—C.S.

Our legal adviser writes as follows: "I understand that, strictly speaking, a council is not bound to allow a hut to be used for garage purposes. If, however, a council does allow it to be used it can insist on such alterations as it thinks proper, and no doubt these would vary somewhat throughout the country. In some instances, it might be regarded as sufficient to have asbestos outside the hut, while in others both inside and outside would be insisted on. I am informed that, in the case of a hut similar to that described by your correspondent, and to be utilised for four cars or taxis, it would be very advisable to have asbestos both inside and out as well as a concrete floor, and these stipulations could not be regarded as unreasonable. I presume asbestos is required on the outside because there is no brickwork. Probably corrugated iron would be sufficient, but that would be expensive and more difficult to obtain. Your correspondent has no power to cancel the order, and the vendors can either send on the hut or they can resell it and deduct any deficiency in price and let your correspondent have the balance. I do not think that delay in delivery for a few days would make any difference unless immediate delivery was stipulated for."

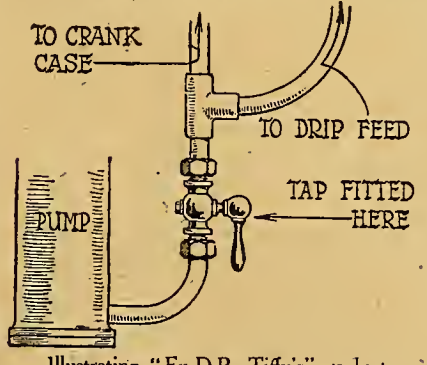
READERS' REPLIES.

Loss of Compression.

Having just read "G.J.B.'s" letter in your issue of July 3rd *re* loss of compression on his Douglas, I may state that, on first possessing one, I was mystified by the hiss of escaping air he describes. Very soon, however, my natural (or unnatural) curiosity prompted me to seek its cause. I find that the lubrication of the valve operating gear is effected by an oilway drilled in centre of mainshaft pinion, through which oil is blown by crank case compression as the pistons "descend." When turning flywheel by hand he can probably hear the air hissing through this oilway, and, if the inspection cover is taken off, it can be felt with the hand.—C.W.F.

Lubrication.

Several readers who complain of excessive oil consumption troubles may find help in the following remedy, which I have carried out and found very successful to more than one 4 h.p. W.D. Douglas: Between pump and branch union (to drip feed and crank case supply) place an ordinary petrol tap, so that in its *on* position it faces down (to obviate



Illustrating "Ex-D.R. Tiffy's" reply to L. W.'s query on the lubrication of a 4 h.p. Douglas.

closing with vibration). By this method it will be seen that the supply can be regulated very easily, and when correct lubrication is obtained, can be fixed if desired, or even, by fitting a lever (foot operated), can be varied according to load.—Ex D.R. TIFFY.

Magneto Ignition.

I notice H. E. Porter says, in reply to a correspondent who has trouble with a low-tension magneto fitted to an N.S.U., that the glazing of the carbon brush is part of the trouble. I always understood that the glazing of all carbon brushes on a magneto machine was had and that the surface should not be allowed to become too much glazed. Then I attended a paper read at the Coventry Technical Institute by Mr. A. P. Young, A.M.I.E.E., and an expert technical manager at the B.T.H. Co., Coventry, who said that the glaze on a carbon brush did not affect the correct functioning of the magneto machine. No explanation of the reason was, so far as I recollect, given for this, but Mr. Young, I know, upset one of two more cherished theories in the same paper; one being the opinion that a loud "snappy" spark meant a more effective one for exploding the charge. He proved, by actual experiment at the lecture table, that a very "crackly" spark could be produced by a very low voltage machine, and that the most effective magneto spark could be, and was, practically noiseless—the degree of heat is the thing, not the volume of sound.—B.S.A.

RECOMMENDED ROUTES.

LIVERPOOL TO NORWICH.—G.W.

Liverpool, Widnes, Northwich, Congleton, Leek, Ashbourne, Derby, Nottingham, Grantham, Donington, Long Sutton, Kings Lynn, Swaffham, Dereham, Norwich. Approximately 140 miles.

CHELTENHAM TO MIDDLESBROUGH.—C.H.

Cheltenham, Winchcomb, Broadway, Stratford-on-Avon, Warwick, Hinckley, Ibstock, Cole Orton, Castle Donington, Nottingham, Mansfield, Worksop, Doncaster, Ferrybridge, Aberford, Wetherby, Boroughbridge, Topcliffe, Thirsk, Stokesley, Middlesbrough.

LONDON TO TORQUAY.—H.B.

London, Kingston, Esher, Cobham, Ripley, Guildford, Hog's Back, Farnham, Alton, Alresford, Winchester, Romsey, Wimborne, Bere Regis, Dorchester, Bridport, Lyme Regis, Charmouth, Colyford, Exeter, Chudleigh, Kingsteignton, Torquay.

BENWICK (NEAR MARCH) TO WESTON-SUPER-MARE.—A.R.A.

Benwick, Ramsey, Huntingdon, Spaldwick, Higham Ferrers, Wellingborough, Northampton, Canons Ashby, Banbury, Chipping Norton, Burford, Cirencester, Tetbury, Bristol, Long Ashton, Congresbury, Weston-super-Mare. Approximately 185 miles.

WESTON-SUPER-MARE TO BENWICK (NEAR MARCH), VIA GLOUCESTER, SHREWSBURY, AND BIRMINGHAM.—A.R.A.

Back to Bristol, Thornbury, Hardwick, Gloucester, Worcester, Kidderminster, Bridgnorth, Shrewsbury. To reach Birmingham, go through Bridgnorth, Stourbridge, Halesowen, Birmingham, continuing through Coventry, Rugby, Market Harborough, Kettering, Thrapston, Huntingdon, Ramsey, Benwick. Approximately 580 miles.

Following Famous Brother.

Percy Newman, who made his *début* in competitions in the M.C. and A.C. "Long Day" Trial on an Ivy, is a brother of Howard C. Newman, the well-known Precision exponent before the war.

Extensions.

We learn that the Owen Davies Engineering Co., Ltd., is extending its motor body building, sidecar, and sheet metal departments, having moved into larger premises at Ballards Lane, near Tally Ho Corner, North Finchley, London, N.12.

The £100 Runabout.

The three-wheeled and four-wheeled runabouts, which will shortly be offered to the public by the Beaufort Motor Agency, of Bristol, will not be known as the Aero-car, as has been announced. This name is the property of the Aero Car Engineering Co., and a new title will be found for the Bristol production.

Catalogues Received.

Messrs. Tuck and Blakemore, Coventry. A comprehensive list of tools suitable for motor work and adjustment.

Messrs. Leo Ripault and Co., 1, King's Road, St. Pancras, London N.W.1, have issued a descriptive list illustrating their various types of Oleo plugs.

The Vowels Engineering Co., of Mount Street, Coventry, has issued a booklet concerning the Warner spring frame attachment, by which rigid machines can be converted into spring frame mounts.

A neat and very useful booklet has just been issued by the makers of the Dalm engine dealing with running instructions. The book also contains a revised list of spare parts. Owners of Dalm engines should write for a copy from Messrs. J. C. Dalman and Sons, River Street, Birmingham.

We have received a copy of the latest catalogue published by the Etablissements Hutchinson, 70, Basinghall Street, London, E.C., which includes a useful table showing the types of Hutchinson tyres recommended for various makes of machines. Advice is given for solo machines up to 350 c.c., and for passenger and solo machines up to 500 c.c., 750 c.c., and 1,000 c.c. Special mention is made of the three-ribbed pattern Hutchinson tyre for motor cycles fitted with voiturette rims and for light cars.

Air Force Cross for Competition Rider.

Lt. J. L. Stocks, late of the R.A.F., the travelling representative for the Ariel Co. and a keen competition rider, has been awarded the Air Force Cross for distinguished services rendered during the war.

The New Home of the B.L.I.C. Magneto.

The British Lighting and Ignition Co., Limited, who, during the war were established at 204, Tottenham Court Road, London, W.1, have now removed their head office and works to Cheston Road, Aston, Birmingham, and will in future be known as the B.L.I.C. Works.

Direct Factory Representatives Overseas.

We have frequently referred to the necessity for motor cycle manufacturers to be directly represented Overseas, and several firms are now making arrangements on these lines. The Clyno Co. has appointed Capt. B. C. Woodward (who has contributed articles on Overseas trade to *The Motor Cycle*) to be their resident factory representative in South Africa, and his temporary address is P.O., Box 124, Germiston, Transvaal. The Clyno Co. has also appointed representatives covering Scandinavia, Holland and Belgium, and the Indian Empire, and are endeavouring to find suitable representatives to act in a like capacity in Australia and Southern America. This is indeed a step in the right direction.

Change of Name

Messrs. Alfred Wiseman, Ltd., Glover Street, Birmingham, inform us that the motor cycle manufactured by them is to be known as the Verus, and not the Sirrah Verus, as has been mentioned.

Aero Plugs for Motor Cyclists

Capt. Gathergood, the winner of the Aerial Derby, used K.L.G. plugs, as did the second and third prize winners, and also Capt. Sir John Alcock in his Transatlantic flight.

A London Repair Shop.

Vivian Hardie and Lane, Ltd., the London agents for the Douglas, have opened a well equipped repair shop for the repair and maintenance of Douglas machines.

Reviews.

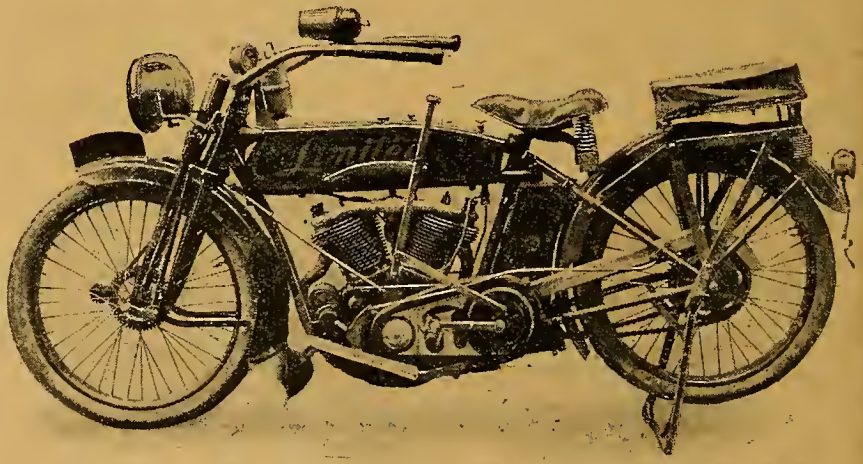
Touring Atlas of the British Isles: J. G. Bartholomew, F.R.G.S., John Bartholomew and Co., The Geographical Institute, Duncan Street, Edinburgh. 2s. 6d. net. This convenient pocket size touring atlas is divided into eighty-nine sections, one of which is printed in contour colours on each double page. First, second, and third-class roads are represented by suitable conventional lines. One hundred selected routes are given at the end of this book, with distances from the starting point recorded in miles. The highest points of the road and of some selected towns in the British Isles are to be found at the beginning of the book, the colouring of which corresponds to that of the contour colouring in the section maps of the atlas.

Gasoline and Kerosene Carburetters: V. H. Page, M.S.A.E., The N.W. Henley Publishing Company of New York, and Crosby Lockwood and Son, 7, Stationers' Hall Court, Ludgate Hill, London, E.C.4, in the United Kingdom. The principles of carburation are thoroughly dealt with; numerous illustrations portray the construction and mechanism of the principal American and British carburetters. The undeveloped subject of the use of the heavier grade petrol or "kerosene" forms an instructive chapter, and supplies both practical and theoretical information.

AMERICAN DESIGN.

WHILE at Wauchope's the other day we came across an American motor cycle which is quite unknown in this country. It is known as the Limited, and is manufactured by the Felbach Motor Co., of Milwaukee, Wisconsin. The particular model is stated to have been used by the Milwaukee police.

In general appearance the machine is exceptionally American. It is fitted with a Schebler carburetter, neatly stowed away between the two cylinders, has overhead mechanically operated inlet valves, and a camshaft for each pair of valves. The raising of the exhaust for the purpose of releasing the engine compression is effected by a rotating camshaft through the twist handle and rod control. The machine is fitted with pedals, which are used for starting the engine. No details of this machine are available at the present time in this country.



The Limited big twin, an American machine at present very little known in this country.

Peace Motoring

Peace of Mind follows A.A. Membership.

It signifies protection—freedom. It is the Key to the Open Road, unlocking the barriers to pleasure motoring.

A.A. membership gives you peace of mind on the road. The great Army of Road Scouts is always at your command to render every possible assistance.

A.A. Roadside Telephone Service is available day and night, ridding you of the fear of getting stranded or losing touch with home or business.

A.A. Free Legal Defence takes a load off your mind should you be threatened with proceedings under the Motor Car Act.

A.A. Hotels relieve you of the anxiety of finding satisfactory accommodation when touring.

A.A. Engineering Department takes from you the fear of buying a faked second-hand car.

In fact, in a hundred and one ways, A.A. membership relieves you of motoring worries.

Join the A.A. now and motor in peace.

Write to-day for a free copy of "The Key to the Open Road" and learn for yourself the advantages which follow A.A. membership.

Applications should be addressed to the Secretary, A.A. & M.U.,
21, Fanum House, Whitcomb Street, London, W.C.2.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., & Co. and crossed. Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box ooo, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. ooo, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

☞ DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged; when under £10, the fee is 1s. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

CROW Bros., High St., Guildford, have contracted largely for the new A.B.C. Order now for earliest delivery [5298

LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Parr St., Liverpool [0003

A.B.C.—Distributors for Scotland. Book your order now to ensure reasonable date for delivery.—Edinburgh Pioneer Motors, Ltd., 50, Grindlay St., Edinburgh [X8301

MAUDE'S MOTOR MART

Accessories for Immediate Delivery

PILLION SEATS.

Tan-Sad Saddle 33/-
(Post, 2/-).

ACCUMULATORS.

4 volt 20 amp., in tin case 17/6
(Post, 1/-).

HEAD LAMPS.

Lucas' King of the Road Head Lamp and Generator, khaki model £4 10
(Post, 1/6).

HORNS.

Motor Cycle Mechanical Horn 36/-
(Post, 1/-).

SPEEDOMETERS.

Smiths', for 26×28in. wheels 84/-
Bonniksen, for 26×28in. wheels 95/-
(Post, 1/-).

PLUGS.

K.L.G., 5/-; Lodge, 8/- and 8/6; Apollo. 6/-.
(Post, 3d.)

TOOLS.

King Dick Spanner, No. 0, 3/-; No. 2, 7/6
(Post, 3d.)
Set of Tubular Spanners, 3/-; in case 4/6
Toolkit, fine set in roll 17/6
Ditto, superior set 29/6
(Post, 1/-).

WINDSCREENS.

Easting ..... £4 10s.
(Post, 2/6).

WADERS.

Water-tight, with leather soles 24/-

ENGINES.

M.A.G., 4 h.p. twin, without magneto £28
Ditto, with magneto £34
J.A.P., twin, 50°, without magneto £23
These are new engines.

Celluloid Footpumps (motor cycle) 6/6
(Post, 3d.)
Patchquick Outfits (post, 3d.) 3/-
Mascots—Mechanical Policeman (post 6d.) 16/6
Dixie Magneto, 45° twin, new ..... £4 10s.
(Post, 2/6).
Dissolved Acetylene Cylinder, with gauge and clips complete ..... £3 16s. 8d.

100, Great Portland St., LONDON W.1

Telegrams: "Abdicate, Wesdo, London."
Telephone: Museum 557.

and at

100, Paris St., EXETER.

Telegrams: "Combustion, Exeter."
Telephone: Exeter 933.

MAUDES MOTOR MART
THE SEAL OF SATISFACTION

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Sole agents for these famous machines. Orders booked now for early delivery.—Chandler, Reyre, and Williams, Sun St., Hitchin. [0996

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

ORIGINAL A.B.C. and Racing Sidecar, not been used for 4 years, just overhauled, and in perfect order; £80.—Stanley Russell, High St., Newport, I.O.W. [6105

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

Abingdon.

4h.p. Abingdon King Dick, perfect running order; £50, or near offer.—Godly, 18, Crewy's Rd., Child's Hill, London, N.W. [6560

ABINGDON King Dick 3½h.p., clutch, pedal start, ride away, £27/10; also wicker sidecar, £2/18; after 6.—S. Tite, 113, Lavender Hill, S.W.11. [6703

ABINGDON King Dick 3½h.p., 2-speed, clutch, handle starter, new heavy Dunlops, lamps, spares, good sidecar machine, splendid condition; 50 gns.—14a, Wingford Rd., Brixton Hill, London, S.W. [6900

:: DEPOSITS ::

SPECIAL NOTICE.

The attention of Advertisers is called to the fact that Deposits are now dealt with at

20, Tudor St., London, E.C.4,

to which address all communications relating to deposits should be directed

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [5601

JACK HEALY, Cork.—Official A.J.S. agent.—Garage and works, Drioan St [X8336

1919 A.J.S., new, delivered July 6th; best offer.—65, Ablewell St., Walsall. [X6428

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

2¾h.p. A.J.S., 2-speed, clutch, engine overhauled; £55.—33, The Parade, Golder's Green, N.W. [6717

1917 6h.p. A.J.S. Combination, hood, screen, lamps, perfect order, recently overhauled; £140.—Davies, Photographer, Stafford. [X6425

1919 A.J.S. 6h.p. Combination, spare wheel, wind screen, etc., 3 Lucas lamps, electric horn, outfit fully insured, delivered last month; £185.—Allen, Ledbury. [X6258

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries. [0007

2¾h.p. A.J.S., 3-speed countershaft, kick start, hand-controlled clutch, chain drive, perfect order, lamps, horn; £60.—9a, West St., Prittlewell, Southend. [6737

1915 2¾h.p. A.J.S., 2-speed, entirely rebuilt at a cost of £30, not run last 3 years, all new tyres, machine is like new; best offer over £65.—F. Ridley, Addingham, near Ilkley. [X6311

A.J.S. 6h.p. 1916 Combination de Luxe, hood, wind screen, spare wheel, Lucas lamps and horn, luggage carrier, in excellent condition; 145 gns.—Arnold, 4, Myrtle Ter., Sidmouth. [X6221

A.J.S., 6h.p., 2-speed, with 2-seater hooded Sociable sidecar, and fittings for driving from sidecar if desired, engine rebushed, gears perfect; any expert examination; 97 gns.—Box L2,696, c/o *The Motor Cycle*. [6337

A.J.S. 1914 6h.p. C.B. Combination, hood, screen, 3 lamps, splendid condition; seen any time Thursday; best offer over 100 gns. gets it.—Green, 1, Hollingbourne Gardens, Ealing, close to terminus of 105 bus. [6772

A.J.S. 6h.p. Combination, late 1913, 3-speed countershaft gear box, speedometer, wind screen, accessories, overhauled throughout, plated and enamelled like new; 100 gns.; seen any time.—69, Gladstone Av., East Ham, Essex. [7001

MOTOR CYCLES FOR SALE.

Campion.

AMPION-J.A.P. 6h.p. Combination, late 1916, Jardine 4-speed, hood, wind screen, lamps, speedeter, pillon seat, Klaxon horn, in new condition; 28; seen after 6.—119, Benares Rd., Plumstead. [6886

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h.p. C.C.R. and Sidecar, 2-speed and free, good condition, £38; cycle car chassis, 3-speed and reverse r, wire wheels, wheel steering, and 12h.p. engine, 5; four F.N. cylinders and new pistons, £5.—Wade, St. Leonard's St., Stamford, Lincs. [X6380

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ENTAUR, 4h.p., clutch model, excellent condition; £40.—41, Heath Gardens, Twickenham. [6948

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(HATER-LEA-J.A.P., 3½h.p., 2-speed N.S.U. gear; £40.—Robertsnn, 55, Broad St., Peterborough. [6623

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NLYDE 2¾h.p. Lightweight, Dixie, B. and B.; £25.—64a, Murray Rd., South Ealing. [6764

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ENFIELD 3h.p. Twin, 2-speed, chain drive, very little used, practically as new; bargain, £50.—Smith, 21, Castle St., Dover. [6773

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IT TELLS of our exceptional ability to supply the Motor Cyclist with sparking plugs, belt fasteners, and other accessories that will give him long and satisfactory service. It describes and pictures various types of plugs that give the best results with different kinds of engines, and tells him of our other manufactures which promote his comfort and his safety on the road.

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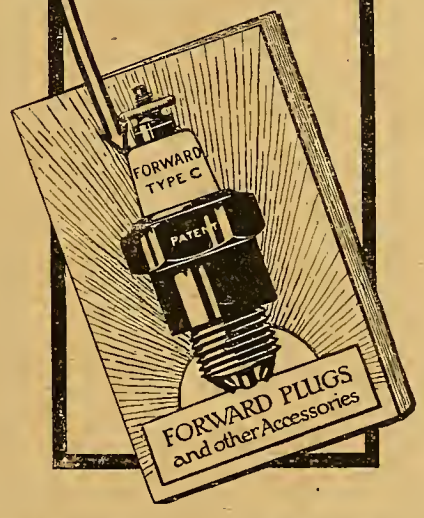


MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD 1915 3h.p., with light canoelet sidecar, very little used, in perfect condition; £60.—L., 56, Eton Av., Hampstead, N.W.3. [6397

8h.p. Enfield Combination, new April last, complete with lamps, horn, etc; 145 gns.—Edwards and Co., 7, Exhibition Rd., S.W.7. [7077

ENFIELD 2¾h.p. Twin, 2 speeds, chain drive, Bosch mag., B. and B., nice order; £35.—23, Park Rd., Golborne, Newton-le-Willows, Lancs. [6782

1919 Royal Enfield 3h.p. V Twin, delivered April, with accessories; selling as buying light car; 75 gns.—234, Romford Rd., Forest Gate. [6422

ENFIELD 3h.p., 1916, 2 speeds, kick start, new tyres, lamps, etc., complete; £58.—Davies, 23, John St., Cwmcarn, Cross Keys, Newport, Mon. [X6417

2¾h.p. Enfield, in tip-top condition; £55, or close offer.—Hardie, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [6175

ENFIELD 1916 Combination, fully equipped, nearly £20 worth accessories, fine condition; any trial here; £125, no offers.—Howells, Garn Rd., Blaenavon. [X6152

ENFIELD Combination, 6h.p., 1916, condition like new, perfect condition, lamps, horn, tools, etc.; bargain, £115.—Shaw, 20, Fisher St., Workington. [X5969

ENFIELD Combination, 1913-14, 6h.p., good tyres, Binks carburetter, new chains, perfect condition; £95.—Myrtle Cottage, Redbridge, Southampton. [X6576a

ENFIELD 1914 Twin, 3h.p., 2-speed, chain drive, Bosch, Amac, lamps, excellent order; £42; after 12 o'clock.—48, Prince George Rd., Dalston, N. [7071

1918 (December) 3h.p. Twin Enfield, 2 speeds, kick start, lamps, horn, spare valve, all accessories, condition like new; 82 gns.—Shirreff, Whitley, near Melksham, Wilts. [6333

2 1916 Royal Enfield gear spindles for combination, electric rear lamp, 2 4-volt 60 amp. accumulators, new, Tricord horn new; offers.—Kirkland, Middleton-Cheney, Banbury. [X6174

6h.p. Enfield Combination, 1914, recently overhauled, excellent condition throughout, £2 unexpired insurance; about £94.—Dr. Blackett, Southstoke Rd., Combe-Down, Bath. [X6432

LATE 1914 Enfield 3h.p., Lucas head lamp, Service horn, speedometer, new tyre and tube on back wheel, perfect condition; any trial; £58.—Mellett, Woburn Green, Bucks. [6909

ENFIELD 1916 3h.p. Twin, 2-speed, kick start, Bosch, Amac, horn, electric lamps, speedometer, splendid condition; £60, or nearest.—161, Hertford Rd., Enfield Wash, Middlesex. [6916

ROYAL ENFIELD 1917 2-stroke 2½h.p., 2-speed, almost new, 2 lamps, 2 generators, £50; also Thomson-Bennett mag., new hand starter, £4/10.—8, Effra Parade, Brixton, S.W. [6353

ROYAL ENFIELD Combination, 8h.p., 1916, complete with lamps, horn, speedometer, and very neat wind screen, everything in perfect condition; £125. —Longland, Broadway, Crowland, Lincs. [6440

ENFIELD 3h.p., 2-speed, 1916 model, hardly used, enamel perfect; good combination or Morgan wanted, or sell, £65.—Newnham, 223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [6707

ROYAL ENFIELD Combination, 6h.p., J.A.P. engine, electric lighting, speedometer, luggage carrier, horn, mirror, in splendid condition throughout; £149.—1, Melrose Rd., Merton Park, S.W.19. [6700

ROYAL ENFIELD 6h.p. Combination, new November, 1917, Easting wind screen, speedometer, Lucas lamps, splendid condition; best over £145 secures.—25, Canarvon St., Hollinwood. [X6281

3h.p. Enfield, 1916, 2-speed, kick start, P. and H. lamp, Stuart horn, excellent condition; £68, or exchange machine of same year; 5-6h.p. Indian preferred.—24, Cossington Rd., Westcliffe-on-Sea, Essex. [6547

1914 6h.p. Enfield Combination, Bosch, Sensprav, lamps, just been overhauled, perfect order; £95.—M.M., c/o J. Hutchins, 7, Davies St., Berkeley Sq., W.1., or appointment by 'phone, Mayfair 4359. [6442

ENFIELD Combination 6h.p. J.A.P., August, 1914, excellent condition, just overhauled, 2 extra seats, speedometer, 3 lamps, generator, horn, tools, spares; best offer over £150.—Fox, Norwood, Leigh, Lancashire. [6959

ENFIELD 6h.p. Combination, delivered June, 1916, stored over 2 years, condition as new, fitted complete with lamps, mechanical horn, wind screen and hood, spares, genuine; £130, no offers.—36, Pitcroft Rd., North End, Portsmouth. [6303

ENFIELD Combination, 6h.p., 1916, double-seated sidecar, complete with lamps, horn, etc., new condition, stored for 18 months; expert examination invited; £130.—Conigan, Grocer, Lane Ends, Whiston, near Prescot, Lancashire. [X6458

1919 Enfield, 6h.p. (April), only ridden 200 miles; latest showroom model, fully equipped, 3 new lamp sets, horn, etc.; pull anything, an engine seldom met with, giving up riding through doctor's orders; best offer over £150.—Chadwick, Grocer, 2, Byrom Parade, Barlow Rd., Levenshulme, Manchester. [6840

MOTOR CYCLES FOR SALE.

Enfield.

1918 Enfield 6h.p. Combination; Hammersmith; bought new April, D.A. lighting, oversize Palmer Cords, new spare inner tubes, Klaxon and bulb horne, spare chain, luggage carrier, complete accessories; £160. —Box L2,695, c/o *The Motor Cycle.* [6336

ROYAL ENFIELD (guaranteed) 1918 8h.p. Combination, mileage under 2,000, original 700×80 Palmers, lamps, spares, tool kit; trial with pleasure; £145.—175, The Grove, Denmark Hill (2 mins. Denmark Hill Station). 'Phone Brixton 286. [6665

ENFIELD Combination 6h.p., 1917, low mileage, hood, wind screen, apron, Lucas dynamo lighting, Binks carburetter, Klaxon horn, speedometer, back tyre studded, 3¼in. Dunlop, other wheels original tyres, in splendid condition, has been driven by careful owner, looks almost new, mechanism perfect; 145 gns.—Poppleton, The Cedars, St. Catherine's, Lincoln. [X5952

3h.p. Enfield, 2-speed, 1914, just thoroughly overhauled, enamel and plating in splendid condition; this machine has been carefully treated and parts renewed where necessary as follows—new pistons, front cylinder (new pattern), and front mudguard; very fast and economical (118 m.p.g.), won hill-climb (see page 636, "Motor Cycle," June 26th); £55.—Box 4,327, c/o *The Motor Cycle.* [X6456

Excelsior.

EXCELSIOR 3½h.p., U.H. mag., B. and B., tyres and belt nearly new; £30.—22, Park St., Slough. [6794

3½h.p. Excelsior, good condition; £35. Seen Saturday, 3 to 5.—Mander, 77, Victoria Rd., Stroud Green. [6461

1919 British Excelsior, Ixon, Omega, Wolf, Carfield, Enfield lightweights in stock.—Clifford Motories, Eastwood, Notts. [6263

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

AMERICAN Excelsior Combination 1916 7-9h.p., Hercules coachbuilt car, dynamo lighting, electric horn, 3-speeds, clutch, kick-start, chain drive; £130.—Punter, Wote St., Basingstoke. [6497

AMERICAN Excelsior Coachbuilt Combination, 7-9 h.p., 1917, Bosch, B. and B., lamps, spare valves, etc., Chater-Lea spring wheel sidecar, excellent order; bargain, £95.—63, Woodstock Rd., Oxford. [X6520

EXCELSIOR 3½h.p., in splendid condition, price £46; also Chater-Lea frame, wheels, tank, mudguards, handle-bars, all in good condition; price £6/10. —Tully, Bathing House, Howick, Lesbury, Northumberland. [X6145

EXCELSIOR 7-9h.p. Combination, late model, splendid condition, paint hardly scratched, engine overhanled, and in perfect condition, tyres almost new, excellent sidecar, 2-seater, screen, extremely good outfit, fitted with electric lights; £120.—Write or call, after 6 p.m., F. W. Mace, Pendinnes, Highfield Rd., Purley, Surrey. [6557

Fafnir

3½h.p. Fafnir, 2-speed; £16.—Bird, 7, Skipton St., London Rd., S.E.1. [6638

FAFNIR 3½b.p., C.A.V., mag., h.b. controlled, B. and B., compression splendid, can be seen running; £25.—10, Paget Rd., Lordship Park, N.16. [7069

F.N.

2¼h.p. F.N., in good order, less mag. and carburetter; £12.—Prout, Canon St., Taunton. [X6577a

F.N. 5h.p. 4-cyl., fixed gear, Bosch; ride away; £30; after 7 o'clock.—Kenmuir, Gt. North Rd., Highgate. [6806

1912 4-cyl. F.N., 2-speed, free engine, broken cylinder; £20.—Andrews, Grange, Attleborough, Norfolk. [6653

F.N., 4-cyl., 2-speed gear, re-enamelled grey; bargain, £45; sidecar to suit; £10. — Earl, Athenæum Works, The Vale, Hampstead, N.W. [6941

SPEEDY Sporty 4-cyl. F.N., 6-6h.p., Bosch, Amac, Brooks, wide bars, new P.H. lamp set, Indian red, and good plate; £45, cash.—8, Hatherley Rd., Reading. [6502

F.N., 5-6h.p., 4-cyl., late type, Bosch mag., shaft drive, splendid condition, ride away; £40; after 6 p.m.—136, Stebondale St., Cubitt Town, Poplar, E.14. [6987

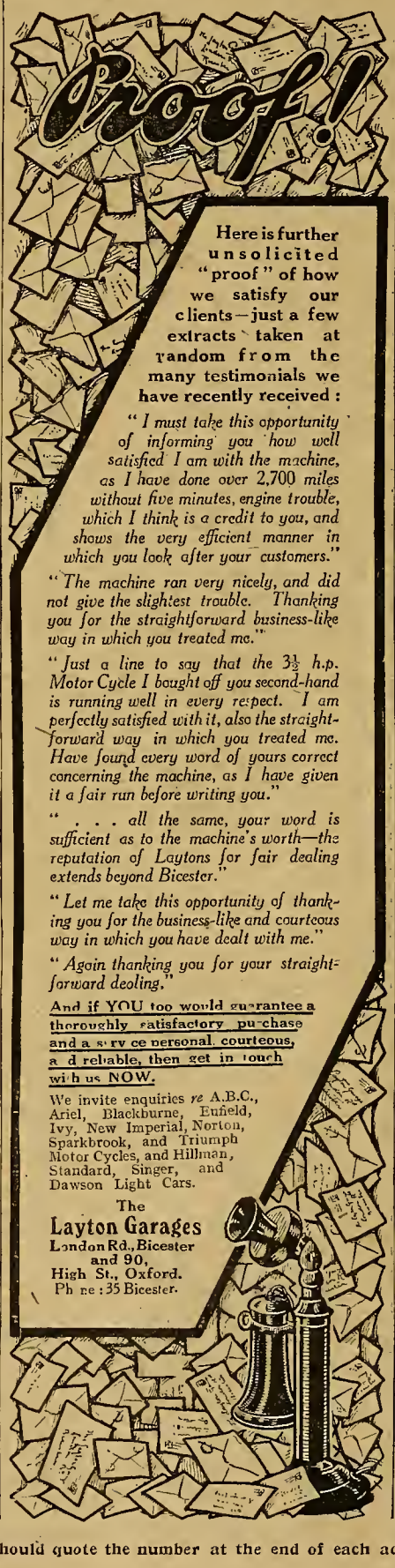
F.N., 4-cyl., shaft drive, B.B., T.T., Bosch, footboards, overhanled, new Dunlop back, sound throughout; £38, lowest, genuine bargain.—Rosslyn, 5, Clifford Rd., Blackpool. [6776

2¾h.p. F.N., sporting type, low and fast, Thomson-Bennett mag., new 2¼in. Dunlop tyres, just overhauled and re-enamelled Matchless buff, lined green and gold; £32.—H. Conder, Cherryhinton, Cambs. [6589

F.N. Lightweight, 2-speed, shaft drive, T.T. handles, free engine, clutch, usual accessories, including spare valve parts, very little used, in splendid condition; £35.—Cambridge Settlement, 43, Jamaica Rd., Bermondsey, London. [6647

Gamage.

GAMAGE 2¾h.p., about 1914, Sturmey-Archer 3-speed gear, good tyres, good mechanical condition throughout; £33.—Butler, Bootmaker, Bracknell. [X6495


Proof!
Here is further unsolicited "proof" of how we satisfy our clients—just a few extracts taken at random from the many testimonials we have recently received:
"I must take this opportunity of informing you how well satisfied I am with the machine, as I have done over 2,700 miles without five minutes, engine trouble, which I think is a credit to you, and shows the very efficient manner in which you look after your customers."
"The machine ran very nicely, and did not give the slightest trouble. Thanking you for the straightforward business-like way in which you treated me."
"Just a line to say that the 3½ h.p. Motor Cycle I bought off you second-hand is running well in every respect. I am perfectly satisfied with it, also the straightforward way in which you treated me. Have found every word of yours correct concerning the machine, as I have given it a fair run before writing you."
". . . all the same, your word is sufficient as to the machine's worth—the reputation of Laytons for fair dealing extends beyond Bicester."
"Let me take this opportunity of thanking you for the business-like and courteous way in which you have dealt with me."
"Again thanking you for your straightforward dealing."
And if YOU too would guarantee a thoroughly satisfactory purchase and a service personal, courteous, and reliable, then get in touch with us NOW.
We invite enquiries re A.B.C., Ariel, Blackburne, Enfield, Ivy, New Imperial, Norton, Sparkbrook, and Triumph Motor Cycles, and Hillman, Standard, Singer, and Dawson Light Cars.
The
Layton Garages
London Rd., Bicester and 90, High St., Oxford.
Phone: 35 Bicester.

MOTOR CYCLES FOR SALE.

Griffon.

GRIFFON-ZEDEL, 5-6h.p., clutch, Bosch, Amac, 30 gns; seen after seven.—10, Burney St., Greenwich. [68

Harley-Davidson.

1916 Electric Model Harley and Sidecar, little mileage.—J. C. Pickering, Mardol, Shrewsbury [67

HARLEY-DAVIDSON, electric model, late 191 perfect running order; £89.—Guynne, photographer, 24, Orion Rd., Weymouth. [68

HARLEY-DAVIDSON Combination, 1916, 7-9h.p. electric model, excellent condition, fast, and powerful; £135.—Dupont, 23a, Bramber Rd., Fulham W.14. [66

HARLEY-DAVIDSON Combination, 1916, Bosch magneto, all usual accessories; £120 lowest.—Canterbury Mansions, Lymington Rd., Hampstead N.W.6. [67

HARLEY-DAVIDSON Electric Combination, 191 de luxe sidecar, lamps, horn, not done 3,00 guaranteed good condition; £130.—35, Alfred R Acton, W. [66

1917 Harley-Davidson 7-9h.p. Electric Sporting Combination, wind screen, 760×90 car tyres; wante light car, or sell; what offers?—28, Bushey Rd., Hu lington, Middlesex. [65

HARLEY-DAVIDSON Combination, 1916, electr light model, with lamps, electric horn, new tyre just overhauled, excellent condition; £140.—Bush View, Hampton Wick. [X63

HARLEY-DAVIDSON, 1915, with sidecar chass only, electric lamps, mechanical horn, goo tyres; £98.—B., c/o Bromley Motor Works, Bromle Kent. 'Phone: 961. [69

1915 Harley-Davidson Combination, Swan sidecar electrically equipped, 3-speed, kick start an clutch, in running order; £130.—A. Bristow, 102, We Green Rd., South Tottenham. [67

1915 7-9h.p. Harley-Davidson Motor Cycle, electri model, run less than 2,000 miles, recently ove hauled, and in first-class order; seen and tried any day £93.—11, Gt. Queen St., Kingsway, W.C.2. [64

HARLEY-DAVIDSON 1915 7-9h.p. Solo, dis wheels, electric lamps, Klaxon horn, perfec order, stored 2 years; £100, no offers; seen evening after 7 p.m.—1, Caroline Place, Queen's Rd., Bay water, W. [70

HARLEY-DAVIDSON 1915 7-9h.p. Motor Cycle an new sidecar, 3-speed countershaft, kick start Bosch mag. ignition, all tyres new, lamps, etc., a fin lot, in good condition; no offers; £125.—E. Hurlock 63, Denmark Hill, S.E.5. [65

HARLEY-DAVIDSON 1915 Electric Lighting Mode thoroughly overhauled, stored during wa luxurious sidecar, accommodating 2 persons, hood first-class outfit.—Seen Bedford Engineering Works East Finchley; best offer over £145. [56

Hazlewood

HAZLEWOOD-J.A.P. 5-6h.p. Combination, coach built sidecar, Cape cart hood, wind screens, 3 speed, kick start, Bosch, auto. drip feed, electric light lately replated and enamelled, perfect order; any examination; what offers?—Salsbury, 5, Jesson St., Coventry [X635

Henderson.

HENDERSON, 1916, 4-cyl., 2-speed, clutch, perfect running order; £105.—Lewis, Charlestown, Weymouth. [649

HENDERSON Combination, 1915, all accessories wants tuning up; £130.—Earl, Athenæum Works, The Vale, Hampstead, N.W. [694

LANCASHIRE, Cheshire, North Wales, and Isle o Man.—Enquiries for Henderson 4-cyl. invited.—J Blake and Co., Official Dealers, Liverpool-Manchester. [703

Hobart.

HOBART, 2¾h.p. Clemeut engine, Bosch, B. and B. wants connecting rod; £15; after 7.—133, Fawnbrake Av., Herne Hill, S.E.24. [665

HOBART Motor Cycle, 2¾h.p., Bosch mag., 4 stroke, pedal start, good tyres, front new, splendid condition; £32/10.—Chelwood, Ellesmere, Salop. [X646

Humber.

3½h.p. Humber, coil ignition, less front tyre; £13; bargain.—Prout, Canon St., Taunton. [X657

3½h.p. Humber, coil, good running order; any trial; £10.—Rugby House, North Malvern, Worcestershire. [X645

3½h.p. Humber, chain drive, just overhauled, ride away; £27/10.—Seen Friday, 42, Beechhill Rd., Eltham, S.E.9. [673

1912 3½h.p. Humber, 2-speed, new tyres and belt, sound condition; £36/10.—Edwards, Sotwell, Wallingford. [672

HUMBER 3½h.p., 2 speeds, free engine, handle starter, good running order; £35.—5, St. Hilda Rd., Folkestone. [X653

HUMBER 2¼h.p., Bosch, B. and B., practically new, perfect; £39; after 6, not Sunday.—101, Croxted Rd., S.E.21. [691

COMBINATION Humber, 4h.p., 3 speeds, 1915 sporting model sidecar, in perfect condition; £75. —Hoyle, 10, Duke St., Reading. [641

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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The Scottish Trials.

FROM the point of view of the Edinburgh M.C., it was unfortunate that, at the eleventh hour, the "trade" decided to withdraw their entries for the Scottish Trials, as, with only private riders competing, the six days' event now taking place over the famous Scottish test hills is robbed of some of its interest. No doubt the news of the withdrawal of trade support will come as a surprise to many, but, everything considered, it is really only what could be expected in view of the many manufacturing difficulties confronting the trade which require such attention that it is necessary to concentrate solely upon production. The preparation of competition machines diverts energy which, at the present time, can better be devoted to output. Also, several manufacturers have not yet rearranged their affairs and got into full swing in producing their new motor cycles.

It was due to a misunderstanding that several makers entered riders for the Scottish Trials, but, in fairness to their contemporaries, who had not done so because of a long-standing and probably forgotten tacit agreement among manufacturers to recommence post-war competitions with the Six Days' Trials, they withdrew their entries.

The Edinburgh Club did not give much time for the matter to be considered by the trade; in fact, we believe that the entries had been closed before a meeting of members of the Union could be arranged. This took place last week, and, we understand, the feeling was unanimous that the A.C.U. trial in September should be the first event recognised by the trade.

Nevertheless, there is no reason to believe that the Scottish Trial will not be a great success, even with its reduced entry. The trade element, moreover, by no means formed the majority of the entries, and there still remain many first-class riders on representative machines. Unlike any other "big" trial held since the signing of the Armistice, this year's Scottish Six Days' is confined almost entirely to private owners.

Weights in Trials.

LAST week we touched briefly upon the weights of the motor cycles which take part in such trials as the A.C.U. Six Days', and again urged the desirability of publishing weights. We publish elsewhere in this issue the preliminary regulations for the Auto Cycle Union's thirteenth annual Six Days' Reliability Trial, which is to be held on September 15th-20th, with Llandrindod Wells as a centre. From these regulations we gather that minimum weights are to be imposed upon each class—solo and passenger—and the actual weights in each case published. Fixing minimum weights will have a good effect in one direction—it will prevent unduly weak, and consequently dangerous, machines from being entered in an arduous trial, and thus minimise the risk of accident. But does it go far enough? We are inclined to think not. Maximum weights should also be fixed. It is a simple matter to add weight to any machine. The designers' real problem so far as the weight question is concerned, is to combine lightness with strength. The average man does not want a machine which, owing to its excessive weight, combined possibly with small capacity, will show up well in hill-climbs, and might, under the old formula, be regarded as a certain winner. What he wants is a motor cycle in which strength and lightness have received their proper consideration. All machines which nearly approach the A.C.U. minima and get through the trial creditably may be considered to have achieved this ideal, for the weights cannot be called excessive.

Minimum tyre sizes are also fixed, but these are, in our opinion, too low, and we should regard any machine so equipped as being under-tyred, except for racing purposes. We are pleased to note that gear ratios—always interesting—are to be published this year.

An Index to the advertisements in this issue will be found on the page facing the back cover.

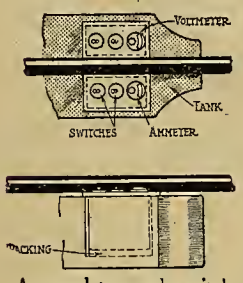
ELECTRIC LIGHTING.

The Suggestion of a Compact Set suitable for a Solo Motor Cycle.

IT is not generally thought that the system of electric lighting at present in use on solo motor cycles will be adopted to any great extent. The objection seems to me to be that motor cycle manufacturers, instead of designing a cheaper and lighter set for motor cycles, have, with few exceptions, adopted the type used on cars, with unfortunate results to their popularity.

The disadvantages of the present type are: (1.) Far too heavy. (2.) Not simple enough for a novice to handle. (3.) Invariably fixed in a dirty position. (4.) Not of a suitable design to enhance the appearance of a machine but rather to detract from it. (5.) Cost.

In the opinion of the writer electric lighting will never be successful until the novice can fix the equipment on with the same amount of ease with which he at present puts on a new horn, and at a price which would enable every two-stroke owner to purchase. Also manufacturers are at present fitting a generator which is almost identical in size with that used on a car, not taking into consideration the relative amount of work to be done on a six-lamp car, and, say, a three-lamp combination. Therefore, I would suggest an ideal set which would be as follows:

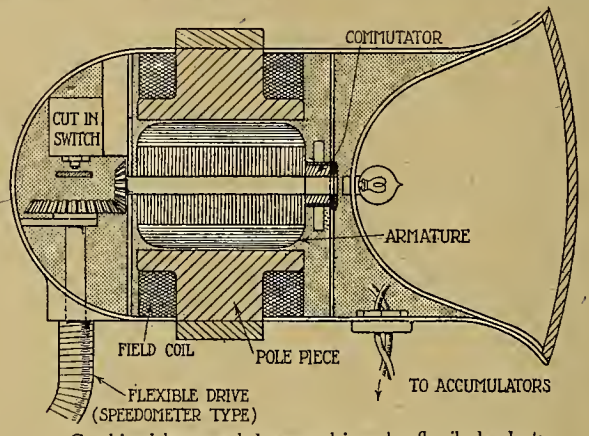


Accumulator and switch box contained in the tank.

GENERATOR.—A generator which I would propose should take the form of a neat head light and generator combined with a drive on the same principle as that of a speedometer, the whole to be mounted on the lamp bracket or handle-bars, and connected to a gear wheel fitted to the hub. Such a generator is shown in the accompanying sketch.

ACCUMULATOR.—The accumulators should be fixed as if these belonged to the machine and were not put on as an afterthought. For a new machine, I would suggest two compartments in the main tank on each side of the frame tube, suitably padded, where a standard battery would fit in a standard sized compartment.

SWITCHBOARD.—The accumulator compartment would be fitted with two neat covering lids, carrying all switches and a small ammeter and voltmeter. In this position the switch would be easy to observe, and would have ample protection afforded by the frame tube.



Combined lamp and dynamo driven by flexib le shaft.

WIRING, ETC.—The beauty of the machine depends to a large extent on its clean, clear cut lines, and its freedom from projecting pieces of wire, cable, etc. I would suggest, therefore, that wherever possible the wiring should run through the frame tubes, and where this is not feasible it should be brass armoured wire, which looks well.

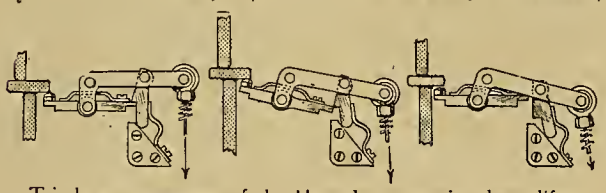
R. BAKER WHITTICK, LT. R.A.F.

KICK-START OPERATED VALVE LIFTER.

A Device to Facilitate Starting, and to Reduce the Handle-bar Equipment by One Lever.

THE modern three and four-speed machine, being no longer dependent on the exhaust valve lifter as a means of control and merely requiring the device to facilitate starting, has introduced a distinct tendency on the part of designers so to arrange the valve lifter that it is operated by the initial movement of the kick-starter pedal.

Such a mechanism is now before us in the design patented by G. C. Alexander, 27, Cranbourne Avenue, Birkenhead,


Trip lever arrangement of the Alexander automatic exhaust lifter.

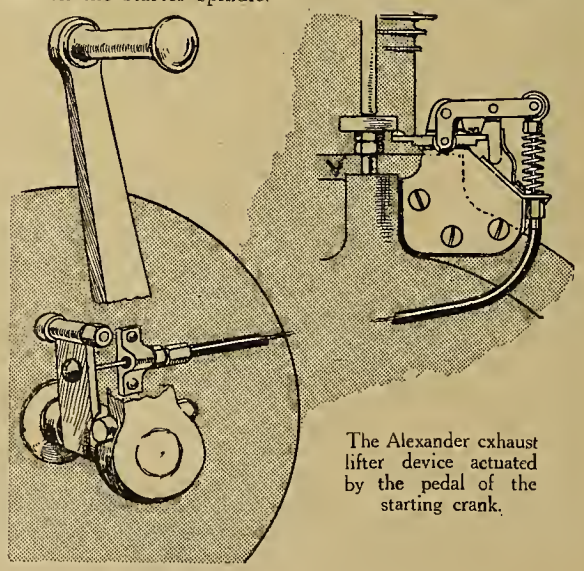
who has adopted an ingenious trip lever to secure the necessary quick drop of the exhaust valve at the correct moment.

A lever, pivoted on the gear box, operates the Bowden wire of the valve lifter through the action of a cam formed by milling a flat on the starter-pedal spindle.

The lifting device proper consists of a bell crank lever pivoted on a plate attached to the crank case; the shorter end of the lever carries a small rocking arm, one end of which lies under the valve tappet and the other under a catch on a small trip lever also attached to the bell crank.

The same movement which raises the valve also causes the lower end of the trip lever to slide along an inclined plane forming part of the crank case attachment plate, and after the correct length of travel the catch moves past the end of the rocking arm, thus allowing the valve to drop suddenly.

Several alternatives and simplifications are suggested, perhaps the most interesting being a method of operating the Bowden control by means of an eccentric instead of a cam on the starter spindle.


The Alexander exhaust lifter device actuated by the pedal of the starting crank.

Another Unicycle.

ACCORDING to *La Science et La Vie*, a French inventor is busied upon another unicycle. It is equipped with two gyroscopes. One of them revolves horizontally and keeps the machine upright. The other is placed vertically, and can be tilted by the rider for steering purposes. The unfortunate rider is perched in a wicker chair on the top of the single wheel, which is apparently about 3ft. in diameter. The snag on which this ingenious inventor will probably be impaled is the problem of getting an engine of rational size to drive both his gyroscopes at a sufficient speed, and also to propel the machine. If he succeeds in this preliminary detail, he will certainly have to guarantee an oiltight crank case and transmission; for his horizontal gyroscope would distribute any leakages far and wide.

Out with a New 'Bus.

THE other day I had a chance to make extended tests of one of the machines which are as truly modern as the Bolsheviks, and not merely refined reincarnations of our oldest friends. It was all that it has been called, so far as pace and performance were concerned, but two pin-points of my experience underline its intrinsic novelty. For one thing, I kept stalling myself with sooted plugs. I knew the engine was super-cooled, as compared with most of my previous mounts; and eke that there were no plain bearings in its anatomy; technically, it followed that it should run world without end on a smear of oil; but habit is stronger than intellect, and, after wiping up a bevy of friends for speed or mopping up a pet test-hill with the flywheel camouflaged into a grey blur, I could not believe that an invisible and odourless exhaust was O.K. Consequently I fed her with oil, most of which the outraged pistons promptly spat up in green and liquid form on to the plug points. Secondly, the most virile thing about the machine was its acceleration, which I demonstrated frequent and free to sundry enthusiastic spectators for several days. The tread of my back tyre not unnaturally displayed resentment; when you bang open the throttle of a willing engine on a 10 to 1 gear on a 1 in 10 hill with a surface resembling those nice little white chips some mourners sprinkle inside grave kerbs, something has got to slip; and after your cush drive has wound itself up solid, there is not much slip in a chain. Which leads me to wonder whether what we win at the Aunt Sally we spend on the roundabouts: or, being interpreted, what we are in pocket through jettisoning spare belts, punches, fasteners, etc., we are out of pocket in renewing our back covers. I had the impudence to tease Mr. Grahame-White for spreading his ægis over a buckboard which used its back tyre as a clutch; but, gadzooks and oddsboddikins, if we accelerate some of the 1919 machines as they deserve, we shall all be treating our back tyres as cush drives.

Sealed Toolbag Trials.

CLUB secretaries are earnestly discussing the revival of the start-to-finish non-stop principle, demonstrated so successfully in the ride for the Arbuthnot Trophy. I see little sense in the contention that only men of some social standing can be set to ride under such conditions. Black sheep dwell in every fold, as W. S. Gilbert had it, but, as far as that goes, there is no need to depend on the personal honour of the entrants. Any club can easily run a non-stop trial with a mere handful of officials. It is only necessary to

(1.) Observe the awkward corners of the route.
(2.) Seal the toolbags at the start.
(3.) Make the riders empty their pockets at the start.

Machines now show a degree of reliability which should render non-stop trials quite practicable. It should not be very long before the A.C.U. adopts this procedure, though the length of its route and the frequency of garages in a populous district create problems which do not arise in one-day trials over sporting courses. Moreover, the sealed toolbag trial is always extremely instructive. To cite a single illustration, how many forms of o.h.v. can cover 1,000 miles without developing an absurd tappet clearance?

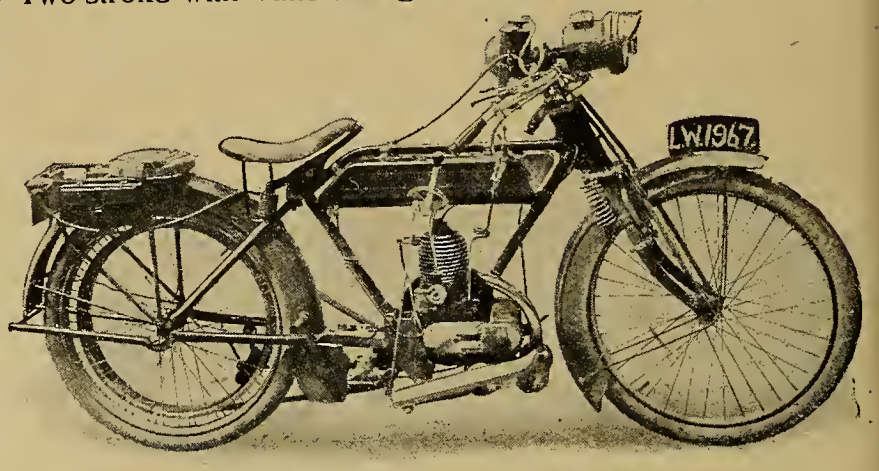
Nemesis.

FATE is just. I curled a scornful lip as I read "Chinook" and "Spring" on the value of adjusting your clutch. Why not, mused I, purchase a decent jigger like my old ——, which is delivered with its clutch in perfect adjustment, and so continues? While ascending one of the 1 in 6 bits with which my vicinity bristles as I thus mused, I became aware that the revs. sounded somewhat excessive for the throttle opening. Two gay calves on the next hairpin distracted me, and the dour mood passed. Next time I travelled that way there was no doubt about it; my favourite old perennial clutch was slipping. Came a wet day, and I threaded one leg under the gear box and the other through the spokes of the back wheel to investigate. Various unpleasant discoveries followed, since the old 'bus has received no more attention than a door-scraper during the great war. By the time I had synchronised the hand and foot controls of the abominable contraption, and made several special tools with which to coax the watch-like intestines of the vital fittings, it became clear that (*a*) the clutch *was* slipping; (*b*) the clutch spring had wilted through age; (*c*) there was no even approximately similar spring within fifty miles; (*d*) packing up the old spring with washers was the only immediate hope; and (*e*) to get at the old spring implied the possession of one of those rubber-neck, triple-universally-jointed box spanners which used to be advertised in the good old days. Having no spare 'bus—— [*Really*, Ixion!—ED.]

A "RUFFELLS" ON THE ROAD.

Strenuous Test of New Two-stroke with Villiers Engine and Burman Gear.

A NEW motor bicycle, unknown to the motor cycle public, came unexpectedly into our hands at Plymouth on the occasion of the Arbuthnot trophy. This is known as the Ruffells, and is sold by the Ruffells Imperial Bioscope Syndicate, Ltd., 8-9, Long Acre, W.C.2. It is fitted with a 2¾ h.p. Villiers engine and a Burman two-speed gear box, incorporating a clutch and kick starter of the type described in *The Motor Cycle* of the 3rd inst. The machine was absolutely brand new and not run in, and to expect it to follow so strenuous a course as that chosen for the Arbuthnot Trophy Trial was asking a great deal.



The Ruffells, the latest newcomer among two-strokes.

On the Steep Hills.

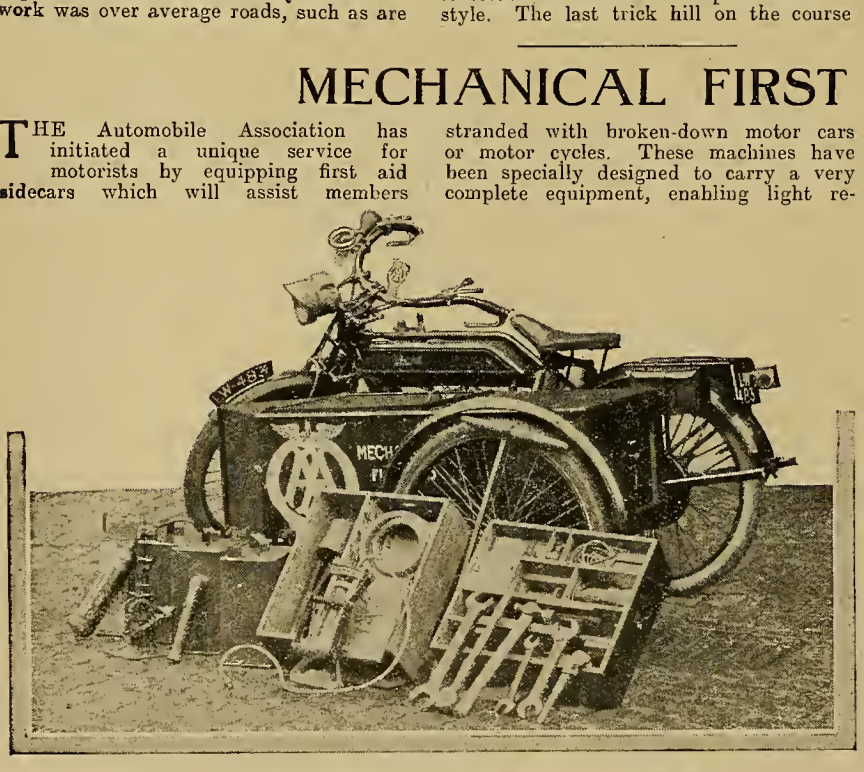
When we left Plymouth on the first day's run the Ruffells suffered very seriously from its new condition, a complaint from which it rapidly recovered after careful driving and plenty of lubricating oil—in fact, it ran better and better every mile, and by the afternoon it ran extremely well. After lunch it was called upon to climb the exceptionally steep and rough ascent between Moretonhampstead and Tedburn St. Mary. This entailed a hairpin corner almost at the very foot, a gradient of 1 in 4 or worse, and an exceptionally loose surface. It failed the first time, but the second time it got up quite well, and the hill near Clifford Bridge, which formed part of the course, was taken in really excellent style.

On the next day the little Ruffells acquitted itself most creditably. Its main work was over average roads, such as are encountered during every-day touring, although the main road hills taken were often extremely long, and such as might be expected to tire an engine pretty severely. The worst task it had to perform during the day was to climb out of Lostwithiel over the old coast road, a straightaway ascent with a good surface, and of considerable length. One could get no run at it, and it had to be climbed on the low gear practically the whole way, and this the machine did very satisfactorily till within a few yards of the top, when, after about three minutes' rest, it restarted and finished up in excellent style. The last trick hill on the course out of Tavistock on to the golf links was taken without a falter.

We cannot speak too highly of the Burman two-speed gear and clutch, which took up the drive smoothly and effectively, and several times restarted the machine on the most appalling gradients. The little engine ran well, and the machine was quite comfortable. The chief criticisms we have to make refer to the smallness of the petrol tank, and the fact that the heel brake pedal is too near the clutch spindle. Otherwise the Ruffells pleased us extremely well, and satisfactorily accomplished the difficult task it was asked to perform.

MECHANICAL FIRST AID.

THE Automobile Association has initiated a unique service for motorists by equipping first aid sidecars which will assist members stranded with broken-down motor cars or motor cycles. These machines have been specially designed to carry a very complete equipment, enabling light repairs to be done "on the road," thereby avoiding the inconvenience and delay involved in towage to garages for repairs or obtaining assistance from distant repairing establishments. In addition to tools, a large assortment of small but important accessories and supplies enable the drivers of these machines, all of whom are competent mechanics, to carry out tyre repairs and to make replacements of faulty connections, wires, etc., causing breakdowns.



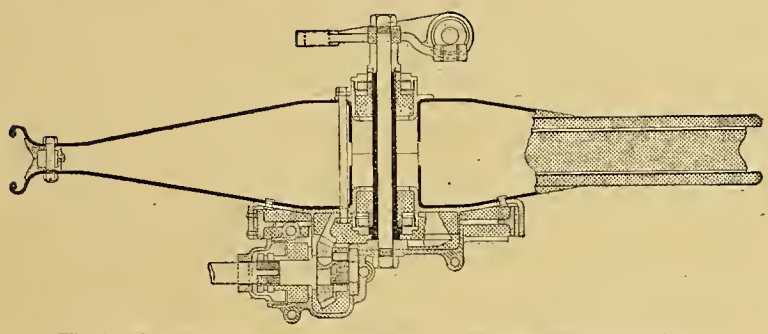
One of the sidecars used by the A.A. to assist members in distress.

The services of these machines and their drivers are entirely free to members of the A.A.

The carrier is divided into two main compartments. The front portion carries the large items, such as petrol, benzole, oil, water, car jack, and the tyre inflator, all ingeniously clipped or strapped in place. At the rear are two drawers divided into small compartments of various dimensions, and fitted with clipped-on covers in which the small articles in the equipment are carefully and compactly arranged to enable the driver-mechanic to find what he requires expeditiously. The side-carriers are painted with the familiar A.A. yellow, and indicate their "mission" to stranded members by the prominent description "Mechanical First Aid," supplemented by a large A.A. badge.

AN UNCONVENTIONAL DESIGN.

Pressed Steel Frame, Rear Springing by Volute Springs, Mechanical Units Enclosed, Shaft Drive, and Opposed Two-stroke Engine with Common Combustion Space.



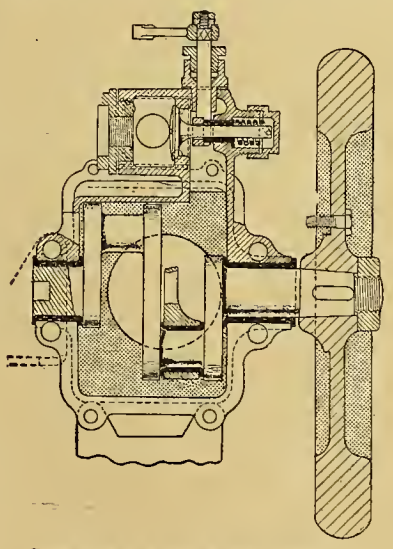
The bevel drive of the shaft transmission. Note the construction of the disc wheel.

THERE have been many attempts on the part of designers of motor cycles to break away from the conventional "diamond" frame, and for some time past there has been a decided tendency for more thought to be given to the great possibilities of pressed steel. Usually, however, such designs have been from the board of more or less pseudo designers who have aimed at the ideal without much regard to the commercial aspect. In addition, we know of several manufacturers who are experimenting with machines which reduce as much as possible the use of steel tubing, as it is thought that pressed steel construction will greatly assist in overcoming several inherent faults of the conventional motor cycle, by enclosing the engine and gear box as in a car, and so removing the possibility of oil reaching the driver. By enclosing the "machinery" it is also possible to produce a machine which can be washed down by a hose, thus reducing the amount of work necessary to keep a machine in first-rate condition.

A Built-up Frame.

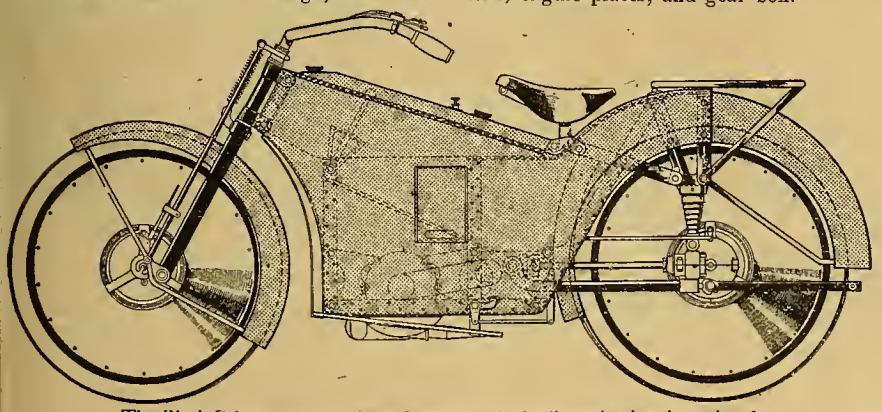
One of the most interesting designs on these lines which we have seen recently is that of the Black Prince motor cycle, which Mr. E. W. Cameron, of Askern, Doncaster, advises us that he hopes to produce shortly as a marketable proposition. The machine, however, departs so much from the conventional that several manufacturing difficulties are likely to be encountered which will tend to retard its production on a large scale without special facilities.

As will be seen from the illustrations, the machine, while unconventional, is by no means "freakish" in design, and when given an "all black" finish, which, we presume, is the intention to be in keeping with the name, the appearance should be quite pleasing. The frame is composed of two side panels of pressed steel connected by means of a sub-frame, the steering head and the tank, which latter becomes part of the frame construction in-



Cross section of the engine, showing the automatic valve for transfer of gas.

stead of an "accessory." Two transverse members pass through the engine plates and hold the frame rigid. These cross members carry an undershield, the crank case, engine plates, and gear box.



The Black Prince motor cycle, a design in which all mechanism is enclosed.

In addition to the ordinary mudguards, there are wide wing pieces at the front of the side panels with a camber forward which induces a draught into the centre part of the machine and should assist in cooling the engine.

The rear springing is quite simple, and should be less expensive to manufacture than the average leaf spring device. The wheel is carried in a substantial fork hinged at its inner end, and volute springs attached at their wider ends to the rear extension of the frame bear upon bosses on the rear ends of the lower stays.

The front wheel springing, too, is simple.

Not the least interesting feature of the design is the type of disc wheel used. As will be observed from the drawing, wire spokes are dispensed with, and in their place two dished discs are used which, with a centre rim piece, form the wheel. Roller bearings carry the wheels, knock-out spindles will be used, and it is intended to fit internal expanding brakes on both hubs.

The steering head is of the usual tubular construction, with two substantial lugs for the bolts, which secure it to the pressed steel members and the tank.

The Transmission.

Following the ideas of many "advance" thinkers, Mr. Cameron has included shaft drive in the specification. The primary transmission is by chain to the gear box, whence the drive is taken by cardan-shaft to the rear wheel through bevel gears.

The centre of the driving member of the gear box coincides with the hinged rear wheel frame. No particulars are yet available regarding the gear box, but we understand that this is to have two speeds, a clutch, and pedal starter.

O.P.T. Engine.

Equally interesting as the framework is the flat twin two-stroke engine, which is the first of a new type which may become to be known as the O.P.T., *i.e.*, one plug twin. This is to say that, although the cylinders are opposed, they have a common combustion space, therefore one plug fires both cylinders with, of course, perfect synchronism, the impulse effect and the mechanical balance being the same as in a four-stroke opposed twin.

By this form of construction long induction pipes are obviated, and as the new gas enters at the centre of the combustion space and exhausts at the bottom of the stroke, a straight through flow is pro-

An Unconventional Design.—

vided, which ensures that no dead gases remain near the sparking plug on the following power stroke.

As will be appreciated, there is considerably more radiating area on the combustion chamber than in any other type of engine, and in an air-cooled engine of the two-stroke type this may be found a very desirable feature. In a water-cooled type, however, it may be found that such an engine would not show up to great advantage, as in all probability it would be over-cooled.

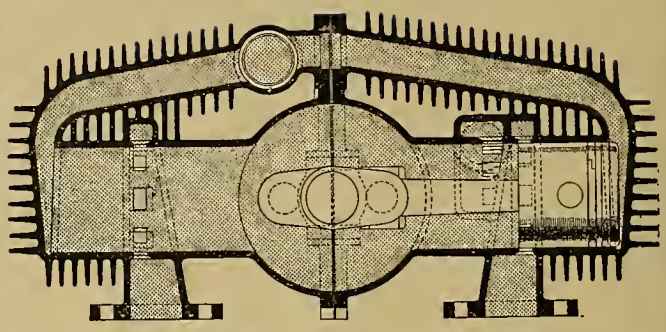
To Eliminate Four-stroking.

From the crank case the new gases enter the combustion space through an automatic valve directly opposite the plug, therefore four-stroking, even at low speeds, should be almost, if not entirely, eliminated.

The overall length of a 60 × 61 mm. engine of this type is only 15½in., and we are informed that 4,000 r.p.m. have been attained.

It is also intended to market a model fitted with a single-cylinder two-stroke engine, and for this model the Union engine, made by Messrs. Josiah Parkes, of Willenhall, may be chosen.

Without doubt the Black Prince is a most interesting design, and at a later date we may be able to record our impressions of its performance on the road. In the meantime we congratulate the designers in producing on paper what is a really serious attempt to attain a machine which so many have prophesied to be the type of the future—a weatherproof motor cycle at a low cost.



An "O.P.T." engine—a flat twin two-stroke with common combustion space.

THE 1919 "P.V."

Pioneer Spring Frame Machine in a New Guise.

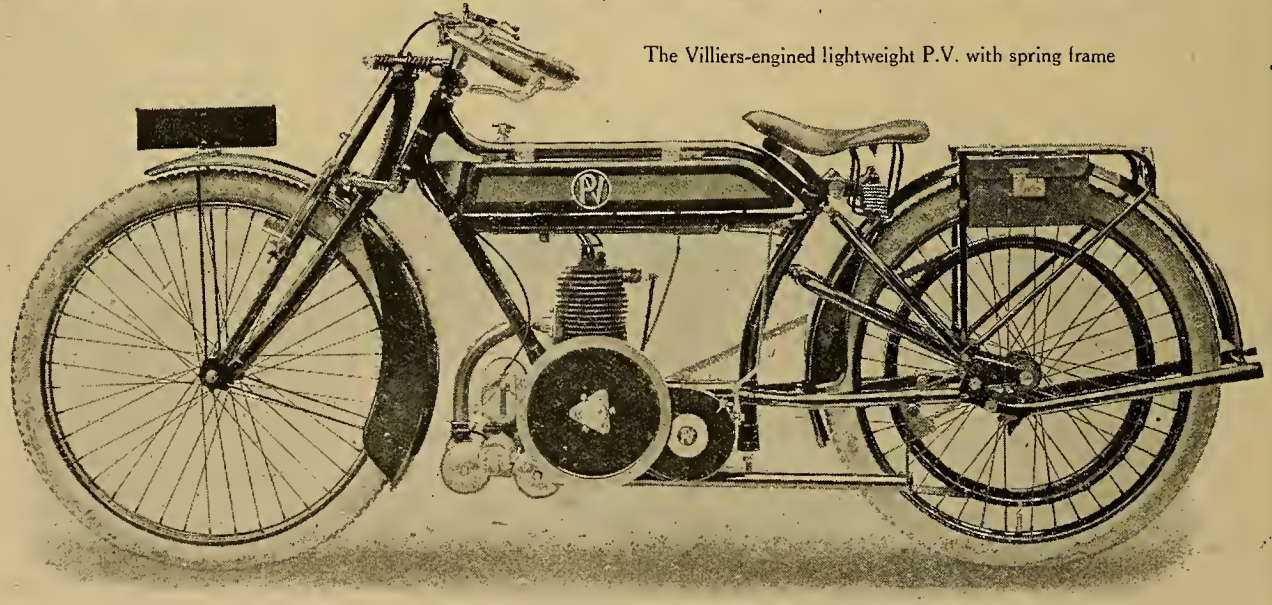
THE P.V. motor bicycle is famous as being one of the first motor bicycles made with a spring frame. Its makers, Messrs. Elliston and Fell, Perry Vale, Forest Hill, S.E., may therefore be regarded as among the pioneers so far as spring frames are concerned. Their latest pattern P.V. is a nice looking, well fitted up, and thoroughly practical little mount.

At the present moment it is made in the form of a lightweight, and is equipped with a 2¾ h.p. Villiers engine and a Chater-Lea two-speed gear box, transmission being by combined belt and chain. The spring frame has been considerably improved in detail since Messrs. Elliston and Fell have returned from serving their country in the army.

We may remind our readers that the system of springing consists of carrying the rear wheel in a sort of auxiliary pair of forks, which terminate in triangular malleable castings, and are carried on substantial bearings running through the main back fork ends. The forward end of the forks terminates in a peg secured to a fibre collar passing through a slot in the saddle tube. This fibre collar works between two coil springs in the saddle tube. The lower spring is secured by an adjustable plug, which can be moved by means of a spanner, thus allowing the tension of the spring to be altered so as to suit the weight of the rider. The peg referred to runs through a damping box consisting of a shoe lined with leather and kept in tension by a light spring. This serves also to cover up the slot in which the sprung portion of the frame is free to move, thus excluding any mud and grit. The saddle tube in which the springs are to be found is packed with grease when the machine is delivered, and no further attention is needed for a very long time.

Points of convenience have been well studied in the P.V. There is a small pyramid of gauze above the petrol outlet, so that no dirt can reach the carburetter. The rear brake spindle is mounted eccentrically, and if the nut by which it is secured to the frame be loosened and a peg inserted in the hole conveniently provided, the adjustment of the brake is an extremely simple matter.

The machine is suspended in front on Brampton biflex forks, an extra heavy chain is fitted, and the handle-bars are wide and comfortable. We tried the machine on the road, and found the springing to be excellent in every respect. There is no possibility of side play, the wheel is the only unsprung weight, and there is no doubt that it satisfactorily absorbs all serious road shocks.



The Villiers-engined lightweight P.V. with spring frame

The Machine—Not for the Multitude.

A Plea for a Rolls-Royce of Motor Cycles.

THERE is a very important distinction between the snob and the man who likes to ride a little above the common flotsam and jetsam of the multitude. There is nothing more hateful and despicable than snobbishness, but, at the same time, there are many excellent men, hail-fellow-well-met in every sense of the word, who hate to be one of a crowd. Considering the cosmopolitan nature of the brotherhood of motor cyclists, this is particularly so in that community.

It is not because the motor cycling fraternity has its objectionable element that many riders want machines out of the ordinary. It is not at all in a spirit of snobbishness. We have heard enough about Rolls-Royce owners who look down with a sneer on the drivers of Fords. Personally I know more than one Rolls-Royce owner who keep, in addition, a veritable stud of Fords —not because they enjoy driving Fords, but because Fords are endlessly useful. They will go anywhere and do anything within the power of the Rolls-Royce, their initial cost is but a flea bite—why then does the Rolls-Royce exist?

I have seen the same question applied to motor cycles. If a well-powered three-speed machine can be bought for ninety guineas, who will pay a hundred and ten for a mount that can do very little more?

The answer is—scores! Not because they want to spread themselves and pose as a little above the rest, but because, with the most kindly feelings on earth, they desire to ride a shade above the crowd.

A Market Exists.

It has been pointed out that the motor cycle is the poor man's mount, being the cheapest of self-propelled vehicles, but there are scores of men who ride motor cycles not because they are cheap, but because they afford the most sporting and attractive means of travelling. The matter of price does not enter into the question at all. If the best motor cycle made were double its present price they would ride it all the same, and if there were one machine, the finish, running, and beauty of which warranted the expenditure of an additional twenty guineas over the common run of motor cycles, then there are scores who would buy it for the pleasure of possessing a mount which would be a source of comment among their friends and an additional pleasure to handle. They would not buy it because it was dear, but because for the additional twenty guineas or so they obtained a Rolls-Royce among motor cycles—a standard of refinement and finish for which the man of the multitude did not think it worth while to pay. I am certain that if some firm of modest output concentrated their energies on the production of a solo mount de luxe, which would inevitably appeal to the sporting rider to whom initial cost was not of much consequence, they would only have to exhibit at the proper season and at the proper place in order to obtain all the orders they required.

Some Necessary Points.

The manufacturer may know that certain features are desirable, but ordinarily he is prevented from including them on account of the question of cost. In the production of the machine de luxe this is just the spirit that must be avoided. If the purchaser of this type of machine regards a certain feature as desirable, then give him the opportunity of having it and he will not grumble at the cost.

An earnest effort must be made, however, at keeping down the weight. Hitherto the British manufacturer's idea of turning out a *modèle de luxe* has been to add a whole chaos of weighty gadgets to a standard model. That is quite the wrong principle. We do not want gadgets. A spring frame may be all right, but it must be light and simple. Chain cases we can do without so long as we have efficient chain shields, though, of course, we would prefer an enclosed shaft drive with phosphor bronze to steel plate clutch integral with the gear box.

The type of engine is one the manufacturer must choose in accordance with his own ideas in order to produce a harmonious mount, but it must be silent, capable of a slow tick over, and of terrific revs., and of even torque. It would seem to rest between the four-cylinder and the flat twin, though it is to be hoped someone will have a shot at the three-cylinder two-stroke. The machine must be nippy and handy on corners, and the adjustable bars should possess a sufficient range to appeal to every class of rider. The country potterer does not mind a machine capable of T.T. effects so long as it is docile, but the sportsman will not look at a machine designed throughout for the country potterer.

Let us have good, strong, ample tool cases, and special provision for carrying a complete set of spares, safely and securely in some out of the way corner of the machine. These little points go a very long way in influencing the practical man, and should not be set down as unimportant side issues.

Lighter Weight.

One thing that everyone will be demanding soon is a lighting dynamo, and here the question of weight again enters. It is possible now to make motor cycle engines much lighter than was thought advisable in 1914, but if we are to economise in weight we must have magneto-and-lighting flywheels. Think what we save! A flywheel of this kind need be very little, if any, heavier than an ordinary flywheel, which means that we dispense straight away with the magneto

The Machine—Not for the Multitude.—

and dynamo. Numbers of electricians are bringing their brains to bear on motor cycle and dynamo construction, while others are concentrating all their energies on the magneto, but where is the firm that bids fair to appropriate the business of the two by placing on the market two or three different sizes of magneto dynamos of the outside flywheel variety? The problem is far from being a really difficult one, and the demand for the right instrument will be great.

A Small Market, but Select.

Needless to say, the finish of the Rolls-Royce of motor cycles would have to be of superlative quality. It would not be wise to eliminate plated parts, but only those parts which could easily be cleaned should be plated. A horn is always necessary, so why not braze lugs on the handle-bars for it, also for the speedometer, the machine being turned out with all the best of ordinary fittings, permanently attached instead of being left to dangle in attitudes of distress at the end of 2,000 miles of riding.

But silence, sweet running, and cleanliness are perhaps the three most important points—especially mechanical silence. Everyone hates an engine that clatters, and personally I vote for side-by-side valves, since what one gains in actual revs. with overhead valves one loses in other ways. A well-tuned side-by-side valve engine is nearly as fast as—runs slower and pulls harder, and is less irritable to handle than—one which may obtain higher volumetric efficiency by means of overhead valves.

Anticipation.

So much, then, by way of a rough summary. We all have our own pet features, and it is impossible entirely to satisfy everyone, but the above are just a few fairly obvious and commonsense points of which probably all will approve. It is to be hoped someone will go to work on the lines suggested, for there are scores of riders who are hoping to be able to obtain something quite out of the ordinary a little later on. A firm of real engineering ability aiming at thoroughness—mechanical and superficial—is the firm to take it up rather than one aiming at gigantic output, and one has only to recall the splendid reputation enjoyed by one or two smaller firms who have followed these lines to understand that the demand for something "very good" is just as insistent as for another article at a lower price.

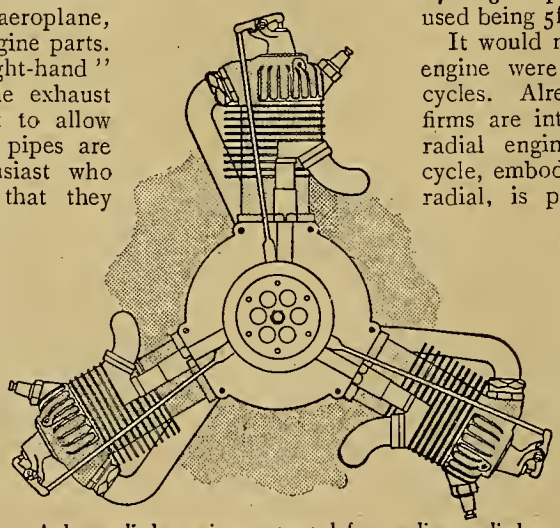
CHINOOK.

A Three-cylinder Radial.

Small Aeroplane Engine with Motor Cycle Cylinders.

IT will be remembered by many of our readers that A. V. Roe's early flights were attained with an aeroplane fitted with a J.A.P. motor cycle engine. The illustration given here shows a three-cylinder engine built up for an aeroplane, chiefly from Harley-Davidson engine parts. It will be noted that three "right-hand" cylinders have been used. The exhaust pipes are short and bent back to allow free exhaust, but the induction pipes are long, and the American enthusiast who built the engine recommends that they be made of aluminium tubing. A three-cylinder magneto is used, and the firing order of the cylinders is one, three, two, the nearest cylinder being passed over.

The ordinary motor cycle engine crankshaft can be used, but the crank pin has to be larger to allow placing the third connecting rod in position. This is accomplished by making two of the connecting rods thinner than usual and placing them inside the forked rod, which should be slightly wider at the fork. Obviously a special crank case is necessary. An engine of this character is said to be capable of developing 27 to 30 h.p. at 2,000 r.p.m., the propeller used being 5ft. 6in. diameter, 3ft. 6in. pitch.



A three-cylinder engine constructed from ordinary cylinders taken from Harley-Davidson engines, the crank case being, of course, specially designed.

It would not be surprising if this type of engine were developed for use in motor cycles. Already two well-known motor car firms are introducing light cars fitted with radial engines, and a lightweight motor cycle, embodying a diminutive three-cylinder radial, is promised shortly. The engine illustrated above would not be suitable for a motor cycle, but a similar engine fitted with cylinders half the capacity, *i.e.*, 250 c.c., would be quite compact; and, while a frame design departing from the accepted diamond pattern may be necessary, there should be no insurmountable difficulties preventing the accommodation of the engine as the power plant of a motor cycle, and a light and unusually efficient machine should result.

ROAD WARNING SIGNS.

DURING a recent long cross-country run, the writer was very forcibly impressed by the absurdity of the totally unnecessary overlapping of "danger" notice activities of the various associations which safeguard the tourist's interests. It is a moot point whether any real system prevails in the allocation of these signs, for, while a gentle bend may be adorned with a red triangle, the black and yellow A.A. sign, and an ancient C.T.C. board, one comes to innumerable blind turnings with no warning at all! Surely this is a point on which the bodies concerned might amicably combine: as it is, we are apt to grow a little careless of the possible danger indicated.

WHARFEDALE.

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"A trial which really is a test."

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THE ONLY Single-cylinder Combinations to secure GOLD AND SILVER MEDALS

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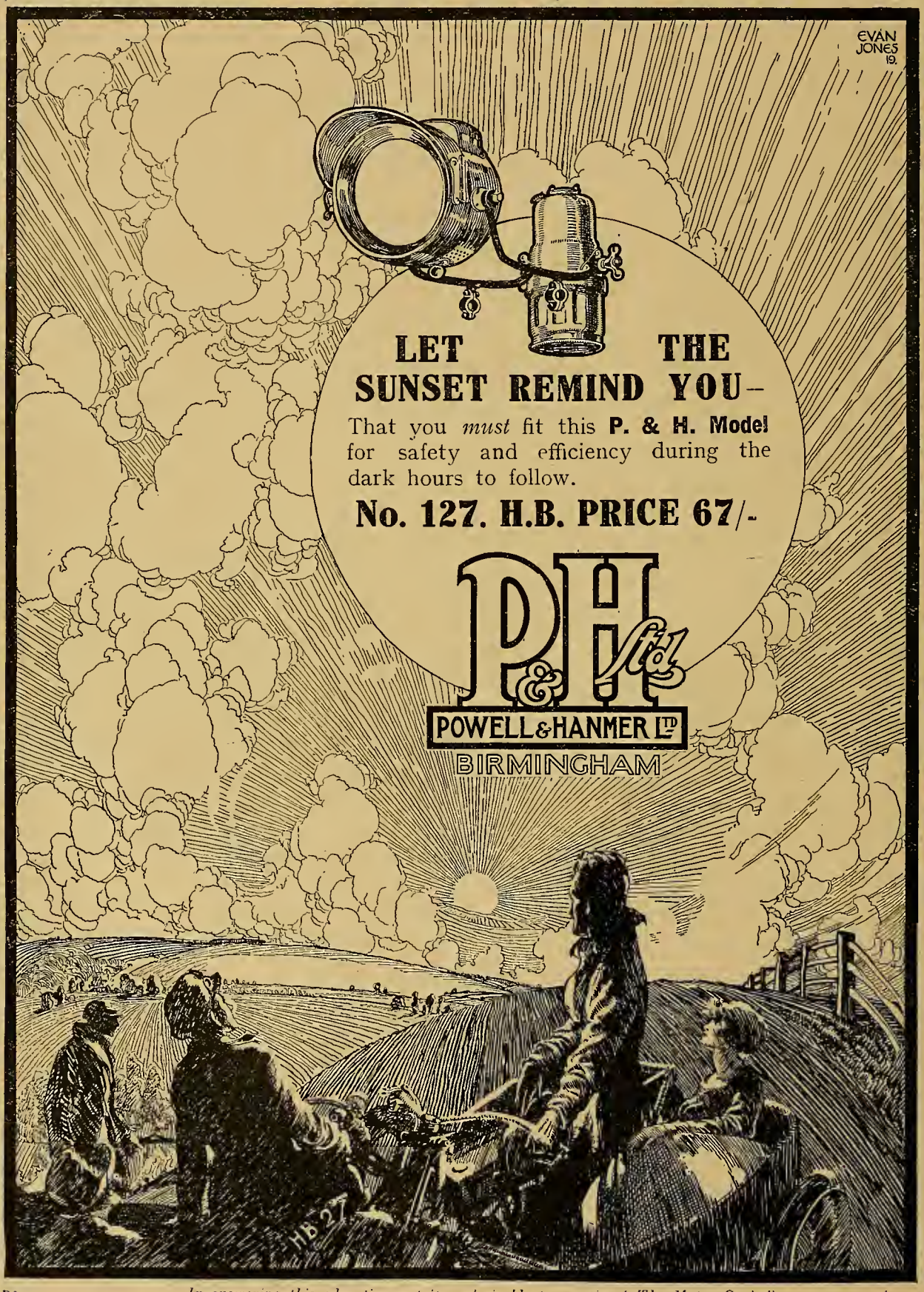
ARIEL WORKS, LTD., 3, BOURNBROOK, BIRMINGHAM.


EVAN JONES 19.
LET THE SUNSET REMIND YOU–
That you *must* fit this **P. & H. Model** for safety and efficiency during the dark hours to follow.
No. 127. H.B. PRICE 67/-
P&H ltd
POWELL & HANMER LTD
BIRMINGHAM
HB 27

In answering this advertisement it is desirable to mention 'The Motor Cycle.'

The A.C.U. Six Days' Trial, Sept. 15th to 20th.

Extracts from the Preliminary Regulations of the Thirteenth Annual Event organised by the Auto Cycle Union.

Minimum weights and tyre sizes imposed. All machines to be weighed and the weights with details of specification to be published. Tests of reliability, silence, hill-climbing, acceleration, maintenance of efficiency, and petrol consumption. Starting and finishing point each day will be at Llandrindod Wells. Entries close August 23rd; at double fees on August 30th.

COMPETITORS ELIGIBLE.—Every competitor must be on the competitors' register of the Union, or of the Scottish Auto Cycle Union, or of the Motor Union of Ireland, or of any Colonial club recognised by the Union, or of any club in the F.I.C.M. other than the national clubs of Germany and Austria.

ENTRIES.—Entries will be received by the Union, at 83, Pall Mall, London, S.W.1, up to mid-day, Saturday, August 23rd, at ordinary fees. Late entries will be received up to mid-day, August 30th, at double fees. Entries must be made upon the official form, and must be accompanied by a remittance in payment of entry fee.

ENTRY FEES.—Entries from manufacturers or agents and for riders in their employ, ten guineas each entry. Other entrants: Five guineas each entry, or, if members of an affiliated club, four guineas each entry.

If in the opinion of the Union sufficient entries are not received no trial will be held. The entrance fee may be returned in full if no trial be held, but under no other circumstances will it be returnable.

Classification and Equipment.

DEFINITION.—A motor bicycle is defined as a vehicle comprising a frame, two wheels, and suitable engine. Motor vehicles with three wheels are included within the term motor cycle.

CLASSIFICATION.—All motor cycles taking part in these trials must conform to, and will be classified under, the following divisions and classes.

DIVISION I.
MOTOR BICYCLES.

Cylinder Capacity not Exceeding.	Minimum Weight without Oil or Fuel.	Minimum Diameter of Tyre (Cover and Inner Tube Separate and Detachable).
Class A, 250 c.c.	40 kilos (88 lb.)	45 mm. (1¾in.)
„ B, 350 „	50 „ (110 lb.)	50 „ (2in.)
„ C, 500 „	60 „ (132 lb.)	55 „ (2¼in.)
„ D, 750 „	70 „ (154 lb.)	60 „ (2⅜in.)
„ E, 1,000 „	80 „ (176 lb.)	65 „ (2½in.)

Nearest English equivalent

DIVISION II.
MOTOR BICYCLES WITH SIDECARS AND THREE-WHEELED CARS.

Cylinder Capacity not Exceeding.	Minimum Weight without Oil or Fuel.	Minimum Diameter of Tyre (Cover and Inner Tube Separate and Detachable).
Class F, 350 c.c.	80 kilos (176 lb.)	50 mm. (2in.)
„ G, 500 „	100 „ (220 lb.)	55 „ (2¼in.)
„ H, 750 „	110 „ (242 lb.)	60 „ (2⅜in.)
„ K, 1,000 „	120 „ (264 lb.)	65 „ (2½in.)
„ L, Any capacity Above 1,000 c.c.	175 „ (385 lb.)	65 „ (2½in.)

Nearest English equivalent.

Sidecars must be fitted with recognised touring bodies, and must be upholstered and finished with due regard to the comfort of the passenger.

WEIGHTS OF COMPETITORS, ETC.—The minimum weight of each competitor or passenger is fixed at 60 kilos. (132 lb.). Weight must, if necessary, be made up with ballast.

EQUIPMENT.—All competing motor cycles must be equipped as follows: Two independent brakes, a set of tools and receptacle therefor, mudguards projecting at least 10 mm. (7/16in.) on each side of the tyres, one or more petrol tanks with a minimum capacity of 5 litres (8.8 pts.), one or more oil tanks with a minimum capacity of 1 litre (1.76 pt.), and a complete set of lamps as required by law.

In addition to the above, motor bicycles must be fitted with a stand and a carrier, the latter having an available surface of at least 600 square centimetres (93 square inches).

SPARE WHEELS.—Spare wheels may be used on any competing motor cycle if carried throughout the whole trial. In the event of a spare wheel being used, the original wheel for which such spare wheel has been substituted must be carried throughout the remainder of the trial.

WEIGHING, ETC., OF MACHINES.—All competing motor cycles will be weighed, and the weights published. The frames, engines, and gear boxes will be sealed.

GEAR RATIO.—The diameter of the driving wheels and the gear ratios of every motor cycle shall be stated on the entry form and will be published. Should the ratios be indefinite, as in the case of motor cycles fitted with adjustable pulleys, the highest and lowest ratios obtainable shall be stated. A misstatement as to the gear ratios may involve disqualification.

SCHEDULE TIMES.—The schedule time will be calculated on a basis of 20 m.p.h., but extra time will be given when reduced speed limits and the like have to be covered. Any competitor passing any point of the route ten or more minutes in advance of his schedule time for that point shall be penalised one mark per minute or part of a minute in excess of the said ten minutes. Further, any competitor passing any point of the route twelve or more minutes later than his schedule time for that point shall be penalised one mark per minute or part of a minute in excess of the said twelve minutes, provided that competitors in classes A, F, G, and H, shall not be penalised unless they are fifteen or more minutes behind schedule.

The route card that will be handed to the competitor each day will state various points on the route, and the schedule time set for arrival at these points. Competitors will be started each day and restarted after the luncheon interval at their schedule time for the day, and competitors late in starting in the morning or after the luncheon interval will lose one mark for every minute or part of a minute that they are so late. In any one day the maximum loss of marks due to deviation from schedule shall be limited to 30.

Any competitor more than one hour late at the conclusion of the day's run shall be deemed to have retired.

DRIVERS.—Every competing machine shall be driven by the same person throughout the trial, unless before starting on any day's run after the first he shall be physically incapacitated, when his place may be taken by a substitute on notice being given to the secretary at least thirty minutes before the time the first competitor is due to start.

REPLENISHMENTS.—No cleaning, repairing, or adjustment may be effected in controls. Replenishments of petrol, oil, and water may be made only at the official starting depot or during the luncheon interval.

Special Tests and Awards.

Nature of Test.	Marks Credited at Commencement of Trial.	How Tested.	Penalties.
Reliability	50	Adherence to schedule	1 mark per minute or part of minute over allowance.
Silence	10	Special apparatus	Max. penalty, 30 per day.
Hill climbing	30	Non-stop sections	4 marks per stop.
Acceleration	20	*Fast and slow climb	Maximum loss, 20.
Maintenance of efficiency	20	*Special test	Maximum loss, 20.
Brakes	10	*Special test	Maximum loss, 10.
Mudguards	10	Examination	Maximum loss, 10.
Condition at finish	50	Examination	Maximum loss, 50.
Total	200		

On one half-day's run of the trial the consumption of petrol may be recorded.

Minimum number of marks required to gain awards:

		Gold.	Silver.	Bronze.
Division 1	Class A	150	135	110
	„ B, C	180	165	140
	„ D, E	185	170	145
Division 2	„ F	150	135	110
	„ G	160	145	120
	„ H, K, L	180	165	140

* Particulars of these special tests will be published in the final instructions.

Current Chat

Times to Light Lamps.

SUMMER TIME.

July 24th	... ...	9.29 p.m.
,, 26th	... ...	9.26 ,,
,, 28th	... ...	9.24 ,,
,, 30th	... ...	9.21 ,,

Important Notice.

Owing to the August Holidays, the issue of *The Motor Cycle* for August 7th must be closed for press earlier than usual. All copy and instructions for *Miscellaneous Advertisements* in that issue must, therefore, be in the hands of our publishers not later than first post on Thursday, July 31st.

Falling Prices at Government Sale.

Lower prices were the general rule at the Government sale of motor cycles held last week at the Agricultural Hall, Islington. "Bargain" 2¾ h.p. Douglas motor cycles were sold for the low figure of 8½ gns., whilst 4 h.p. models of that make realised an average price of 18 gns.

Peace Day Decorations.

Messrs. The Enfield Cycle Co., Ltd., 48, Holborn Viaduct, E.C., on Peace Day, when the Victory March passed their showroom, had on view a suitable display demonstrating a feeling of loyalty and respect for those who, previously under their employ, have fallen in the war. Their names, numbering 200, were draped with both the American and British flags, and suspended over one of the Enfield motor cycles, which was decorated with the colours of the British Empire.

A Prominent Director Retires.

We learn that Mr. M. J. Schulte, for many years a director of the Triumph Cycle Co., of Coventry, has resigned his position and will retire into private life. Thus an excellent sportsman retires from the motor cycle world, and he will be greatly missed, for he was a prominent figure in the leading competitions, particularly the Tourist Trophy Race, in which event he annually took the keenest possible interest. Mr. Schulte's faith in the future possibilities of the motor cycle never wavered, and he and his company proved a tower of strength in and around the dark period of 1904 and 1905, when the industry was tottering owing to the production of heavy high-framed machines, which were unpopular; moreover, the uninformed daily press did its utmost to kill the pastime for ever by the publication of damaging articles. At a later period, but long before the war, Mr. Schulte recognised in the high-tension magneto the solution of ignition troubles, which were a real source of dissatisfaction with motor cycles in the early stages of their development, and endeavoured to establish manufacturing facilities in this country, but in this he met with little encouragement.

The Motor Cycling Club Team Trial.

The inter-club team trial for the fifty guinea cup presented by *The Motor Cycle* will be held by the Motor Cycling Club on September 6th, starting probably from Oxford. A notice has already appeared in the press inviting clubs interested to send in their names to the secretary, Mr. Southcomb May, 34, Gower Place, London, W.C., and so far favourable replies have been received from the following clubs: The Nottingham and District M.C.C., the Ealing and District M.C.C., the Essex Motor Club, the Middlesex M.C.C., the Woolwich and District M.C.C., and the Public Schools M.C.C. We are asked to state that full particulars will be sent to the various clubs at an early date, and that, so far as is possible, the original rules will undergo very little alteration. This year it is proposed that each team should consist of three solo and three sidecar drivers.

Special Features.

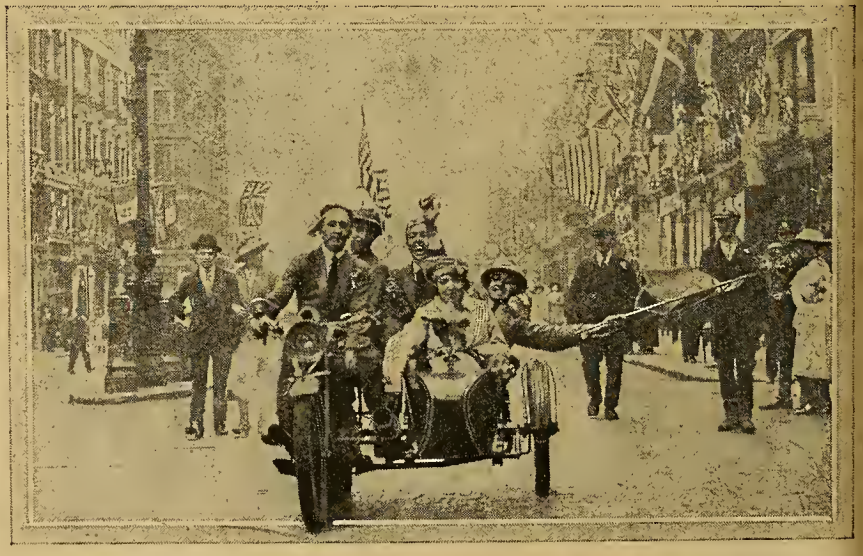
SCOTTISH TRIALS.
A.C.U. SIX DAYS' REGULATIONS.
AN UNCONVENTIONAL DESIGN.

Broken Glass on Roads.

The Automobile Association offers a reward of one guinea for information and evidence necessary for prosecuting persons deliberately placing broken bottles, etc., on the roads. For a considerable time motorists have suffered from this dangerous practice, and numerous cases have been reported by the Automobile Association to the police, but complete evidence has not always been possible.

Carburetter Patents.

An interesting decision relative to carburetter patents was made by the Acting Controller of Patents, on the 15th inst. An opposition was lodged against the sealing of letters patent, applied for by Mr. Arthur Cox, in respect of the Cox-Atmos carburetter by Messrs. Chas. H. Pugh, Ltd., and Mr. G. F. Bull, on the ground that certain features were anticipated in the Senspray carburetter. The opposition was dismissed as it was held that Mr. Cox's claims are clearly limited, and had not been claimed for the Senspray.



In nearly every city the motor cycle played a prominent part on Peace Day. The picture shows a happy party of London motor cyclist sightseers.

The Repeated Successes of the

prove the consistent reliability and service of this machine for solo and sidecar work.

DUBLIN MOTOR CYCLE CLUB

24 HOURS' RELIABILITY TRIAL

(June 27th-28th, 1919).

B.S.A. TEAM

THE ONLY TEAM TO FINISH

OUT OF FIVE.

Gained 598 marks out of 600, securing

TEAM PRIZE

ALSO

3 GOLD MEDALS

(2 Special Gold Medals. 1 Club Gold Medal)

ONE SPECIAL AWARD

B.S.A. 4¼ h.p. Single with Sidecar made a clean ascent of GLENGESH HILL, the crucial point of the Trial.

The Birmingham Small Arms Co., Ltd.,
Small Heath, : : Birmingham.

Why you wait.

During the first years of the war, the Allied Governments demanded all our facilities for the production of CLYNO Sidecar Outfits for service on the various fighting fronts—later, in addition, our facilities were urgently requisitioned for the manufacture of complete Aero Engines, and even to-day we are not wholly through with our commitments in this direction.

Hitherto, "our written word" was all the evidence which we could offer, but to-day we've more convincing proof, in the form of a factory illustration reproduced from a photograph taken in the CLYNO Works, which are still very largely—in fact almost solely—employed on this concentrated effort.

Why you benefit.

Experience—a widened, more comprehensive experience in the building of the Internal Combustion Engine—has brought with it a greater knowledge of the possibilities of this wonderful source of power, and our staff are certainly more capable to-day of turning out an even better CLYNO than that which earned so enviable a reputation in the pre-war period.

But you benefit, *too*, in the fact that, while mass production has so far been impossible, every vital feature in the design of both our 1920 8 h.p. Model and The Aristocrat of the Lightweights—the 2½ h.p. CLYNO—has been finally tested and approved, and that the Machines themselves in the several trials in which they have been entered have proved beyond refute their absolute reliability.

You wait, but to-day we can assure you not for long.

CLYNO ENGINEERING Co.,
Pelham Street, Wolverhampton.

Police Traps.

Police traps are in operation in the neighbourhood of Solihull and Knowle.

Registration Numbers.

Following the example of London and other places, Wiltshire and Coventry have had other index marks assigned to them, viz., HR and HP, in addition to the existing letter AM and DU respectively.

The Humber Staff Trial.

The results of the "staff" trial organised by the Humber Co., and described in last week's issue, are as follow: Silver cup for the best performance, E. C. Gilliard (3½ twin Humber). Gold medals: F. C. Brown (3½ twin Humber), F. Yates (3½ twin Humber sc.), and E. M. Powell (15.9 Humber car). Silver medal: W. H. Turner (3½ Humber sc.). Sixty riders competed, of which fifty were motor cyclists on machines of various makes.

Rudge Prices Raised.

Rudge-Whitworth, Ltd., announce a further advance of prices to take effect from August 1st.

The retail figures stated below will apply to orders in hand, which will be invoiced at prices ruling at time of delivery:

	£	s.	d.
3½ h.p. Rudge-Multi roadster...	90	0	0
3½ h.p. ,, ,, T.T. roadster	90	0	0
5-6 h.p. ,, ,, ...	98	0	0
Rudge sidecar	33	10	0

The increase only amounts to slightly over 50% on pre-war prices.

Benzole and the Scott—a Warning.

Riders of Scott machines should bear in mind that indiarubber is soluble in benzole. One of our readers who uses a Scott was recently much mystified by his engine refusing to pull, with periods of bad misfiring, when travelling slowly. He had been using benzole, finding it to give better results than petrol for sidecar haulage; but, now, taking his engine adrift, he was surprised to find that the rubber compression rings between the cylinders and the crank case were completely dissolved, all that remained of them being a suggestion of rubber solution adhering to the joints. The machine had run less than 1,000 miles on benzole, so other Scott riders should beware.

Army Sale of Motor Cycle Tyres.

During recent Government sales at the Agricultural Hall, Islington, a large number of second-hand motor cycle covers were offered for sale.

The majority of the lots, each consisting of a bundle of twenty "bargain" covers, for which it was evident there was a great demand, were knocked down for £4, the buyer then having the option of purchasing the next five consecutive lots at the same figure.

A large number of motor cycles were also offered for sale; the prices realised, however, remained at approximately the same figures as at the previous sales. The organisation of the dates and nature of future sales has been improved. Definite sales are now arranged for 6 p.m. on Mondays, 11 a.m. and 6 p.m. on Wednesdays, and 6 p.m. on Fridays.

An American Record Broken.

The "three-flag record" (in which the rider starts in Canada, crosses America, and enters Mexico) was recently lowered by "Hap" Scherer riding a sports model Harley-Davidson flat twin. His time for the distance of 1,716 miles was 64h. 58m., the average speed for the run being 26.4 m.p.h.

Open Trial, York-Edinburgh-York.

The York and District M.C. is running an open reliability trial for all types of motor cycles and cars on August Bank Holiday. The start will be at midnight on August 3rd. The course is an easy one from York to Edinburgh and back. Entries close on Monday next. The secretary is Mr. G. A. Reed, 6, Blake Street, York.

Motor Cyclist Airman.

Mr. Trevor T. Laker, the ex-competition rider, whose photograph we gave alongside his aeroplane in our issue for June 5th, advises us that the general public is quite keen to take flights. Mr. Laker is located at Nuneaton, from which place he made over seventy flights during one week. Mr. Laker is associated with a private company which will shortly have aeroplanes at several seaside resorts.

State Sales.

The Ministry of Munitions (Disposal Board) has realised, up-to-date, over £132,000,000 as a result of the sales of surplus war stores.

In many cases, as for instance in the sales of machinery, much of the material was sold at higher prices than cost; while during last month alone £300,000 was taken in the sales of mechanical transport at Kempton Park and the Agricultural Hall, Islington.

The Six Days' Trial.

The Auto Cycle Union intends that the machines in the forthcoming Six Days' (which will be held from September 15th to 20th) will be subjected to an adequate test without resort to freak routes or regulations.

A.C.U. and the Arbuthnot Trophy Trial.

The committee of the Auto Cycle Union announce that valuable information was obtained in the competition for the Arbuthnot Trophy, and that this will be of much assistance in the promotion of other trials.

Unique Test.

To show that evidence often given in law cases where the speed at which a car or motor cycle is travelling is not to be relied upon, the Sheffield Club recently organised a speed-judging competition at which the general public were asked to estimate the speed of the competitors. The general results were in every way satisfactory, as proving that the average person has not the slightest idea of the speed at which a machine approaches him. A similar event is being held later when the police will be invited.

Obstructing the Police.

Recently a Hailsham motor cyclist was summoned at Enfield for exceeding the speed limit and for obstructing the police, the evidence being that after being timed and stopped he returned into the trap and warned other motorists to slow down. He was defended by the solicitor of the A.A., and, while admitting the speed offence, the case of obstruction was resisted, a previous judgment of the Lord Chief Justice being quoted. The defendant was fined three guineas for exceeding the speed limit and the charge of obstruction was dismissed.

A new use for a three-wheeler. An enterprising refreshment caterer converts an A.C. carrier into a mobile "bar."

The Scottish Six Days' Route.

NOTES ON THE COURSE OF THIS WEEK'S BIG TRIAL.

IT is no discourtesy to the A.C.U. to say that the hardest riders in England enjoy the Scottish Trials as they enjoy no other jaunt. It is not merely that they provide us with a thorough change, though everything is new, from the joy of hearing a man pronounce Rudge as though it began with eighteen "r's" to defying the ridiculous ten-mile limits which bestrew the north of Tweed. It is simply that in England we have neither the hills nor the scenery which Scotland can furnish. No country can furnish a more sporting course, and no committee could run an official trial in a more sporting spirit than the Edinburgh and District M.C. If the event has a solitary defect, it is that tyre troubles are apt to bulk too largely in its history.

On the first day the route is from Edinburgh to Perth: forty miles as the crow flies, and 157 miles by the official route. The cream of the run is our old friend Amulree, which commences with a long bumpy climb on the straight, and suddenly culminates in an evil double hairpin. Its gradient should not bother any modern machine: the trouble is that the surface sets a machine plunging on the lower corner, and it is not easy to regain control in time to steer wide round the upper twist. Although a non-stop is insisted upon, this hill should not unsaddle any practised rider. Yet it must be remembered that the Scottish event always attracts a strong amateur element, and that their corner work is usually weak for the first day or two.

Tuesday confronts the entry with 168 miles, Inverness being reached by a big detour to the north-east. There is plenty of bad going along this stretch, and, if the roads are wet, timekeeping will be a prime consideration. Cairn o' Mount and Cockbridge are the two non-stop hills of the day. Cairn o' Mount is really an "engine hill," for none of its three corners are terrifying to modern machines. It is supposed to average about 1 in 9 for nearly two miles, but can only create real anxiety if its surface is patchy. The Scot puts up with any old surface on his by-roads until news comes along that a horse and cart have foundered in a soft patch. Then he sends up several waggon-loads of stone, and dumps them in the hole. Campbell MacGregor hears of it, and includes the road in his next trial. The last time I went up Cairn o' Mount, none of the entry kept their saddles, thanks to a hundred yards of slush interspersed with chunks of granite. After four years of war there may not have been time to patch the holes. If the weather is fine, the hill should be simple: if rain is teeming down, it might be unrideable in patches. Cockbridge,

On the second bend of Kenmore Hill, to be ascended next Saturday, the last of the six days in the Scottish trials.

Started by Lucas.

All the Sunbeam-Coatalen 275 H.P. Engines of the R34—the first airship to cross the Atlantic—are fitted with LUCAS ELECTRIC ENGINE STARTERS.

Famed for their high efficiency and unvarying reliability.

Designed and Manufactured by

Joseph Lucas Ltd., Electrical Engineers, **Birmingham**

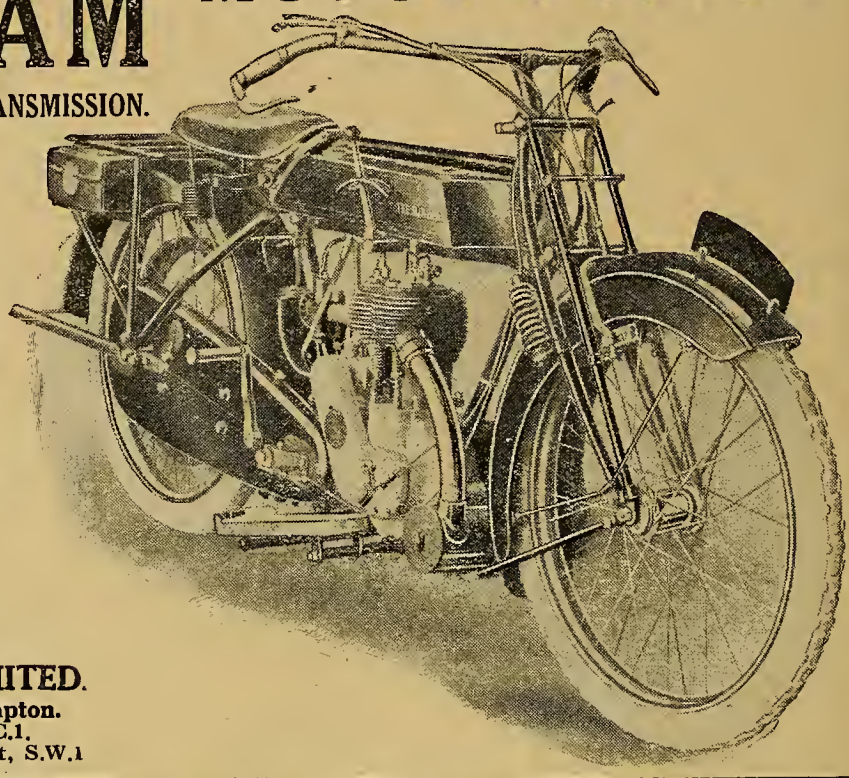
Pioneers of Electric Power on Aircraft.

LUCAS

See that your new motor cycle is equipped electrically by LUCAS.

SUNBEAM MOTOR CYCLES

WITH PERFECT POWER TRANSMISSION.



London-Edinburgh Trial.

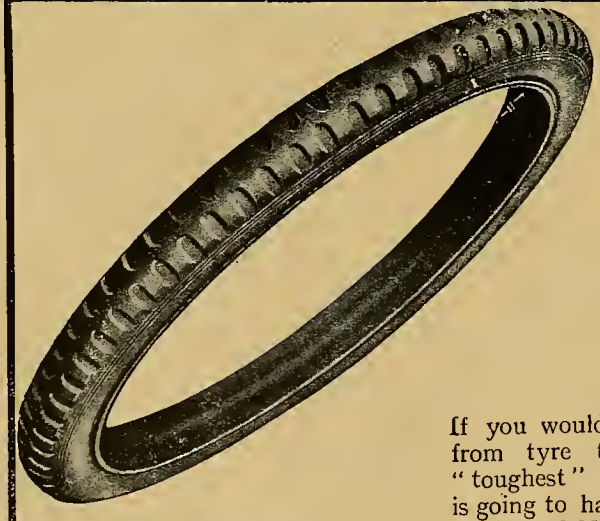
Nine Gold Medals.
The "Auto Cycle" says:—"As was to be expected, Sunbeams ran with the regularity of a train."

Liverpool Club North Wales Trial.

The only 3½ h.p. and sidecar to climb all Hills and finish the course was a Sunbeam.

3½ h.p.	.. ..	105 guineas.
8 h.p.	.. ..	130 „
No. 1 Sidecar for 3½ h.p.	..	30 „
No. 2 Sidecar for 8 h.p.	..	38 „

JOHN MARSTON, LIMITED.
11, Sunbeamland, Wolverhampton.
London: 57, Holborn Viaduct, E.C.1.
157 & 158, Sloane Street, S.W.1



Wood-Milne

Keygrip

MOTOR CYCLE TYRES

If you would know what it is to be absolutely free from tyre trouble, to be able to negotiate the "toughest" piece of road without wondering "what is going to happen next"—or finding out, then fit the new Wood-Milne "Keygrip" Tyre.

These tyres are made on the most generous lines, and the very heavy tread gives a degree of comfort hitherto unknown

With "Keygrips" on, it is good-bye to aches from jarred wrists and back.

Write for our Latest List

WOOD-MILNE, LTD.
(Amalgamated with George Spencer, Moulton & Co., Ltd.)
London: 42, Wigmore St., W.

Telephone: Mayfair 735, 6789, 6790.
Wires: "Wudmiln, Wesdo, London."

Manchester, Birmingham, Belfast, Bristol, Dublin, Glasgow, Leeds, Newcastle-on-Tyne.

The Scottish Six Days' Route.—

the second non-stop hill of the day, is of quite another type. It is a narrow track with hard surface, twisting up through a wood on to the moors with some fierce gradient at the bottom, and no really wild corners; it offers no terrors to a low bottom gear.

Inverness as a Centre.

Tuesday, Wednesday, and Thursday nights are all spent at Inverness: a pleasant innovation which permits riders to arrange for a change of clothing after wet or sultry days. On Wednesday Abriachan will probably be the non-stop hill. This is a "rider's hill," with some extremely rough going and sharp corners. The sidecar men must show prowess here, and the solo rider who keeps clear of his rivals will still find the full width of the road useful on two of the corners. The scenery all day is gorgeous, but there is so much atrocious surface that timekeeping will be strenuous work, and nobody will have much leisure to look about him.

To-day (Thursday) the competitors tackle the famous, or infamous, Applecross-Tornapress climb, of which no contour book can picture the terrors adequately. Within ten miles the route ascends from sea level to over 2,000ft., and comes right down again. This is only an average of 1 in 25, but no Scottish hills resemble inclined planes: they are engineered on the ladder and landing principle. These twin hills include gradients and hairpins galore, but neither will vex the well-handled solo mount seriously. The real trouble is the surface, which shakes up a rigid frame terribly. I usually dismount several times during touring descents, simply to rest my aching body and tired wrists. The summit is often veiled in thick fog; but when the atmosphere is clear, the outlook is gorgeously beautiful. On misty days ceaseless vigilance is necessary, for the hairpins spring up suddenly, and a careless rider may not see where the road has gone to in time to lug a sidecar outfit round the worst bends. Engines tend to get very hot on the climb, since the surface suggests low gearing where the gradient would accept top. Everybody will be tired when this day's run is over.

The Tit-bit of the Trial.

On Friday, Glendoe is the official precipice. This is another "engine hill," and modern machines ought to scamper up it: it has often been slaughtered by single gears. The Spittal of Glenshee is thrown in as a makeweight, and there is any amount of rank bad going.

On the last day, the number of gold medals is whittled down, as usual, by the inclusion of the "back stair" road up the Kenmore side of Amulree, which remains the *pièce de résistance* of the Scottish week, no research having elicited anything more trying. It is one of those hills which nobody has climbed until he is up it. To my mind, the danger point comes about a third of the way up at a left-hand bend of fair acuteness. A reef of solid rock constitutes the majority of the road surface at this point, and the twist reduces the pace to moderation. Then the back wheel gets on the reef, and in the resultant plunge the rider very possibly lets his engine conk out. If he keeps his engine going, he may either plunge off the track or let his back wheel lose its grip. So he has to wriggle through three perils almost simultaneously, and some will certainly fail. It is a case for wary path choosing at a crawl on bottom gear: the rider who wants to show off r.p.m. on such a hill will come to grief.

It must not be fancied that the seven official non-stop hills by any means exhaust the climbs of the trip: the whole route is freely littered with awkward places. The gist of the Scottish week is that it gives an engine very little rest: the route is too severe for those long trickles with the throttle closed down on a high gear. Incessant gear changes, incessant low gear work due to gradient or surface or corners, render the nominal 1,000 miles equivalent to 2,000 miles of average English going. In the A.C.U. trials we are accustomed to make up our week's mileage by a good deal of main road work between the wild patches. In Scotland they drive us hard nearly all the week.

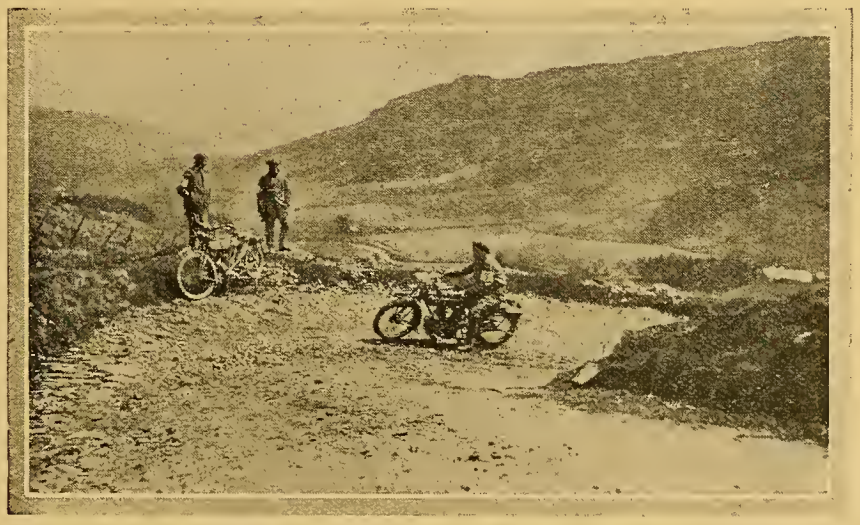
A Few Words of Advice.

Caution is advisable in corner work alike on the moor tracks and on those stretches which tempt one to catch up a few lost minutes. The character of the surface is always changing in the difficult pieces. Within a single mile of twisty road through foot hills and pines one may meet hard speed bits, soft mud, loose stone, deep ruts, and unexpected corners.

Plenty of tyre spares and a bulging repair kit are wise precautions, but if the rider fits a really stout back cover, the trip may be trouble free.

In some of the remoter districts petrol is almost unobtainable, unless the promoters of the trial manage to send a lorry full on ahead. It is, therefore, wise to carry enough for at least half the daily trip, and 100 m.p.g. consumptions are rarely recorded in such rough riding.

B. H. DAVIES.



The notorious hairpin on Amulree, one of the hills encountered by competitors on Monday last, the first day of the trials.

THE SCOTTISH TRIALS.

72 Competitors enter in this Week's Sporting Six Days' Trial; 50 started.

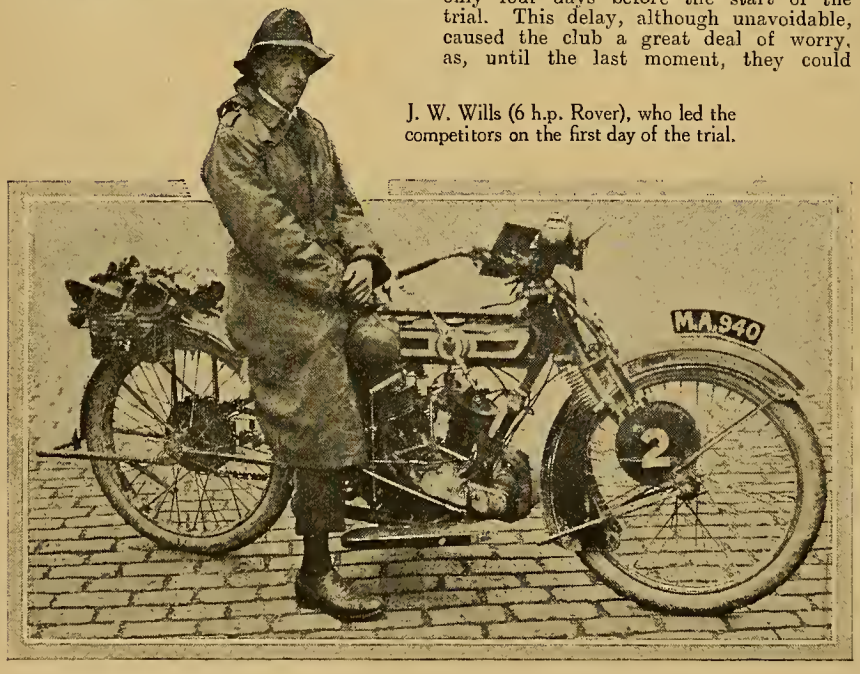
ALTHOUGH the Edinburgh M.C. did not expect a large trade entry for their first post-war Six Days' Trials, there is no doubt that the officials were disappointed when the dozen riders who had been entered were suddenly withdrawn in accordance with the decision of the Manufacturers' Union, to which we refer in a leaderette on the first page of this issue. The trial this year was organised more or less as a reunion after four blank years during which everyone concerned has been scattered all over the world, and the Scottish riders, who form the major portion of the private-owner element, and the officials of the Club were looking forward to meeting once again those trade experts who have so keenly appreciated the sporting nature of past trials and the treatment they have always received at the hands of the sporting Scotchmen. We know that every withdrawn trade rider—together with many who were not entered—was also disappointed, for this trial has always been a popular event, to be regarded as a strenuous but enjoyable holiday.

We think, however, that had longer notice been given, a representative trade entry might have been forthcoming. It was because it was not representative that it was withdrawn altogether. Unfortunately, the date of the trial was automatically fixed by conditions over which the organisers had no control. First, this week was the only convenient date when the many officials are on holiday. Secondly, it was utterly impossible to secure hotel accommodation in August.

Large Trade Entry Not Expected.

The decision of the Edinburgh M.C. to hold the trial was communicated to the Manufacturers' Union but three weeks before the event. Team entries were not expected, Campbell McGregor, the secretary, informed us, and a single competitor from each of the large manufacturers would have satisfied the club. This short notice, unfortunately, was not sufficient to enable the Union to arrange a meeting of manufacturers, who made their decision only four days before the start of the trial. This delay, although unavoidable, caused the club a great deal of worry, as, until the last moment, they could not estimate the number of entries, which made the catering negotiations somewhere difficult. In the meantime, a round dozen of trade riders were entered, and to have these withdrawn at the eleventh hour, as it were, was distinctly hard on them. However, the Scotchmen fully appreciate the difficulties under which manufacturers just now are working, and have taken the Union's decision in true sporting spirit. This year, they say, the trial will be an amateurs' and shamateurs' event, and the results will show how such owners can negotiate the Scottish hills on present-day machines.

Some of the officials of the Edinburgh M.C., the organisers of the trial: Messrs. W. Fraser, W. M. Smellie, R. R White, A. G. Ballantine, Campbell McGregor (centre), R. Dixson, J. Beaton, and Donald McKay (assistant secretary.)



J. W. Wills (6 h.p. Rover), who led the competitors on the first day of the trial.

Preparations.

EDINBURGH, SUNDAY MORNING.

"Pleasures are like poppies spread," said the immortal Bobby Burns, and Edinburgh this morning bore something of the spirit that inspired the lines. Saturday found Edinburgh festive till the small hours, but this morning the stately streets of Scotland's capital, always inspiring a sense of profound respectability on Sunday mornings, are enveloped also in an atmosphere suggestive of "the morning after." One or two of the members of the Edinburgh Club baptised themselves with glory at Lanark races yesterday, but this morning the officials of the great Scottish event, which starts to-morrow, bear expressions of languid boredom, and refuse to be harassed.

As a matter of fact Croall's garage is deadly dull, save for the usual frenzied *debut*, and the sudden withdrawal of the number of new riders are making their eleventh-hour preparations. A fair trade, it is pleasing to observe, accounts for only eleven gaps in the list of

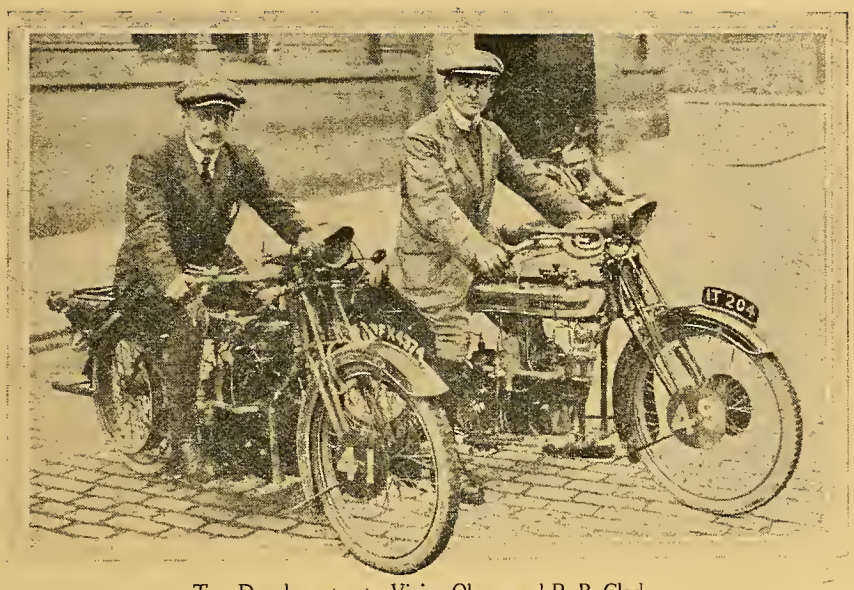
The Scottish Trials.

The Scottish Six Days' this year presents an aspect which, at any rate, is unique in its interest. The crack trade rider is ruled out, and this most sporting event is, for the first, and we hope for the last, time confined to the amateur and shamateur. Many of our readers will therefore view the event with special interest, the works-tuned mount being, for once, conspicuous by its absence.

The Machines.

The competing machines which are still assembling at Croalls presented very few features of special interest. George Wray, cheerfully optimistic in his profession of complete indifference as to the results of the whole event, is riding a 1914 Clyno, which is probably more business-like than it looks. The sole A.B.C. entry is equipped with a very neat Lucas lighting unit set, packed away in a tunnel, which is part of the gear unit, and E. W. Choldcroft's 4 A.J.S. is provided with a Low generator and Autoclipse head lamp—otherwise the lighting sets are of a most unpretentious order. Alan Hill's Morgan is one of the smartest little machines yet present, finished dark crimson, save for one bright blue bolt in the right wing, which, Hill asserts, is to remind him which way to turn on Applecross.

By the official programme, Newman's 3½ Sunbeam is entered as fitted with gears lower than standard, but, as a matter of fact, they are higher, the top being 4.6 and the two lower ratios in proportion. This rider anticipated carrying a lady passenger through the trial on his carrier, but has, happily, abandoned the idea. Baker's Scott is one of the most interesting and attractive machines present. It is fitted with disc wheels of his own making, and a special oiling system of unusal layout.



Two Douglas entrants, Vivian Olsson and R. B. Clark.

Mrs. Bell (6 A.J.S. sc.) is the only lady competitor, and G. C. Stead's A.C. is the only light car entry. We noticed that Carfrae had shed the chain cases of his Bradbury, while another Bradbury rider retired last night with stripped gears.

Judging from the machines, the mascot craze is coming to a dead end, and Brash, who carries a rabbit's foot as a mascot, is the only interesting exception. Macrae is carrying a small fishing rod lashed to the handle-bars of his Harley, with which, presumably, to while away idle moments *en route*.

The most harrowing and hair-raising reports keep dribbling through as regards the condition of the roads. The few good patches which existed in 1914 are now, it is said, as bad as the worst of the less frequented roads, being completely smashed up by timber haulage. Wednesday's route from Inverness to Beauly and Braemore encompasses a new hill which we are all learning to pronounce. It is spelt Aultnaharie, and correctly pronounced only as McGregor and his satellites pronounce it. It is on everybody's lips, in several translations, and some idea as to the ferocity of the gradient can be judged by the special clause in the rules: "In the event of 90% of the competitors starting that day failing on Aultnaharie Hill, failure on this hill will not disqualify a competitor from gaining a gold medal, but competitors who make a clean ascent will be awarded some form of recognition for their performance." Another observed hill may be substituted in the occurrence of many failures.

"Georgie Runciman" (Mrs. Bell), the only lady competitor.

From all accounts the hill has so far been climbed only by an A.C. light car, a 2¾ A.J.S., and a Douglas. It is said that the riders go round three sides of a cottage, and, on the third "leg," look down its chimney.

At Croall's Garage the Triumph, Douglas, and Sunbeam riders stand idly by their machines. Cool and soft-voiced officials proceed with the work of sealing. Wills, who will lead the competitors, anticipates a world of trouble. He has a hole in his crank case stuffed with solder.

A Blackburne and an A.B.C. have just ticked quietly into their places on the tan floor of the official garage, which, under ordinary conditions, is a horse repository.

By the time these notes appear in print three of the six days will have gone. The following are the courses for the last three days: THURSDAY, July 24th.—Inverness, Beauly, Marybank, Garve, Auchnasheen, Auchnashellach, Applecross (lunch) Jeantown, Auchnasheen, Garve, Inverness. FRIDAY. — Inverness, Drumnadrochit, Glendoe, Craggie Inn, Grantown (lunch), Cockbridge, Braemar, Bridge of Cally, Perth. SATURDAY. — Perth, Dalguise, Kenmore, Crieff, Falkirk, Linlithgow, Edinburgh.

The Entrants.

*J. Dudley (3½ Sunbeam)
J. W. Wills (6 Rover)
Claude Duncan (4 Douglas)
*Hugh Gibson (8 Clyno sc.)
*P. J. Enticknapp (4 Blackburne)
D. S. Milne (4¼ B.S.A.)
R. Spence (4¼ B.S.A.)
H. Macrae (7-9 Harley-Davidson sc.)
H. Alexander (8 Enfield sc.)
C. S. Burney (4 Blackburne)
F. J. Hutchison (4 Douglas sc.)
N. Black (4 Triumph)
J. Emerson (3 A.B.C.)
E. W. Choldcroft (4 A.J.S.)
W. Hoyland (4 Norton)
R. Hay-Will (6 A.J.S. sc.)
A. F. Selby (4 Blackburne)
G. Grinton (7 Harley-Davidson sc.)
"Georgie Runciman" (6 A.J.S. sc.)
R. B. Clark (4 Douglas)
*L. Newey (4¼ Ariel)
Duncan Bell (5-6 James sc.)
G. Wray (5-6 Clyno)
R. Carfrae (6 Bradbury sc.)
*J. L. Stocks (6-7 Ariel sc.)
H. Moir (3½ Sunbeam)
A. Downie (6 A.J.S. sc.)
D. Wright (3½ B.S.A.)
W. Deans (3½ Ariel)
*Frank Smith (8 Clyno sc.)
J. Robertson Brown (10 Henderson)
T. Rutherford (3½ Sunbeam)
D. S. Alexander (8 Enfield sc.)
G. C. Stead (10 A.C.)
*T. C. de la Hay (3½ Sunbeam)
W. Westwood (4 Triumph)
R. Hendry (5 Indian)
W. S. Jameson (2½ Diamond)
H. E. Fairley (4¼ B.S.A.)
B. Alan Hill (8 Morgan)
A. L. Downie (2¾ A.J.S.)
L. L. Sealey (4¼ B.S.A.)
Vivian Olsson (4 Douglas)
A. H. Alexander (4 Douglas sc.)
J. A. Newman (3½ Sunbeam)
J. R. Alexander (7-9 Indian sc.)
J. Shepherd (5-6 Campion)
*J. S. Holroyd (8 Blackburne sc.)
H. G. Cassie (4 Douglas)
E. R. Troward (——)
J. A. W. Beaton (8 Matchless sc.)
Jas. Beck (3½ Sunbeam)
*A. G. Cocks (2½ Clyno)
*A. F. Knight (8 Clyno sc.)
J. A. Jefferys (5-6 A.J.S.)
L. B. C. Cunningham (8 Morgan)
W. Young (4 Triumph)
P. Brady (3½ Douglas)
L. S. Fisher (3½ Norton)
D. Balloch (8 Matchless sc.)
J. Baker (3¾ Scott)
W. Strettell Miller (3½ P. and M.)
D. M. Brash (7-9 Harley-Davidson sc.)
E. J. Tunbridge (5-6 A.J.S. sc.)
A. Downie (5-6 Ariel)
Jas Balloch (6 Bradbury sc.)
*T. Peck (3½ Ariel)
G. Taylor (——)
W. C. Sutherland (4 Triumph)

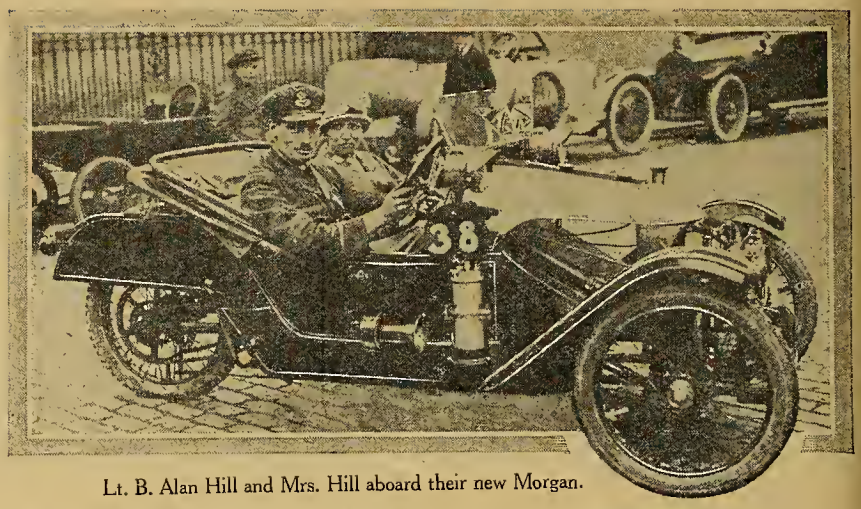
*Trade entrants withdrawn.

EDINBURGH, MONDAY.

As a strong contrast to the weather of yesterday, the sun shone brilliantly as, under perfect conditions, J. W. Wills (6 Rover) led the fifty competitors from Croall's Garage at nine o'clock this morning. In addition to the "trade" entrants, which were withdrawn, there were several other non-starters through various causes, but chiefly due to the non-delivery of new machines, several of which were held up by the railway strike. As the competitors went away in pairs and singly, disappointed entrants learnt from the newspapers that the strike had been settled. It lent a touch of irony that the settlement should come a few hours too late to benefit them, so far as riding in the trial is concerned.

Capt. C. S. Burney (4 Blackburne), L. S. Fisher (3½ Norton), D. Ballock (8 Matchless sc.), Robertson Brown (10 Henderson), T. Rutherford (3½ Sunbeam), and W. C. Sutherland (4 Triumph) all failed to face the starter. The greatest enthusiasm prevailed, and as the last man disappeared round Princes Street Gardens *The Motor Cycle* recorder of facts and failures mounted his Scott and followed, with the staff photographer on his Victory Matchless in pursuit.

A detailed description of the trial, with photographs, by our own representatives, will appear in the next issue of "The Motor Cycle."



Lt. B. Alan Hill and Mrs. Hill aboard their new Morgan.

Incidentally.

This year Alan Hill takes his wife as a passenger on his new red Morgan. In the 1914 trial he drove a Humberette with his mother as his companion.

Two Morgan entrants represent the runabout class and an A.C. is the only light car. Where was the Harding and Summers cycle car which competed in the 1913 and 1914 trials?

Newman did well to reconsider his intention to take his wife as a pillion passenger.

Georgie Runciman, who figured in the official programme is none other than Mrs. Bell—the only lady competitor this year.

It was hard to realise that five years had rolled by since the last Six Days' in Scotland when Lieut. McGregor was seen in mufti. The McGregor presents a fine figure in his kilts.

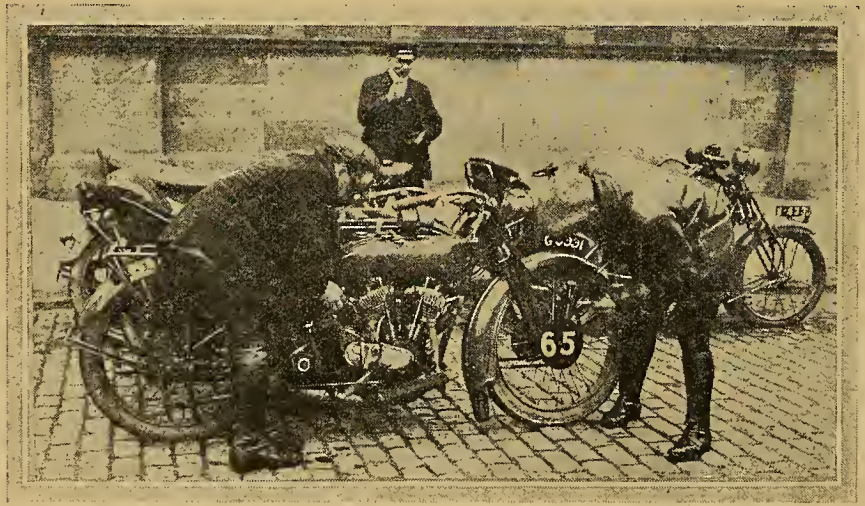
Will Harry Macrae succeed in getting his "bit of fishing"? He carries a fishing rod as part of his equipment, and intends to "blind" in places to steal the time out of his schedule.

Captain J. A. Jefferys, who is riding a 6 A.J.S. solo, is an Australian. It is his first competition, and he wishes to take back a "gold" when he returns to the Antipodes shortly.

The Clyno firm, with one of the most up-to-date machines on the market, is represented by one machine—an apparently much-worn 1914 model.

Although Army motor cycles were not allotted a place in the Peace Procession at Edinburgh last Saturday, they were doing a great deal of running about at speeds which would make the Edinburgh police look severe in normal times.

Aultnaharie is the "tit-bit" in this year's trial. To return to civilisation, it is necessary to climb it. Riders who fail to do this may have to wait a month for a ferry.



Finishing touches. The Brothers Brash take a final look round their Harley-Davidson

Midland Passenger Machine Trial.

Peace Day Event in Unfavourable Weather.

THE passenger machine trial organised by the Birmingham M.C.C. was arranged to take place on "Peace Day," and as the English climate usually justifies its reputation for changeability on public holidays the coincidence was unfortunate.

The meeting point was the Swan's Nest Hotel, Stratford-on-Avon, and, although the signs were by no means promising, the subsequent downpours were scarcely foretold.

Starting arrangements were in the hands of Mr. T. Silver, and everything was very smoothly carried out, the riders' own watches sealed, and the machines marshalled into order and started with the minimum of fuss. Starting was arranged at minute intervals, and competitors were not allowed to "warm up" their engines.

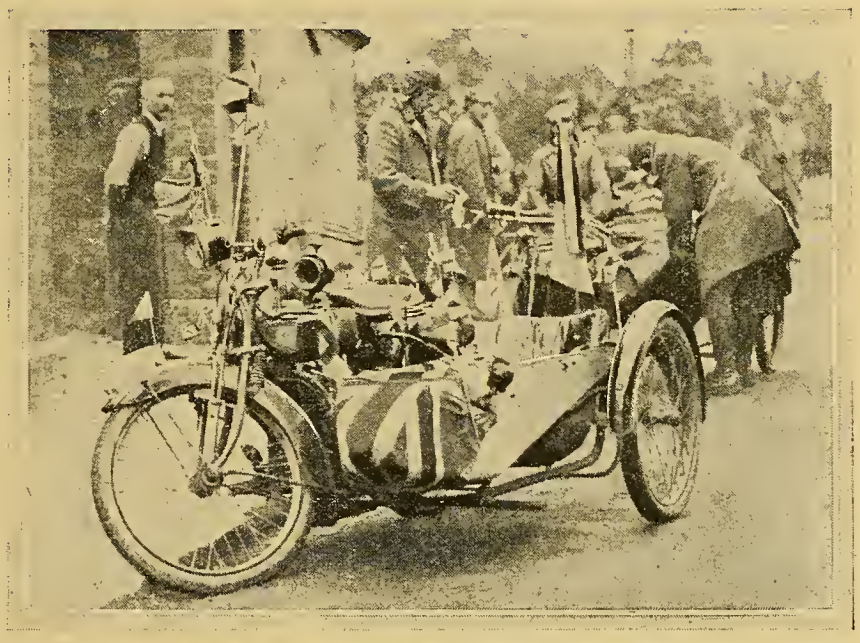
Only one competitor (on an American machine) had any difficulty in getting off. Most of the engines, indeed, responded to the first or second kick—probably the quickest in getting away was Kickham (Sunbeam), but there was really little to choose between the majority of starters.

The first test to be encountered was the stop and restart on Edge Hill; most of the machines performed well, and the greater part of the failures were, apparently, more the result of misunderstanding the instructions than inability of the engines and clutches to deal with a restart on this gradient.

Eveson (New Imperial sc.) and Birch (B.S.A. sc.) stopped before getting between the tapes. Dalby (Triumph sc.) evidently misjudged the stopping point but made a good restart, while Weaver (Harley-Davidson sc.), whose mount did not seem to be quite in the best of humours, ran back to the roadside, thus slightly baulking Kickham (Sunbeam sc.).

Descending Sunrising several competitors lost their way near Tysoe and by some means got on a round-about track and came up Tysoe again—Minton (Norton sc.) complained that he was quite familiar with Tysoe, having climbed it three times in his efforts to find the proper route!

Some bitter remarks were made about the blue-print tracing of the map supplied to competitors, but we think that the trouble was due to follow-my-leader tactics, and, as "no arrowing" was distinctly stated on the map, entrants would have done well to verify the route on the ordnance map. Beyond Chipping Camden, the rain began to fall, and, at Broadway, the roads were very slimy and bumpy.



A decorated James at the Midland Cup Trial on "Peace Day."

Several were disqualified for restarting their engines after the lunch stop at Cheltenham before the starter's signal, while the acceleration test on Sunrising largely decided the fate of many. Stretton Ward (Triumph sc.) and Benley (Morgan) made exceptional performances here.

By the time Edge Hill was reached on the homeward journey the entry was very considerably thinned, and rain fell in torrents during the last hour or so.

The brake test made here was something of a fiasco—indeed we cannot imagine any more impossible task than that of pulling up a machine in about two lengths after running more than half way down Edge in neutral, as the conditions required; indeed, it is probably fortunate for the lives of the riders that it was raining so heavily, for the locked back wheels which resulted from the sudden application of brakes simply skidded down the hill, whereas, had the road been dry, there appeared to be every chance of ripping off a cover, if nothing worse happened.

Most of the competitors who were left in the run flashed over the tapes at about 30 m.p.h., and on applying their brakes those who were able to stop at all overshot the mark by eighteen to thirty yards, while the others merely continued down the hill with locked wheels. This test could not be described as fair either to the machines and riders or safe to any of the general public who might be using the hill at the time.

No one amongst the eleven finishers succeeded in qualifying for either a cup or gold medal, but the team prize will probably go to the three New Imperial riders who finished.

Competitors in last Saturday's Midland Cup Trial discussing the course which they had lost. The group includes Minton (Norton), Vale (Douglas), Weaver (Harley-Davidson), and Kickham (Sunbeam).

HILL-CLIMB AT STILE COP.

Sutton Coldfield and Mid-Warwickshire A.C. Closed Competition.

H. Smethurst (3½ h.p. Norton) making a fast ascent of Stile Cop

STILE Cop is a safe hill, but hardly steep enough to test the capabilities of the modern motor cycle. The part of the hill used for the competition measures nearly threequarters of a mile in length (about 1,250 yards), and rises about 270 feet, giving an average gradient of 1 in 14, but the steeper portion near the top is 1 in 9. The hill is part of the road from Rugeley to Beaudesert, and is two miles from the former place. The surface was somewhat loose and very dusty until heavy rain began to fall; this commenced towards the end of the competition, and continued throughout the evening.

Considering that the hill-climb took place on "Peace Day," there was a good muster of competitors, and spectators were quite numerous. As usual, the smaller machines started first, and on this occasion some of the classes had to be combined owing to lack of entries.

Some excellent times were accomplished, though the record for the hill of forty-five seconds made in 1914 was not beaten. This was, however, made over a slightly shorter portion of the hill, so a fair comparison is not possible. It was often noticeable that the amateur riders were not so fast as their trade competitors, though many of them rode well. A lady was to have competed in Class 6, but, unfortunately, she met with an accident on her way to Stile Cop, and did not put in an appearance.

Amongst the small machines, the Levis was very prominent, as were the Norton and Triumph in the larger classes. The fastest time of the day was 49s. by J. Smith (3½ Triumph) (nearly 53 m.p.h.), but perhaps the most remarkable performance was made by G. Kuhn on a 2⅜ Levis, who came up in 51s. (51 m.p.h.). Other riders who completed the climb in less than 50s. were H. Petty (3½ Norton) and H. Taylor (8-10 Matchless), whose times were 49.6 and 49.4 respectively. The new 3 A.B.C. made its debut in a public hill-climb, the same machine that was used in our Staff Trial at Edge Hill being ridden by J. Emerson, and acquitted itself with credit, but Emerson told us that he was previously unacquainted with the hill and, expecting something much more severe, had geared the machine too low, viz., 6¾ to 1 on top. He ascended the hill in 56.4s. (nearly 46 m.p.h.) in Class 7, but perhaps his best performance was in the sidecar class, where he made fastest time, 78.6s. (over 33 m.p.h.) against a 4 Douglas, 106.2s., and an 8 Enfield, 88.8s.

Only one scooter presented itself for competition in Class 8, and this, a 2¾ h.p. Autoglider, ridden by C. R. Townsend, made an excellent ascent in 102.6 sec. Its formula figure was, however, low.

In comparison with the motor cycles, the cars which competed in Classes 14, 15, 16, and 17 seemed slow, L. Hands (25 h.p. Talbot) alone approaching the speed of the fastest motor cycles. His time was 54.4s. (47.6 m.p.h.). H. R. Godfrey (10 h.p. G.N.) came up alone in 75.2s. (34.4 m.p.h.).

The formula used was that long recommended by *The Motor Cycle*, viz., $\frac{W}{C \times t^2}$ but the results were not passed at the time of going to press.

FASTEST TIMES.

Classes 1 and 2.—W. A. Jacobs (1½ Singer), 65⅕s.
Class 3.—N. Hall (2½ O.K.), 75⅖s.
Class 4.—G. Kuhn (2⅜ Levis), 51s.
Classes 5 and 6.—J. Smith (3½ Triumph), 49s.
Class 7.—H. Taylor (8-10 Matchless), 49⅖s., and H. Petty (3½ Norton) 49⅘s.
Class 8.—C. R. Townsend (2¾ Autoglider), 102⅘s.
Classes 9, 10, and 11.—J. Emerson (3 A.B.C.), 78⅘s.

CARS.

Classes 14 and 15.—H. R. Godfrey (10 G.N.), 75⅕s.
Classes 16 and 17.—L. Hands (25 Talbot), 54⅖s.

A SPORTING SOCIAL RUN.

THE first social run of the Westmorland M.C.C. since August, 1914, took place on the 13th of July, 1919. Hostilities having ceased, many of the members have now been demobilised, with the result that about twenty-five members journeyed to Honister Pass. The climb was commenced at 3 p.m., and most of the machines reached the summit.

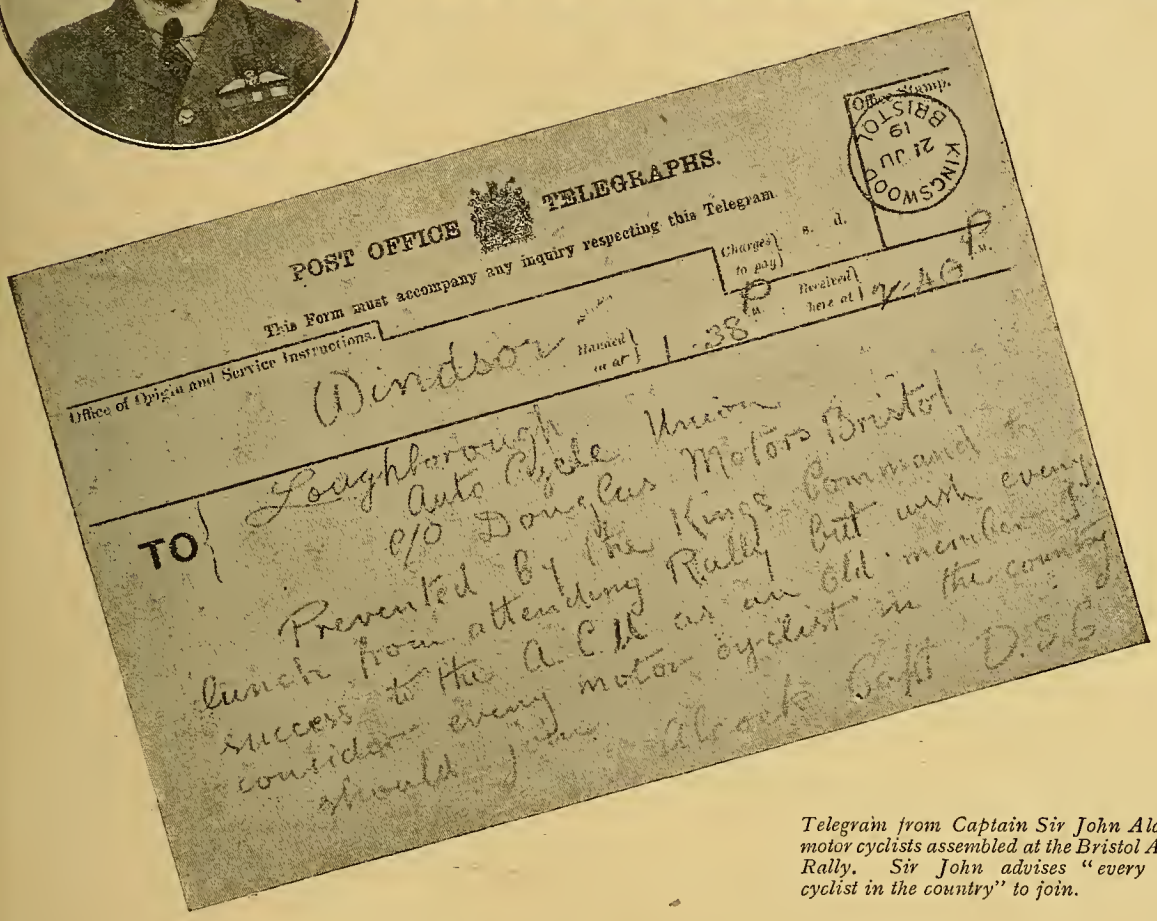
The star performance of the day was made by C. Whiteside (2¼ Velocette), who made the only clean ascent from the Buttermere side. A smile went round before the Velocette commenced the climb, but its magnificent performance surprised most of the members.

C. Whiteside (Velocette) on Honister Pass during the Westmorland M.C.C. sporting social run last week. Note the rough surface.

SIR JOHN ALCOCKS' ADVICE

TO ALL MOTOR CYCLISTS

JOIN THE A.C.U.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should join
Alcock Capt D.S.O.

Telegram from Captain Sir John Alcock to motor cyclists assembled at the Bristol A.C.U. Rally. Sir John advises "every motor cyclist in the country" to join.

Fill up this form and JOIN THE A.C.U. TO-DAY.

To the SECRETARY, AUTO-CYCLE UNION, 83, PALL MALL, LONDON, S.W.1. Date.....19

Sir,—I desire to become a Member of the Auto-Cycle Union, and I enclose remittance as stated below in full payment of my subscription for the next twelve months and for the A.C.U. Badge.

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MACHINE BADGE, complete with handle-bar clip - - - - price 4/6 each				
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LONDON-EDINBURGH RUN
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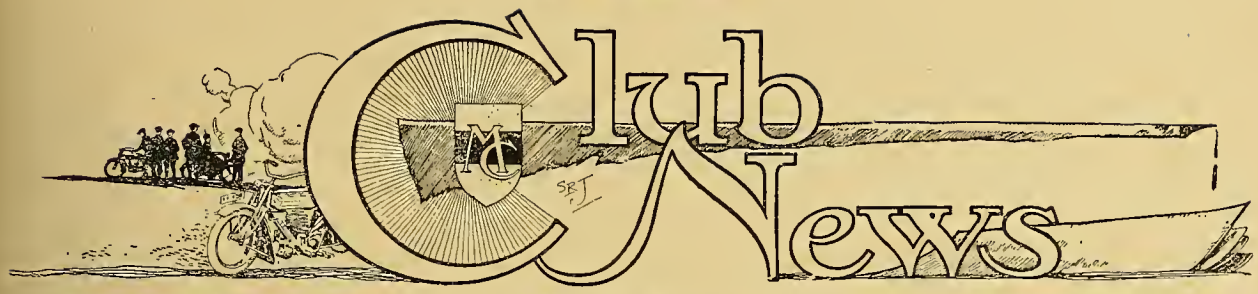


Bradford M.C. and L.C.C.

The above club is again resuming its activities, and has under consideration various competitions, including a speed trial, a hill-climb, and a reliability trial between Bradford and Edinburgh.

Carmarthen M.C. and C.C.C.

The Carmarthen Motor Cycle and Cycle Car Club are holding a climb at a well-known local hill on August Bank Holiday. Five classes will be decided on formula, and a special prize awarded for fastest time. The joint secretaries are Messrs. J. C. Evans and J. Jenkins, Nelson Hotel, Carmarthen.

Cumberland M.C.C.

Results of hill-climb at Warnell Fell :

Class I.—1, T. Stordy (2¾ A.J.S.)
Class II.—1, R. Drinkall (4 Triumph).
2, W. G. Harrison (4 Triumph).
Class III.—1, W. G. Harrison (4 Triumph).
2, R. Drinkall (4 Triumph).
Class IV.—1, R. Drinkall (4 Triumph sc.)
Fastest time of the day: H. Prescott (Harley-Davidson).

York and District M.C.

A reliability trial was held by the York and District Motor Club last week on a course over moors in North-east Yorkshire. The roads to Whitby were in fine condition, and the run was thoroughly enjoyed. A stopping and restarting test at Saltburn on a hairpin bend was unexpectedly introduced, but the results cannot yet be announced, owing to the check sheets being held up by the railway strike.

Ealing and District M.C.C.

At a re-inaugural meeting of this club, held in the Broadway Cinema, Ealing, many new ideas and suggestions were forthcoming. The social side of the club life was strongly advanced, and the suggestion of J. J. Hilyer, to form a limited company with the object of providing a country club house, was enthusiastically received. The club secretary is Mr. S. P. Lissant-Brown, "The Laurels," Ormiston Road, London, W.12.

N.M.C.F.U. Gymkhana (Birmingham).

The Birmingham branch of the N.M.C.F.U. is holding an open gymkhana on July 26th at the Red Lion Hotel sports ground, Knowle (on the main Birmingham-Warwick road). The six events (open to any motor cyclist) include slow race, obstacle race, ladies' driving contest, plug removing race, musical chairs, etc. The first event starts at three o'clock, and the proceedings will terminate in time for everyone to get home before lighting-up time. There will be two prizes in each event, entrance fees being one shilling. The secretary is Mr. F. Murray, Strathmore, Wharfdale Road, Acocks Green, Birmingham.

Future Events.

July 24.—N.M.C.F.U., Leeds. General Meeting, Green Dragon Hotel.
July 24.—Taunton and District M.C.C. Treasure Hunt.
JULY 25-26.—LIVERPOOL M.C. TWENTY-FOUR HOUR OPEN TRIAL.
July 26.—N.M.C.F.U. (Birmingham). Open Gymkhana.
JULY 26.—SUTTON COLDFIELD AND MID-WARWICKSHIRE A.C. LIGHTWEIGHT TRIAL FOR CALTHORPE CUP.
July 26.—Western M.C.C., Glasgow. Run to Lake of Monteith.
July 26.—N.M.C.F.U., Portsmouth. Run to Poole Park and New Forest.
July 26.—Public Schools M.C.C. Six Hours Night Reliability Run.
July 26.—N.M.C.F.U., Portsmouth. Run to Warsash.
July 26-27.—Wolverhampton M.C.C. Reliability Trial to Aberystwyth for Stevens Cup.
July 27.—Streatham and District M.C.C. Picnic Run to Ashdown Forest.
July 27.—Ilkeston and District M.C.C. Run to Malvern.
July 27.—Troedyrhiw and District M.C. Reliability Run
July 27.—N.M.C.F.U., Leeds. Run to Malton and Castle Howard.
July 27.—Woolwich, Plumstead, and District M.C. Vice-captain's Surprise Run.
July 27.—Birmingham M.C.C. Social Run and Picnic.
July 29.—Rochester, Chatham, and District M.C. Inter-club Meet with Woolwich and Streatham Clubs.
AUG 4.—YORK AND DISTRICT M.C. OPEN RELIABILITY TRIAL TO EDINBURGH AND BACK.
Aug. 4.—Carmarthen M.C. Hill-climb.
Aug. 10.—Birmingham M.C.C. Social Run to Monsal Dale.
AUG. 16.—S.E. COUNTIES INTER-CLUB TEAM TRIAL.
AUG. 16.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR THE PALMER CUP.
Aug. 16-17.—Wolverhampton M.C.C. Reliability Trial to Barmouth for the Eric Williams Shield.
Aug. 22-23.—Essex M.C. Annual Run Woodford to York and back.
AUG. 23.—BIRMINGHAM M.C.C. OPEN HILL-CLIMB.
AUG. 30.—BRISTOL M.C. SPEED TRIALS AT WESTON-SUPER-MARE.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
Aug. 31.—Birmingham M.C.C. Social Run.
SEPT. 5.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
Sept. 6.—Birmingham M.C.C. Reliability Trial for Sonster Cup.
SEPT. 15-20.—A.C.U. SIX DAYS' RELIABILITY TRIALS
Sept. 19.—Essex M.C. Gymkhana.

South Eastern Counties Inter-club Team Trials.

The competition for the Woolwich, Plumstead, and District M.C. Trophy will be held on August 16th, and is open to teams of six from any club. Any type of vehicle under A.C.U. regulations may be entered. Gold medals will be awarded to members of the winning team, and an additional medal to the competitor making the best performance outside the cup winners. Previous holders of the cup are: Brookdale Motor Club, 1912; Woolwich, Plumstead, and District M.C., 1913. Entries close on August 8th, and secretaries wishing to nominate teams should communicate with Mr. F. J. Ellis, 3, Nightingale Place, Woolwich, S.E.18.

Southport A.C.

The Southport Automobile Club held a meeting recently for the purpose of electing officials for the ensuing year. The club promises to become one of the largest in the North, and prospective members should note that the address of the honorary secretary *(pro tem.)*, Mr. Harry Dobson, is 3, York Avenue, Southport.

Wolverhampton M.C.C.

A reliability trial to Aberystwyth and back is being run by the Wolverhampton M.C.C. on Saturday next, returning the following day. The chief award is the Stevens Cup. No route cards will be issued, and timing will be by competitors' own sealed watches.

The start will be from West Park entrance, at 2.30. The trials secretary is Mr. J. E. Greenwood, 1, Stubbs Road, Wolverhampton.

North Cheshire M.C.C.

At the reliability run held last week, T. C. Lawton on a 4 h.p. Triumph arrived in nearest on time, thereby gaining the Mather cup. Oliver Jessop, also on a 4 h.p. Triumph, ran second.

A picnic on the river Dee (Chester) has been arranged for July 27th. The club will meet at the Trafford Arms Hotel, Alderley, at 2 p.m. All are cordially invited, and should communicate with the hon. sec., Mr. W. R. Eadington, London Road, Alderley Edge, Cheshire.

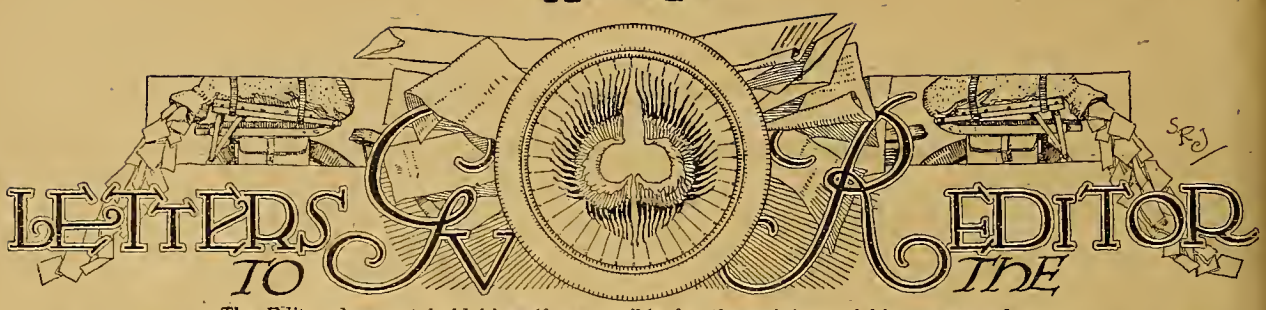
A Works Club.

The staff and employees of the Cosmos Engineering Co., Ltd., Bristol, have recently formed a club of fifty members, and ran off a very successful reliability trial, including a fast hill-climb on Wimley Hill. The President's challenge cup for reliability was won by G. Powlesland (3¾ Scott combination), the runner-up being J. Brownsey (7-9 Matchless combination).

The club has an excellent programme, and is affiliated to the A.C.U. The secretary is Mr. H. Smallwood, Cosmos Engineering Co., Ltd., Fishponds, Bristol.

Ealing and District M.C.C.

A social run from Kew Bridge to Ripley was attended by over forty members, and after tea a fault-finding competition was held, the machine being a 1919 5-6 h.p. Rover, lent by Mr. F. A. Longman. The following "faults" were arranged. 1. Paper between platinum points. 2. Plug points hammered together. 3. Cardboard between inlet valve and tappet. The winner was S. A. Lees, who eliminated the three faults in 3 min. 25 secs., the remaining competitors all exceeded the time limit without tracing the three faults.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

PLEASE QUOTE PRICES.

Sir,—With reference to "Sussex's" letter in a recent issue, "Please Quote Prices," I might say I quite agree with him that all manufacturers should give prices in the advertisements of their goods, but perhaps he would like to know that some firms who advertise in your paper have *not even sufficient courtesy to reply* when one makes enquiries about their goods, and *sends stamped addressed envelope for a reply.*

I think it only fair to your readers that you should stipulate in your rules *re* advertisements that no advertisement can be inserted without the prices of such goods mentioned in the advertisement being quoted. It would save your readers much time, paper, and postage.

I hope you will be able to take this matter up strongly with manufacturers. H. F. BARTLETT.

BENZOLE.

Sir,—I notice in *The Motor Cycle* of June 19th a letter from the secretary of the A.A. and M.U. stating that the price of benzole is now 2s. 9d. per gallon. Motor cyclists are also continually being urged to use benzole as it is a home-produced product. Petrol can be obtained in Scotland at from 2s. 6d. to 3s. per gallon, so, while I agree that it is highly desirable to support home industries, it seems rather ridiculous to suppose that benzole can seriously compete with petrol when the present high prices are charged for it.

Benzole used alone makes the average engine run very dry and, from my experience, certainly does not give 15% extra mileage as stated in the above-mentioned letter. It certainly does prevent knocking, but I think it is generally agreed that good petrol is superior in almost every way. Let the National Benzole Association place benzole on the market at, say, 2s. per gallon, and then they would get support from the motoring public; but, while the present price is charged, I cannot see what advantage there is in using it. A.F.S.

Edinburgh.

FOUR-STROKE V. TWO-STROKE.

Sir,—Riders of two-stroke machines will hardly feel disposed to accept "R.N.'s" terse summing up of the pros and cons of two-strokes and four-strokes. In the first place, the oil consumption of two-strokes fitted with good drip feed lubrication systems (as most of the well-known makes are) is not bad, or, at any rate, not worse than that of equivalent four-strokes.

Secondly, the "consumption of plugs" of "average two-strokes" is *not* "absolutely abnormal." Possibly the number of types of plugs that can be depended upon to work satisfactorily under any conditions is more limited than in the case of four-strokes; but once the best type of plug has been found (merely a matter of a little experiment) any tested specimen of that type will stand up to its work quite as long as any four-stroke plug would.

Personally, I ask for a four-stroke every time, but not a 2½ h.p. four-stroke. In the small sizes the good two-stroke always more than holds its own. What has led to a certain amount of prejudice against the two-stroke is that some "cycle and gramophone" experts, whose capabilities of workmanship (not to mention design) did not rise to the manufacture of a four-stroke engine for their assembled motor cycle, considered the two-stroke an easy solution of the difficulty, especially as the cost of production was considerably lessened thereby. The old indictments of the two-stroke hold less and less every day. REVS.

Sir,—As a two-stroke enthusiast, I feel bound to reply to "R.N.'s" letter in *The Motor Cycle* of June 5th. A good two-stroke does not require decarbonising until after 1,000 miles. Owing to its simplicity, a two-stroke can be taken down and decarbonised in a far shorter time and with greater ease than a four-stroke.

In my opinion, a two-stroke scores over a four-stroke in every point except as regards maximum speed, fuel consumption, and mileage before decarbonisation is necessary. Its far superior hill-climbing capacity, much greater simplicity, smoother running (which results in less wear and tear for the transmission and tyres, and greater comfort for the rider), and lower cost more than make up for these disadvantages.

As regards overheating, "R.N." has ridden nine miles at an average of 31 m.p.h. on a 2½ h.p. four-stroke. A fortnight ago I rode from Woburn Sands to Dunstable (eleven and a half miles) in twenty minutes (an average of 34½ m.p.h.) on a 2½ h.p. Levis two-stroke. From Dunstable to St. Albans I kept up an average of over 30 m.p.h. There were no signs of overheating. D.B.C.

Newport Pagnell.

Sir,—In a recent issue there appears a letter over the initials of "R.N.," wherein the writer seeks to compare the merits and demerits of the four-stroke and the two-stroke motor cycle, and concludes by adding that the average person would pay £5 extra for a four-stroke.

Now, in reply to this letter, I should like to state that I have been a motor cyclist for a number of years, during which time I have ridden numerous makes, both four and two-strokes, and I am of the opinion that the choice depends upon the purpose for which one requires the machine.

With reference to "R.N.'s" analysis, I am prepared to take his statement, so far as four-strokes are concerned, as being correct, and will, therefore, only deal with the two-stroke.

	R.N.	Self.
Maximum speed	35-40.	38-42.
Reliability	Reliable.	Very reliable.
Fuel consumption	80-110.	100-120.
Oil consumption	Bad.	Good with B. & L. drip-feed.
Simplicity	Very simple.	Very simple.
Carbon deposit	Decarbonise every 600 miles.	Quite equal to a four-stroke. I have ridden my machine since 1915, and only had cylinder down once.
Starting	Easy to start.	Easy to start.
Overheating	Overheats very easily.	Does not overheat, in spite of severe tests. I have had no trouble in this respect.
Hill-climbing	Very good.	Very good.
Consumption of plugs	Abnormal.	No different to four-stroke. I have two plugs; one in use and one spare—both having been in use since 1915.

"R.N." also says that if one drive at over 25 m.p.h. any length of time the average two-stroke shows signs of tiredness, whereas his 2½ h.p. J.A.P. can do nine miles at 31 m.p.h. without distress. I might add I have done 38-42 m.p.h. for five miles without causing my engine any apparent distress, and, further, have ridden from Barrow, Lincolnshire, starting 4.30 p.m., stopping at Brigg for petrol, and arrived in Lincoln at 5.45 p.m., distance thirty-eight miles, returning the same evening.

With regard to the extra price for a four-stroke, I would not have one at any price having now tried a two-stroke, except it be a 6 or 8 h.p. twin for touring with sidecar.

I am not in the trade nor in any way connected with the makers of my machine, which is a Sun-Villiers.

EAST YORKS.

HUTCHINSON

"Yours very satisfied."

C . . . S . . . .

THIS is the strain in which all our customers testify their appreciation of Hutchinson's Tyres. It is an absolute certainty that, if you have not already done so, you will express your opinion in the same style when you have tried them.

Read what our correspondent says:

. . . . Edgbaston.

". . . . I fitted one of your covers 26 x 2½ to my back wheel on my combination, and I have pleasure to state that I have now covered

OVER 5,000 MILES

without having had any trouble whatever.

"I think that it is an exceptional performance when taking into account the bad condition of the roads to-day.

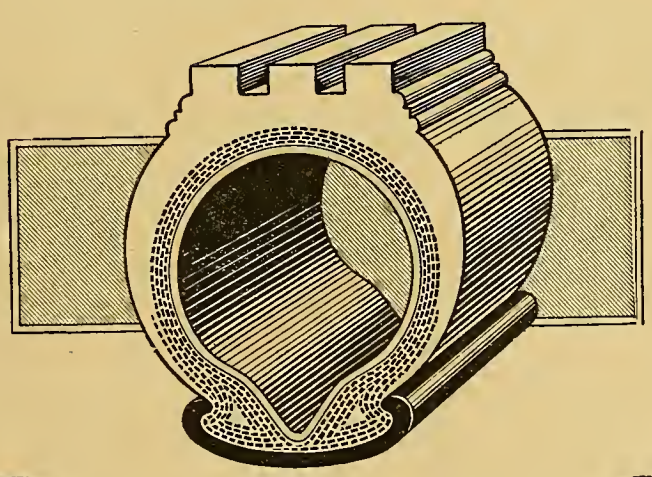
"I need hardly say that I don't expect a similar performance again, but I shall continue to use Hutchinson.

"Yours very satisfied,

"C . . . S . . . ."

"C. S." makes an error when he gives up hope of repeating this performance—by choosing the correct type of Hutchinson Tyre for your particular purpose you will be

SATISFIED ALWAYS.



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HUTCHINSON TYRES,
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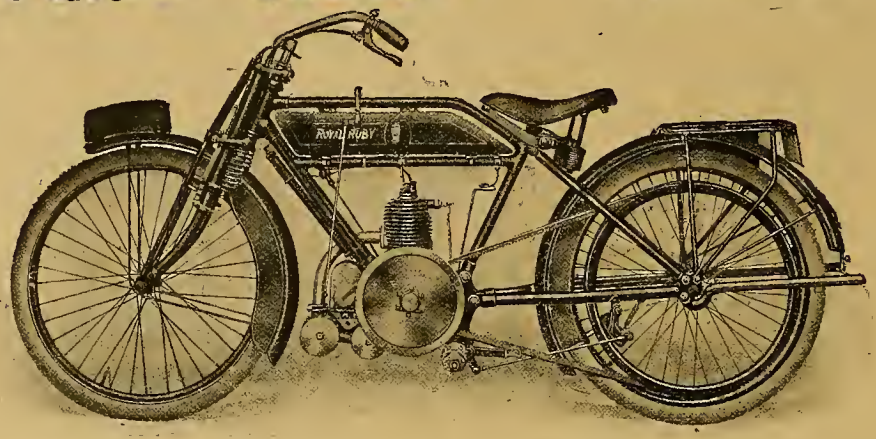
ESTABLISHED 1850.

THE TYRE WITH NINE LIVES

ROYAL RUBY

2½ h.p. 2-stroke. Lightweight. - -



Price £40 (plus 10% advance) **nett cash.**

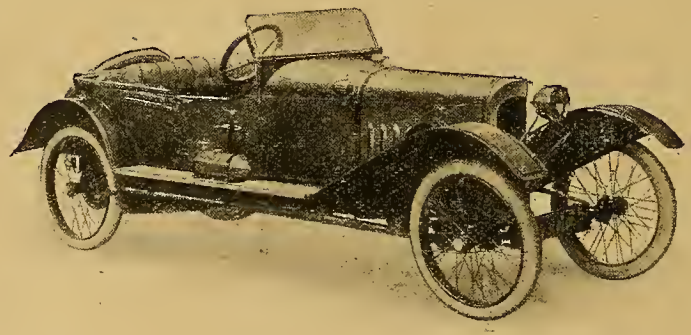
Maximum Service at minimum cost is provided for Royal Ruby Lightweight riders. Fitted with Villiers 2½ h.p. 2-stroke engine, Dunlop motor cyclette 26 x 2in. B.E. tyres, Dunlop belt, and Brooks saddle, and with the Royal Ruby special frame and patent safety stays, it is indisputably the best value on the market.

RUBY CYCLE CO., LIMITED, CANNEL STREET, ANCOATS, MANCHESTER.

MANUFACTURERS AND PATENTEES OF ROYAL RUBY CYCLES, MOTOR CYCLES, AND SIDECARS

Telephones—City 3818. *Central* 1570. *Telegrams: "Machines, Manchester."*

The G.N. Engine.



The G.N. Engine is an outstanding example of the vibrationless and successful air-cooled engine. It is, moreover, unique in its supreme accessibility. Its efficiency is shown by its hill-climbing successes and by its use for special purposes during the war, during which time several minor improvements were embodied.

Messrs. The G.N., Ltd.,
Etna Works, Albert Road,
HENDON, N.W.4.

A QUESTION.

Sir,—The answer to the Rev. J. M. Philpott is simple. Tickling the float gave a richer mixture, which the weak spark would fire. I had the same trouble in the Birmingham-Land's End trial. F.J.W.

MERCURY AS AN AID TO COOLING.

Sir,—I read with interest the letter of Major G. Madge, R.E., in *The Motor Cycle* of July 3rd. He suggests using mercury, cased in with copper or aluminium jackets, for cooling; the effect of mercury on aluminium is to form an oxide of aluminium, and on copper mercury forms an amalgam.

Mercury has little or no effect on cast iron. C.O.P.
Newcastle-on-Tyne.

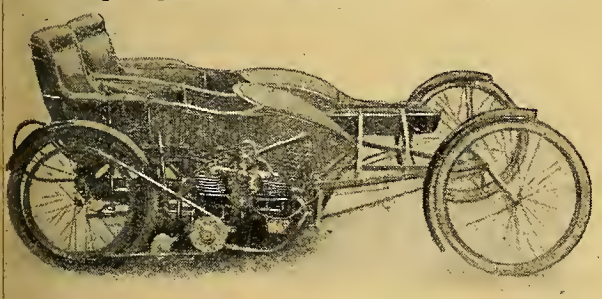
THE THEORY OF PETROL CARBURATION.

Sir,—I am no chemist, but a mere engineer, and would greatly appreciate it if your contributor on the above subject, Mr. H. J. Poole, would say if the values he calculates for the ratio of volumes of air to vapour for the various fuels are for an explosive mixture in each case or simply the air theoretically necessary for complete combustion.

Also, if he has the figures handy, could he state the density of the various vapours at N.T.P. in grams per litre or otherwise? ANGUS LOVE.

A SIMPLE CYCLE CAR.

Sir,—It may possibly be of interest to "W.A.M.," whose letter appeared on May 8th (and to other readers), to know that there is a cycle car, built by Breach of this town, on the lines he suggests and illustrates, already on the road. I enclose photograph of the machine. The engine shown



A lightweight cycle car fitted with a 2¾ h.p. flat twin engine.

is, as will be seen, a 2¾ h.p. air-cooled, fitted with three-speed gear and clutch. An extremely simple and ingenious differential is, I believe, being incorporated, which, it is claimed, will not add one ounce to the present weight, which cannot be more than that of a medium weight sidecar outfit.

Sidmouth. GARTHGOGO.

PILLION RIDING.

Sir,—I just want to endorse what "A Regular Flying Officer" said in *The Motor Cycle* of July 3rd *re* pillion riding.

I think it would be a great shame if pillion riding was prohibited, because it would mean disappointment for thousands of motorists who take their friends for a ride in the fresh air, and whose means will not allow them to sport a sidecar. If pillion riding has its dangers and is to be stopped, why not stop step riding on push bicycles? Surely it is as dangerous? In my opinion, there is no danger provided one is careful at cross roads and always prepared to stop. I have ridden over 1,000 miles with passenger on the back through towns and villages and everywhere, and never had a spill. In the accidents that have occurred how many can be proved that it was solely due to the passenger being on the back? I should like to hear what other motorists have to say *re* pillion riding. FAIR PLAY.

Sir,—I beg to disagree in every respect with "A Regular Flying Officer (Pilot)."

Motor cycle pillion riding is most dangerous, and acknowledged as such by those who indulge in this practice. I never give anyone a ride on my carrier if I can, in any way, get out of it. Every machine at various times gets into a tight corner, and the chances of escape are lessened if a passenger is on the back. The balance of the machine is totally upset, bigger swerves have to be taken, tramlines at acuter angles, the steering is slower, it is unresponsive to the brakes, and the driver's attention is constantly being taken (especially if the passenger is a new flapper).

On straight roads it may be safe enough, but at the slightest risk the chances of accident are, according to insurance companies, more than doubled. A. C. ROBBINS.

Sir,—The remarks of the general press, and even a portion of the motor cycle press, on pillion riding make me tired.

In spite of three years' active service as an aeroplane pilot—with some success—I had regarded myself as a normal every-day man, who gets "cold feet" at times, and overcomes the feeling when he can. Now, however, on reading a contemporary on pillion riding, I discover that I am nothing more nor less than a brave, dashing, fearless young hero, for have I not, since the age of fifteen, dauntlessly carried flappers, relations, broken down motorists, etc., galore for some thousands of miles without turning a hair, or even pausing to hesitate, in spite of the dread risk I was taking?

Do let us come down to commonsense. Pillion riding, with a novice steering, may be a trifle more risky than solo, but certainly not nearly so dangerous as the novice on a sidecar outfit, even though experienced in solo riding. I have never seen an accident due to pillion riding, though I have been with many in their first attempt; but I have seen—and been in—several with experienced drivers, due to the sidecar lifting when a sharper turn than anticipated was necessary, while with learners on sidecars accidents are legion. I have seen many due to the sidecar lifting, and one due to the driver forgetting existence of the sidecar, and trying to dodge through a 3ft. space in traffic! Yet no one runs down the sidecar as risky, so why try to interfere with the many thousands who find the carrier so useful and inexpensive? Let every man decide for himself as to whether anything he wishes to do is risky or not.

Luton. LIVE AND LET LIVE.

THE BIG FOUR.

Sir,—May we through the courtesy of your columns call attention to the misuse of the words "Big Four."

When some eight or ten years ago we first introduced the big single as a class apart from usual 500 c.c., we hit upon the term "Big Four" as a distinctive name for our particular engine. The term caught on, and, since then, "Big Four" has been understood to mean the *Norton* big single.

Now that we are no longer alone in the manufacture of this most useful size of engine, there is a tendency to designate all singles over 500 c.c. "big fours." This we consider not quite fair to us; "big four" *type* if you will, but there is only *one* "Big Four"—the Norton—and the term is one of our exclusive trade marks.

We wish to draw attention to this in order to avoid any misunderstanding or possible unpleasantness in the future.

NORTON MOTORS, LTD.

THE CHEAPEST MOTORING FOR TWO.

Sir,—Your contributor, "Car Driver," is rather sweeping in his comparisons between cycle cars and sidecar outfits.

He can know very little of cycle cars when he says that they "well lose in hill-climbing, petrol consumption, speed, first cost, taxation, and in difficulties of garaging." In only one particular is he correct, viz., taxation, and then only if his cycle car is a four-wheeler.

As a motor cyclist of five years' standing, I have only recently "discovered" the cycle car, and, when I look back on those "overalled, disreputable, up to one's eyes in dust or mud" days of motor cycling, I curse myself for a prejudiced ass.

What sidecar outfit can beat the G.N.'s performances at South Harting? Which one of equal h.p. can better its petrol consumption on the London-Edinburgh run? It is cheaper than a sidecar outfit just put on the market by exactly £17 10s., with exactly the same equipment; and, whereas on the one you could ride (as driver) 150 miles on a wet day and get out in the same state of cleanliness as you got in, on the other you would have to get yourself up like an arctic explorer or a sewer man.

Until I can get my G.N., I am content with my present "animated bathchair," despite its tendency to fall to pieces in detail and to bark my knuckles when the (so-called) starting handle slips, and wild horses would not drag me back to the best sidecar outfit ever dreamed of.

London. PRIVATE OWNER.

IN PRAISE OF THE HEAVY TWIN AS SOLO.

Sir,—Is not the pendulum swinging too much in favour of lightweights? I have ridden all sorts since the early Minerva days, and have never before experienced such road pleasures as with a recently purchased 8 h.p. Zenith. Its comparative silence—a purr instead of a chug-chug—its elasticity and acceleration, its hold of the road, and, above all, a charming sense of power in reserve for use on hills, and —should you care for that sort of diversion—dust-ups are pleasing points.

I have had its weight against me too, due to a short, which I could not diagnose. Pushing to a garage made one's forehead wet. Still, for the greater glory of its stride over lighter and less powerful mounts one is prepared to endure a good deal. The usual disclaimer. PA 4416.

Kingston-on-Thames.

A LESSON WANTED

Sir,—In a recent issue of the "Blue Un" a reader, John Scoble, says he takes himself, his wife, and two daughters, on his 3½ h.p. Sunbeam and sidecar; the machine being five years old. Again, I have sometimes read in your account of a test or trial, that the winner "managed his machine very cleverly."

Perhaps John Scoble, or some experienced rider, would be good enough, for the benefit of novices like myself, to give as accurate a lesson as possible how to get "all out" of a machine without damaging the bearings, etc.

For my part, I found a 3½ h.p. too low-powered to travel in comfort, without serious damage, such as loose bearings, and threatened seizure, loose fork head bearings, and even cracked cylinders (at the exhaust valve seat), and distortion of cylinder and piston, and I attempted only to take my wife—without any further passenger—less than twenty stone altogether, over average roads.

If these accounts are correct, what a bad driver I am, and what a lot I have to learn. I am perfectly serious in my wish to learn the best manner to drive a machine, say, over average roads, against a fifteen mile an hour wind, loaded up with rider, passenger, and luggage. Can the lesson be put in plain "figures," as it were? Can the amount of oil necessary, the *exact* gears, etc., be given?

One person travels further up a hill than another on the *same* scooter; how does he do it? I rush a hill—is this necessary or advisable?

My 3½ h.p. used to "konk"—why does Mr. Scoble's not do the same? TOP HEAVY.

HOT OR COLD INDUCTION?

Sir,—Our thanks are due to Mr. H. J. Poole for his clear and well reasoned showing of the need for heating paraffin carburetters, as based upon consideration of the vapour tension of petrol and paraffin.

May I, however, call attention to the prime importance of knowing the temperature involved when applying Mr. Poole's results to the conditions of the engine? It is very easy to be misled into the idea that if we start up an engine "all cold," say, at 16° Centigrade (about 60° Fahr.), that will be the temperature of the gas entering the cylinder, whereas, in point of fact, the temperature will be very much lower, except in the case of paraffin, which scarcely volatilises at all at this temperature. It is true enough that during the compression period in the cylinder the temperature may rise high enough to ensure theoretically complete volatilisation; but if the cylinder has been supplied with fuel that is only partly volatilised the time involved during compression is not enough to admit of complete conversion of liquid into gas, or it may be to admit of thorough mixing of air and gaseous fuel. The result is misfiring or failure to fire at all.

The case of benzole is not mentioned by Mr. Poole, and it is interesting because it comes between petrol and paraffin as regards volatility, and, as might be expected, does require induction heating in very cold weather, and is all the better for it at ordinary temperatures.

It would be of considerable interest to know the temperature of the gases in the induction pipe when No. 3 petrol is being used, for it appears to me to be highly probable that this would show, on Mr. Poole's results, the advisability of induction heating at cold or fairly cool atmospheric temperatures. One cannot help being impressed by the coldness of the induction pipe of the average engine, warmed though it generally is by conducted heat from the engine.

We know, as a fact, that it is much more difficult to get satisfactory starting in cold weather with the lower (less volatile) grades of petrol, and this can only, I think, be accounted for, with Mr. Poole's tables before us, on the assumption that the heat absorbed during evaporation so greatly reduces the temperature as to prevent anything like complete volatilisation.

I am sending you this note without any attempt to criticise Mr. Poole's observations, but as an attempt to show one of the limitations upon his results, which must be observed when it comes to the consideration of the less volatile fuels when used in cold weather.

What I want to emphasise is the great *amount* of heat which must be continually supplied to the fuel by some means or other to ensure complete conversion from the liquid to the gaseous state. J. H. LESTER.

ADVICE WANTED.

Sir,—I have been working all through the war, in conjunction with another lady, with a canteen of my own, and now that it is no longer required I am anxious to make use of it, and it struck me, if I could find a district in one of the Southern counties, which is much frequented by motor cyclists and motorists, that I might be of some service in providing general refreshments. Perhaps your readers would aid me by giving advice in this matter as to the locality where this might be required, as I am very anxious to start at once. A. M. HUME.

CHEAPER FUEL.

Sir,—I have been reading with no small interest recent articles which have appeared in the press on the qualities of benzole and other motor fuels; their cheapness and efficacy as compared with petrol itself, and I think that the following may be of interest to your many readers.

I am the first individual who ever succeeded in amalgamating petrol and paraffin. In August, 1916, I was granted a patent for a motor fuel which consisted of petrol and paraffin and other ingredients which, when properly blended, resulted in a perfectly homogeneous and harmonic substance capable of performing the best duties of pure petrol with less deteriorating effects on mechanism, and at a considerably lower cost. The fuel invented by me can be manufactured and sold much below the cost which you state is being charged for other petrol substitutes. The efficacy of my fuel is, I claim, unequalled. This patent has been eulogised and certified by the chairman and secretary of the Irish Automobile Club and other large users of petrol in this country, and I hold documentary proof of this fact. Owing, however, to the restrictions imposed on the use of the materials which were required for the manufacture of my patent by war conditions, I have been debarred till now from placing this important and revolutionising invention before the public.

Any of your readers who may require further particulars for the purpose of comparison with other advertised fuels will be gladly accommodated by applying to

JOHN HANNIN, J.P.

30, Leinster Road, Rathmines, Co. Dublin.

SUMMARY OF CORRESPONDENCE.

Messrs. Burney and Blackburne, Ltd., of 166-168, Shaftesbury Avenue, London, W.1, will be pleased to hear from Sgt. A. G. Gripper, late 20th Divisional Signals, R.E., B.E.F., France, as they have something of interest to communicate to him.

Useful Books and Maps for Motor Cyclists.

	Price net.	By post.
"THE MOTOR CYCLE" ROAD MAPS. England and Wales, Scotland, London (showing roads into and out of London and avoiding London). Mounted on linen. Set of three, complete in case	4/6	4/10
"HINTS & TIPS FOR MOTOR CYCLISTS." Full of useful "wrinkles" and little items of sound advice on the management, repair, equipment, and general care of a motor cycle. It will be found invaluable to all those who are thinking of overhauling their machines. *Sixth edition (2nd reprint)*	2/-	2/3

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PETROL CONSUMPTION 125 MILES PER GALLON.

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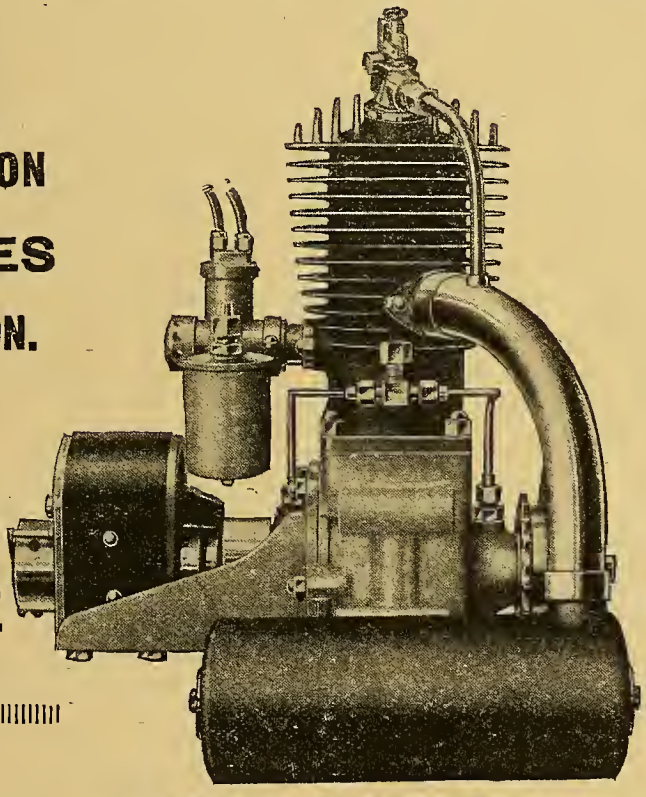

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WE ALSO MANUFACTURE TO THE TRADE A **TWO-SPEED KICK-STARTER GEAR BOX** OF OUR EXCLUSIVE AND FOOL-PROOF DESIGN. WRITE FOR BOOKLET, &c.

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DEPT. W., UNION WORKS, WILLENHALL, STAFFS.

A comfortable hundred-and-forty

in the day is easy work for the

ZENITH

with the GRADUA GEAR.

That is the machine R.H.B. was on, and the thing that evidently attracted Ah Sin's notice was—

the ZENITH Rear Number Plate.

Catalogue of current models, etc., on request.

ZENITH MOTORS, LTD.,
HAMPTON COURT, ENG.

A Journey Northward.

"I took myself by the metaphorical scruff of the neck last week-end, saying 'No, you *don't* go down south. Fresh fields and pastures new for you. This is the way, up the Finchley Road.' So that is how we were bubbling through Barnet at ten-thirty on a Sunday morning, 'admiring how the world was made' north of the Thames. . . . .

"Considering how very excellent (for these days) is the condition of the Great North Road, I wonder more motor cyclists don't use it. The day was a little overcast, it was true, and there was a westerly wind that would have ripped the teeth out of a power saw. . . . .

"Slipping along towards Baldock, I became aware of a slight singing noise that didn't oughter be there. It kept worrying me, though I peeped all over the machine, until I thought to glance behind me, when I saw a saffron skinned young Celestial—in fact a Chinese—mounted on a little —— I thought it was up to me to give the —— something to do, so we slipped along in nice style for ten or fifteen miles, respecting the ten-mile limits religiously, for the police coffers seem to stand in need of filling hereabouts. Wonderful how this little 'bus stuck to my tail, and I must say that Ah Sin was a devil on corners. The rain did not permit of our really hitting it up. . . .

"At Royston our ways parted, and I ran on alone over the Cambridgeshire flats, a raging typhoon of a wind trying to pick the machine up from under me, and jolly near succeeding. A lunch at a country pub near the town, and I slid into the clean streets of Cambridge. . . . The sun gleamed fitfully, but a gathering storm, looking very grim and grey to the south'ard warned me that I had better not linger. . . But this dodging storms is rather fun, and an appealing feature about the motor cycle.

"I evaded this one, and got back to Hatfield, where quite a few drivers were out. . . .

"The first notification I got that we had been a hundred and forty miles was that the big engine spat and coughed in an under-nourished manner near the Swiss Cottage." R. H. B.

"Autocycle Illustrated."

WHEN YOU HAVE INSURED YOUR MOTOR WITH US YOU ARE SHREWD, BUT WISDOM DEMANDS—

The Pool Comprehensive Family Policy for your HOME.

The Pool Comprehensive Family Policy for your TRADE.

The Licenses & General Insurance Co., Ltd., 24, Moorgate Street, E.C.2.

Leosco REGD.

MOTOR CYCLE SUITS made of Government Waterproof Heavy Twill and Light Twill, as supplied to the Allied Army Service Corps.

No. 1. Heavy Brown Twill, double-breasted with belt, seated trousers, tailor finish, patent clasps for fastening trousers, guaranteed waterproof.
Sizes. Chest 36in., 38in., 42in., or 44in.
Price, £4 4 0 per Suit.
Coat only, 57/-

No. 2. Light Brown Twill, double-breasted with belt, seatless trousers, finish and sizes as above.
Price, £3 7 6 per Suit.
Coat only, 41/-

Light Motor Cycle Dust Suits with seatless trousers, any size, 24/- Suit.

Postage, 1/- extra.

Each Suit is guaranteed, and we can deliver all sizes from stock. See that the LEOSCO Trade Mark is stamped on every Suit, as without this they are not genuine.

Motor Cycle Overalls.
No. 3 .. 17/- each.
No. 4 .. 16/- each.

Of all our Agents, or from

LEO SWAIN & CO.,
Motor & Motor Cycle Accessory M'frs.
237 & 239, DEANSGATE, MANCHESTER.
Please ask for List and Patterns.

QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Completing a Purchase.

Recently I viewed a motor cycle and also had a trial run. I deposited £1 on the machine with a view to purchase. Since then I have seen another machine, which I think of purchasing. How do I stand in regard to the first machine? Am I bound to purchase it, or simply lose my deposit?—F.W.Z.

Having paid a deposit on the machine, the vendor might lawfully insist upon you completing the purchase, but if you explain your inability to do so he might forego this. He will be justified in retaining your deposit.

B.S.A. Adjustments.

(1.) The clutch of my 1914 B.S.A. is too stiff, and will not give a proper free engine when out. How and where is this adjusted? (2.) The machine will not take full throttle and air, although it runs well on full air and half or threequarters throttle. (3.) The machine is fitted with a Best and Lloyd drip feed lubricator, and I cannot get this to work properly. I have had it out and cleaned it thoroughly, fitted a new washer to the plunger also, put new packing in the adjusting screw and pump rod, but still it goes down practically as soon as it is pulled up with the valve closed. (4.) Will you explain the working of this pump, as I do not understand the principle? (5.) Sometimes the oil fills up the glass, and does not get away. What is the cause? (6.) Are the B.S.A. valves interchangeable? (7.) What kind of bearings have the engine-shaft big end and gear box main shaft?—R.P.

(1.) A multiple-plate metal clutch needs thin oil to secure freedom. You will find the adjustment consists of a right and left-hand screwed sleeve on the clutch rod. (2.) Try varying the size of the jet by means of the adjusting screw between the throttle and air barrels on the top of the carburetter. (3.) You have apparently reassembled the oil pump of the drip feed wrongly, *i.e.*, with the spring above the washer, instead of below it. (4.) The pump is operated by depressing the plunger, which is returned by the spring beneath it, at the same time forcing oil through the drip feed valve. (5.) Probably the oil pipe is choked. If clear, make sure that the crank case release valve through the engine-shaft is working. (6.) The valves are interchangeable. (7.) The 1914 B.S.A. bearings are as follows: Engine main-shaft, ball; engine big end, plain. Gear box main shaft, ball (plain bearing in driven sprocket only operates on lower gears).

Timing 4 h.p. Douglas.

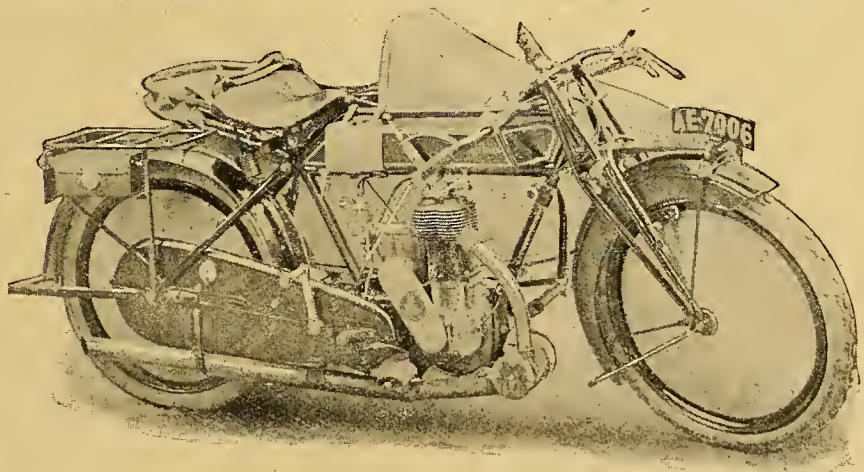
I have a 4 h.p. 1915 Douglas combination, and would be much obliged if you would answer the following questions. (1.) What is the correct timing for this machine, and should it be slightly advanced for speed work, solo? (2.) I use Castrol C oil, and I find my filter and sump covered with hard black ashes, and still there is plenty of oil in the sump—how is this? (3.) I find I cannot exceed 40 m.p.h., solo, with this machine. I have a 29 jet; would a larger jet improve the speed? (4.) I have a C.A.V. magneto, type 3U2, on this machine, and it has become loose on its base. Where are the screws situated which secure it, as I do not wish to disturb it unless absolutely necessary?—H.T.B.

(1.) In timing your 4 h.p. Douglas, rotate the engine until the piston is 8 mm. from the top of the compression stroke. Advance the ignition control fully and connect up the magneto drive when the contact breaker points are just about to separate. Fully advance the spark when travelling at speed. (2.) If the oil has been in the sump any length of time, it is advisable to clean it out. Reduce oil supply to front cylinder slightly. (3.) If the machine is not in very good tune, you will have difficulty in exceeding 40 m.p.h. Attend to above points, also grind in the exhaust valves, if pitted, adjust the tappets, decarbonise, and fit a slightly larger jet, say 31. (4.) The screws securing the magnets to the base-plate of the C.A.V. magneto are underneath—it is advisable to tighten these at once and to do this will necessitate removing the magneto from the engine.

Faulty Three-speed Hub.

I have a New Hudson combination, fitted with three-speed hub. When I get the engine running, putting in the clutch stops it immediately. The gears have not acted properly since I had them; the spindle which controls the gear has broken twice, and is at the present time broken. (1.) Is there any gear you can recommend, that I can have fitted? I must admit I am quite disappointed with hub gears. (2.) Will you give me your opinion about the Grado Multi gear advertised in your columns, and if you think it would be a suitable gear?—A.D.H.

The fact that your engine stops when you engage the clutch is possibly due to your attempting to start with the high gear in operation. As the gear seems completely out of adjustment, you should submit it to a competent repairer or to one of the firms who specialise on hub gear repairs. (1.) You could not fit any other gear without considerable structural alterations to your machine. (2.) In a fairly level district the Grado gear might suit your purpose.



A new Sunbeam owned by E. Kickham, the Bristo Sunbeam agent. A new type of spring fork is fitted to this model.

Speed Gear for Old Machine.

I have an old type Chater-Lea motor cycle frame, which has a round bottom bracket, and I find it difficult to purchase a two or three-speed gear box to fit it. (1.) Can I purchase a gear box to suit above frame? If so, what make? (2.) Will the Philipson pulley fit a 6 h.p. J.A.P. engine? (3.) Will above pulley act satisfactorily with sidecar and passenger, using above engine?—W.H.P.

(1.) The Bowden two-speed countershaft gear was made in a special model to suit the Chater-Lea type of bottom bracket. The makers' address is Messrs. Bowden Wire, Ltd., Victoria Road, Willesden Junction, London, N.W.10. (2.) The Philipson pulley would be quite suitable on a 6 h.p. J.A.P. engine. (3.) The pulley will be satisfactory for passenger work if you specified a heavy governor for this purpose when ordering.

Indian Carburetter.

I have a 5 h.p. Indian, and shall be glad to receive information as to the following. (1.) On opening the throttle the engine chokes, sometimes picking up again and at other times stopping, however slowly I open out. I have decarbonised, and there are no air-leaks; it starts on pilot jet, first kick. (2.) I should like to know how to adjust the level of the Indian carburetter; I see no other means than bending down the two arms which support the float.—G.T.

(1.) The difficulty you experience with your Indian carburetter is, apparently, due to the mixture being too rich when first opening on to the main jet. Try a further opening of the extra air inlet, or reduce the jet (fit a smaller one if necessary. (2.) The method you suggest is quite a practical way of varying the level.

Choice of a Gear.

(1.) I am overhauling a 1912 3½ h.p. fixed gear Rex, and should like to know something of the following gears: Mabon, N.S.U., and Philipson. Would they be satisfactory on my machine, and, as I believe them to be all of variable pulley action, is the belt in tension on all gears? Also what are their ratio limits? (2.) Is it a fact that Binks carburetters give *less* petrol consumption, also *less* speed and power? Would B. and B., Amac, or Senspray suit my engine better? (3.) With a good carburetter, what mileage should I get to the gallon, also what range of speed?—M.S.

(1.) Presuming that you intend your 3½ h.p. Rex for solo work, any of the gears will be satisfactory. The N.S.U. is a two-speed epicyclic gear with free engine, and will give ratios of 5 to 1 top, and 7½ to 1 low; the Mabon gear will involve more alteration in fitting, but gives a wider range, about 4½ down to 8 to 1. The belt is always in tension with this gear by virtue of the movement of the countershaft concentrically with the engine shaft, so tightening the belt on the lower gears. The Philipson pulley is automatically variable, with a range of 4½ to 6 to 1, and is a very flexible form of gearing. (2.) The Binks carburetter gives satisfactory petrol consumption, and may also be adjusted to give maximum power with very little sacrifice of economy. All the other carburetters you name are excellent, but varying results may be obtained from them according to the manner in which they are tuned and their suitability for your particular engine. When ordering a carburetter you should give dimensions of your engine to the makers. (3.) Solo, about 80-90 m.p.g., 8-45 m.p.h. on the level.

READERS' REPLIES.

Magneto Trouble.

I notice in *The Motor Cycle* of July 3rd that your correspondent "H.E.N." has trouble with his Dixie magneto. I have had some experience of this magneto on charging, etc., and motor cycles, and I think it possible that "H.E.N.'s" magneto is playing the same trick that I have suffered from in the past. This consists in sparking across from the (stationary) secondary winding on to the field magnets. It is a very elusive fault, but easy to cure by pressing or tapping the windings so that they stand as far away from the magnets as possible. If I remember rightly, this fault could be induced by careless erection of the magneto, and also, presumably, by damp or faulty insulation. If the magneto has a switch-wire terminal, as I think some patterns have, it would be worth while suspecting it as an alternative. The insulation is not always perfect, which allows the primary current to leak. Another failing from which I have suffered on Dixies is the platinum points not opening cleanly in one jump. Sometimes (when the mechanism is worn) they open about $\frac{1}{100}$in. or less, stay like that for a degree or two of rotation, and then open properly. This means that the primary current sparks across the points. Remedy, adjust points the $\frac{1}{100}$in. closer together.—W. WHATELY SMITH.

Misfiring.

Referring to the query from "F.J.W.," in the issue for July 3rd, relative to misfiring of his 8 h.p. Rex. Having ridden all models of this make, I think I can put him right. (1.) This is a common defect in 1914 twin models, which are fitted with U.H. magnetos, and is partly due to leakage of magnetism. In my case I was compelled to get a new magneto. (2.) If the carburetter is of the needle variable jet type, it may be due to the throttle control wire having stretched. (3.) The oil pipe should have a non-return valve fitted in the union at the base, which, if working properly and the sight feed dome and all joints are air-tight, enables the oil to drip automatically. The breather pipe, which should also have a non-return valve, must be kept wide open—in fact, better and cleaner crank cases result from fitting two of these.—L.V.B.

Questions for D.R.'s

I notice in your issue of 3rd inst., a reply from "D.R." to "A.W.G.M.'s" query about castor oil, and I should like to supplement his remarks in case it should be thought that the use of castor oil was generally approved by D.R.'s. I think most of us who gave the oil a careful trial will agree that its use is doubtful in a motor cycle engine. Much, of course, depends on the quality of the oil with which it is mixed, and, while the impression in some cases was that an improvement in the staying power of the engine had been effected, as a rule engines, I fancy, ran hotter where a large proportion of castor oil was used. Bearings almost invariably were found ultimately to have suffered. (Of course, material was very poor latterly.)

If "A.W.G.M." wants to try it, he will find a mixture of one part pure castor oil to from five to seven parts of good lubricating oil quite a high enough mixture—assuming that a mixture is effected. This will secure the required smell, but he will need a file with which to clean his crank case, etc.

As regards respirator tubing for grips, this also is open to objection. It retains the wet, and helps to keep the fingers cold. The canvas wears and the appearance is ragged. It necessitates removing the makers' grips, usually by putting a match to them, and it is rather thick for some hands. On greasy roads it cannot compare with a strip of old inner tube wrapped puttee-fashion round the grips.

These items were both regular D.R. ideas, and remind me of aeroplane plugs, 1914 footrests, cranked kick-starters to accommodate straight exhaust pipes, aeroplane elastic and rubber buffers in the forks, hub discs, etc., and the smile of the man with the old Bosch magneto. What times we had!—D.N.H.

RECOMMENDED ROUTES.

OXFORD TO WALLASEY.—J.H.W.

Oxford, Banbury, Warmington, Warwick, Kenilworth, Stonebridge, Coleshill, Lichfield, Armitage, Rugeley, Stone, Woore, Nantwich, Tarporley, Chester, Birkenhead, Wallasey.

YORK TO GUILDFORD.—E.D.C.R.

York, Tadcaster, Ferrybridge, Doncaster, Bawtry, Retford, Tuxford, Grantham, Stamford, Norman Cross, Alconbury, Eaton Socon, Biggleswade, Baldock, Hitchin, Luton, Dunstable, Tring, Chesham, Amersham, Slough, Windsor, Staines, Chertsey, Guildford.

NEWCASTLE TO PETERBOROUGH.—T.W.R.

Newcastle, Chester-le-Street, Nevilles Cross, Darlington, Northallerton, Boroughbridge, Wetherby, Aberford, Ferrybridge, Doncaster, Bawtry, Retford, Tuxford, Newark, Grantham, Colsterworth, Stamford, Wansford, Peterborough. Approximately 200 miles.

TAUNTON TO DUMFRIES.—T.M.

Taunton, Bridgwater, Highbridge, Redhill, Bristol, Stone, Gloucester, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Hodnet, Whitchurch, Tarporley, Warrington, Ashton-in-Makerfield, Wigan, Preston, Garstang, Lancaster, Kendal, Penrith, Carlisle, Annan, Dumfries.

CHATHAM TO BRISTOL.—F.G.D.

Chatham, Aylesford, Leybourne, Ightham, Seal, Westerham, Godstone, Redhill, Reigate, Dorking, Guildford, Farnham, Odiham, Hook, Basingstoke, Kingsclere, Newbury, Hungerford, Marlborough, Calne, Chippenham, Box, Bath, Bristol. Approximately 165 miles.

WORTH WAITING FOR.

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PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co. Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. 000, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½ %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Easthourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

CROW Bros., High St., Guildford, have contracted largely for the new A.B.C. Order now for earliest delivery [5298

A.B.C. Distributors for Radnorshire. Book your orders now to ensure early delivery.—Owens, Baveno Garage, Llandrindod Wells. [7863

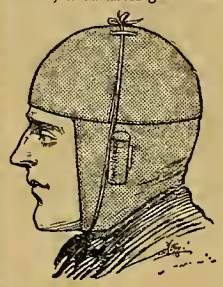
LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Parr St., Liverpool. [0003

GET IT AT Taylor's

Sole London Agents for
A.J.S. and BRITISH EXCELSIORS.

PILLION SEATS IN STOCK.

The Tan-Sad Spring Seat, dish-shaped, easily fitted, No. 1 ..... 33/-
Extras.—Cushion and Grips, No. 8 ..... 5/-
Terry's Spring Pillion Seat, leather-covered. Price 45/-
V.M., with spring cushion and back-rest .. 40/-
Ditto, with dress-guard and footrest 70/-



LEATHER RACING HELMETS, with Ear-rolls.
Lined 11/6
Unlined 10/6
(Post 3d.)

Cameo Windscreen 55/-
Ditto, with valance .. 60/-
(Post free.)

SPARE PARTS.

Piston Rings for the following engines in stock:

H.P.	Diameter. mm.	Depth. in.	Price. Each.
2¼ Levis pattern	62	¼	1/6
2½ Villiers pattern	70	¼	1/6
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A.B.C.—Sole agents for these famous machin Orders booked now for early delivery.—Chandl Reyre, and Williams, Sun St., Hitchin. [09

FANCOURT'S Garage, Stamford, for A.B.C.'s; a distributing agent for Soke of Peterboro' & County of Rutland; particulars and illustrations request. [X97

ORIGINAL A.B.C. and Racing Sidecar, not b used for 4 years, just overhauled, and in p fect order; £80.—Stanley Russell, High St., Newpo I.O.W. [61

A.B.C.—Book early and prevent disappointme Specification and full particulars will be sent application.—The Spalding Motor Co., Ltd., Spaldi distributing agents for Lincolnshire. [X69

A.B.C.—Early position on our waiting lists occasi ally become vacant again owing to clients fering immediate delivery of other makes; probably is well worth your writing us; large July deliver expected; 200 A.B.C.'s due this season.—Dunwe Garage, Wigan. [X46

Abingdon.

ABINGDON King Dick 3½h.p., 1913, 2½in. tyr mechanical horn; 34 gns.—5, Eglon Mews, Pr rose Hill, N.W.1. [75

ABINGDON K.D. 3½h.p, new Dunlop tyre and h Amac, Bosch, accessories, good condition; £ or offers.—23, Essex Rd., Islington, N.1. [X68

LATE 1914 Abingdon King Dick, 4h.p., 2-spe clutch, like new, stored during war, will p sidecar anywhere; £50.—2, Appian Rd., Roman B Bow, London. [74

ABINGDON King Dick 3½h.p. Combination, speeds, clutch, Watsonian coachbuilt sidec lamps, horn, tools, in fine touring condition; pha £64; would separate.—20, Frankfort St., Birmingha [76

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A.J.S.

A.J.S. Specialists and Agents: The Walsall Gar Walsall. Tel.: 444. [5

JACK HEALY, Cork.—Official A.J.S. agent.—Gar and works, Drinan St. [X8

CROW Bros., High St., Guildford, A.J.S. agt since 1912.—Deliveries have begun. [4

A.J.S. 6h.p. Combination, recently overhauled, t good; £110.—214, Kew Rd., Richmond. 'Phon 780. [7

A.J.S. 6h.p. Combination, 1914, first-class turno £135.—768, Manchester Rd., Castleton, n Rochdale. [7

A.J.S. 6h.p. Combination, late 1914, excellent c dition, little used, all accessories; £125.—1 Corve St., Ludlow. [X6

A.J.S. Combination, 6h.p., hood and wind scr 1915-16, in good condition; £135.—Robertson, Broad St., Peterborough. [X6

1914 2¾h.p. A.J.S., 2 speeds, kick starter, han bar controlled clutch, in good running or £50.—Bellwood, Victoria Rd., Scarborough. [7

LIGHTWEIGHT A.J.S. Motor Cycle, 2-speed, h clutch, chain drive, like new, both in appear and mechanically; £55.—Moss, Station Rd., Liph [7

A.J.S.—Exeter Motor Cycle and Light Car Co., L Bath Rd., Exeter, and 28, Tavistock Rd., month. Sole agents. Now booking for earliest liveries. [0

A.J.S. 6h.p. Coachbuilt Combination, 2-speed, start, clutch, speedometer, lamps, horn, mir good tyres, ready to ride away; 90 gns.—After 7 p 69, Higham Hill Rd., Walthamstow. [7

1917 A.J.S., 4h.p., with coachbuilt sidecar, in condition, complete Lucas head and tail li ing set and horn; what offer over £130.—Smith Br Haulage Contractors, Pencombe, Worcester. [X6

A.J.S. 1914 6h.p. Combination, complete with sc luggage carrier, apron, and 3 lamps, etc., 700; nearly new tyres on machine, little used, apart being stored 3 years, good condition; £120.—Sle 408, Wylds Lane, Worcester. Tel. 44. [X6

MOTOR CYCLES FOR SALE.

A.J.S.

S. 1918 Combination, 6h.p., spare wheel, wind creen, luggage grid, speedometer, electric light, horn and mirror, 700×80 extra heavy Dunlop all round, new spare valves and springs, complete its, a splendid and luxurious outfit in perfect oical condition, any trial, buying light car; or best offer over; wire appointment.—Pearce, nville, South Heath, Great Missenden. G.C. and Railways. [7150

S. Spares; engine and gear box repairs; prompt lelivery.—Cyril Williams, Chapel Ash Depot, Wolnpton. T.A.: Parts. [1089

Alldays.

ON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [0017

DAYS Allon, 2-speed, clutch; 58 gns.—Smith, 68, Lavender Hill, Clapham Junction, S.W. [7540

ON.—All models, exceptionally good deliveries; enquire approximate dates.—Parker's, Deansgate, ester. [X7117

DAYS-MATCHLESS 2¾h.p. 2-stroke, new condition; £35, or near offer.—172, Greenvale Rd., m, S.E.9. [7587

DAYS Allon, 2¾h.p., 1915, fine condition, ride away; £35.—Halewood Nurseries, Sandycombe Kew Gardens. [7376

ON 1919 2¾h.p., lamps, Klaxon, tools, mileage 00; 60 gns.—Scott, 65, Hopton Rd., Streatham, 'Phone: 1575. [7479

ES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside e, North Finchley. [2931

DAYS-MATCHLESS, 1913, 3½h.p., 2-speed, perfect condition; fine sidecar machine; £55.—nia Inn, Brigg. [7454

ON 2¾h.p. 2-stroke, countershalt, last, recently verhauled, good condition; £45; after 6.—1, le Rd., Clapton Common, N.16. [7527

ON, 2h.p., 1919 model, 3 weeks since left works; all accessories; £70, no offers; buying car.—gs, Dolanog, Pensarn, N. Wales. [X6798

ON, 2¾h.p., 2-speed, 1916, covers nearly new, both lamps, pump, horn, etc.; £50; evenings 6, Saturday afternoon.—"Upcote," Hammer's Mill Hill, N.W.7. [7366

4 Alldays Matchless, 2-stroke Villiers, Sea-spray, mag. just overhauled, plating, belt, tyres and nuce good, splendid climber; £34.—Noble, Fern-Clapham Rd., Bedford. [X7027

DAYS Matchless 2½h.p. 2-stroke, new 1919 Villiers engine, new tyres, everything in perfect and condition, accessories; 40 gns.—115, Hazel-Rd., Silver St., Edmonton, N. [7857

9 Allon 2¾h.p., 2-speed, clutch model, as new, not done 500 miles, Lucas lamps and horn, acces-; £75; owner giving up riding.—Glover, 127, Mid 3d., Wellingborough, Northants. [7559

ON, 1916, 2-stroke, 2 speeds, new tyres, Lucas lamps, mechanical horn, condition, appearance, ent; ride away; £44 cash, a bargain; owner abroad.—Uphill, White Horse, Norton Heath, [X6808

DAYS Combination, twin 2-stroke, 6h.p., 1918, 3 speeds, kick starter, C.A.V. dynamo lighting, ns, low canoolet sidecar, disc wheels, detachable pare luggage grid; painted dark red, top-hole ion; price 140 gns.—Apply, Capt. MacDonald, Deer Garage, Croydon. [7091

Antoinette.

TOINETTE 3½h.p., also sidecar if required), Bosch mag., B. and B. carburetter, ready for the £25, or near offer.—Apply, 104, Camberwell New S.E.5. [7247

Ariel.

)W Bros., High St., Guildford.—Ariel agents since 1913. 1919 deliveries have begun. [5299

.p. Ariel, 1912, excellent condition; any trial; £28.—Empson, Gamlingay, Cambs. [7744

EL 3½h.p., Simms, B. and B. variable gear, F.E.; £40.—Storham, 6, Newton Rd., Faversham. [7794

p. Ariel Combination, 1918, complete lamps, horn; £120.—Eveson, The Dingle, Stourbridge. [X6947

6 (late) Ariel, 3-speed countershalt gear, in good condition; bargain, £55.—1, Wastdale Rd., Forest [7805

ES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, Finchley. [2929

EL, 3½h.p. and 6-7h.p.; early deliveries.—F Speakman, Ariel Expert, 7, Rochdale Rd. arbey Manchester. [5269

EL Combination, 3½h.p., variable gear, free engine, lamps, etc., splendid condition; £50; after 7 96b, Dawlish Rd., Leyton. [7173

Ariel Twin Combination, 3-speed countershaft, kick starter, de luxe sidecar; bargain, £105.—m (Motors), King George St., Greenwich. [7834

EL 4h.p. Combination, 3-speed, clutch, lamps, electric horn, Bosch, B. and B., speedometer; £65. Half Moor Crescent, King's Cross, N.1. [7430

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Ariel.

ARIEL 1916 Combination for Sale, 3-speed, kick start, countershaft, in splendid condition; best offers over £85.—Kemp, The Villa, Radford, Coventry. [X7134

1919 Ariel 5-6h.p. Twin, new May 1st, excellent condition, spare belt and valves, for disposal about July 31st; £98.—W.T., 43, Leeds Old Rd., Thornbury, Bradford. [X6950

ARIEL Combination, 1915, 3½h.p., C.B. Millford, excellent condition, 3-speed countershaft, Dunlops, Lucas lamps, speedometer; £82/10; mileage 4,000; after 5 p.m.—89, Durlston Rd., Upper Clapton. [7429

ARIEL 4h.p. C.B. Underslung Combination, 1915, 3 speeds, decompressor, electric lights, spring frame, B. and B., Bosch mag., guaranteed mechanically sound; £80; private owner.—19, Upper Park Rd., Belsize Park, London, W. [7328

Arno.

4h.p. Arno, T.T., Indian red, 2-speed, very fast; £40.—Hyde, Burnside, Shere, Surrey. [7532

ARNO 3½h.p., Druids, adjustable pulley, B. and B., Eisemann mag., splendid running order; £35.—151, Kingston Rd., Teddington. [7639

1916 Arno 3½h.p., fixed engine, front and rear lamps and generators, and stands, speedometer, horn, good brakes and tyres, recently overhauled, perfect; 45 gns.—Reed, 12, Kentish Town Rd., N.W.5. [7500

A.S.L.

A.S.L. 4¼h.p., 1914, Precision engine, 2-speed, waterproof Bosch, Senspray, Hutchinson tyres, sprung frame, stored during war, fast and powerful; £36.—Grantham, Bootmaker, Southborough. [7702

Auto-Wheels

WALL Auto-Wheel, good running order; 9 gns.—Bacon, St. Peter's, Canterbury. [7682

FOR Sale, Wall Auto-Wheel, in perfect running order; £11.—A. J. Hempstead, Ltd., West Mersea, Essex. [7733

AUTO-WHEEL, requires little overhauling; £9.—Smith, 268, Lavender Hill, Clapham Junction, S.W. [7542

AUTO-WHEEL, B.S.A. model de luxe, new, as received from makers; price £15.—Bunner, Montgomery. [7756

1914 B.S.A. Auto-wheel de Luxe, perfect condition, done 500 miles, £15; also, wanted, coach combination, cheap for cash.—Laysdown, Upper Hughenden Rd., High Wycombe. [7599

AUTO-WHEEL, 1914, 1¾h.p., fast, powerful, with low bike, good Dunlops, £14; or alone, £10; or exchange with cash for sound lightweight with mag. ignition.—27, Winchester St., Acton, Middlesex. [7514

Bat.

5-6h.p. T.T. Bat, overhead valve engine, single speed; a fine mount for sporty boy; £50.—Cross, Agent. Rotherham. [X6666

4h.p. Bat, spring frame, Mabon clutch; £21; quick sale.—Boot Stores, 121, Acton Lane, Chiswick. London, W. [7715

BAT-J.A.P. 1912, 8h.p. Combination, lately overhauled; £50.—4, Kedsley Mews, Bridge Rd., Battersea, S.W. [7436

BAT, 4h.p., about 1912, Bosch, Amac, Grado gear, new tyres, in good running order; £40, or nearest.—Box L2,929, c/o *The Motor Cycle*. [7824

BAT-J.A.P. 6h.p., new coachbuilt sidecar, 2-speed sprung frame, lovely condition, lamps, spares; 80 gns.—F. Wastell, 29, Athelstane Rd., Bow. [X6998

ALLEN-BENNETT Motor Co.—1912-13, 6-8h.p. Bat and coachbuilt sidecar, N.S.U. 2-speed, fine order; £67/10.—9, Royal Parade, London Rd., Croydon. [7864

BAT-J.A.P., 1915, 8h.p., overhead valves, Bosch, Amac, excellent condition, fast and sporty; £55; any trial.—Thirkwell, 26, Whittington Rd., Bowes Park, N.22. [7434

BAT, 4h.p., Bosch, Amac, heavy Dunlops, ride away; first M.O. £20, lowest; take 2½-3½h.p. complete unit part. Wanted, tank, 26×7¼, faulty will do.—Whatley, 1, Mayville Rd., Leytonstone, E. [7256

BAT-J.A.P., M.M.C. 3689, old timer, in good running order, any trial, strong built brass tank, Bosch mag., single speed, 3½h.p., good tyres; £25, or offer.—30, William St., Herne Bay. [7179

6h.p. Bat-Jap and Wilton Sidecar, 2-speed, chain drive, kick starter, mechanically perfect, good appearance, mileage 7,000, unused during war, complete with F.R.S. lamps, horn, tools, and spare parts; £95.—Seen at Wade's, Chapel Rd., Worthing. [7250

BAT-J.A.P. Combination, 6-8h.p., Bosch mag., 2 speeds, clutch, kick start, drip feed, Lucas horn, lamps, tyres, excellent coachbuilt sidecar, splendid condition; £85; view after 6.30 p.m.—K., 5, Bishops Grove, Balls Pond Rd., Islington, N.1. [7847

BAT 1913 5-6h.p. Twin, Blumfield engine, Bosch mag., B. and B. carburetter, lately overhaued, tyres very good, grey torpedo tank, Druid pattern forks, single gear with adjustable pulley, fast and powerful, needs re-enamelling; seen Brighton; £60, or offers.—Box 2,361, c/o *The Motor Cycle*. [X6906

MOTOR CYCLES FOR SALE.

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BAT-J.A.P., 5-6h.p., June, 1914, engine No. 38944, coachbuilt sidecar, Armstrong 3-speed hub gear, kick starter, Bosch mag., new heavy Dunlop tyres all round, hood, screen, Klaxon, electric lamps complete, tools, spares, excellent condition, mechanically perfect, smart appearance, and speedy; trial given; £100, no offers; private owner.—Seen, 237, London Rd., Westcliff-on-Sea. [X6926

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and can give early deliveries. [5300

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [6104

BLACKBURNE.—Sole agents. Book now for early delivery.—Chandler, Reyre and Williams, Sun St., Hitchin. [0999

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

BLACKBURN 3½h.p., T.T., 1916, stored during war, 3-speed Sturmey-Archer countershaft gear, Hunts electric lighting set, exceptional engine, take sidecar easily, condition like new; £85.—Box L2,889, c/o *The Motor Cycle*. [7219

Bradbury.

BRADBURY Cycle, sidecar, 2-speed, excellent condition; £65.—Skipworth, Maresfield, Sussex. [7501

BRADBURY 4h.p., splendid machine; £32.—Bond, Box Villa, Maybank Rd., South Woodford. [7296

BRADBURY Clutch Model, late 1914, low, powerful, new condition.—52, Maryon Rd., Charlton, S.E.7. [7803

BRADBURY 3½h.p., Mabon clutch, Bosch mag., B.B., in good condition, ride away; £25.—138, Rodney Rd., Walworth, S.E. [7132

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5606

BRADBURY 6h.p. Combination, 1914, little used, new condition, commodious sidecar; £130.—32, Fairbourne Rd., Levenshulme. [X7097

BRADBURY, 4h.p., 3-speed, free engine, lamps, horn, tyres perfect; any trial; £55.—Ward, 12, Pond Rd., Thorpe Lea, Egham. [7528

1912 4h.p. Bradbury, single-speed, guaranteed in good order, any trial; £35.—Tom Batt, Turnden Farm, Bethersden, Ashford, Kent. [7152

BRADBURY, 4¼h.p., C.B. combination, 2-speed N.S.U., Bosch, lamps, new belt, good condition; ride away; nearest £65.—98, Longley Rd., Tooting, S.W. [7457

BRADBURY 4h.p. Combination, Bosch, Brown and Barlows, 2-speed, F.E. K.S., accessories, ride away; £65.—Smith, 60, Chubworthy St., New Cross, S.E. [7716

BRADBURY, 4h.p., 1913, new cyl. and piston, new heavy Duolops and belt, Bosch mag., lamps, horn, splendid condition; £50.—Solly, West Heath, Congleton, Cheshire. [X7085

4¼h.p. Bradbury, T.T., variable pulley, new back tyre and tube, excellent working order, fast and powerful, accessories; £34; after 6.30 p.m.—83, King's Rd., Leytonstone. [7439

4h.p. Bradbury, Sturmey-Archer 3-speed, excellent condition, and coachbuilt sidecar; £60, or exchange for lightweight, with cash adjustment.—20, Grafton St., Coventry. [X7164

BRADBURY, 4h.p., and coachbuilt sidecar, kick start, 2-speed, clutch, free engine, excellent running order, lamps, horn, speedometer; £45.—Macdonald, 54, Lower Rd., Rotherhithe. [7413

BRADBURY Combination, 4¼h.p., 2-speeds, clutch, all chain drive, just overhauled, and in perfect condition, 2 lamps, horn, ready for road; £65.—Thomas, Aston Dining Rooms, Broad Lane, Tottenham. [7350

1910 4¼h.p. Bradbury Combination, N.S.U. gear, nearly new, Bosch, B. and B., engine overhauled by makers, done 56 miles since, wonderful machine, climb anything; £52.—Heashaw, 35, Old Dover Rd., Canterbury, Kent. [7799

BRADBURY, late 1915 6h.p. twin, 3-speed, chain countershaft, Terry's spring links, Bosch, Swan sporting model red torpedo coachbuilt sidecar, lamps, mechanical horn, spares, splendid condition; very sporty; any trial after 6 p.m.; buying car; what offers?—F. Council, 9 Elm St., Farnworth, Nr. Bolton. [X6841

Brough.

3½h.p., 2-speed Brough, D.R. bars, etc.; snip, £62; property of a client.—Clapham (Motors), King George St., Greenwich. [7832

BROUGH 4h.p. Racing Model, lamp, horn, spare tyres and belt, good order; £42, or offers.—Hedges Farm, Pinner, Middlesex. [7516

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7039

4h.p. Brough Twin, 3-speed, clutch, kick start, speedometer, lamp and generator, tyres good, excellent condition; £70, or offers.—Hedges Farm, Pinner, Middlesex. [7617

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ALLEN-BENNETT Motor Co.—1916 3½h.p. Br 3-speed Sturmey countershaft, reenamelled plated; £87/10.—9, Royal Parade, London Rd., don.

BROUGH Combination, 1919, delivered last 5-6h.p. horizontal twin engine, Sturmey-A 3-speed gear box, kick starter and head-controlled cl Thompson-Bennett mag., Amac carburetter, forks, Dunlop voiturette heavy tyres, lovely coach sidecar with spring cushion and bulbous back, locker space, all tools, just the thing for the holi very fast and powerful; 140 gns., or highest offer; car head lamps and Lucas generator extra; no dea —Box 4,357, c/o *The Motor Cycle*. [X

Brown.

BROWN, 3½h.p., Bosch, in new condition, e perfect; £33.—Sharp, 39, Langdon Rd., High N.

6-8h.p. Twin Brown, kick start, coachbuilt side speedometer, etc.; £45; after 6 o'clock.— Colvestone Crescent, Dalston, E.8.

BROWN, 3½h.p., Bosch mag., Saxon spring fo B.B. carburetter; good running order, comf able machine; price £26 or near offer.—A. J. Pal 333, Katherine Rd., Forest Gate, E.7. [X

B.S.A.

B.S.A., 2-speed, free engine, rebushed, underslu sidecar; £65.—45, Avigaoa Rd., Brockley.

B.S.A., 4¼h.p., 1915, 3-speed, countershaft, in good order; £60.—200, High St., Tooting, S

B.S.A. Sole District Agents; book now.—The Wa Garage, Wolverhampton St., Walsall. Tel.:

B.S.A., 2-speed, all accessories; £45; or with sid £50; seen after 5.30.—36, Albert Rd., Hen

B.S.A. 4¼h.p. Combination, late model.—Write p and particulars to Calder, 175, Otley Rd., B ford.

B.S.A., solo or combinations; prospects of g delivery.—Enquire, Parker's, Deansgate, M chester.

JONES' Garage, special agents for B.S.A., Bro way, Muswell Hill, N.10, and Woodside Para North Finchley.

B.S.A., 4¼h.p., Model K, new C.B. sidecar, registered Sept., 1918; £110; smart lot.—Mor Printer, Reading.

3½h.p. 1914 B.S.A., in good condition, new cylin piston, and gudgeon pin; £45.—27, Lower Cl ton Rd., London, E.6.

B.S.A., 3½h.p., 2-speed, free engine, clutch, pe start, Bosch, lamps, horn, etc.; £60.—23, Grove, Hammersmith, W.6.

1919 B.S.A., 4¼h.p., Model K, 3 speeds, brand condition, accessories; after 5 p.m.; £96.— Valley Rd., Streatham, S.W.16.

B.S.A. 1919, 3-speed, just delivered, very latest mo makers' guarantee; best offer.—Smith, 36, Nor ampton Rd., Addiscombe, E. Croydon.

ALLEN-BENNETT Motor Co.—1915 4¼h.p. B.S and coachbuilt sidecar, splendid condition; £105 9, Royal Parade, London Rd., Croydon.

B.S.A., Model H, delivered fortnight ago, mile 200, fully equipped; price £110.—Apply, 2 Vauxhall Bridge Rd., S.W.1, after 5 p.m.

1913 B.S.A. 3½h.p., 2-speed, K. start, all-chain, M ford C.B. sidecar, speedometer, lamps, etc., g condition.—Harrison, Albion St., Tamworth.

4h.p. B.S.A., 2-speed, all chain drive, perfect con tion; £75.—Hardie, 24, Woodstock St. (off Oxf St.), Bond St., London, W.1. 'Phone: Mayfair 65

B.S.A. 1913 T.T., N.S.U. 2-speed gear and clut lamps, horn, knee-grips, spares, excellent con tion; £50.—Arthur, St. Bartholomew's Hospital, L don.

B.S.A. Combination, 4¼h.p., all chain drive, Coro sidecar, wind screen, speed, new Aug., 1917, lit used; best offer over £125.—W. Owens, 151, Brunsw Rd., Buckley.

B.S.A. The Birmingham City Agents and B.S. Specialists, County Cycle and Motor Co., 3 and 308, Broad St. All replacements in stock. Te Comocyco, Birmingham.

B.S.A., single-speed, good tyres, new inner tub lamp, horn, enclosed Bosch mag.; exceptio condition, capable of good hard work; 37 gns. or off —57, Gt. George St., Liverpool.

1919 B.S.A. 4¼h.p., chain-cum-belt, practica new, done 300 miles, C.B. sidecar, horn, speed meter, Lucas acetylene lamps; 140 gns., lowest; aft 6.30 Friday.—Rudd, 23, Mornington Rd., Wanstea

B.S.A. Late 1917 4¼h.p., chain-belt, coachbuilt si car, hood, screen, luggage carrier, speedomet lamps, horn, spare cover, 2 inner tubes, overhauled recently, under 4,000; £105; after 7 p.m.—Ground Flo 5, Guildford St., W.C.

MOTOR CYCLES FOR SALE.

B.S.A.

S.A. 1918 4½h.p. Coachbuilt Combination, new engine and gear box just fitted, 3-speed, K.S., accessories; £110, or offer; seen any time.—C.S., Swaton Rd., Bow, E.3. [7595

S.A. 1915-16 Combination, chain-cum-belt, 3-speed, wind screen, luggage grid, dynamo lighting, tools, spares, condition almost as new, been stored 2½ r; £120; owner buying faster machine; seen after Villsmore, 46, Cromwell Rd., Luton, Beds. [7568

16 B.S.A., 3½h.p., clutch, stored 2¾ years, big P. and H. front lamp, Lucas back, separate rators, Stewart trip speedometer, Lucas horn, er Cord tyres, in splendid condition throughout; cash, no offers, ride away.—Davis, 82, Worple Rd., bledon. [X7041

16 B.S.A. 4½h.p., chain-belt, 3-speed countershaft, clutch, kick starter, E.I.C. mag., nearly heavy Dunlops, Mills-Fulford coachbuilt touring ar (dark green), luggage grid, lamps, hooter, spares, low mileage, excellent condition throughout 105 gns.—63, Solon Rd., Brixton, S.W. [7326

Calcott

LCOTT 2½h.p., nearly new, all accessories; £38. —80, Corrance Rd., Brixton, S.W.2. [7720

Calthorpe.

LTHORPE-J.A.P., 2¾h.p., Enfield 2-speed, 1915; £40.—Mill Hall, Southall. [7776

LTHORPE 1915, 2-speed, F.E., new condition; 42 gns.—320, High St., Poplar. [7386

h.p. Calthorpe-Jap, 1915, Enfield gear, splendid condition; £45.—53, Hawks Rd., Kingston-on- nes. [7659

LTHORPE-J.A.P. 2¾h.p., 1916, Enfield gear, P. and H. lamps, as new; £45; after 7.—3, Har- on Sq., N.W.1. [7358

15 2¾h.p. Calthorpe 2-stroke, mechanical horn, splendid condition, ride away; 36 gns.—Butler, t. James Rd., Derby. [X7042

LTHORPE Junior 2h.p., 2-speed, about 1914, good tyres and belt, will climb anything; £36.— n, Upcroft, Chorley Wood. [X7114

LTHORPE 2-stroke, 1916, 2-speed, lamps, horn, recently overhauled, good tyres and belt; £48.— , 23, Victoria Rd., Bedford. [X6914

h.p. Calthorpe-Precision, 2-speed countershaft gear, with clutch, powerful machine, in good ; £45.—Pannett, High St., Lewes. [7567

p. Calthorpe-Precision, 2 speeds, engine recently overhauled, easy starter; climb anything; £30, fiers.—28, Methuen St., Vickerstown, Barrow. [X6362

LTHORPE Junior, 2½h.p. Precision, 2-speed, F.E., good order, ready to ride away; first cheque 24 secures.—R.C.B., 76, South Ealing Rd., Ealing. [7193

LTHORPE, 3¾h.p. T.T., good tyres, new belt, Bosch mag., new platinum points, lamp, horn, class condition, sporty; £38 or offer.—57, Gt. ge St., Liverpool. [X6684

LTHORPE Junior, 2-speed gear, Precision engine, adjustable pulley, Dunlop tyres, splendid machine, tion nearly new, all accessories; a bargain, £40. rder, Woodridings, Cumnor Rd., Sutton. [7732

LTHORPE, 1917, 2¾h.p. J.A.P. engine, Enfield 2-speed and clutch, Palmer Cord and Avon tyres, lete with head lamp, rear lamp, and horn, just auled, excellent condition; £48; exchanges.—R. D. y, Thundersley, Essex. [7489

Calton.

LTON 3½h.p., Chater-Lea frame, Bosch, new tyres, going order; £20.—12, Brewer St., Pimlico. [7613

Campion.

MPION-J.A.P. 4h.p., new countershaft gear, carburetter and tyres, all chain, lamps; £48; upholsd sprung pillion seat, 25/-.—Grocer, 69, North Plaistow Broadway. [7181

14 Campion-Jap Combination, 6h.p. twin, Bosch mag., 2 speeds, coachbuilt sidecar, Dunlop comion steel-studded tyres nearly new, perfect runorder, excellent condition; seen by appointment; -Doubleday, Corby, Grantham. [7637

MPION Twin J.A.P., 1915 6h.p., free engine, coachbuilt sidecar, only done 3,000 miles, speedo-, all accessories, perfect running order, trial reason sale, owner buying car; £130; no offers. nnell, Chemist, Northampton. [7713

Centaur.

NTAUR 6h.p., 2 speeds, clutch, mechanical valves, drip feed lubrication, splendid sidecar machine; -49, Well St., Hackney. [7797

Chater-Lea

JTH Lancashire Only.—Chater-Lea enquiries.—J. Blake and Co., Official Dealers, Liverpool-Man- er. [7040

ATER-LEA 8h.p. Combination, handle starting, clutch, 3 speds, chain drive, 2-seater coachbuilt ar, hood, screen, spring wheel, first-class condi- £85.—Pryce Trow, 230, Oxford St., Swansea. [7697

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	Our Price.	List Price.
HUTCHINSON—		
26×2¼ passenger heavy rubber studded	49/6	55/-
26×2¾ Tourist Trophy	39/6	45/-
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Rubber non-skid (For Auto-Wheels). ..	17/6	28/-
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29×2¾ oversize for 28×2½ rim, rubber studded ..	42/-	
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Firestone Tubes for Auto-Wheels.				4/6	6/6

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All makes in Stock at special prices

Best English make 6ft. lengths by ¾in. 1/1 per ft.; 8ft. lengths by ¼in. 1/1 per ft.

We can supply odd lengths to make up two piece belts, to any required lengths.

We have purchased a large consignment of Government second-hand covers in perfect condition; Dunlop, Clincher, Hutchinson, etc., and can offer same in 26×2¾ extra heavy at 17/6 each; money returned if not approved.

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MOTOR CYCLES FOR SALE.

Chater-Lea.

LUXURIOUS Chater-Lea Combination, coachbuilt, nearly new, delivered 1917, 8h.p. J.A.P. engine, 3 speeds, clutch, fully equipped with screen, luggage grid, Lucas electric lighting, oversize Palmer cord tyres; £145.—72, The Chase, Clapham, S.W.4. [7642

Chater-Lea-Fafnir.

CHATER-LEA, 3½h.p. Fafnir, accumulator ignition, B.B., excellent condition; ride away; £25; after 6.—1, Eastwood St., Mitcham Lane, Streatham. [7432

CHATER-LEA-FAFNIR 3½h.p., Bosch, new tyres and belt throughout, lamps, etc., first-class condition; £38, or offer.—4, St. James' Terrace, Peel Rd., Woodford. [7565

Chater-Lea-Jap.

6h.p. Chater-Jap, semi T.T. bars, fast, in splendid condition; £55.—17, Tamworth Park, Mitchnm. [7390

6h.p. Chater-Jap, coachbuilt sidecar, good condition; what offers.—98, Chestnut Grove, Malden, Surrey. [7170

CHATER-LEA-J.A.P., 4h.p., Bosch mag., B. and B. carburetter, Kempshalls; £28.—Brown, 23, Ramsgate Rd., Margate. [7293

CHATER-LEA-J.A.P., 4h.p., 2-speed, F.E., Bosch, B. and B., lamps, horn, tools, good condition; £60; after 6.—206, Cricklewood Lane, N.W.2. [7280

8h.p. Chater-Lea-Jap, Bosch, Binks, adjustable pulley, fixed engine, with Millford spring wheel cane sidecar; £60; good condition.—Kiddell, H.M. Customs, Folkestone. [7190

CHATER-LEA-J.A.P., 6h.p., a.i.v., U.H. mag., new back tyre and belt, 30 gns.; 2¾h.p. Douglas engine, mag., and flywheel (fixed), £6/10.—Collins, 21, Pulford St., Pimlico. [7461

1914 8h.p. Chater-Lea-Jap, T.T., new Sturmey-Archer 3-speed hub, new tyres, front and rear lamps, re-enamelled, splendid condition, very fast, sporting mount; £65.—Agnew, Wellington, Salop. [X6895

CHATER-LEA, J.A.P. engine, N.S.U. 2-speed gear, set of lamps, horn, front brake in absolutely perfect condition; ready to go touring at once; price £38.—Williams, 38, Thrale Rd., Streatham Park, London, S.W. [X6799

Chater-Lea-Minerva.

CHATER-LEA-MINERVA, 3½h.p., Grade multi-gear, new J.B. belt, new Palmer corded tyre and tube on back, new rings, bushes, also spare rings, Dixie mag., B. and B., ride away; reasons given; £38/10, no offers.—P., 51, Corporation Rd., Gillingham, Kent. [7187

Chater-Lea-Peugeot.

CHATER-LEA-PEUGEOT, 3½-4h.p., 2-speed, C.B. sidecar, mechanically sound, not used since 1914; £47.—2a, Ladbroke Grove, Holland Park Av., W.11. [7856

Chater-Peugeot.

3h.p. Twin Chater-Peugeot, thoroughly overhauled, fitted new mag. and tyre, very smart machine; £35.—S. Butcher, Dunmow. [7717

Clyno.

GROVER, Smith, and Willis, Basingstoke, Clyno Agents.—Deliveries in strict rotation; order now. [5778

CROW Bros., High St., Guildford, West Surrey agents for the new Clyno.—Order now for early delivery. [4084

CLYNO Combination, late 1913, good running order, wind screen and hood; £75, lowest.—P., 21, Glenshiel Rd., Eltham, S.E. [7433

CLYNO 6h.p. Combination, all chain gear, mechanically perfect; 60 gns.; any trial; after 7.—True Form Boot Co., Broadway, Witchledon. [7249

CLYNO 1917 Combination, complete spare wheel, electric lamps, speedometer; £130; in excellent condition.—Short, 485, Upper Richmond Rd., East Sheen. [7779

CLYNO 6h.p. 1913 Coachbuilt Combination, 3-speed countershaft, requires new cyls., pistons, connecting rods, and general overhaul; what offers?—B., 25, Woodhurst Rd., Acton. [X7135

CLYNO Combinations and Lightweights. Write, 'phone, or call for particulars of deliveries.—Kays, 8, Bond St., and 116-122, Pitshanger Lane, Ealing. 'Phone: 553 Ealing. [7084

CLYNO Combination, 1916, 5-6h.p., twin-cyl., 3-speed gear, complete with spare wheel, speedometer, clock, mirror, lamp, horn, etc.; £125.—Apply, Martin's Motor Works, Sidmouth. [X6852

CLYNO 1912 6h.p. 2-speed Combination. Advertiser requires front cylinder, piston, and gudgeon pin. If unobtainable, combination will be broken up. Offers for parts invited.—White, Wireless School, Carnarvon. [X6966

CLYNO 5-6h.p. 2-speed coachbuilt Amac, Bosch, horn, new Dunlop back, mechanically O.K., appearance rotten, touring until 22nd, then seen after 6 p.m., no dealers, no offers; £90 cash.—12, Victoria Rd., Fallings Park, Wolverhampton. [7194

CLYNO Coachbuilt Underslung Combination, 6h.p., 3-speed countershaft, kick start, interchangeable wheels, spare wheel, all new tyres, lamps, horn, tools, speedometer, only wants seeing; any trial; bargain, £110.—E.B., 68, Corporation St., Stafford. [X6815

MOTOR CYCLES FOR SALE.

Clyno.

CLYNO 6h.p. Combination, Saxe blue, Bosch, new B. and B., countershaft, double chain drive, 2-speed clutch, K. start, engine just overhauled, Stewart speedometer, Klaxon, electric lighting set, new Palmer cords, storm apron, nice condition; highest offer secures; evenings.—331, Hertford Rd., Ponder's End. [X6997

Coulson.

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

Coventry Eagle.

1916 Coventry Eagle 2-stroke, equal to new; £40.—Perkins, 455, High Rd., Leyton, London. [7683

Dalm

1918 3h.p. Dalm, 2-stroke, 2-speed, splendid condition; £50.—467, Green Lanes, Harringay. [7119

Dayton.

DAYTON 2-stroke, splendid condition and running order, with lamps and horn; seen week-ends; £27/10.—Guy, Queen's Rd., Thame, Oxon. [7465

De Dion.

2¾h.p. De Dion, mag., new Palmer; bargain, £22/10, or offer.—157, St. James' Rd., Croydon. [7333

Diamond.

1915 2¾h.p. Diamond, 2-speed, kick start, clutch, good condition throughout; £40.—13, New St., Wellington, Salop. [X7107

1916 Diamond-Villiers 2-stroke 2¾h.p., tools, horn, smart machine; £38; ride away; a snip.—5, Windmill Cottages, Littlehampton. [X6969

Dot.

DOT-J.A.P. 1913 5-6h.p. Twin and wicker sidecar, V.S. 2-speed gear, handle starting, B. and B. 2-jet carburetter, good tyres, Lucas lamp, horn, etc., excellent condition; £65, no offers.—Vectis, Woodlea Rd., Worthing. [7798

Douglas.

DOUGLAS 1915 2¾h.p., 2-speed; £62.—9, Church Rd., Willesden, N.W. [7651

1917 4h.p. Douglas, beautiful condition.—18, Wix's Lane, Lavender Hill, S.W. [7536

2¾h.p. Douglas.—Several W.D. models for immediate delivery from stock; £62-£72.

ALSO 4h.p. Models, solos and combinations; £75 upwards; first callers secure.—Clapham (Motors), 119, King George St., Greenwich. [7835

DOUGLAS 1914-15 2¾h.p., condition as new; £60.—Martin Motors, Sidmouth. [7360

NEW 2¾h.p. Douglas, in stock; 75 gns.—Edwards and Co., 7, Exhibition Rd., S.W.7. [7078

DOUGLAS old twin, only wants belt; bargain, £20.—12, Cheshire St., Bethnal Green, E. [7137

DOUGLAS, 2¾h.p., single speed, splendid running order; £32.—118, High St., Putney. [7191

DOUGLAS 4h.p. Combination, brand new; first cheque £140.—H. Rock, Cradley, Staffs. [X7096

DOUGLAS.—We are doing our best for deliveries.—Moffat, Douglas Agent, Yeovil. 'Phone: 50. [1103

2¾h.p. Douglas, new, and new sidecar; 89 gns., or separate.—52, Thornhill Rd., Barnsbury, N. [7065

DOUGLAS.—All models, book now for future 1919-20 deliveries.—Parker's, Bradshawgate, Bolton. [X7118

DOUGLAS, 1914-15, clutch, kick start, perfect condition; £56.—48, Prince George Rd., Dalston, N. [7845

DOUCLAS, 1915, T.T., 2-speed, perfect condition, new tyres; £55.—60, Kenwood Rd., Edmonton, N.9. [7577

DOUGLAS 2¾h.p., good running order and condition; £32/10.—29, St. Leonard's St., Bromley-by-Bow. [7590

DOUGLAS 2¾h.p., old type, in running order, but slight repair needed; £17.—184, Pentonville Rd., King's Cross. [7612

DOUGLAS, 1914, 2-speed, thoroughly reliable, spares; £50.—Davis, Roseleigh, Pelham Rd., Bexleyheath. [7452

1919 2¾h.p. Douglas, all accessories; owner going abroad; seen any time; 73 gns.—92, Station Rd., Hendon. [7859

DOUGLAS, 1911, overhauled, enamelled, Bosch, Douglas, carburetter, ride away; £30.—Manna Mead, Grove, Coulsdon. [X6840

DOUGLAS, 2¾h.p., 2-speed, 1911, just overhauled and re-enamelled, good running order; £25.—Phone: Bromley 1930. [7497

1915 Douglas, 2¾h.p., first-class order, many new spares; £55.—Write, Legg, Chartlands Cottage, Crockham Hill, Kent. [7487

1916 4h.p. 3-speed Douglas Combination, just overhauled, splendid condition; £115.—53, Hawks Rd., Kingston-on-Thames. [7662

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ELECTRIC REAR LAMP LIGHTING SETS.

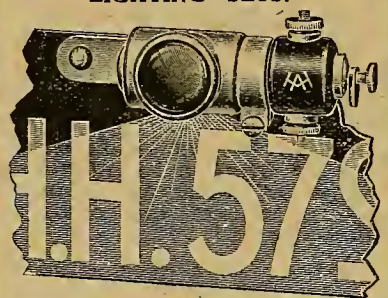

Fig. 572.
Complete with fixing bolts, inspection lamp, switch and bulb—totally insulated. The latest and best rear lamp obtainable.
NICKEL OR BLACK PLATED ..... **18/6** each, complete.

Fig. 573.
Adjustable in any direction, for any fixing, lights number plate, and shows red danger signal. Complete with aluminium body, bulb, and wire. Price, **8/6** complete.

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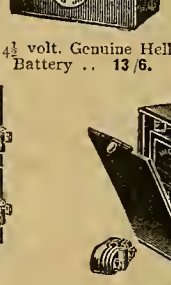

ALWAYS READY.

Price, **13/6.**

"Flash" 4½ volt. Genuine Hellesens Dry Battery .. **13/6.**

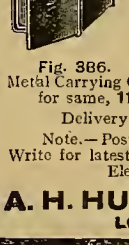

Fig. 386.
Metal Carrying Case for same, **11/-**

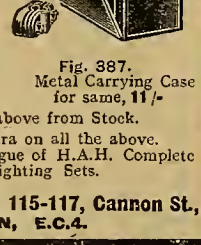

Fig. 387.
Metal Carrying Case for same, **11/-**

Delivery of all above from Stock.

Note.—Postage extra on all the above.
Write for latest Catalogue of H.A.H. Complete Electric Lighting Sets.

A. H. HUNT, 115-117, Cannon St., LONDON, E.C.4.

MOTOR CYCLES FOR SALE.

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ALLEN-BENNETT Motor Co.—1915 2¾h.p. Douglas, exceptionally fine condition; £63.—9, Royal Parade, London Rd., Croydon.

ALLEN-BENNETT Motor Co.—1915 2¾h.p., very good running order; £55.—9, Royal Parade, London Rd Croydon.

ALLEN-BENNETT Motor Co.—1915 2¾h.p., splendid condition; £57/10.—9, Royal Parade, London Rd Croydon.

ALLEN-BENNETT Motor Co.—1915 2¾h.p., splendid condition; £57/10.—9, Royal Parade, London Rd., Croydon. [786

GIBB, The Douglas Expert, Gloucester ('Phone: 852) regrets to inform his numerous clients he cannot accept orders for early deliveries. [634

£30.—4h.p. Douglas, countershaft 3-speed model, kick start, incomplete.—Speechley, 1, Gunnersbury Lane, Acton Hill, London, W.3. [749

2¾h.p. Douglas, 1913, tyres, belt, almost new, engine wants tuning; £22, or nearest offer.—Taylor, 30, Ridge Rd., Todmorden. [X699

2¾h.p. Douglas, brand new, owner bought sidecar combination; £85, or near offer; seen evening after 6.—Soper, 1, Elm Place, S.W.7. [768

DOUGLAS 1914 2¾h.p., 2-speed, newly plated enamelled, overhauled, fast, ride away; 50 gns.—Alexander, 24, Northampton Park, N.1. [720

DOUGLAS, 2¾h.p., clutch, kick start, 2-speed, tyres belt as new; £60 or near offer.—Priddin, Park fields, Minshull Vernon, Middlewich. [X677

2¾h.p. Douglas only ridden 60 miles, brand new out of crate, W.D. model, perfect; first offer £63.—71, High St., South Norwood, S.E. [784

DOUGLAS 1914 2¾h.p., 2-speed, in very good running order; £50.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [780

FOR Sale, 2¾h.p. 2-speed Douglas motor cycle, 1914 in excellent order; price £50.—Apply, W. Warn Motor Engineers, Shalford, near Guildford. [713

2¾h.p. Douglas, 1914, 2-speed, good condition, easy starter, complete with lamps and tools; £55, or best offer.—Box 2,359, c/o *The Motor Cycle*. [X682

1915 2¾h.p. Douglas, 2-speed, F.E., spare belt, mechanical horn and lamps, perfect condition; £52.—W. Hawkins, 10, Albert Terrace, Stafford. [X696

DOUGLAS 4h.p. Combination, new 15th July, lamps, horn, insurance, owner ordered abroad; S.E. district; £150.—Box 4,361, c/o *The Motor Cycle*. [X713

DOUGLAS, 1912-13, 2¾h.p., 2-speed, clutch, Binks 110 m.p.g., very fast, Lodge aero plugs, Miller lamps, horn, spares; £45.—McIlroy, Newbury. [766

2¾h.p. Douglas, 2-speed, free engine, clutch, kick start, Bosch mag., speedometer, lamp, etc., in perfect order; £50.—Gems Bros., Church St., Weybridge. [X680

DOUGLAS 2¾h.p., 2-speed, new tyres and belt, long exhaust and spare silencer, footboards, head lamp, horn; £45.—The Ferns, Adelaide Grove, East Cowes. [731

DOUGLAS, 2¾h.p., 1914, lamps, speedometer, horn and all accessories, in good running order; £55, no offers.—H. W. Hodge, Norbury View, Highlands Rd., Leatherhead. [725

DOUGLAS 1915 2¾h.p., 2-speed, complete with lamps, etc., in fine running order; £55.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [780

DOUGLAS 4h.p. 3-speed Combination, 1917, all accessories, has had little use, tyres, etc., perfect; any trial to genuine buyer; £112.—23, Crockerton Rd., Upper Tooting. [742

2¾h.p. Douglas, 1915, speedometer, mechanical horn, splendid order; 65 gns.—Hardie, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [617

DOUGLAS, 4h.p., 1915 model, 2-speed, clutch, coach-built sidecar, splendid condition throughout.—Mebes and Mebes, Motor Cycle Depot, 154-6, Gt. Portland St., W.1. [702

1919 Douglas 4h.p. Combination, 2 lamps, 2 generators, horn, new tyres on machine, spare cover and tube, tools, etc.; £130.—Jensen, 108, Victoria Av., Cliftonville, Margate. [X637

1916 2¾h.p. T.T. Douglas, 2-speed, electric lighting, speedometer, mechanical horn, only done few thousand miles, equal to any 1919 model; £65.—7, St. Matthew's St., Rugby. [738

2¾h.p. Douglas, W.D. model, brand new, just uncrated, all complete and ready for the road; £80.—Hall Green Motors, Ltd., Stratford Rd., Hall Green, Birmingham. [X708

DOUGLAS 2¾h.p., single speed, new Hutchinson tyres, footboards, recently overhauled and enamelled, good running order; £35; photo.—The Cedars, Long Lawford, Rugby. [X691

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [096

MOTOR CYCLES FOR SALE.

Douglas.

'GLAS 2¾h.p., 1910, P. and H. lighting set, orn, good tyres, Bosch magneto, recently over-, splendid running order; £29.—A.G.D., 242, ell Hall Rd., Ipswich. [7195

GLAS 4h.p. 1917 Combination, coachbuilt side-r, in splendid condition, 3 lamps, Klaxon horn, meter, and accessories; best offer over £115.— Rd., Kingston-on-Thames. [7213

GLAS, 4h.p., W.D. combination, new April 1919, screen, lamp, horn, spare tyre; delivery nly; best offer over £145 secures.—Parker, 36, heen Av., London, S.W.14. [X6786

'GLAS 4h.p. Solo, 1919, practically new, only sed few miles, including accessories; £110.— , 24, Woodstock St. (off Oxford St.), Bond St., , W.1. 'Phone: Mayfair 6559. [6177

Douglas Combination, delivered July 1919 from akers; lamps, horn, Stewart speedometer, com-spares, transferable insurance; £160, cash.— , 10, Bolton Gardens, London, S.W. [X6979

'GLAS, 2¾h.p. lady's model, in stock; very little used, almost new condition; 65 gns.; e bargain.—Hardie and Lane, 24, Woodstock w Bond St. 'Phone: 6559 Mayfair. [7286

Douglas, new, delivered last week, 4 h.p., 3 speed, sidecar, £140 cash secures; also new Multi, Mills-Fulford coach sidecar; accept -21, Cornwall Terrace Mews (adjoins Baker St.). [7382

4h.p. Douglas, 3-speed, clutch, kick start, mechanically perfect, footboards, disc wheels, xhaust, etc., appearance as new; 80 gns.—64, Buildings, Mount St., Bethnal Green, London. [7511

Douglas, 1914, 2-speed, clutch, kick start, Bosch mag., knee grips, very fast and powerful, ly stored 3 years, only done 1,500, practically guaranteed in perfect order; price £90.—3, St. Catherine's, Cambridge. [X7016

2¾h.p. Colonial Model Douglas, 2-speed, clutch, lamp, horn, spares, Terry's links, just over-, new valves, tappets, guides, etc., fitted, £58; ht wicker Montgomery sidecar, with apron and 33.—Cox, Station Hill, Eastleigh. [7687

'GLAS 2¾h.p. 1913, stored 3 years, in splendid condition, dark blue, disc wheels; a real sporting ; just overhauled; new valves, rings, etc., lamps, £53 cash, no offers.—Lt. List, 2, Gipsy Lane, , London. 'Phone: Putney 2008. [X6804

RT Sporting Combination, 4h.p. Douglas, flat vin Bradbury, 3-speed countershaft, kick atart, lutch, all-chain drive, lamp sets, Klaxon, special x coachbuilt underslung torpedo sidecar, disc late model, heavy Dunlops, excellent condition; 30, Burdett Rd., Limehouse. [7633

'GLAS, 2¾h.p., 1915, 2-speed, enamel and paint new. Undermentioned articles new: 2 lamps, tor, pulley, belt, rings, mag. control, mudguard, r-plates, tool bags, tools, and roll; engine over-, perfect machine; £63; letters only.—Lieut. Addington Park Hospital, Croydon. [X6806

'GLAS. Douglas.—Our experience and advice re at the disposal of all Douglas owners. 2¾h.p. model, price £72; 4h.p. combination, price £120. are interested, call and see us.—Vivian Hardie ane, Ltd., Douglas Specialists, 24, Woodstock Oxford St.), Bond St., London, W.1. 'Phone: r 6559. [6169

9 Douglas Combination, picked engine, carefully ridden about 600 miles, trip speeds and acces-costing £12. extra tools and spares; honestly d about best Douglas combination running; full Delivery late August or earlier by arrange-offers over £140 (all in); letters only.—Emley, loucester Place, London. [X6685

Edmund.

IUND, 1917, spring frame, 2½h.p. Jap, Enfield -speed, as new; £58.—52a, Burghley Rd., near l Park Tube. [7850

9 Edmund, 2¾h.p., spring frame, 2 speeds, free engine, P. and H. lamps, large horn, tools, etc.; bout 500 miles, exceptionally powerful; £66.— , Gate Inn, Winsford, Cheshire. [X6783

Elswick.

WICK 2¾h.p., 1916, good condition, fast; £36, r offer; seen evenings; any trial.—Windmill, 17, enburgh Rd., Fulham Palace Rd., Fulham, W.6. [7721

Enfield.

AL ENFIELD Twin, 2-speed, F.E.; £50.— 20, High St., Poplar. [7385

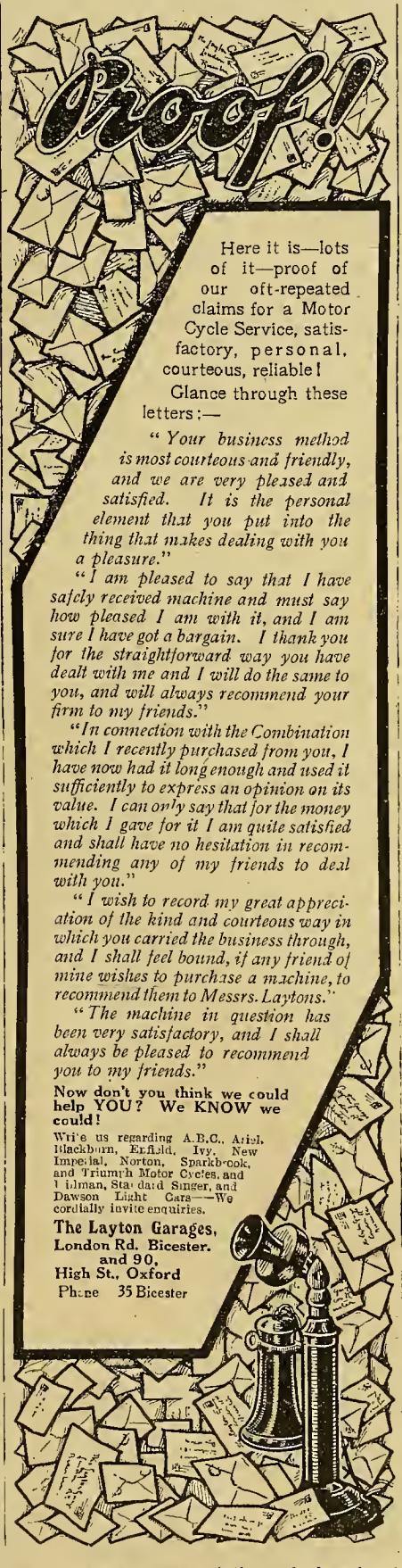
AL ENFIELD, 1914, 2-speed, F.E., new coach-uilt S.C.; £85.—320, High St., Poplar. [7384

IELD, 3h.p. twin, lamps, Amac, ride away; 244.—48, Prince George Rd., Dalston. N. [7844

IELD 8h.p. Combination, brand new; first heque; £165.—H. Rock, Cradley, Staffs. [X7095

IELD 1919 2-stroke, brand new, lamps and horn mplete.—Box 4,344, c/o *The Motor Cycle.* [X6964

IELD 1919 2-stroke, 2-speed, brand new, not idden; what offers?—Box L2,904, c/o *The Motor* [7273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Enfield.

ENFIELD, 1919 2¼h.p. model, fully equipped, new condition throughout.—Parker's, Bradshawgate, Bolton. [X7119

1914 Enfield Combination, hood, screen, lamps, etc., perfect condition; £97/10.—H. Wright, Arlesey, Beds. [7556

ENFIELD, 6h.p. Combination, condition like new; 135 gns.—Mosedale, 30, Canterbury Rd., West Kilburn, N.W.6. [7455

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2920

ENFIELD 2-stroke, 2-speed, Klaxon and accessories, new; £55, or near offer.—172, Greenvale Rd., Eltham, S.E.9. [7588

ENFIELD 6h.p. Combination, hood, screen; £118, or exchange lightweight, cash.—29, St. Leonard's St., Bromley-by-Bow. [7592

ENFIELD Combination, 1917, dynamo lighting, hood and screen; £152/10.—15, The Mansions, Hillfield Rd., West Hampstead. [7852

ALLEN-BENNETT Motor Co.—1916 8h.p. Enfield combination, dynamo lighting; £155.—9, Royal Parade, London Rd., Croydon.

ALLEN-BENNETT Motor Co.—1915 3h.p. Enfield, M.A.G. engine, practically unscratched; £65.—9, Royal Parade, London Rd., Croydon. [7868

1919 Royal Enfield 6h.p. Combination, screen and belt, delivered last month; £148; Coventry district.—Box 4.356, *The Motor Cycle.* [X7021

8h.p. Enfield Combination, new April last, complete with lamps, horn, etc; 145 gns.—Edwards and Co., 7, Exhibition Rd., S.W.7. [7077

ENFIELD 5h.p. Combination, excellent condition, Bosch mag.; seen any time by appointment.—Beverley, Eudlebury Rd., Chingford, E.4. [7388

1916 8h.p. Enfield Combination, new tyres, new chain, wind screen; bargain, £105; no offers.—Sturgess, 165, Queen's Rd., Peckham, S.E. [7616

2¾h.p. Enfield, in tip-top condition; £55, or close offer.—Hardie, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559 [6175

1916 Enfield Combination, fastest turnout on the road, in splendid condition throughout; £130; a very close offer considered.—64a, Highbury Grove, N.5. [7267

1914 6h.p. Enfield Combination, tyres perfect, all new chains, 2 new sprockets, shock absorber, spare chains, etc.; £90.—Griffiths, Bilson, Cinderford. [X5510

1917 Royal Enfield 8h.p. Combination, as new, good lamps, horn, complete, perfect.—Thompson, Potato Merchant, 40a, Old Cattle Market, Ipswich. [7605

ENFIELD 1914 6h.p. Coachbuilt Combination, good condition, wind screen, speedometer, lamps, £98. —Madgwick, Biltmors, Bramshott Chase, Hindhead, Surrey. [7323

DAN GUY, Weymouth.—1917 5-6h.p. Enfield, twin J.A.P. and sidecar, faultless condition; any trial or examination, Lucas head lamp, horn, tail lamp, and tools; £130. [X7046

ENFIELD 6h.p. Combination, 1914, 1915 C.C. sidecar), speedometer, screen, lamps, horn, etc., like new; £115, or nearest.—32, Suburban Rd., Cabbage Hall, Liverpool. [X6846

ENFIELD Combination, 6h.p., just overhauled and rebushed, sidecar reupholstered and enamelled, all accessories; nearest £90.—61, Grantham Rd., Sparkbrook, Birmingham. [X6961

ENFIELD 6h.p. Combination, 1916, electric and gas lighting, hood, wind screen, speedometer, Klaxon, new Palmer back, fine condition; £150.—274, Green St., Forest Gate. [7530

ENFIELD Combination, 1916, 8h.p., hood, screen, lamps, tools, excellent condition, and very fast; £135, lowest; any trial or examination.—5, Devonshire Terrace, East Dulwich Rd., S.E. [7621

ENFIELD 2¾h.p., 2-speed, twin-cyl., in first-class running order, plating and enamelling hardly scratched; seen any time; £32, a bargain.—Knowles, Park Farm, Bewdley, Worcester. [X6922

1917 3h.p. Enfield, 2-speed, K.S., all-chain drive, fine light sidecar machine, and fast; perfect order, new tyres, accessories; best offer.—Smith, 27, Broomfield Rd., Earlsdon, Coventry. [X6977

1919 Enfield (May) 6h.p. Combination, Lucas large horn, hood, Cameo wind screen, spare tube, registration and full insurance policy transferred to purchaser.—23, Hamilton Rd., Reading. [7569

6h.p. Royal Enfield C.B. Combination, condition as new, 65 miles to gallon, wind screen, and all accessories, roomy sidecar; any trial; perfect condition; £115.—53, St. Anns' Rd., Harrow. [7477

ENFIELD Combination, late 1915, 6h.p., C.B. sidecar, in perfect condition, ready ride away; bargain, 125 gns.—Smith, 268, Lavender Hill (opposite Arding and Hobbs), Clapham Junction, S.W. [7539

ROYAL ENFIELD, 6h.p., November, 1916, combination, electric lights, 3in. back Dunlop, Palmers side and front, screen, luggage grid, Lucas horn, quantity of spares, absolutely as new; £135.—Whomes, Sidcup. [7469

MOTOR CYCLES FOR SALE.

Enfield.

6 h.p. Enfield Combination, 1916-17, mileage under 800, practically new, wind screen, lamps, horn, good spares; any trial; privately owned; seen any time; £135.—Davis, 36, Hall St., off King St., Alfreton, Derbyshire. [7630

1916 3h.p. Enfield, free engine, 2-speed gear, kick start, T.T. handle-bars, Pedley grips, electric lighting, new heavy Duolop and inner tube, recently overhauled, splendid condition; highest offer over 65 gns.—9, Elgin Drive, Wallasey, Cheshire. [X7051

ENFIELD, 2¾h.p., 2-speed, stored throughout the war, perfect condition, runs beautifully; first reasonable offer accepted.—Hardie and Lane, 24, Woodstock St., New Bond St. 'Phone: 6559 Mayfair. [7289

Excelsior

3½h.p. Excelsior, U.H. mag., B.B. carburetter, good condition; £30.—A. Salsbury, 22, Charles St., Kettering. [X6886

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

EXCELSIOR, Peco 1916 2-stroke, 2¾h.p., Jardine 2-speed countershaft, hand clutch, all chain, perfect condition throughout; £45.—39, Clodeshall Rd., Saltley, Birmingham. [X6830

EXCELSIOR (American), latest model, 7-9h.p., dynamo lighting, 3-speed countershaft, coach sidecar, practically new; £155; good sidecar part exchange.—R., 5, Victoria Av., Streatham. [7882

1915 4½h.p. Coventry Excelsior Combination, Viceroy sidecar, 650×65 tyres, 3-speed, clutch, and kick, take 3 anywhere, stored 2 years, good order; £80, no offers.—Can be seen, 32, High St., Rusthall, Kent. [7750

AMERICAN Excelsior Combination, 7-9h.p., 3-speed, including lamps, horn, pillion, speedometer, hood, screen, spare tubes, tyres, chains, tools, etc., tip-top condition; what offers over £100.—Barber, 440, Fore St., Edmonton. [7311

5-6h.p. British Excelsior Combination, C.B. sidecar, new April, 1915, countershaft, 3 speeds, K.S., lamps, horn, speedometer, Amac, spares, tools, etc., mileage 3,500, splendid condition; best over £85.—13, Victoria St., Wolverton. [X7011

AMERICAN Excelsior Combination, 7-9h.p., 1916, 3-speed, clutch, kick start, Phœnix sidecar, tyres, and general condition as new, run 2,000 miles only, guaranteed perfect; £130.—Watson, 132, High St., Aldeburgh, Suffolk. [7365

1917 American Excelsior Combination, dynamo lighting, overhauled, re-enamelled and plated, new tyres all round, large sidecar, hood, screen, 2 lockers, spare tyre and chains; £140.—Ellis, 59, Hugh Rd., Stoke, Coventry. [X7131

Fafnir

FAFNIR 3½h.p. U.H. mag., B. and B. carburetter, 2-speed; ride away; £23.—Stokes, Burgfield Common, Berks. [7791

6-8h.p. Fafnir, w.c. engine, with clutch and gear box, and carburetter off cycle car; £25.—Reply, Box 2,358, c/o *The Motor Cycle*. [X6849

F.N.

F.N. 5-6h.p., perfect condition; £28.—150, Hermitage Rd., Finsbury Park. [7155

F.N. 4-cyl., any trial; £28/10.—Payne, 109, St. Leonard's Rd., Mortlake. [X6821

F.N. 4-cyl. 5-6h.p., 2-speed and free engine; 39 gns.—Nurton, 29, Montpelier Vale, Blackheath. [7131

F.N. 1914 Sportiog Model, fair condition, offers, any evening.—G. E. Childs, Parsonage Mill, Dorking. [7302

F.N., 4-cyl., Bosch, B. and B., dropped frame, overhauled, fast; best offer accepted.—58a, Tustin St., Old Kent Rd., S.E. [7475

F.N., 4-cyl., 1914, 5-6h.p., 2-speed, clutch, with wicker sidecar; offers over £55; Worcestershire.—Box 4,341, c/o *The Motor Cycle*. [X6903

F.N. 5-6h.p. Combination, coachbuilt, 2 speeds, lamps, Klaxon, splendid condition; £48.—65, Eccleston Rd., West Ealing. (Call after 5 p.m.) [7629

F.N., 4-cyl., 2-speed, clutch, kick start, semi T.T., large wide tank, low frame, re-bored, new pistons fitted; £69; worth £90.—633, Abbeydale Rd., Sheffield. [7345

F.N., 5-6h.p., 4-cyl., shalt drive, 2-speed gear, Bosch mag., 2 band brakes, 1919 B. and B. carburetter, lamps, tyres, and enamel as new, sound, and in tip-top order, starts walking; £58.—Sargeant, Silsey, Boston, Lincs. [7401

F.N., 4-cyl., fast, model combination, 2-speed, multi disc clutch, Bosch, shaft drive, kick starter, electric lighting, many improvements, special tools, semi T.T. bars, all in good condition; £70.—Lieut. Nicolas, Kippington Court, Sevenoaks. [7228

F.N. latest 5-6h.p model ever turned out by makers, complete, exceedingly smart combination, 4-cyl., waterproof Bosch, 2 speeds, multi-disc clutch, kick starter, enclosed shaft drive, dropped frame, lamps, speedometer; any severe trial; only 95 gns., worth 150 gns.; lightweight part exchange.—99, Shaftesbury Rd., Hammersmith. [7364

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was introduced in

1908

was practically unbeaten in open competition for the three years

1911

1912

1913

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1917

1918

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1920

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3½h.p. Gamage, 3-speed, clutch, Bosch mag., speedometer, lamps, and generator and horn, running condition; 48 gns.—Box 4,359, c/o *The Motor Cycle*. [X7

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2¾h.p. Grandex-Precision, B. and B. carburetter, magneto; unused last 4 years; perfect order; ride away; 29 gns.—Fowler, Stonham, Suffolk. [X69

Harley-Davidson.

HARLEY 7-9h.p. Khaki Combination, bought 191 £130, or exchange light car.—1, Kenlor Rd., Tooting. [76

ALLEN-BENNETT Motor Co.—1916 Harley-Davidson combination, beautiful condition; £145.—Royal Parade, London Rd., Croydon. [78

HARLEY 7-9h.p. Special Brooklands Model K, only one other in England, speed over 80 m.p.h. £110.—52a, Burghley Rd., near Tufnell Park Tube. [78

HARLEY-DAVIDSON, late 1917, combination, stored 1918, just had £20 overhaul, spare £135 cash.—Lt. Bayley, The Orchard, Eastcote, Middlesex. [75

HARLEY-DAVIDSON 1915 Electric Model, enamelled, condition as new; 110 gns.; sidecar required.—Broom, 77, Marylebone Lane (1st floor flat near Bond St. Tube, W.1. [73

1918 Harley-Davidson 7-9h.p. Combination, in excellent condition, lamps, spare chain, tools, etc., fast and powerful outfit; £160.—Williams, The Hollies, 118, High St., Connah's Quay, near Chester. [X68

HARLEY-DAVIDSON (1919 electric model), fitted 40 gn. sidecar, smartest turnout on the road, owner had delivery of car; no offers, £250.—Rogers, Carrisbrooke House, Smethwick, Birmingham. [X66

HARLEY-DAVIDSON Combination, 1917, standard mag. model, bulbous back sidecar, acetylene lamps, good Dunlop extra heavy tyres, done very little work; £130; trial here.—Hammond, Gammersgate, Middlebam, Yorks. [X70

HARLEY-DAVIDSON 2-speed 1914 Model, Mills Fulford sidecar, fully equipped, ready to ride away, very powerful, go anywhere; any trial given; can be inspected at any time; £135.—Arnold, High St., Gillingham, Dorset. [X67

1915 Sept. mag. Model 7-9h.p. Harley-Davidson Combination, head and sidecar lamps, hood, screen in splendid condition, re-enamelled, unused 2 years during war; 138 gns.—Ford, 132, Lillie Rd., Fulham, London, S.W. [71

HARLEY-DAVIDSON 7-9h.p. 1915 Combination, perfect condition, spare chains, speedometer, all accessories, very powerful, for sale 27th July, moving, no accommodation; £130; a bargain; go anywhere.—Blackburn, 2, Dudley Rd., Huddersfield. [X68

HARLEY-DAVIDSON Combination, late 1916, 3-speed, clutch hand and foot, electric light and horn, speedometer, luggage carrier, hood, screen, tyres perfect, looks like new, runs better; must be sold quick; 150 gns.—251, Rye Lane, Peckham, S.E. [X68

HARLEY-DAVIDSON Combination, 7-9h.p., 191 magneto model, hood, screen, speedometer, accelene lamps, luggage grid, spare valves, chain, tube etc., splendid condition, just overhauled; 110 gns., offers.—F., 28, Holmwood Gardens, Finchley. 'Phone: Finchley 1667. [77

HARLEY-DAVIDSON 7-9h.p., electrically equipped model, with special chassis for Harley-Davidson and body, complete with Easting wind screen, electric horn, tail, and sidecar lamps, electric horn, guaranteed brand new; delivery Saturday; best offer.—Bingham, 6, Elgin Mews South, Maida Vale. [78

1915 Harley-Davidson, 3-speed and kick start, with Swan sidecar, electric head, tail, and sidecar lights, new Clincher tyre on back, and Good year on sidecar wheels, new chains, speedometer; overhauled and greased 12 months ago, not run since; can be seen and tried any time; £125.—Mr. S. Keal, Moor Rd., Rushden. [X67

HARLEY-DAVIDSON, 1915, 7-9h.p., perfect mechanical condition, with 1917 double sprung Montgomery sidecar, wind screen, mudshields, Klaxon horn, Jones trip speedometer, clock, 2 P. and H. lamps, and Lucas rear light fed by small car generator, spare cover, tools accessories, and spare parts, special large luggage carrier and swag bag, stored 2 years; highest offer.—30, Dover ton Av., Streatham Hill, S.W.2. [73

Hazlewood.

1917 Hazlewood Combination, 6h.p., 3-speed, clutch, K.S., complete with tools and lamps 24, New Borough, Wimborne. [77

5-6h.p. Hazlewood and Sidecar, Jap engine, Bosch B. and B., 3-speed, kick start, nearly new; £1 —295, Whitehorse Rd., Croydon. [77

Henderson.

HENDERSON 1916 8-10h.p., 4-cyl., 2 speeds, clutch Cancelet sidecar, accessories; 150 gns.—5, Victo Av., Surbiton. [78

LANCASHIRE, Cheshire, North Wales, and Isle Man.—Enquiries for Henderson 4-cyl. invited Blake and Co., Official Dealers, Liverpool-Manchester [76

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Tariffs.

AT present there is an *ad valorem* duty of 33⅓% on all motor vehicles brought into this country. The object of this duty is two-fold: to help pay for the war and to protect British trade. The latter is suffering from the effects of the titanic struggle of the last five years, from the difficulty of getting material, and from the disinclination to work, which is resultant from the past years of strenuous effort on the part of those who helped to win the war at home. The British motor cycle trade has not yet settled down to production, and until it has it would be obviously unfair to allow foreign countries, which have not suffered from the war as we have, to capture our home markets. Whether or not it is advisable to tax the importation on all foreign-made vehicles for all time is not for us to say, as this journal is not political. The question whether this 33⅓% duty should remain in force till 1920 has recently been discussed in Parliament, although Mr. Austen Chamberlain, in introducing the Finance Bill, proposed that the present prohibition on the importation of motor vehicles should come to an end in September next. After a long debate, however, it was decided that the existing tariff should continue till May 1st next year. Several points of view were argued. The free traders moved the amendment to abolish the tariff this year; others, to improve foreign exchange, sought to prohibit the importation of foreign-made motor vehicles altogether; while the tariff reformers thought that the tariff should remain. As matters stand now, the importation of motor cycles made abroad will be free in the spring of next year, unless the Board of Trade, as it has power to do, prohibits foreign-made motor cycles from entering the country; and before May next year the Chancellor of the Exchequer may have something to say regarding the matter. It is evident then that the position is not certain; and, at the conclusion of the recent debate on the subject in the House, Sir Donald Maclean said: "The issue is left in a very muddled condition." We entirely agree, and the sad part of it all is that the British manufacturer, who needs all the help and protection he can get until his house is in order, is left unable to formulate a definite plan of campaign until the Government decides what it is really going to do.

Scooters—Trials and Definitions.

THERE is no doubt that great interest will be taken in the open scooter trial which the Auto Cycle Union has decided to promote in October next. This will be the first official trial of the newest form of motor vehicle, and it will take place in the London district. Scooters have not figured in competition to any great extent so far. There were three in our Staff Trial on Edge Hill, and one put in an appearance at Stile Cop. Last week's trial for lightweights, which was to have included a class for scooters over a somewhat ambitious course, did not take place; and, in the opinion of many good judges, a scooter must be more powerful than is desirable, and be possessed of a change-speed gear.

Therefore, since scooters are beginning to make their appearance in competition, a limiting definition becomes desirable, and the A.C.U. proposes the following: A motor scooter is a motor cycle having: (*a*) A platform not more than six inches from the ground, the centre portion of which platform shall, for not less than twelve inches in length, be the uppermost portion of the frame; (*b*) an engine, the cylinder capacity of which shall not exceed 200 c.c.; (*c*) no pedals for propulsion; and (*d*) a maximum weight, not including fuel, oil, or water, of 60 lb.

A scooter, then, is limited in three ways: in construction, in engine size and consequently horse-power, and in weight. The question of fitting a saddle or not is left with the designer.

THE ITALIAN GRAND PRIX.

British Machine wins the Junior Race of Sixty-two Miles. Italian Flat Twin makes Fastest Lap Time.

FOR the second time a Douglas 2¾ h.p. machine won the 350 c.c. race in the recent Italian Grand Prix, while the fastest lap in the 500 c.c. class was also accomplished by a flat twin. The Douglas was ridden by Baj. Badino, who rode a similar machine in the last T.T., and, in addition to the Turin Municipality Trophy, is awarded the regularity prize by having a minimum difference of time between each lap.

The winner of the 500 c.c. class was Bordino, who rode a Motosacoche, and the regularity prize goes to Gianoglio on a Fongri, who also made the fastest lap time. The Fongri machine is an opposed twin of Italian manufacture, having a cubic capacity of 575 c.c. on the standard models; it has side-by-side valves placed on the top of the cylinders and operated by a single camshaft.

Several other new Italian machines were in the race, including the twin-cylindered Della Ferrera, with a 500 c.c. engine having cylinders 68 mm. bore and stroke, and the Bianchi, with a V twin of 60×88 mm.

The results are as follow :

500 c.c. Class.

1.	Bordino (Motosacoche)	1h. 6m. 50⅖s.
2.	Acerboni (Frera)	1h. 17m. 30⅖s.
3.	Gianoglio (Fongri)	1h. 21m. 53⅕s.

350 c.c. Class.

1.	Baj. Badino (Douglas)	1h. 27m. 1⅘s.
2.	Maffeis (Maffeis)	1h. 27m. 17⅖s.
3.	Bonasso (Douglas)	1h. 43m. 2⅖s.
4.	Antoniazzi (Douglas)	1h. 47m. 39s.

The Biella-Oropa Hill-climb.

Another Italian classic motor cycle event is the Biella-Oropa seven mile hill-climb, which was held recently between Biella (the Italian Manchester) and the convent at Oropa, a hill 3,870 feet above sea level, the length being seven miles. The results of the various classes were as follows :

Meldi (Borgo), who made fastest time of the day at the Biella-Oropa event.

Acerboni (Frera), winner of the 500 c.c. class, Biella-Oropa hill-climb.

350 c.c. Solo.

1.	Maffeis (Maffeis)	14m. 1s.
2.	Bonasso (Douglas)	16m. 37⅖s.
3.	Saino (Douglas)	18m. 57⅖s.
4.	Minetti (Douglas)	28m. 53⅖s.

Maffeis, winner of the 350 c.c. class at the Italian hill-climb

500 c.c. Solo.

1.	Acerboni (Frera)	13m. 0⅕s.
2.	Carughi (Frera)	14m. 39⅘s.
3.	*Della Ferrera (Della Ferrera) ...	16m. 32⅖s.
4.	Crosa (Triumph)	17m. 5s.

750 c.c. Solo.

1.	Meldi (Borgo)	12m. 12⅖s.
2.	Dogo (Della Ferrera)	14m. 40s.
3.	Berutto (Triumph)	16m. 56⅘s.

1,000 c.c. Sidecar.

1.	Merlo (Frera)	15m. 22⅕s.
2.	Galloni (Frera)	17m. 31⅖s.
3.	Cremona (Frera)	19m. 9s.

*Fell at start.

The best time of the day was made by Meldi (Borgo), in 12m. 12⅖s., which, however, does not beat his previous record (made in 1914) of 11m. 15⅖s.

Some New Machines.

The Maffeis machine, winner of the 350 c.c. class, has a J.A.P. V twin racing engine, with overhead valves, and a chain-cum-belt drive through an Albion two-speed gear. The engine dimensions are 60×60 mm. bore and stroke.

The Frera is a standard 3½ h.p. model, single-cylinder, 85×88 mm., side-by-side valves, and chain drive through countershaft three-speed gear.

The machine, however, which is most eagerly awaited by the buying public is the Fongri. This is a 4 h.p. flat twin following the lines of the Douglas engine, equipped with three-speed gear, enclosed chain transmission, hand-controlled clutch, and kick-starter. The frame and spring forks, however, are not in accordance with English ideas, since the former is constructed of bent tubes and the latter are the usual Italian pattern.

ITALIAN ROAD RACING.

In the report of the first important post-war road race in Italy which appeared in our issue of July 3rd the second man's time was stated to be 3h. 56m. for the course of 225 kilometres, but we are now advised from Rome that Tuccimei (Triumph) actually completed the distance in 3h. 45m., being thus only 9m. behind the winner.

OCCASIONAL COMMENTS

BY "IXION"

Profiteering by Amateurs.

THE riders who denounce rampant profiteering should not forget that it is by no means confined to agents and people in the trade. For example, I hear of a 1919 Morgan, which has already changed hands four times, and on each occasion at an increased price. Moreover, another private owner of a post-war Morgan unloaded his bargain at a profit of £55 after a fortnight's ownership. We cannot suspend the eternal laws of supply and demand.

Pillion Riding.

I AM perhaps a little biassed against pillion riding for two special reasons. The first is that I have seen some good friends seriously hurt by the practice. It is a horrid spectacle, for when balance is lost in an emergency, the driver loses control very suddenly and very completely. He is instantaneously overmastered by the misplaced centre of gravity, and cannot save himself, but is hurled helplessly across the road. His passenger is in even worse case, and usually hits the road hard with the back of his or her skull. Few people who have seen such smashes—and I have seen three at close quarters—would wish to continue the practice. My second bias arises from the fact that the flapper bracket is not, and never has been, my sole means of taking a companion on my runs. If I never enjoyed the use of a cycle car, sidecar, or light car, it is conceivable that I might face the risks of putting a companion in peril. Quite apart from this, frank bias, I should wish to see pillion riding prohibited. It is technically absurd. A doubly-laden two-wheeler handles quite nicely under normal circumstances; but its centre of gravity is hopelessly and dangerously misplaced, and the results are patent in any imbroglio. When the machine skids or bumps badly, or has to be twisted sharply in a tight corner, or braked abruptly, trouble looms up quickly; and the false balance may convert what should be nothing more than a minor anxiety into acute danger. Secondly, the pillion rider does not merely risk his own neck: machines so laden are peculiarly uncontrollable when balance is once lost, and an innocent motorist passing by may be burdened through life with the memory of having killed a fellow creature. On two occasions pillion riders have crashed almost immediately beneath my head lamp, and I have narrowly escaped running into them. In one of these incidents, the pair skidded on a greasy patch just ahead of me at ten miles an hour; in the other incident, they were scrapping at an illegal speed to overhaul my machine, and fell over just as they had passed me. To quote other examples, I know of such riders coming over on meeting a traction engine unexpectedly in narrow lanes, and upsetting whilst overtaking a motor char-à-banc on second-class roads. The solo rider usually retains some control of direction when a fall or collision of some kind has become inevitable. The pillion riders often lose control completely when things go wrong. These are substantial reasons in favour of the abolitionist case. I am just at the age when one suspects one's self of grandmotherly tendencies; but surely there is not one solitary word to be said in favour of flapper-bracketing except that it is uncommonly cheap while it lasts.

Wanted, a Waterproof Glove?

I LUNCHED the other day at a popular hotel on a favourite motoring road. The morning had been stormy, and numerous riders sought shelter and a meal. Their riding attire was grossly unsuitable in many cases, probably because the morning had opened with sunshine, and they had been caught napping. But I noticed particularly that there was not a single pair of waterproof gloves between the lot of us. Of course, this is a perennial problem. Prior to the war, I knew exactly two makes of gloves which would keep out a drencher. One was the Continental rubber type (of Hun manufacture, one imagines?). A good glove, dear to buy, not over warm in December, and apt to perish rapidly if oil attacked it. The other was the Asbestol, made of hide too thick for the delicate control of a motor cycle. If anybody knows of another, many readers will be interested.

The Fouling of Sight Feeds.

THE other week I described in exaggerated and quasi-humorous fashion the difficulties of watching the oil drip through the average sight feed glass. There are, of course, three main causes for this trouble. If the device leaks at any joint, oil is apt to film the outside of the glass, dust settles on the oil film, and periodic cleansing is the obvious remedy. Secondly, if a full charge is rushed through the glass by opening the drip and pushing down the handle of the force pump, the whole interior surface of the glass becomes oily, and perhaps capillary attraction encourages the fouling under certain conditions. Thirdly, and most common of all, the blow-back from the crank case spurts oil over the interior surface. A reader has cured the last tendency on several machines by enlarging the release valve which is intended to relieve the crank case compressions. This may be done by fitting a larger valve, or by adding a second standard valve. Alternatively, it might be possible to obviate the nuisance by fitting a very light check valve between the drip feed and the crank case, in which case the valve should be so light that the weight of a few drops of oil would open it. The consequences of a stuck check valve might become so serious that an effective crank case release valve is certainly preferable. The fact that many manufacturers ignore so simple a remedy indicates how carelessly some machines are designed, or perhaps that few people take drip feeds seriously.

THE IRISH END-TO-END TRIAL.

Motor Cycle Union of Ireland (Ulster Centre) holds Successful Two Days' Trial.

THE decision of the Ulster Centre of the M.C.U. of Ireland to make the End-to-end trial a two-day event was generally appreciated. The course is upwards of 500 miles, and to cover this distance without a rest, especially on Irish roads, is by no means a holiday.

Thirty-two riders entered for the event, including many competitors from England, and the spirit of *camaraderie* displayed by motor cyclists from the North and South of Ireland and from the sister island of Great Britain was a very pleasant feature of the competition.

The entries included the following:

W. J. Chambers (6 A.J.S. sc.)
T. J. Woods (4¼ B.S.A.)
T. V. Murphy (7 Matchless sc.)
Frank McDonagh (4¼ B.S.A.)
W. J. Lake (3¾ Scott).
Jas. Browne (2¾ Douglas).
Geoffrey Boyton (4 Douglas sc.)
D. O'Connor (4 Douglas sc.)
Tom Mallon (3½ Sunbeam).
Wm. Downling (3½ Rover).
Jas. Stewart (3½ Douglas).
T. C. de la Haye (3½ Sunbeam).
A. Carton (7-9 Indian sc.)
A. G. Cocks (2½ Clyno).
Thos. Hall (4¼ B.S.A. sc.)
Maj. A. H. Waters (2¼ Triumph).
F. A. Newell (2¾ Douglas).
R. S. Russell (2¾ Sunbeam).
Thos. Stewart (4 Douglas sc.)
Jack Healy (3½ Norton).
"Sou'-Wester" (3½ Douglas).
Jas. Boston (3½ B.S.A.)
J. Dias (3½ P. and M.)
W. Wilhelmij (8 Matchless).
W. B. Gibb (2½ Douglas).
F. Ball (2½ Douglas).
R. W. Moffatt (3½ Douglas).
E. Clarke (4 Douglas sc.)
T. R. Popham (6 Enfield sc.)
S. J. Redmond (7-9 Indian sc.)
M. J. Doyle (7-9 Indian sc.)
R. Jones (4¼ B.S.A.)

Only three competitors failed to start from Rock Island coastguard station on the first day of the trial. These were Lake, Redmond, and Wilhelmij. Although cold and dull, the weather was dry when the first competitor started off for the opposite end of Ireland. The route lay by the way of Kenmare and Killarney, where there was a breakfast stop of threequarters of an hour. By this time the weather had broken, and from Glengarriff the run was in a regular downpour. Gowlane, the test hill of the day, did not prove too severe for the majority of the competitors, including Maj. Waters on his Baby Triumph.

Between Killarney and Rathkeale the roads were very bad, and the trouble with straying horses, cows, and pigs, not to mention hens and other fowl, was considerable. At Abbeyfeale the weather cleared, and the remainder of the run to Dublin was under better conditions. The luncheon stop was at Cashel.

The following did not check in on time at Inchicore at the end of the first day:

Geoffrey Boyton (4 Douglas sc.)
D. O'Connor (4 Douglas sc.)
A. Carton (7-9 Indian sc.)
Jack Healy (3½ Norton).
Jas. Boston (3½ B.S.A.)
J. Dias (3½ P. and M.)
T. R. Popham (6 Enfield sc.)
M. J. Doyle (7-9 Indian sc.)

The Second Day.

The second stage of the trial began at 6.30 next morning, the route taking in Swords, Balbriggan, Drogheda, Dunleer, Castlebellingham, Dundalk, Newry, Banbridge, Moira, Crumlin, Larne to Fort William Park.

On Iscar Hill was held a flexibility test, the first section being a slow climb, the second fast, and the third a non-stop run to the top. Of the twenty competitors to reach the foot of the hill only six made a clean ascent. These included Chambers, de la Haye, Cocks, Gibb, and Moffatt.

The following competitors finished the run:

W. J. Chambers (6 A.J.S. sc.)
T. J. Woods (4¼ B.S.A.)
Tom Mallon (3½ Sunbeam).
Wm. Downling (3½ Rover).
T. C. de la Haye (3½ Sunbeam).
A. G. Cocks (2½ Clyno).
Jas. Stewart (3½ Douglas).
F. A. Newell (2¾ Douglas).
R. S. Russell (2¾ Sunbeam).
Maj. A. H. Waters (2¼ Triumph).
Thos. Stewart (4 Douglas sc.)
"Sou'-Wester" (3½ Douglas).
W. B. Gibb (2½ Douglas).
T. V. Murphy (7 Matchless sc.)
M. J. Doyle (7-9 Indian sc.)
R. Jones (4¼ B.S.A.)
Jas. Browne (2¾ Douglas).
Thos. Hall (4¼ B.S.A. sc.)
R. W. Moffatt (3½ Douglas).
Frank McDonagh (4¼ B.S.A.)
F. Ball (2¾ Douglas).

Results.

Although not yet confirmed by the committee, the following may be taken as the probable prize winners:

Palmer Trophy.—W. J. Chambers (6 A.J.S. sc.)
Second Prize.—T. W. Moffatt (3½ Douglas).
Third Prize.—W. B. Gibb (2¾ Douglas).
Fourth Prize.—De la Haye (3½ Sunbeam).
Team Prize.—Douglas team (No. 1): Moffatt, Ball, and Gibb.

Scene at the finish of the Irish End-to-end trial last week. Eight Douglas riders between them secured the team prize, the Lindsey special prize, two cups, and four silver medals.

Automobile Association General Meeting.

THE fourteenth annual general meeting of the Automobile Association and Motor Union was held on the 23rd inst. at the Savoy Hotel, London.

In moving the adoption of the annual report, the president, Mr. W. Joynson-Hicks, M.P., reminded members that this was the first report after the conclusion of the great war, and would foreshadow the future expansion of the Association's activities.

He went on to say that nearly the whole of the patrols were on the road again, and, in addition, the road telephone system was being greatly extended; also the special mechanical first-aid sidecar outfits would be made increasingly available.

Membership was going up by leaps and bounds, the record week in their history being one during last month, when 1,753 new members were elected. Every hope could be entertained of attaining a six figure membership by the end of the year, and to keep this membership it was realised that value for money must be given.

The question of home-produced fuel was receiving great attention, and a special sub-section had been formed to encourage the production of benzole at the gasworks throughout the country.

The Ways and Communications Bill, now before the House of Lords, had also been watched with attention, and he believed that, when the Bill went through, the road organisations and users would not find that they had been ignored.

The report was unanimously accepted, and Mr. McWhirter, chairman of the Finance Committee, thereupon moved the adoption of the accounts. The balance-sheet and report for the past financial year showed a surplus of income of £7,420, which compares with the previous year of £24,374, the additional activities roughly representing in cost the difference between these two amounts.

SOME USEFUL HINTS TO COMPETITION RIDERS.

THERE is no doubt that many clubs could obtain very useful lessons from the cheery sportsmen associated with the Edinburgh M.C. Campbell McGregor, the secretary, who organised the Scottish Six Days', leaves nothing to chance, and instructions to officials are always clearly set forth in a four-page leaflet as are the duties of observers from start to finish. In addition, McGregor gives each competitor a letter setting forth his "fourteen points," and the phraseology of these illustrates the spirit of the trial which makes the Scottish event so enjoyable. These are as follow:

Read before Destroying.

All judges and observers act in an honorary capacity. You can help them by

1. Remembering that when an official asks you to remove your machine to a certain place, he is not doing so for practice.

2. Remembering that checkers' watches do not always agree—we know that as well as you do.

3. Remembering clerical errors sometimes arise, and when the mistake is ours it will be rectified.

4. Remembering that this year there will be an official investigation of all complaints—an "O.C. Complaints," who will have his instructions from the judges. If the fault is ours, we rectify it; if the fault is yours, we do not. You will have a right, of course, to insist on seeing the judges, but, if the case is adversely reported on, we think you will be wasting the judges' time by insisting on seeing them. The judges do not mind wasting their time, but they would hate to think that they were wasting yours.

5. By remembering that before you can put in a complaint, you must fill up a form. We will give you as many forms as you wish.

6. By remembering that if you are baulked on a hill, the failure does not count against you if you can restart. Your complaint is of no avail unless you produce evidence. We like to know the names of these baulkers (they exist in every trial), and they will start last.

7. By remembering that we do our best as regards arrowing. That's all!

8. By remembering that if you are not ready to start at the appointed hour, you are late. You may curse the hotel porter, but please do not curse us!

9. By remembering that this is a sporting event. The rules will be adhered to. If there has been a direct contravention of the rules, such as failing on a hill, not even your silkiest tones will help you.

10. By remembering that our organisation can quite easily cope with any irrelevant or unnecessary complaints.

11. By remembering that we have no desire unjustly to do you in for your gold medal. If you win it, good and well. If you lose it—well, the fault is yours.

12. By remembering that you are only one per cent. of the total competitors. The other ninety and nine are entitled to consideration. They will have ours. Give them yours also.

13. By remembering that each check stands by itself.

14. By remembering that it is easier to check the cards when you run to the time stated on your card, and try and keep the card legible.

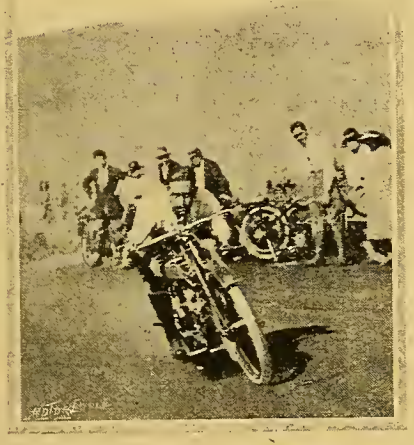
HILL-CLIMBING IN SOUTH AFRICA.

PARTICULARS are just to hand of a successful hill-climbing contest organised by the Natal Motor Cycle Club on May 31st. The Inchanga Bank Hill-climb for the Shimwell Trophy attracted a good entry, and it is encouraging to note that in the solo classes none other than British machines were entered.

The Inchanga Bank is about 30 miles from Durban on the Durban-Maritzburg Road; it rises 700 feet in 1,800 yards and has six bad corners.

The sidecar class was won by Dales (Harley-Davidson) in 1 min. 52 secs.

On formula, the solo class proved a scoop for the 2¾ h.p. Douglas, riders



F. A. R. Zurchar (2¾ h.p. Douglas) winning the Shimwell Trophy at the recent Natal hill-climb.

of this mount taking first, third, fourth, fifth, and sixth prizes. The second place and fastest time went to a big four Norton.

The formula positions and times were as follows:

		M.	S.
1.	F. A. R. Zurchar (2¾ Douglas) Shimwell Trophy.	1	46⅘
2.	A. Morcom (4 Norton) ... ... Morcom Trophy.	1	56⅘
3.	C. Dowse (2¾ Douglas)	1	56
4.	A. J. S. Ford (2¾ Douglas) ...	1	54
5.	P. Riequeburg (2¾ Douglas) ...	1	54
6.	T. Handley (2¾ Douglas) ...	1	58
7.	R. Shuzor (Rudge)	1	47⅘
8.	Young (Triumph)	1	41
9.	Harris (Triumph)	1	43⅕
10.	Kenion (Rudge)	1	50

Twenty started and fifteen finished. There were numerous tumbles on one particularly bad corner. The winning Douglas is a well-known mount several years old which has been successful in many past events, and continues to give excellent service.

CO-OPERATION IN OVERSEAS TRADE.

FOR several years we have advocated that British manufacturers appoint direct representatives abroad, and more than once have suggested that a practicable scheme might be arranged by which several firms with non-competing goods could co-operate. We now learn with pleasure that a number of Midland accessory manufacturers have combined to form the Associated British Manufacturers' Syndicate, with the idea of developing trade in Canada and North America. These firms include the Sphinx Manufacturing Co., Powell and Hanmer, Terrys of Redditch, Accles and Pollock, Benton and Stone, Ltd., Abingdon-Ecco, Ltd., W. and A. Bates, Rotherham and Sons, and the makers of the Amac carburetter.

Capt. S. A. Rowlandson, late R.A.S.C., has been appointed to the important position of general manager, and will shortly sail for Canada, where wholesale depots will be opened in some of the leading cities, such as Montreal, Toronto, Detroit, and possibly Vancouver.

Capt. Rowlandson is well known in the motor cycle world, and before the war was seen in all the important competitions on a Rudge motor cycle. We recently had the pleasure of a chat with him, and learned that he is as keen as ever about motor cycles and their future prospects. He intends to take a machine with him to Canada.

READERS' ROAD REPORTS

THE following report of road conditions in the North of England and Scotland forwarded by readers will doubtless be of interest to other motor cyclists:

Southport to Preston: Good.

Preston to Carnforth: Excellent.

Carnforth, *via* Kendal and Shap, to Penrith: Good.

Penrith to Carlisle: Excellent.

Carlisle, *via* Langholm, to Hawick: Good.

Galashiels to Edinburgh: Excellent.

Hawick, *via* Selkirk, to Galashiels: Good.

Stirling to Crieff, *via* Dunblane: Good.

Dunblane *via* Amulree Hotel, to Dunkeld: Good, except near Amulree, this being rather rough.

Edinburgh to Stirling: Excellent, except through Linlithgow and Falkirk; very bumpy.

Dunkeld, *via* Pitlochry, to Killiecrankie: Excellent.

Killiecrankie to Kingussie: Poor; very bad, loose stones Blair Atholl to Dalwhinnie.

Kingussie to Inverness: Fair.

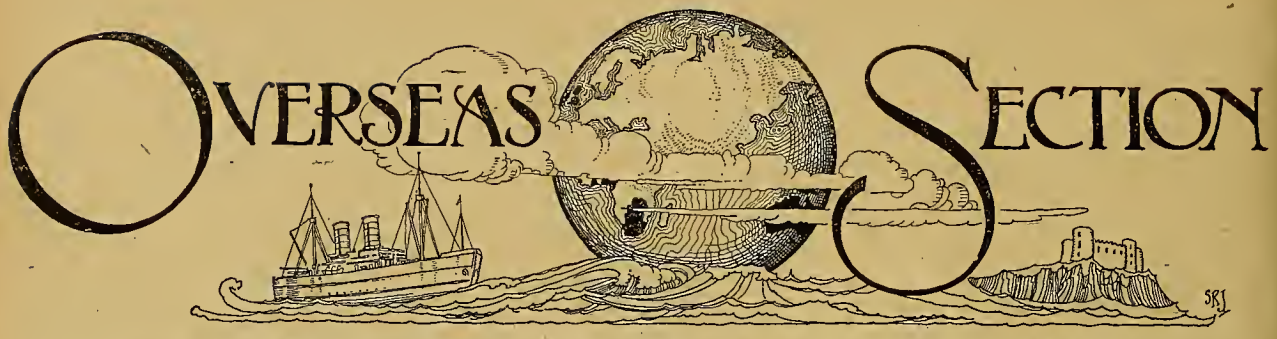
Inverness to John-o'-Groat's, *via* Dingwall, Bonar Bridge, Helmsdale, and Wick: Very good, except for five-mile stretch near Bonar Bridge spoilt by timber-hauling.

John-o'-Groat's to Thurso: Very good.

Thurso, *via* Forsinard, to Helmsdale: Bad; many stretches of loose and sharp stones.

Inverness to Fort William, *via* Fort Augustus: Fair, with several bad stretches of about five miles each, these being bumpy through timber-hauling.

Crianlarich, *via* Tarbet, to Dumbarton: Fair; bumpy in places.



A Commentary based upon Practical Experience and a Study of Overseas Opinions.

Luggage Grids.

ONE of the greatest difficulties in sidecar touring lies in finding a suitably-sprung position for the necessary luggage, and particularly does this apply to the Overseas sidecarist, as, in addition to the personal equipment of himself and his passenger, it is generally necessary for him to carry something in the way of a tiffin basket, etc. Moreover, he is likely to encounter far rougher going than the tourist in the Old Country, so that his luggage grid, whatever form it may take, is of little use unless it be effectively sprung.

The most obvious position for the luggage grid is to attach it protruding from the back of the sidecar body, but this method presents difficulties, particularly if heavy burdens, including a tin of petrol, are to be carried. The sidecar springing, unless very much on the stiff side, will not stand the additional load, so placed that it obtains considerable leverage on the springs, and at all events the comfort of the passenger is likely to be upset by the limitation of the springing being reached when bad jolts are encountered. In other words, if heavy loads are to be carried on the grid, the springing of the body must be designed for that purpose, in which case it is probably too rigid for comfort when no additional load is carried.

We would further point out that serious accidents have occurred owing to the overloading of grids attached to sidecar bodies, the springing of which was never intended for that purpose. The additional weight at the back throws undue strain on the front points of attachment of the body, particularly during rapid acceleration, and should the front connections give way the body is apt to turn completely over in a backward direction, pivoting on its spring shackles, and the passenger meeting the ground head-first and in a most unenviable position.

It is, all things considered, unwise to attach grids to sidecar bodies that were never intended for that purpose, for though the danger of serious accident may be remote, it is very doubtful whether the springs will stand the strain, and the arrangement seldom proves satisfactory.

In the case of one or two luxurious outfits, grids attached to the body are provided, and endlessly useful they prove, but we have found very few sidecar manufacturers at all anxious to fall in with a request to equip their standard models in this way. In the case of medium weight outfits, some system of adjustable springing might be arrived at, the act of unfolding the grid bringing into action simultaneously some form of supplementary spring to take up the additional load, but even this suggests complications.

One would imagine a tiny Pacific island to be the last place in which to find motor cycles and keen motor cyclists. But in the island of Suva, of the Fijian group, there is quite a live little club. The photograph sent to us by Mr. H. Lanyon shows with their owners an Ariel, Rudge, American Excelsior, and three Harley-Davidsons.

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Independently-sprung Luggage Grids.

A GOOD many experiments have been tried with luggage grids having their own independent springing systems, which are attached to the rigid chassis; but here again we are up against difficulties. It is difficult to design a system of springing of this kind having a sufficient range of movement. Even if the range be sufficient, the rebound is generally so rapid that the luggage thus mounted receives a worse jolting and shaking than if it were on a rigid carrier. For a spring carrier of this kind to work well under a dead weight friction springing is necessary to damp out the rebound, all of which means additional expense and weight.

These facts point to the further desirability of springing the sidecar wheel, in which case a good grid, sufficient for all requirements, could be attached to the chassis in the obvious way.

Some sidecars are provided with a box or boot behind the upholstered backrest of the seat, and such provision is highly desirable for the Overseas vehicle. In fact, the Overseas rider is grateful for any additional carrying room the ingenuity of the manufacturer can provide.

A Selection of Letters from Readers scattered all over the World.

Current Prices in India.

"A BOMBAY RIDER," a Douglas enthusiast, writes: "You may be interested to know how things are developing in Bombay. The only new British machines to reach us so far have been W.D. Triumphs, six of which arrived last month, and were snapped up immediately, although the price was fairly stiff, being £120. I examined one carefully, and although I am not a lover of the 'single,' could not help admiring this beautiful specimen of its class—a sturdy Britisher all through. I consider (and so do many others here) that the one thing required to make the Triumph perfect is a decent system of lubrication, instead of a crude hand pump, as at present. A drip feed preferably, with a dome-shaped indicator on the tank (like the New Hudson and Norton) would be a great improvement. With a hand pump even experienced riders sometimes have a sneaky feeling that the lubrication is being neglected.

"American machines—Indians and Harley-Davidsons—are expected this month. The agents for the latter tell me that we shall not see the Harley-Davidson flat twin this year, as the production is not sufficient to meet the demand in America. Another machine we are all dying to see is the A.B.C. Personally, I am patiently waiting for my old pal the 2¾ h.p. Douglas.

"Wishing you the best of luck."

The Motor Cycle and Japanese Competition.

LT. E. C. HILL, writing from Lahore, India, prophesies that the Japanese will soon be competitors in the motor cycle field. "With further reference to two or three letters published in *The Motor Cycle*, dated January 23rd, referring to the inflated prices of motor cycles, I wonder if any of your readers at home, and manufacturers, too, have considered the lot of the motor cyclists abroad? The prices asked for 1919 machines are almost impossible, and are only possible to the favoured who have made good on the war. Before the war I was resident in Malaya, and then paid £70 for a solo 3½ h.p. James new (fixed engine and gear). To-day, in India, this is the average price *for a second-hand machine*, and added to this hardship it is very difficult to obtain spares, and when obtainable the prices are such as to make one disgusted with motor cycling. There are thousands out here who would indulge in motor cycling, but that it is beyond a joke—the second-hand machine is too expensive to buy, and the spares required for such are indeed numerous, and, when obtainable, make you think twice before buying them. If this, then, is the case with second-hand machines, what is the lot of the new? Nobody wants them; they are beyond the reach of thousands of likely riders. In the principal cities one can count the number of new machines to be seen in six months on one hand. 'The Buyers' Guide,' published in the issue referred to above, is disheartening. From the figures published, the new machine is going to cost nothing less than £100 for a 3½ h.p. solo. We know that labour, fuel, and material have all gone up, but do not forget that those abroad have *got* to pay freight, insurance, and increased rates due to shortage of tonnage, etc., in addition to the make-hay-while-the-sun-shines-at-home prices.

"In conclusion, I may add that American machines are pretty plentiful out here, and possibly we shall not be very long before the enterprising Japanese step into the breach, as they appear to have done in most lines. Motor cycle manufacturers at home are cutting their own throats by neglecting Overseas trade in this manner. The firm that first establishes itself out here with a good machine at a fair price would beat all comers. There are new fields of enterprise, too, of which India may be considered the hub, and what could be better than an established motor cycle business to compete with it?"

The M.C.C. of South Australia.

MR. ALFRED MOYLE, writing from West Australia, says: "The Motor Cycle Club of South Australia intends next season to carry out a programme of events that will keep the possibilities of the motor cycle well before the public, as, in spite of the splendid work they have performed at the Front, motors are still spoken of as a nuisance by a certain section.

"About three years ago we discovered a fine racing track, about three miles long, on a beach known as Sellick's, where, with a suitable tide, after a competition of forty events, with inevitable trial runs, the surface is still perfect. This hardness of surface is accounted for by the sand (about 6in. deep) having for its bed a layer of pebbles, which has an effect similar to concrete. At low tide there is width enough to race three cars abreast.

"Our best times on this track up to date are (electrically timed): Half-mile solo, E. Ferguson (8 h.p. Indian), 20⅘s.; passenger, E. Ferguson (8 h.p. Indian sc.), 22⅘s.; one mile, solo, E. Ferguson (8 h.p. Indian), 38⅘s.; passenger, E. Ferguson (8 h.p. Indian sc.), 45⅘s. The standard touring model passenger one mile is held by A. Smith (Excelsior sc.), 49⅘s. All flying starts.

"This beach is thirty-five miles South of Adelaide, so much of the day is taken up by travelling to and from the scene of action. For our long distance events of 100 and 200 miles, which we hold once a year, we have to travel 138 miles by road, or fifty miles by steamer and twenty miles by road. We are obliged to travel these long distances because the councils who control the roads near Adelaide will not grant us permission for their use, and this permission must be received before we are allowed to break the speed limits which are arranged in all districts.

"We recently held our annual 100 and 200 miles race at Winlaton, Yorke's Peninsula. The 200 miles was run by C. W. A. Korner (Powerplus Indian) in 3h. 50m. 9s., E. C. Wagener (Harley-Davidson) being second in 4h. 12m. 9s. The 100 miles was won by A. Smith (Excelsior sc.) in 2h. 16m. 12⅘s., C. C. Souter (Harley-Davidson sc.) being second in 2h. 24m. 28⅘s.

"It will be noted that all these wins are on American machines, the reason being that American machines are at present all we have to choose from, the British machines still in use being too old for competition work; but we are anxiously looking forward to the time when our Triumphs, J.A.P.'s, Precisions, or other British brands shall appear and show what can be done after four years' experience of war work.

"As far as Colonial models are required here in South Australia, I am certain that if a special heavy model, with high clearance, were put on the market it would be turned down by our riders, because the locally built machines are practically on the same lines as the Triumph, with perhaps larger tyres (2½in.) and Chater-Lea or Druid forks; and if more clearance and the number of so-called improvements advocated for a Colonial model are required we should have had them in our locally built machines long ago."

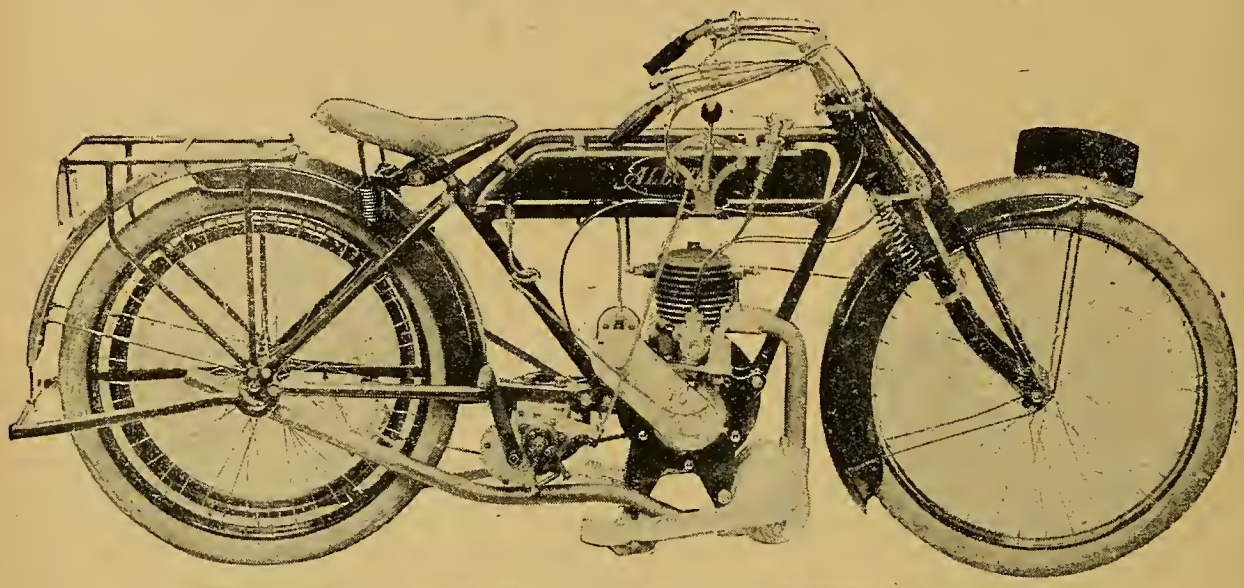
A Home-made Three-wheeler.

D. S. RAMSAY, writing from Middelburg, South Africa, says: "I have been a reader of *The Motor Cycle* for some years now, and look forward to its arrival like a child does to a new toy. Formerly, I had a single-cylinder Indian (single speed), which I ran solo until I got married. Then I made a sidecar, and, although the machine pulled the sidecar all right, I did not like the sidecar idea, so I put on my thinking cap, and a three-wheeler containing the Indian parts is the result.

"The car is composed of the motor cycle with the front wheel and forks, and the handle-bars taken off. A frame was made in the shape of a triangle, and clamped on the machine at the sidecar lugs. The front axle is sprung, no springs being fitted at the back as it is my intention to put a spring frame 7-9 Indian in place of the old machine. As no English ash was obtainable in this out of the way place, common deal was used for the frame and stayed up aeroplane fashion to stand the strain. Steering at present is direct, but I am only wanting a chance of getting a cable, then I shall fit up bobbin and cable steering. The 4 h.p. engine, geared 5¼ to 1, pulls wonderfully for its size, but I am sure the makers would not recognise the engine now—some experiments with the cams, timing, and one thing and another, have knocked a good few more revs. out of the old engine. I have been running the machine five weeks now over very rough roads. I have never bumped the crank case against anything yet, but when I tell you that my wife, myself, and a baby two months old ride in the car you will understand that the construction is quite sound. Being the first car with three wheels seen in Middelburg, it is a great attraction."

A MEDIUM WEIGHT TWO-STROKE.

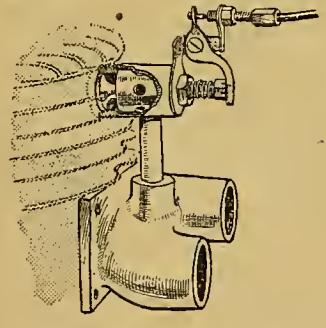
The Alecto—Another New Two-stroke in the 350 c.c. Class.



The latest two-stroke to be introduced, the Alecto, which has a 76 × 76 mm. engine nominally rated as 3½ h.p.

A NEWCOMER in the motor cycle world is the 3½ h.p. Alecto, quite an interesting mount, the engine of which is manufactured by the makers of the machine, Messrs. Cashmore Brothers, Hildreth Road, Balham, London, S.W.

The engine possesses several novel features, and is constructed on the three-port system. There is a spacious transfer port, in which there is a plug 1½in. in



The compression release, which passes the gas into the twin exhaust pipes.

diameter, and when this plug is removed it allows easy access to the ports for cleaning. The exhaust port has a twin outlet, each outlet being 1¼in. in diameter, and it exhausts into a silencer 5in. in diameter and 9in. long, three times the capacity of the cylinder, the exhaust finally passing into the air through a long tail pipe 1½in. in diameter. The release valve exhausts directly into the twin exhaust pipe union, and when the compression is released there is complete absence of sound. This does away with one of the most objectionable features of many two-stroke engines.

The cylinder itself is provided with deep fins, so that the cooling should be quite efficient, and it is composed of cast iron in accordance with A.I.D. specification. The crankshaft is made of 62 ton tensile steel, and the connecting rods are made of the same material, while the flywheel is a mild steel stamping. The piston is of an aluminium alloy, known as Magnalium, and possesses two rings, a compression ring and a scraper ring.

Ball Bearing Mainshaft.

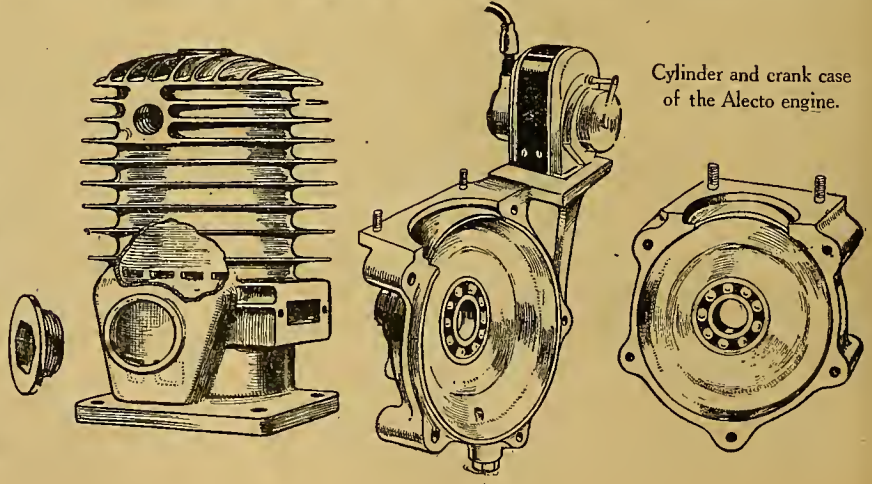
Turning to the crank case, the size of the ball bearings is extremely noticeable. These are of the double row Skefko pattern, and the crankshaft journals also run in white metal bearings in bronze housings, which enables the crank case compression to be retained. It is also interesting to note that the connecting rod big end bearing is of the split variety, and is white metal lined, not a very usual feature in motor cycle construction.

The metric system is employed throughout in the dimensions of the engine parts.

Another noteworthy feature of the Alecto is the substantial cradle, which is used for supporting not only the engine, but also the silencer and footboards. So far as the rest of the machine is concerned, the frame illustrated is not the final model, which will be provided with a straight top tube and an oil tank carried under the saddle. The machine is fitted with a Brooks saddle and a Juckes two-speed gear and kick starter; the final model will be equipped with Brampton forks.

It is interesting to find that at last the two-stroke engine is attracting designers who are willing to incorporate the results of the latest researches in construction, and to get away from the tendency to copy one or two successful and conventional designs.

The Alecto motor bicycle is one of great promise, and we look forward with much pleasure to some experience with it on the road.



Cylinder and crank case of the Alecto engine.

The Essex Motor Club Open Speed Trials.

A Well-attended Meeting. Arrangements Marred by Showers.

J. R. Pattinson, 4¼ B.S.A. sidecar, who won first prize in Event XVI.

THE best supported event since trials were restarted was the Essex Motor Club's speed test run off at Southend on Wednesday, last week, with the help of the Southend and District Automobile Club. Numerous well-known motorists took part in the organisation. The stewards were Major A. M. Low, R.A., Mr. S. G. Cummings, and Mr. R. J. Wilson. Mr. A. G. Reynolds, lately recovered from a dangerous illness, was, we are glad to say, able to act as one of the judges. Messrs. A. V. Ebblewhite and T. D. Dutton were the timekeepers, while Major Loughborough, R.G.A., the brother of the secretary of the A.C.U., occupied the post of timekeepers' auditor, and assisted by Mr. S. C. Westall and Sgt.-Maj. Summer, R.G.A., undertook the laying of the field telephone, which proved far more reliable than these instruments usually are during motor cycle events. The hon. sec. of the meeting was Mr. Harold Fuller.

Altogether there were 237 motor cycle and ninety car entries, and prizes to the value of £200 were offered. The Essex Motor Club put forward strenuous efforts to run the tests with clocklike precision. They started punctually to time at 2 p.m., and so sandwiched in the car with the motor cycle events that the competitors in the latter had plenty of time to return to the starting point to be ready to take part in the next event. But the weather entirely upset the programme. A strong westerly breeze blew down the course in favour of the competitors, but rain fell just after the start, lightly at first, and then in torrents. In a few moments the course was unsuitable for solo motor cycles, so the car classes were run off, and thereafter some confusion and a good deal of delay followed. Later the weather cleared up, but to the spectator the event developed into an intermittent and meaningless procession of motor vehicles, as no classes, were announced and few times were published.

Many Well-known Competitors.

The competitors' numbers were ineffective, and, being mostly illegible, were a source of much trouble to the timekeepers' helpers at the finish. Barker (Henderson) had a spill early in the afternoon, but was able to continue to compete in other events.

The motor cycle events were run in classes, and the results were based on the times made over the kilometre course, but the car events, which included several vehicles in which this journal is interested, were run on handicap.

Among the competitors we were pleased to see Major Jack Woodhouse, D.S.O., who did such magnificent work in the war, Sgt. Milner, the inseparables W. A. Jacobs and J. P. Le Grand, and that fine old sportsman F. W. Applebee. E. J. Bass, lately returned from Germany, was clerk of the course.

The results of the motor cycle events were as follows:

EVENT I.

STANDARD TOURING MACHINES, 250 c.c.—First prize, gold medal; second prize, silver medal.

	Time, sec.	Speed, m.p.h.
1. F. Thorpe, 2¾ Douglas (standing start)	46⅘	= 47.82
2. A. Milner, 2¾ Diamond (standing start)	47⅖	= 47.21
3. G. McIntosh, 2¼ Singer (standing start)	49⅜	= 45.11

EVENT II.

TOURING CARS, 1,100 c.c.—First prize, bronze medal.

1. W. D. Hawkes, 10 G.N. standard (scr.)	56	= 39.96
2. R. O. Lowe, 8 A.V. Monocar (4s. start)	56⅘	= 39.41

EVENT IV.

STANDARD TOURING MACHINES, 1,000 c.c.—First prize, gold medal; second, silver; third, bronze.

1. B. Houlding, 7 Harley-Davidson	36⅖	= 61.48
2. H. Petty, 3½ Norton	37⅜	= 59.51
3. S. Marks, 7 Harley-Davidson	37⅘	= 59.20

EVENT V.

STANDARD TOURING MACHINES, 250 c.c.—First prize, silver medal.

1. J. V. Prestwich, 2¾ Diamond-Jap	57	= 39.25
2. W. A. Jacobs, 1½ Singer	65⅘	= 33.79

A. Milner (2¾ shaft-chain-drive Diamond), J. V. Prestwich (2¾ Diamond-Jap), and A. E. Wills (2¾ Douglas) about to start in Event XXI., the 350 c.c. solo race.

EVENT VI.

CYCLE CAR HANDICAP.—First prize, silver medal.

	Time, sec.	Speed, m.p.h.
1. E. B. Ware, 8 Morgan (2½s. start)	53⅘	= 41.59
2. W. D. Hawkes, 8 Morgan (2½s. start)	55	= 40.68

EVENT VII.

STANDARD TOURING MACHINES, 500 C.C.—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. H. Le Vack, 3½ Edmund-M.A.G.	47	= 47.61
2. A. Milner, 2¾ Diamond	47⅘	= 47.21
3. F. G. Plnck, 3½ Primus	48	= 46.62

EVENT VIII.

ANY SIDECAR MACHINE, 1,000 C.C.—First prize, silver medal; second prize, bronze medal.

1. B. Houlding, 7 Harley-Davidson	41½	= 54.31

EVENT IX.

TOURING CARS, 1,500 C.C. (MEMBERS).—First prize, silver medal; second prize, bronze medal.

1. R. O. Lowe, 8 A.V. Monocar (6s. start)	48⅘	= 45.85
2. W. D. Hawkes, 10 G.N. st'nd'rd (2s. st.)	54⅘	= 40.99

EVENT X.

STANDARD TOURING MACHINES, 750 C.C.—First prize, gold medal; second prize, silver medal.

1. L. A. Cushman, 6 Zenith	50½	= 44.58
2. F. Thorpe, 4 Douglas	58⅘	= 38.06

EVENT XI.

ANY SOLO MACHINE, 350 C.C.—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. E. Kickham, 2¾ Douglas	37½	= 60.16
2. G. McIntosh, 2½ Singer	42⅘	= 52.77
3. A. Milner, 2¾ Diamond / R. C. Watkins, 2¾ Douglas	43⅘	= 51.80

EVENT XII.

CARS OF ANY DESCRIPTION, 1,000 C.C.—First prize, gold medal (presented by Mr. S. G. Cummings); second prize, gold medal; third prize, silver medal.

1. F. M. Avey, 5 A.V. Monocar (11s. start)	54⅘	= 40.99
2. W. L. Harris, 8 Marlborough (9½s. start)	54⅘	= 41.13
3. Capt Nash, 10 G.N. (scratch)	45	= 49.73

EVENT XIV.

STANDARD TOURING MACHINES, 1,000 C.C.—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. Capt. G. Watkins, 8 Henderson	42⅘	= 52.77
2. L. A. Cushman, 6 Zenith	48⅘	= 46.05

EVENT XV.

CYCLE CAR HANDICAP (OPEN).—First prize, silver medal; second prize, bronze medal.

1. W. D. Hawkes, 8 Morgan (2½s. start)	53½	= 42.07
2. E. B. Ware, 8 Morgan (2½s. start)	54½	= 41.29
3. E. Longden, 8 Morgan (2½s. start)	56⅘	= 39.85

EVENT XVI.

TOURING SIDECAR MACHINES, 750 C.C.—First prize, bronze medal.

1. J. R. Pattinson, 4½ B.S.A.	64⅘	= 34.86

EVENT XVII.

ANY SOLO MACHINE, 500 C.C.—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. J. W. Draper, 3½ Triumph	36⅘	= 61.13
2. A. H. Beach, 3½ Norton	37½	= 60.16
3. E. Kickham, 2¾ Douglas / Lt. G. A. Vandervell, 3½ Norton	38	= 58.88

EVENT XIX.

TOURING SIDECAR MACHINES, 1,000 C.C.—First prize, silver medal; second prize, bronze medal.

	Time, sec.	Speed, m.p.h.
1. W. J. Barker, 8 Henderson	53	= 42.22
2. H. Dobson, 8 Zenith	56	= 39.96
3. H. Stewart, 6 Enfield	56⅘	= 38.82

EVENT XX.

ANY SOLO MACHINE, UNLIMITED.—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. Capt. O. Baldwin, 8 Matchless	32	= 69.92
2. H. R. Harveyson, 7 Indian / E. Remington, 8 N.U.T.	32⅘	= 69.07

EVENT XXI.

ANY SOLO MACHINE, 350 C.C.—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. F. Kickham, 2¾ Douglas	43⅘	= 51.33
2. A. Milner, 2¾ Diamond	47½	= 47.42
3. R. C. Watkins, 2¾ Douglas	47⅘	= 47.21

EVENT XXII.

MOTOR SCOOTERS.—Special award, value £2 10s.; second prize, bronze medal.

1. H. H. Burrows, 1½ A.B.C. Skootamota	121⅘	= 18.5
2. C. Keddie, 1½ A.B.C. Skootamota	138	= 16.21

EVENT XXIV.

ANY SOLO MACHINE, 500 C.C.—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. E. Kickham, 2¾ Douglas	43	= 52.04
2. A. H. Beach, 3½ Norton	44½	= 50.51
3. J. W. Draper, 3½ Triumph	44⅘	= 50.10

EVENT XXV.

STANDARD TOURING MACHINES, 250 C.C.—First prize, silver medal.

1. W. A. Jacobs, 1½ Singer	45	= 49.73
2. J. V. Prestwich, 2¾ Diamond-Jap	49½	= 44.93

EVENT XXVI.

ANY SOLO MACHINE, 750 C.C.—First prize, silver medal second prize, bronze medal.

1. J. W. Draper, 3½ Triumph	43	= 52.04

EVENT XXVIII.

ANY SIDECAR MACHINE, 750 C.C.—First prize, silver medal; second prize, bronze medal.

1. Capt. Charlesworth, 5 Zenith	44	= 50.86

EVENT XXIX.

ANY SOLO MACHINE, 1,000 C.C. (Standing Start).—First prize, gold medal; second prize, silver medal; third prize, bronze medal.

1. Capt. O. Baldwin, 8 Matchless	40½	= 54.84
2. A. J. Winstanley, 8 Zenith	41	= 54.58
3. H. R. Harveyson, 7 Indian	41½	= 54.31

EVENT XXX.

CARS OF ANY DESCRIPTION, 1,500 C.C.—Special prize, value 5 guineas, presented by the Southend and District A.C.; second prize, gold medal; third prize, silver medal.

1. H. G. Severn, 5 A.V. Monocar (11s. st.)	41⅘	= 53.72
2. F. M. Avey, 5 A.V. Monocar (11s. start)	42	= 53.23

EVENT XXXI.

ANY SOLO MACHINE, 750 C.C.—First prize, silver medal; second prize, bronze medal.

1. Capt. Charlesworth, 5 Zenith	37½	= 60.47
2. Major J. Woodhouse, D.S.O., 3½ Norton	39	= 57.35
3. H. Petty, 3½ Norton	39⅘	= 56.50

EVENT XXXII.

ANY SOLO MACHINE, UNLIMITED.—First prize, silver cup presented by Mr. H. H. Burrows; second prize, gold medal; third prize, silver medal; fourth prize, bronze medal.

	Time, sec.	Speed, m.p.h.
1. Capt. O. Baldwin, 8 Matchless	42⅘	= 52.77
2. E. C. Baragwanath, 8 Zenith	42⅘	= 52.29
3. Capt. Watson, 8 Henderson	43⅘	= 51.33
4. Maj. J. Woodhouse, D.S.O., 3½ Norton	44⅘	= 50.18

EVENT XXXIV.

TOURING SIDECAR MACHINES, 1,000 C.C.—First prize, silver medal; second prize, bronze medal.

1. B. Houlding, 7 Harley-Davidson	39	= 57.35
2. F. R. Hardinge, 7 Indian	48⅘	= 46.24
3. H. Stewart, 6 Enfield	48½	= 45.85

EVENT XXXVII.

ANY SOLO MACHINE, 1,000 C.C.—Special prize, value 5 guineas, presented by Messrs. Godfreys, Ltd.; second prize, gold medal; third prize, silver medal; fourth prize, bronze medal.

1. E. Remington, 8 N.U.T.	31⅘	= 70.81
2. Capt. O. Baldwin, 8 Matchless	32	= 69.92
3. E. Baragwanath, 8 Zenith	34⅘	= 64.68
4. S. F. Garrett, 7 Indian	35	= 63.9

EVENT XXXVIII.

TOURING SIDECAR MACHINES, 750 C.C. (Flying Start).—First prize, silver medal; second prize, bronze medal.

1. Capt. Charlesworth, 5 Zenith	44½	= 50.51
2. J. R. Pattison, 4½ B.S.A.	52⅘	= 42.71

EVENT XXXIX.

ANY SIDECAR MACHINE, 500 C.C. (Standing Start).—First prize, silver medal.

1. F. W. Applebee, 4½ B.S.A.	78⅘	= 28.53

EVENT XLI.

STANDARD TOURING MACHINES, 750 C.C.—First prize gold medal; second prize, silver medal.

1. H. Petty, 3½ Norton / R. Charlesworth, 5 Zenith	38	= 58.88
3. J. Boxall, 5 Indian	43⅘	= 51.09

EVENT XLIII.

STANDARD TOURING MACHINES, 500 C.C.—First prize gold medal; second prize, silver medal; third prize bronze medal.

1. H. Petty, 3½ Norton	41⅘	= 54.05
2. A. Milner, 2¾ Diamond	42⅘	= 52.77
3. L. G. Brown, 3½ Rover	43	= 52.01

EVENTS XLIV AND XLVI.

ANY SIDECAR MACHINE, 1,000 C.C.—First prize, silver medal; second prize, bronze medal.

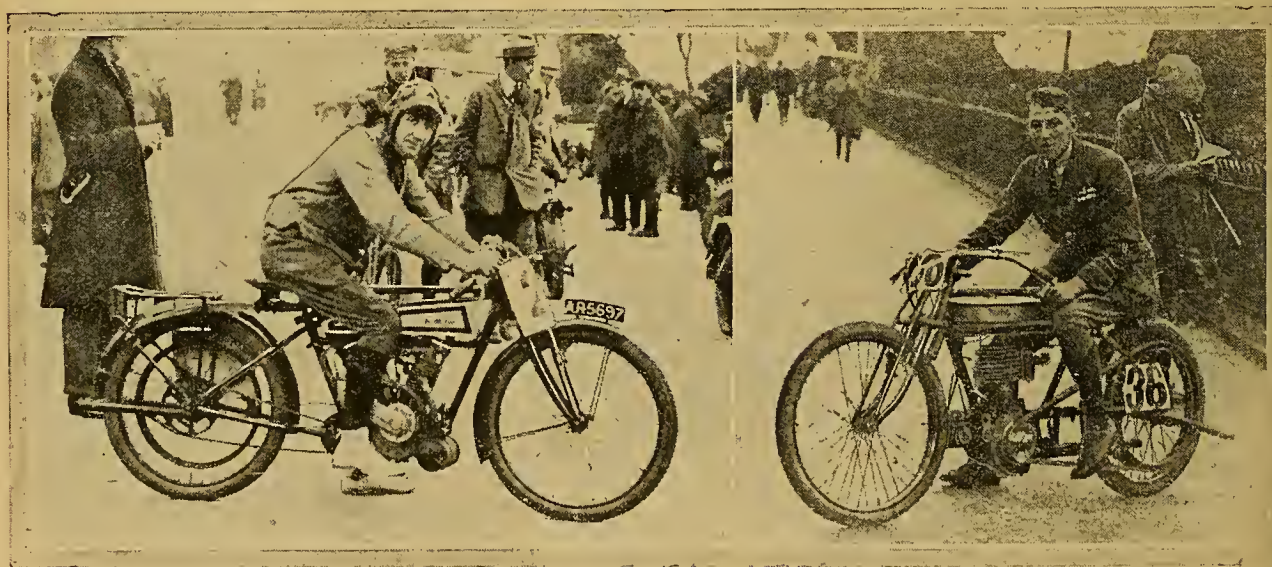
1. W. J. Barker, 8 Henderson	58	= 38.51

EVENT XLV.

STANDARD TOURING MACHINES, 350 C.C.—First prize gold medal; second prize, silver medal.

1. G. J. McIntosh, 2½ Singer	42½	= 53.03
2. J. V. Prestwich, 2¾ Diamond-Jap	44	= 50.86
3. Miss V. Wyatt, 2¾ Douglas	49⅘	= 45.11

For the Palmer Cup a silver rose bowl, value £30 was presented by the Palmer Tyre, Ltd., to the winner of the largest number of motor cycle events. There were three ties: Capt. Charlesworth, 5 Zenith, 3 wins; E. Kickham, 2¾ Douglas, 3 wins; and Capt. Baldwin 8 Matchless, 3 wins.



H. Le Vack (3½ Edmund-M.A.G.), first in Event VII., and Major J. Woodhouse, D.S.O., M.C. (3½ Norton), second in Event XXXI

Scottish Six Days Reliability Trials

Incidents Day by Day. Severity of Road and Weather Conditions account for Many Withdrawals.

In last week's issue illustrations were published of competitors and their machines, together with details of the route.

PERTH, MONDAY.

WE left Edinburgh this morning under ideal weather conditions, and the run to the first check at Stirling was without incident—save that, if facts were obtainable, it might stand out as the greatest blind in history. Dead straight, dead hard main roads the whole of the way—pot-holes? Yes, assuredly, but for the most part the road was tarred, and the occasional moth-eaten patches did not prevent a high average.

Lunch was at Crieff, not at Aberfeldy as the official programme would lead one to believe, and on the way one or two things happened. We came across Wills, busily shedding the last remaining relic of the chain case of his 6 Rover, and complaining of an elusive rattle. On arriving at the lunch control, we were told that Spence had fallen out, and was getting a new wheel axle turned up for his 4¼ B.S.A. It was said that he intended to continue, but we have not seen him since. We also heard that Hugh Gibson and Frank Smith, not to be deprived of at least seeing some of the fun of this classic event, had turned up on a new Clyno.

Amulree.

Somewhere between Crieff and Amulree, J. Shepherd (6 Campion) fell out for good, owing, it is said, to magneto transmission troubles. Not a murmur of tyre troubles yet.

We were on the famous hill in good time to obtain a seat. A very fair show of spectators were present, the weather being glorious.

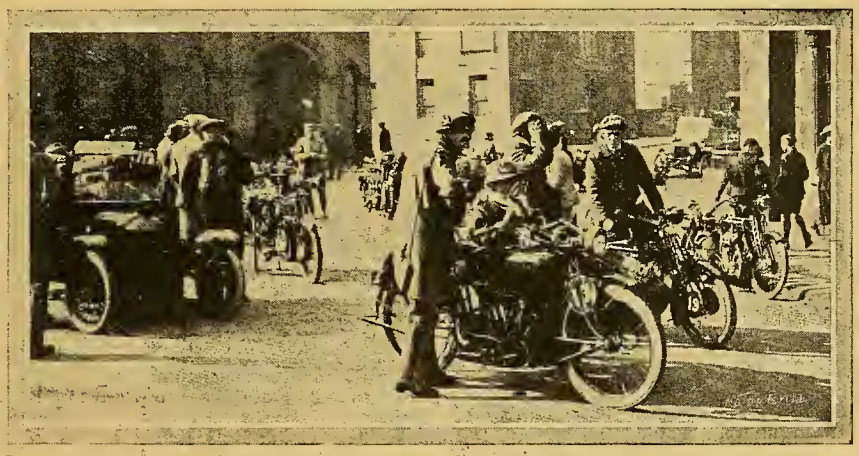
Wills, dead on time, came up behind us and made a clean ascent, though he found that the removal of the chain case had not removed his rattle which is worrying him.

The first bit of excitement was caused by Cunningham's Morgan. At the sound of his exhaust, the spectators stood clear. He stormed the first bend in fine style, but the second was too much for him. He slowly, but surely, came to a stop. Newman, who was directly following, rode skilfully round on his 3½ Sunbeam, and was cheered by the onlookers. H. Alexander (8 Enfield) failed, and. when finally Cunningham restarted and got away, he did so at the expense of his clutch, and was compelled to retire.

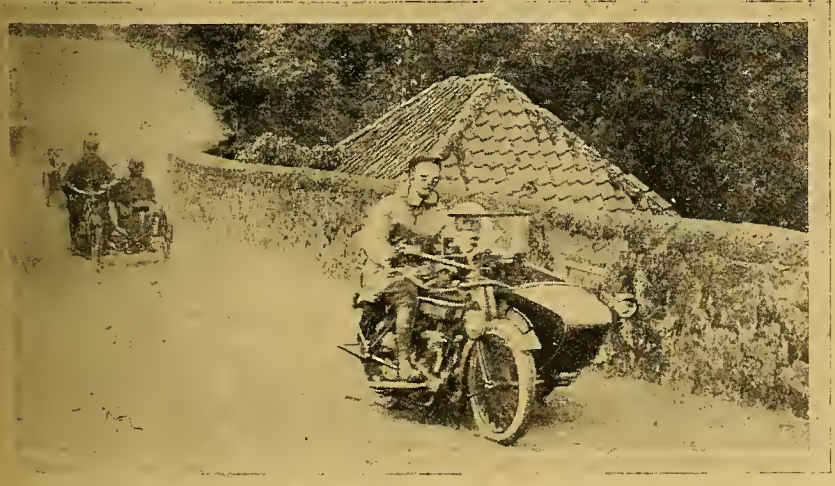
Beck (3½ Sunbeam) struck his footrests with a crash at the first corner, but managed to ricochet out of it. On the second corner he ran into the loose sand, charged the bank, and, of course, failed.

J. R. Alexander on his 7-9 Indian outfit made an excellent ascent, and Hutchison (4 Douglas sc.) negotiated both corners well, then, for some reason, konked out within five yards of the finish of the hill.

Douglas Alexander (8 Enfield sc.) came up much too fast, skidded round the first corner, and stopped on the second owing to his sidecar lifting. G. C. Stead (10 A.C.), the only light car entry, took the corners in fine style and climbed well. H. Hendry (5 Indian) stopped. A. L. Downie (2¾ A.J.S.) skidded badly on the first corner, but managed to recover. By means of repeated clutch slip he successfully negotiated the second, and proceeded up the hill in fits and starts, the engine alternatively racing and konking. His ascent, however, was clean.



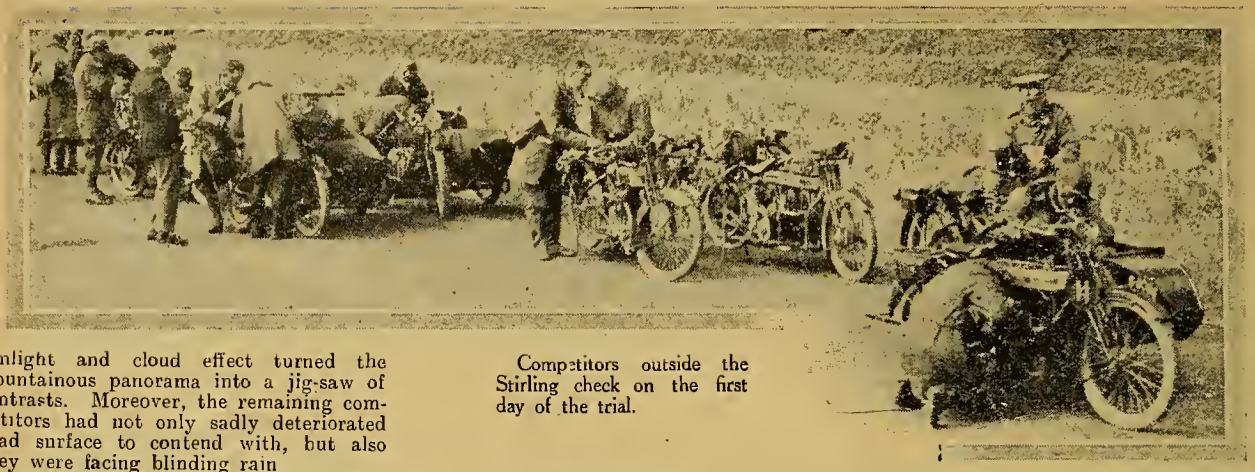
At the start from Croall's Garage, Edinburgh. J. Alexander (7-9 h.p. Indian sidecar), J. Shepherd (5-6 h.p. Campion), and a Morgan



D. S. Alexander (8 h.p. Enfield sidecar) and F. J. Hutchison (4 h.p. Douglas sidecar) passing through Falkirk.

Competitors Handicapped by Storm.

The glorious weather was now interrupted by one of those unexpected deluges reminiscent of every Scottish Six Days up to date. Fair spectators, clad in summer cottons, looked round hopelessly for shelter, and decided there was nothing for it but to go through with the business. The rain came down in torrents for perhaps fifteen minutes, but it was rather more refreshing than otherwise, and the



Competitors outside the Stirling check on the first day of the trial.

sunlight and cloud effect turned the mountainous panorama into a jig-saw of contrasts. Moreover, the remaining competitors had not only sadly deteriorated road surface to contend with, but also they were facing blinding rain

Duncan (4 h.p. Douglas) made a clever climb, and Olsson (4 h.p. Douglas) kicked and skidded his way round. The storm now became almost blinding, and Fairley (4¼ h.p. B.S.A.) took the second corner too fast, failed, and could not restart. Alan Hill, on his crimson Morgan, made a fine climb, as also did Macrae (Harley-Davidson sc.) and George Wray on his old Clyno. Baker, whose Scott is the smartest machine in the trial, came up with a regular T.T. roar, but, unfortunately, the rocks at the first corner jolted his throttle closed. He started with an immense reserve, and climbed easily, and similarly Fisher's Norton went up with power in hand.

Mrs. Bell made one of the cleanest and smartest climbs of the day, and was enthusiastically cheered, as she deserved to be. W. Young (4 h.p. Triumph) failed in no remarkable manner.

Grinton (7 h.p. Harley-Davidson sc.), Selby (4 h.p. Blackburne), and Miller (3½ h.p. P. and M.) took the hill by storm, and Tunbridge (6 h.p. A.J.S. sc.) and Downie (6 h.p. Ariel sc.), running neck and neck, forthwith made slow, cautious, and skilful ascents; the A.B.C. also climbed with ample reserve of power.

The condition of Amulree was about the same as usual, and, as usual, the short, steep, but unobserved rise beyond the hill, caused many forcible remarks.

On to Perth.

The weather now cleared, and the play of sunlight and cloud effect tempted one to dally on the hill-tops. The descent was a veritable nightmare, and we are tempted to think there will be many failures here on the return, owing to the appalling combination of loose sand and bedrocks that comprise the road.

We now kept to the rear, prepared to cheer up the cripples, but mile after mile was reeled off without a glimpse of a stranded roadfarer. Here and there we were shunted on to by-roads of appalling surface, but still no tyre troubles—those will come later. A good average was easily held to Perth, about eleven miles outside which city we found Miller repairing his rear tyre. A pointed stone had punched a hole clean through cover and tube.

MARKS LOST ON TIME.—Hendry, 21.

MARKS LOST ON AMULREE.—H. Alexander, 1; F. J. Hutchison, 1; J. Beck, 1; Cunningham, 1; D. S. Alexander, 1; H. Hendry, 1; D. Wright, 1; W. Young, -; Baker, 1.

SECOND DAY.

INVERNESS, TUESDAY.

Driving mist, stinging rain, diagonal draining gutters looming unexpectedly from the chaos of rocks and fog, unending miles of wet, shifting sand, of deep, slimy mud, of half wild mountain sheep minus decision of purpose or the strength of character to carry their intentions into effect; add to that house-side gradients and roads, which appear to have been designed by a tipsy corkscrew manufacturer, and one has a dim impression of to-day's riding. Those who have been associated with the trial from the first say they do not recall a day when weather and road conditions combined with such unity to annihilate the prospective gold medallist. Now and then we emerged below the clouds to catch glimpses of majestic salmon rivers or of deep, rich glens between the mountains—mere glimpses to help one to realise what the ride might have been. We have bumped and jolted and skidded for endless miles through rain we could not face, or peered anxiously through drifting highland mists in search of the next protruding rock or deeply washed water gulley calculated to break our frames, and for once the sidecarists were better able to stick the pace than the solo mounts. Immediately one attempted an acceleration one plunged into a sea of water or slime, rising suddenly from out of the mist, and immediately proceeded to give an excellent representation of a frog on a buttered plate.

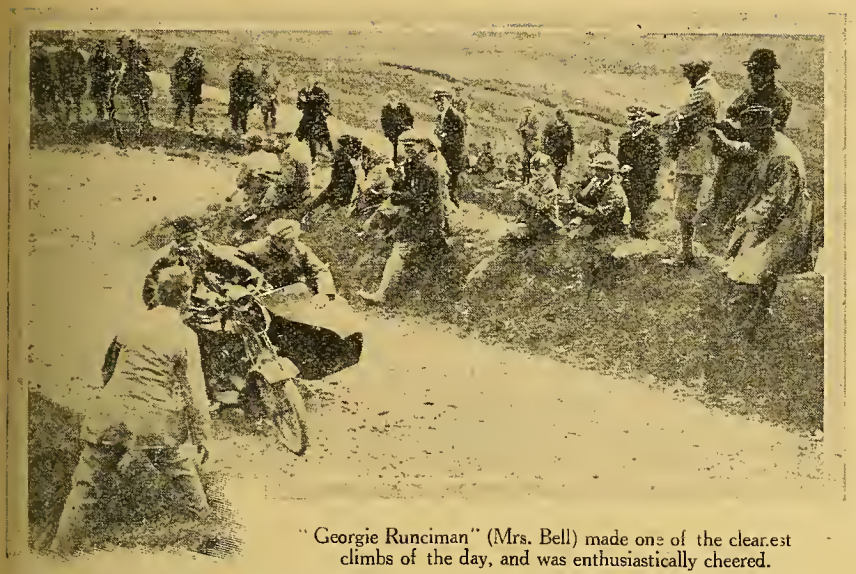
Anyway, here we are, with the bagpipes wailing without—waiting for the tail end of the dripping officials to come in with their clammy wet papers.

The Devil's Elbow.

Last night Alan Hill and Harry Macrae protested, and both protests were accepted. They had fallen, it seems, into the common error of imagining that "extra time" was allowed over and above schedule time, instead of included therein. Quite a number of green cards have gone out for to-night, but the tribunal results are not yet obtainable. The Devil's Elbow was in bad shape, and after that there followed, as one rider put it, "forty miles of concentrated hill!"

But to deal with the hill. Harry Macrae (7-9 h.p. Harley-Davidson sc.)

Douglas Alexander (8 h.p. Enfield sidecar) ascended Amulree at so high a speed that he collided with the bank on the second bend, nearly baulking Westwood (4 h.p. Triumph).



"Georgie Runciman" (Mrs. Bell) made one of the cleanest climbs of the day, and was enthusiastically cheered.

climbed well, and changed into middle directly after the second bend. Capt. Hay-Will (6 h.p. A.J.S. sc.) was badly baulked, and forced into the heather on the extreme left of the second bend. He kept up a good speed in spite of jolts, regained his grip, and recovered well, making an excellent performance. W. Young (4 h.p. Triumph) fell at the first corner, and the succeeding ten miles were too much for him. He checked in at Inverness very late. Downie (6 h.p. A.J.S. sc.) changed too late, and all but got into difficulties. Hill took the climb on his Morgan fast, with superb judgment. The Scott, the Norton, and the A.B.C. all made light work of the corners, and changed up immediately after the second bend. Wills (6 h.p. Rover), Milne (4¼ h.p. B.S.A.), Jameson (2½ h.p. Diamond), and Olsson (4 h.p. Douglas) all made excellent climbs, but, undoubtedly, the thrill of the morning was put up by Fairley (4¼ h.p. B.S.A.), who was behind time, and stormed the first corner at tremendous speed. Thereafter he skidded broadside about ten yards, turned a complete circle, and fell.

Competitors not mentioned all got up successfully.

Cockbridge Ladder.

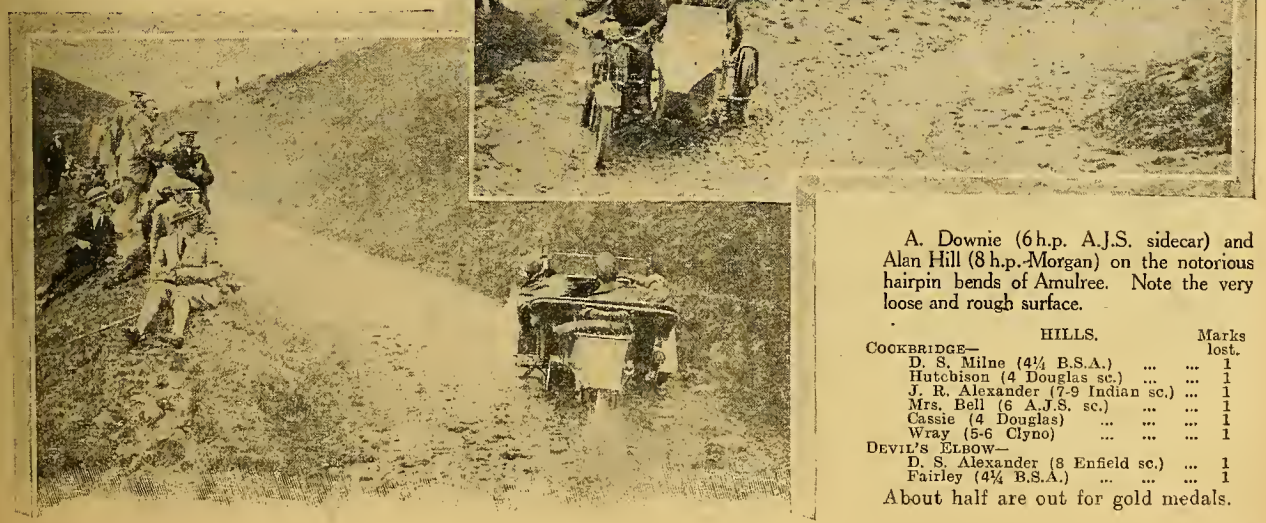
Lunch was at Braemar, and the second observed hill of the day was Cockbridge Ladder. The surface consists of wet yellow mud on solid bedrock. The first corner is easy, the second is a right angle on a gradient of about 1 in 3 with the road sloping the wrong way, then after about half a mile of stiff collar work there comes a second right angle, succeeded by miles of middle gear jolting, skidding, and grinding, so that skill alone did not suffice to assure clean ascents.

It was raining heavily when the first little batch of solo riders came along, but all got up well. Mrs. Bell (6 h.p. A.J.S. sc.) was the first sidecarist to arrive, and failed from wheel spin, baulking Moir (3½ h.p. Sunbeam), who rode round cleverly and made a very clean ascent. The driving mist now became a deluge. Miller (3½ h.p. P. and M.) rode up well, and Downie (5-6 h.p. Ariel) made a good climb in spite of wheel spin. George Wray (5-6 h.p. Clyno sc.) was apparently overgeared. He tackled the steeper side to get out of the slime, konked, and ran backwards, all but ejecting his passenger.

Milne (4¼ h.p. B.S.A.) failed from belt slip due to the wet, which was hard luck, as he was riding well. Carfrae (6 h.p. Bradbury sc.) muddled his gear at the bottom, but came up well. Macrae (7-9 h.p. Harley-Davidson sc.) made a good climb, and A. H. Alexander (4 h.p. Douglas sc.) kept going in spite of wheel spin.

The surface was now awful, the churning wheels cutting deeply into the mud, so that the gradient consisted of scores of wheel ruts, each one filled with a rivulet of trickling water. J. R. Alexander (7-9 h.p. Indian sc.) failed from wheel spin, but is, we understand, protesting, while D. S. Alexander (8 h.p. Enfield sc.) made a good climb. A. H. Alexander was baulked by Hutchison (4 h.p. Douglas sc.), but rode well, while Hutchison asserts that his failure was caused by an effort to avoid baulking Alexander.

TIME.	Marks lost.
J. Baker (3¾ Scott)	3
Hutchison (4 Douglas sc.)	6
Tunbridge (5-6 A.J.S. sc.)	7
Carfrae (6 Bradbury sc.)	9
Wray (5-6 Clyno)	15
Jameson (2½ Diamond)	22
A. Downie (5-6 Ariel)	25
H. Alexander (8 Enfield sc.)	29
Claud Duncan (4 Douglas)	83
Hendry (5 Indian) retired.	



A. Downie (6 h.p. A.J.S. sidecar) and Alan Hill (8 h.p. Morgan) on the notorious hairpin bends of Amulree. Note the very loose and rough surface.

HILLS.	Marks lost.
COCKBRIDGE—	
D. S. Milne (4¼ B.S.A.)	1
Hutchison (4 Douglas sc.)	1
J. R. Alexander (7-9 Indian sc.) ...	1
Mrs. Bell (6 A.J.S. sc.)	1
Cassie (4 Douglas)	1
Wray (5-6 Clyno)	1
DEVIL'S ELBOW—	
D. S. Alexander (8 Enfield sc.) ...	1
Fairley (4¼ B.S.A.)	1

About half are out for gold medals.

Scottish Six Days Reliability Trials.—

THIRD DAY.

INVERNESS, WEDNESDAY.

To-day has reduced the number of potential gold medallists to the merest smattering. The weather has been fine for the most part in the valleys, but practically all day we have been riding in the clouds through banks of driving mist over roads treacherous with wet clay, boulders, and shingle. The old hands among the competitors are unanimous in the opinion that this is the most difficult trial that has yet taken place.

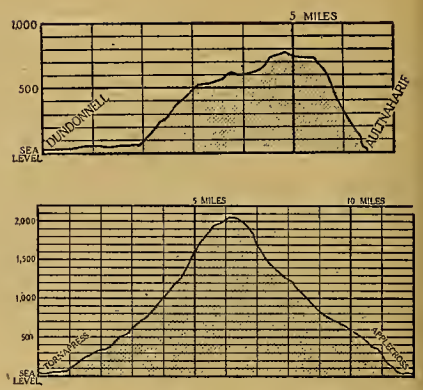
In 1914 solo competitors were allowed ten minutes' and passenger machines fifteen minutes' latitude of schedule time; this year all alike are allowed but four minutes. Added to this is the abnormal condition of road surfaces—factors which reduce the event to one prolonged T.T. Mrs. Bell and others are complaining of over-fatigue, and the number of starters to-morrow will depend largely upon the hearing of to-day's protest.

Nine miles out of Inverness a whole bunch missed an arrow and went nine or ten miles out of their way. Two did the thirty-five miles over freak hills and freak surfaces in the time allowed for the thirty-mile check, and a massed protest of the others is pending. The attempt to rectify the error over the appalling roads led to numerous mishaps, including Emerson (3 A.B.C.), who broke his frame and retired towards the end of the day. J. R. Alexander (7-9 Indian sc.) had a day of punctures, but, taking great risks, lost no marks on time over two-thirds of the journey when the tread came clean off his rear tyre, and he has now joined the ever-growing band of "tail-enders," for whom a bronze is the only possible award. Hutchison (4 Douglas sc.), after a clever climb of Aultnaharie, broke his sidecar chassis and retired. George Wray (5-6 Clyno sc.) broke a coupling on the outward journey when travelling at speed, and experienced a bad smash mounting an eight-foot bank and colliding with a telegraph pole. Luckily, neither he nor his passenger suffered injuries. Macrae (7-9 Harley sc.) also broke a sidecar connection and retired. Twelve different competitors have had more or less serious falls during the day, and tyre troubles have been unending.

We descended Aultnaharie through driving mist, took lunch at the foot, where there was just room to stack the machines at the loch margin, and later ascended.

The Ascent of Aultnaharie.

Nearly everyone was out of petrol and a motor boat was despatched for a fresh supply. The hill is about one and a half miles long, the gradient varying from 1 in 2.8. The surface consists of jagged rocks, boulders, sand, and shingle. The first three solos came up successfully. Macrae (7-9 Indian sc.), the first sidecarist rider, failed, as also did the surviving Morgan, both unable to obtain wheel grip. Hill's gold medal, therefore, is gone, which is hard lines, as he has a good machine, and drives it magnificently. The A.C. also failed. A. H. Alexander (4 Douglas sc.) made a superb ascent, and D. S. Alexander (8 Enfield sc.) passed us nearing the summit at high speed. J. R. Alexander (7-9 Indian sc.) made a marvellous climb, but H. Alexander (8 Enfield sc.) failed on the first corner, overheated owing to wheel spin, and was compelled to shed his passenger. J. Beck (3½ Sunbeam) went over the edge, rolling with his machine for twenty or thirty feet. Downie took the corner well without his passenger performing acrobatic feats Emerson (3 A.B.C.) purred up comfortably, but broke his chain midway. Moir (3½ Sunbeam) crashed among the rocks, Miller (3½ P. and M.), Wills (6 Rover), and Selby (4 Blackburne) all climbed skilfully. There were sixteen failures on the hill.



Wednesday's and Thursday's test hills. Contours of Aultnaharie and Applecross Hills taken from the Contour Road Book of Scotland.

MARKS LOST AFTER TO-DAY'S APPEALS.

	Marks lost.
Jeffreys (6 A.J.S.)	1
Stead (10 A.C.)	1
Hill (8 Morgan)	1
Bell (5-6 James sc.)	1
Moir (3½ Sunbeam)	1
Beck (3½ Sunbeam)	2
Baker (3¾ Scott)	4
Mrs. Bell (6 A.J.S. sc.)	11
Downie (5-6 Ariel)	34
Tunbridge (6 A.J.S. sc.)	43
J. R. Alexander (7-9 Indian sc.)	78
H. Alexander (8 Enfield sc.)	86
Duncan (4 Douglas)	167
Milne (4¼ B.S.A.)	225

RETIRED.

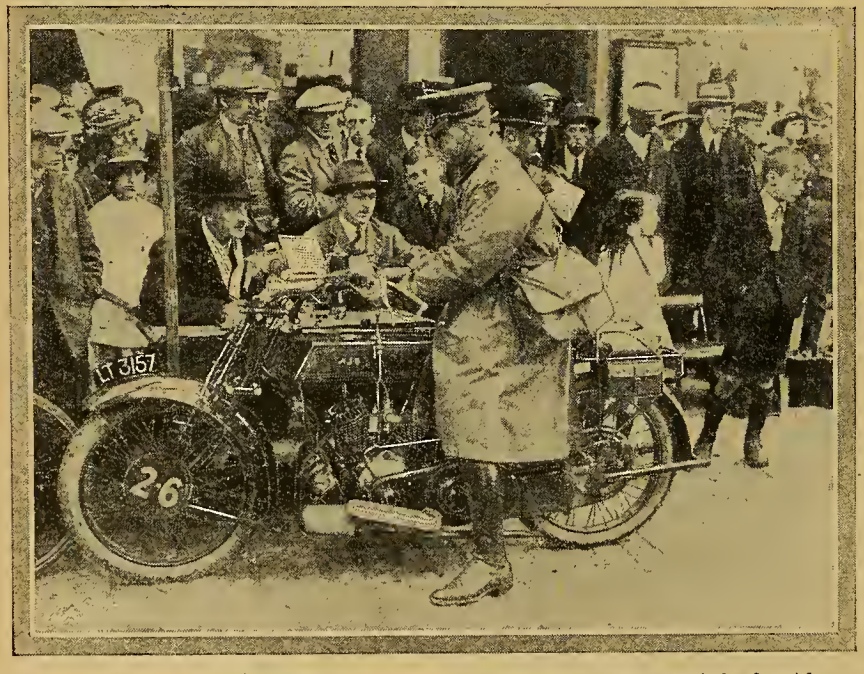
Spence (4¼ B.S.A.)
Macrae (7-9 Harley sc.)
Cunningham (8 Morgan).
Wright (3½ B.S.A.)
Hendry (5 Indian).
Hoyland (4 Norton).
Wray (5-6 Clyno).
Carfrae (5-6 Bradbury sc.)
Young (4 Triumph)
Emerson (3 A.B.C.)
Shepherd (5-6 Campion).
Hutchison (4 Douglas sc.)

Despite the gruelling, eighteen competitors still have clean sheets.

FOURTH DAY.

INVERNESS, THURSDAY.

The most remarkable news item of to-day is that it has not rained. We seem to have been ricochetting over mountain tracks, through drifting cloud banks, since trials began, but to-day brought a glorious relief in the way of almost uninterrupted sunshine, good roads, and an entire lack of exciting wayside incidents. J. R. Alexander's appalling luck as regards the tyres of his Indian held out. D. S. Alexander (8 Enfield sc.) broke a wheel spindle and retired. Moir (3½ Sunbeam) also has retired owing to tyre troubles. Applecross was, of course, the event of the ride. We ourselves rode out just ahead of the competitors, and made the long trying ascent with a following breeze in a stagnant atmosphere, the sun seeming to concentrate his rays on the hard-worked engine, yet the new 3½ Douglas, which we were now riding, took the interminable gradient with the greatest ease. We were, however,



His first trial. Captain Jeffreys (6 h.p. A.J.S.), who had heard so much of the Scottish Trials, although he had not competed in any event before, elected to make a tour of Scotland under the auspices of the Edinburgh M.C.

Scottish Six Days' Reliability Trials.—

glad to be mounted on a spring frame machine.

Halfway up we found McGregor making a restart, owing to the petrol having fallen to the back of his tank.

The Alexander Ford (he is driving with some of the lesser officials, and endless baggage in the tonneau) deserves a special award, as it has covered the entire route and climbed every hill so far, excepting Aultnaharie. Alluding to officials, we feel that special comment should be made concerning the kindly treatment that has been shown by the judges; no reasonable protest has been turned down, none have been refused a hearing. A sporting event conducted by sportsmen is a true description of the Scottish Six Days.

Ye gods! What a gruelling they are giving us, perched on a pinnacle commanding the three hairpins, the scene that lay below was in itself worthy of the ascent.

Overlooking the island-studded rock-dotted loch, with range after range of rugged indigo fading into the distance, the highest peaks were cloud wreathed, some indeed still carrying snow, and a fairy-like effect of light and shade played on the whole scene.

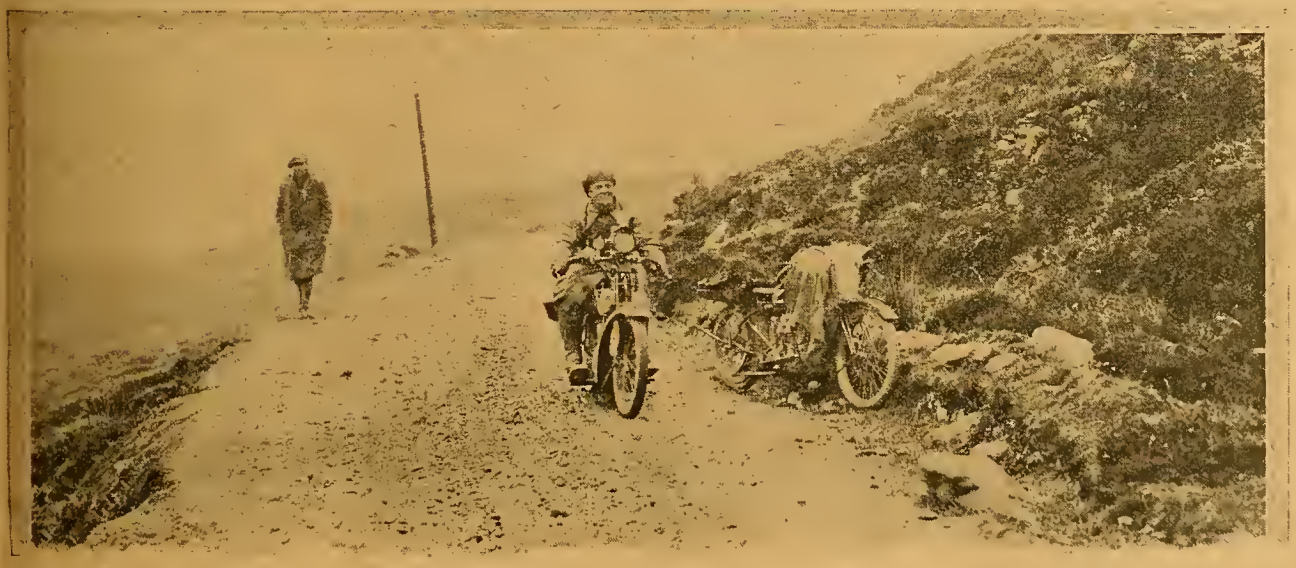
Newman (3½ Sunbeam) and Black (4 Triumph) went up in their usual good form. The last named, after 50,000 miles riding in France, is qualifying for the next T.T., and his reckless dash is paralleled only by his fine judgment. Stretton Miller (5½ P. and M.) is a superb reliability rider. This being only his third competition, he is a probable gold medallist, and this will make his third premier award. The Morgan climbed well: a cascade of shingle flying from the rear wheel, steam issuing with volcanic vigour from the radiator, it was certainly a fearsome machine, and the flying stones were dangerous to approach.

Baker (3¾ h.p. Scott), whose gear seems to grip with dog-clutch fierceness, took the first corners O.K., but over-ran, and crashed into the ditch at the second; he also had "got steam up."

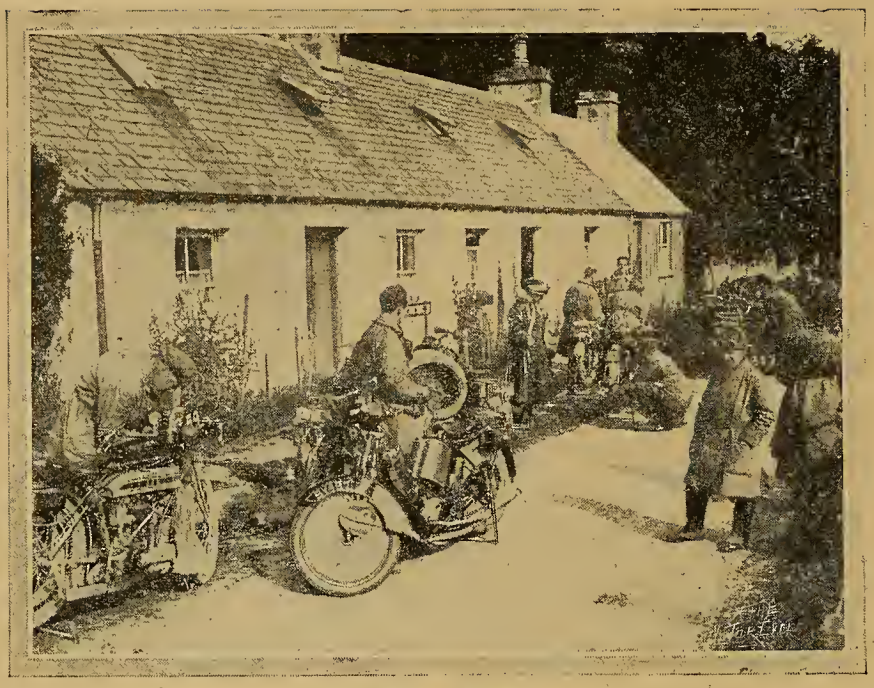
R. B. Clarke (4 h.p. Douglas) on Aultnaharie. Observe the slippery surface of the hill.

A. H. Alexander (4 Douglas sc.) hit the wall at the bottom corner with his sidecar wheel, otherwise he made a fine ascent. He, with Mrs. Alexander as a very plucky and skilful passenger, is piloting his little mount with an able hand. The pluck of the lady passengers and of the sole lady competitor is really inspiring. If Mrs. Bell (6 A.J.S. sc.) gets her bronze medal she will have triumphed over conditions which have tried out all but the topmost cream of the male competitors. Brash (7-9 Harley sc.) climbed well, and it may be added that this very able rider accomplished the impossible later in the day by changing the rear cover of his Harley-Davidson between checks in twelve minutes. The A.C. climbed with vim, and the Blackburne, as usual, was remarkable for its effortless ascent. Duncan (4 Douglas) was stopped on an easy part of the gradient by a boulder, the size of a man's two fists, jamming in his front forks.

It is rather remarkable that, with the exception of two failures, neither of which was due to lack of power, the competitors climbed the famous hill without effort, thanks mainly to the weather. We partook of an excellent outdoor lunch at the loch margin at Applecross, amidst scenery certainly hard to beat, returning by the same route. For romantic grandeur and absolute loneliness to-day's and yesterday's routes beat everything one reads of. Miles and veritable leagues with never a sign of human habitation! For hours one sees



E. W. Choldcroft (4 h.p. A.J.S.) at the summit of Aultnaharie, agreed to be the most severe climb



A halt outside Garve.

only a shepherd or a wandering tribe of half-wild gipsies. There is nothing but rock and heather, crags and clouds, and many of the competitors were quite distressed by the utter loneliness of the riding. The roads are made of splintered boulders, covered with earth and left for the rabbits to tread in.

All the schools are liberated to see the competitors, the children lined up, and encouraged to cheer us on our way. Bonny Scotland is the land of unparalleled scenery, unparalleled whisky, and the worst roads that the ingenuity and cussedness of a man sporting a sporran (in war-time) could devise.

The question of the evening is: "Who killed the blue Persian cat?"

Marks lost to-day:

Duncan (4 Douglas)	60
J. R. Alexander (7-9 Indian sc.) ...	46
E. J. Tunbridge (6 A.J.S. sc.) ...	8

Hutchison (4 Douglas sc.) got home yesterday by strapping up his broken chassis with dog collars. It is reported that it took him two hours to make friends with sufficient dogs to enable him to complete the repair.

The Diamond, which was running magnificently, experienced a broken valve and seven punctures yesterday; the previous day it ran out of petrol, ran some miles on paraffin, during which it was compelled to tackle a test-hill, with the result of a red-hot engine.

Thanks to the Vacuum man, who, of his own account yesterday, drove his car over the appalling route to Aultnaharie, Jameson, the Diamond rider, and several other competitors were helped out of oil shortage difficulties, which otherwise might have compelled abandonment of the trial.

FIFTH DAY.

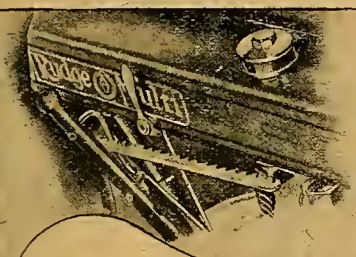
INVERNESS, FRIDAY.

Leaving Inverness at eight o'clock—all that was left of us—we followed the Caledonian Canal and Loch Ness to Fort Augustus, the weather being perfect, and, therefore, the glorious mountain scenery at its best. Thence we climbed Glendoe, the test hill of the day, and away over good roads for the most part to Grantown, where an excellent lunch was provided at the Grant Arms Hotel. The quality of the meal and the reasonable charge made for it were both an appreciable relief after the tip top prices and rock bottom returns we have experienced at Inverness.

From Grantown onward the route was the same as traversed on Tuesday (Tomintoul, Cockbridge, Braemar, and Perth), save that, though the road remains the worst in the entire route, we were spared the discomfort and difficulties experienced on the northward journey.

In Glendoe the road winds along the course of the Glen, the verdant, pretty scenery being quite a contrast after the lonely grandeur of the mountain tops which have characterised the last few days. The observed portion of the hill is about four miles in length, undulating, but chiefly hard collar work, euding with two bad hairpins on a gradient of about 1 in 4,

J. R. Alexander (7-9 h.p. Indian sidecar) had a very useful passenger. On the slippery surface of Aultnaharie she provided the necessary extra weight to cause road adhesion of the back wheel.



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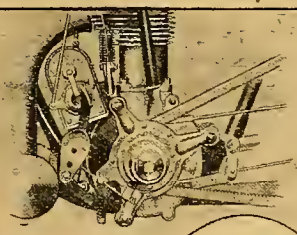

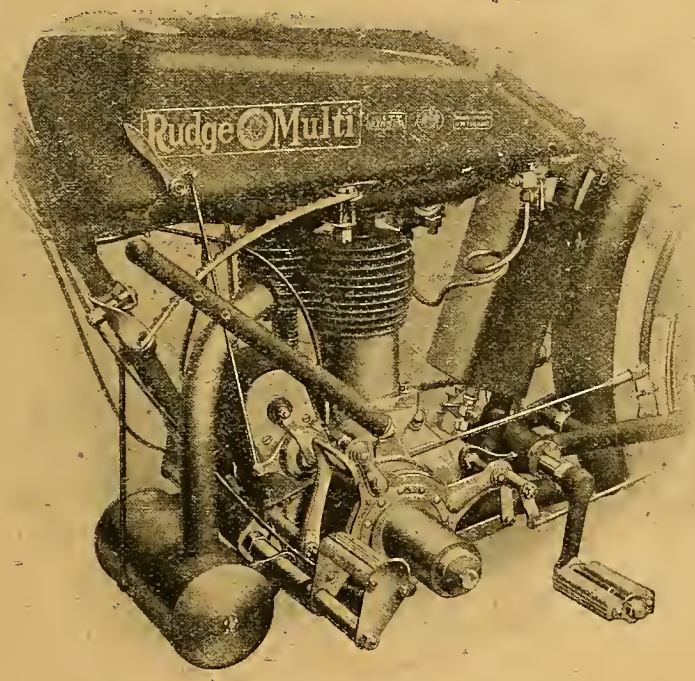

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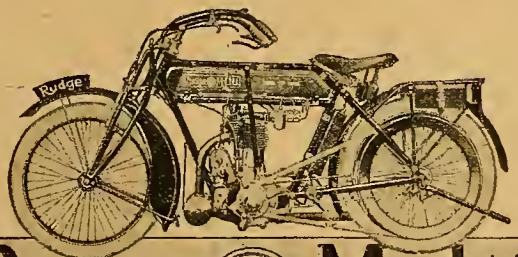

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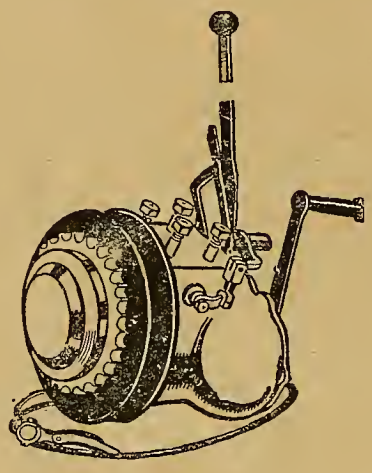

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GLASGOW—72, St. Vincent Street.
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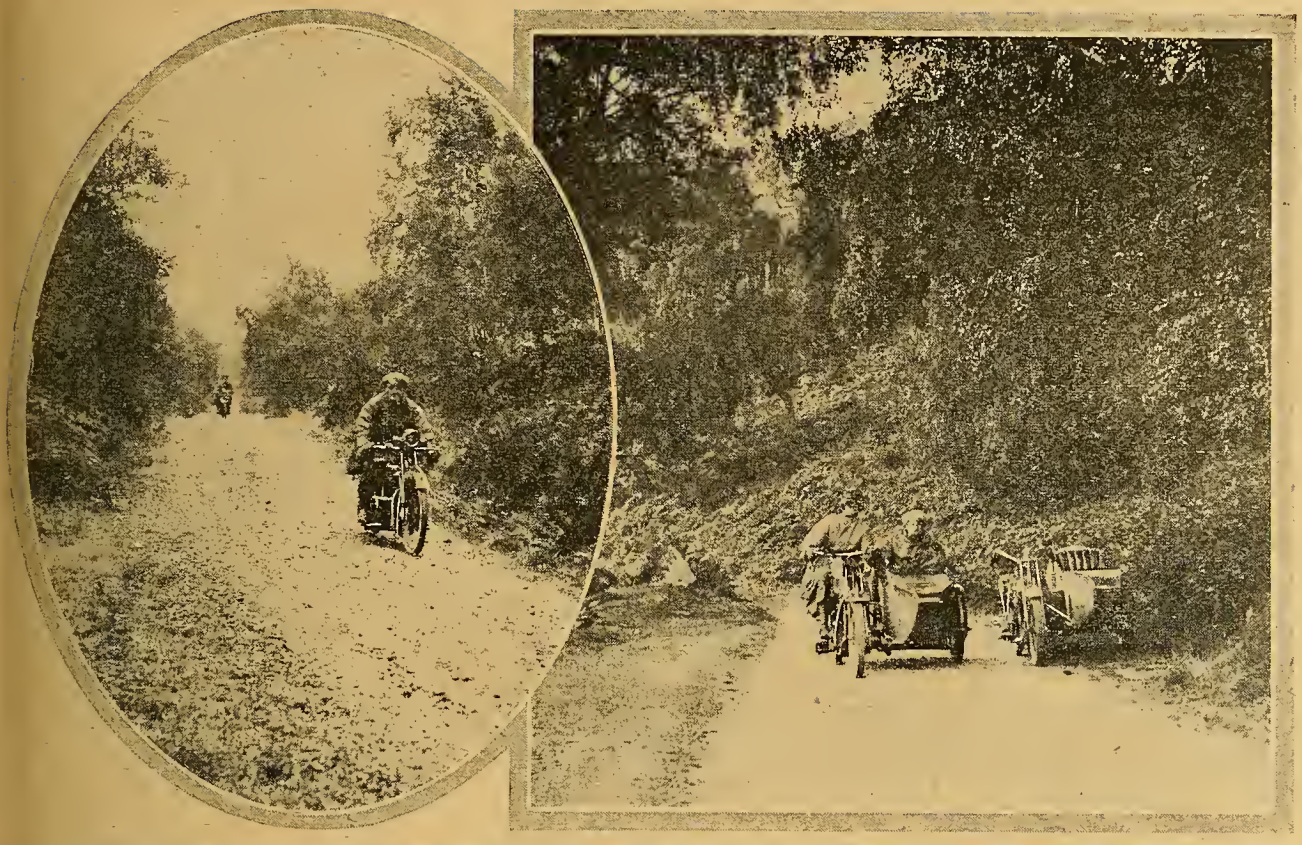


In the glens between the rain storms. Vivian Olsson (4 h.p. Douglas) near Contin, and Mrs. Bell (6 h.p. A.J.S. sidecar) nearing Inverness, after four days' hard riding.

and a surface of deep dust intermingled with stones. In spite of a late start and belt troubles *en route* we managed to arrive well ahead of the competitors, and took our seat overlooking the hairpins, accompanied by Donald McKay (the assistant secretary) and others.

Westwood, on his Triumph, was the first to arrive, and made his usual steady climb. He is one of the few surviving veterans who have competed in every Scottish Six Days' Trial, and his riding and timekeeping are superb. Choldcroft (4 A.J.S.) wobbled somewhat, but kept going. He has made an excellent performance so far. Grinton (7-9 Harley-Davidson sc.) went up very fast, as also did Alan Hill, stones and steam shooting in all directions from the Morgan wheels and radiator. Mrs. Bell (6 A.J.S. sc.) experienced considerable front wheel banking, but got up all right. She deserves a gold, whatever she is awarded, and all the lady passengers deserve awards of some sort. Most of them, it is to be feared, are pretty near the end of their tether. Duncan Bell (5-6 James sc.) made a steady climb. We noticed a squashed petrol tin jammed under his sidecar body; perhaps it had arrived there by accident, but it must have relieved the springs of considerable strain on the rough portions of the road. The P. and M. and the Blackburne knocked slightly, the first hill on which they have shown such symptons, but, while the P. and M. got out easily, the Blackburne, to our complete surprise, all but failed. Baker's Scott was missing fire; he slipped his gear on the first corner, but, safely round, the gear gripped suddenly, and he konked out. He has since experienced considerable magneto trouble and retired.

Yorkshire's representatives. J. Baker (3¾ h.p. Scott) and W. Strettell Miller (3½ h.p. P. and M.) near Contin.

The A.C. light car failed from clutch slip. A. H. Alexander's Douglas was missing fire owing to contact-breaker troubles, and, unfortunately, konked out, thus depriving him of his probable gold. J. R. Alexander's (7-9 Indian sc.) was also missing fire, and again his high gear ratios proved his undoing.

As soon as Beck (3½ Sunbeam) appeared all the spectators got up the bank, but on this occasion he stuck to the road, though riding much faster than was necessary. Newman's Sunbeam probably made the star performance, though Jeffreys, riding the big A.J.S. solo, also did well. This Australian officer is to be congratulated on his success; he entered the trial with no knowledge of such things, and merely as a means of seeing Scotland. A. L. Downie has put up a good show on his little 2¾ A.J.S., and his brother, A. F. Downie (6 A.J.S. sc.) is one of the star performers of the trial. E. J. Tunbridge (6 A.J.S. sc.) konked out, and all those unnamed made clean ascents.

On the execrable roads succeeding Grantown, on which it was noticeable that many machines were misfiring, owing to the awful gruelling they have undergone, the first really regrettable accident occurred. Deans (3½ Ariel), who had a clean sheet hitherto, fell, and was run into by Grinton (7-9 Harley-Davidson). Deans's shoulder was slightly injured, while his Ariel was badly crumpled. The rear wheel of the Harley was buckled, but Grinton is continuing.

Duncan Bell (5-6 h.p. James sidecar) on Glendoe.

Alan Hill got his first puncture at Corgaff, and averaged 27 m.p.h. for nine miles over the most appalling portion of the whole route. The most exciting sprint of the whole trial was put up yesterday by D. Alexander (8 Enfield sc.), who did 39¼ miles over truly atrocious roads in one hour!

MARKS LOST TO-DAY.

ON TIME.

Hill (8 Morgan) 7

RETIRED.

Baker (3¾ Scott).
Deans (3½ Ariel).

THE LAST DAY.

EDINBURGH, SATURDAY.

Midway in the week we would have prophesied that the first-class awards this year would be counted on the fingers of one hand; but, since then, glorious weather has favoured us, and, during such brief spells enjoyed in the Highlands, the most impossible hills became possible and the roughest tracks moderately rideable. As the trial nears its end, we have learnt how to make up the time over boulder-strewn and shifting surfaces. We have learnt to ignore our machines and our native instincts of self-preservation and to blind all out down steep gradients.

To-day's "pimple" was Kenmore on the north side of Amulree. When we descended this hill on Monday, it appeared a far more perilous gradient than Amulree itself, which we had just mounted, for the difficulties of Kenmore are enhanced by the jagged outcrops of rock which form slanting steps, as it were, at the worst hairpins. The gradient is, of course, terrific, but experience gained during the trial, combined with the fact that the road was at its best, were factors which prevented the hill from claiming its toll from the probable gold medal winners.

We had a glorious "blind" to the foot of the hill, and on the way we noticed that the rear wheel of one of the sidecars, which was badly buckled when the competitors checked in yesterday evening, had mysteriously straightened itself during the night. Selby (4 Blackburne) experienced an aggravating piece of bad luck. On the way out, he broke a chain link. His spares had gone astray, and

G. Grinton (7-9 h.p. Harley-Davidson) near Muir of Ord. Observe that the sidecar is fitted on the right side of the motor cycle in the American fashion.

he was riding the Blackburne without spares of any kind, so was compelled to retire. He had a clean sheet thereto, though we noticed yesterday that his engine had suddenly developed a mysterious overheating. Douglas Alexander (8 Enfield sc.) again had chain trouble, and once more put up some marvellous stunts.

On the hill, Black's Triumph exhibited its usual reserve of power, Hill (8 Morgan) came up very fast and took the second

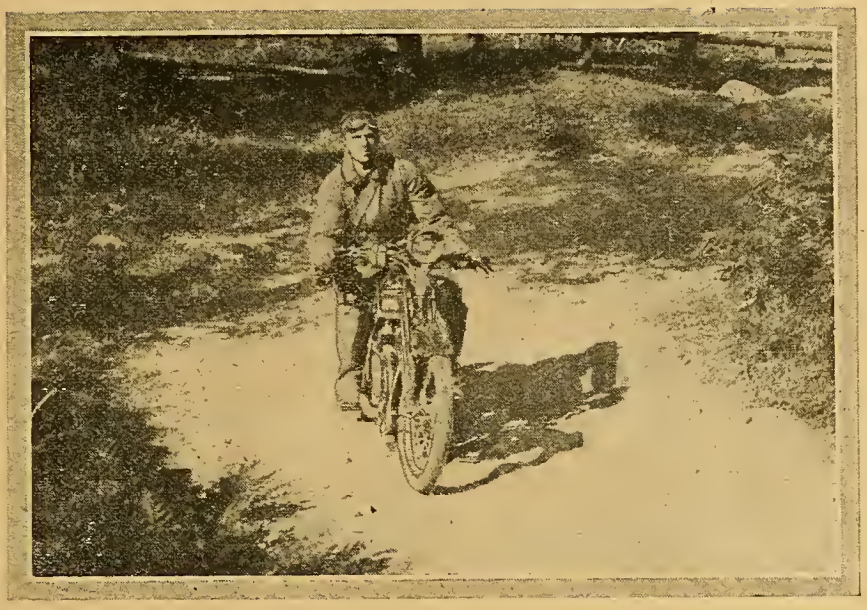
D. S. Milne (4½ h.p. B.S.A.) passing through the gateway on Glendoe.

Scottish Six Days' Reliability Trials.—

hairpin on two wheels in real Gordon-Bennett style, Tunbridge (6 A.J.S. sc.) failed on the first hairpin, and A. L. Downie (2¾ A.J.S.) is reported by the observer to have failed, thus losing his first mark. Downie, however, protests that his ascent was clean, and his protest

From rugged heights to peaceful valleys—the scenery is always changing in the course of the Scottish Trials.

was eventually upheld. Douglas Alexander (8 Enfield sc.) broke both engine chains within five yards of the end of the observed stretch, and all other competitors made clean ascents, thus bringing to an end the last of the difficulties of what has probably been the most strenuous British six-day trial on record.



J. A. Newman (3½ h.p. Sunbeam) on Kenmore.

Impressions.

Aultnaharie ridden cold was undoubtedly the worst hill of the trial, and, consequently, claimed the most victims, though Glendoe and Amulree also took their toll. Amulree is the first hill of the trial, and a good many competitors invariably fail through stage fright.

Thursday was the most strenuous day, the roads on both sides of Cockbridge being terrible at any time, and near upon impossible in driving mist and rain such as we encountered.

Wednesday also will live long in the memory of many of the riders, vile weather adding no little to the endless desolation of the route and the natural difficulties of the moorland tracks.

The special award has gone to trade rider A. F. Downie, who has put up an excellent performance on his A.J.S. sidecar. The solo riding gold medallists have run so close together in the uniform excellence of their performances that it is impossible to set down one as better than another. A. L. Downie (2¾ A.J.S.) probably overcame the greatest difficulties, as he had no power to play with, and climbed the various precipices only by delicate fingering of his clutch.

The lunch check at Grantown on the fifth day of the trial.

AULTNAHARIE—The most severe hill of the Scottish Trials.

J. W. Wills (5-6 h.p. Rover-Jap), who started first and rode well, winning a gold medal.

Of the new riders, J. W. Wills (5-6 Rover-Jap) rode well. He is given to "stunting," but is cautious where caution is needed. Experience will teach him to cut out the theatricals. Black's (4 Triumph) particular temperament is better adapted to the T.T. than a Scottish Six Days, but he is blessed with excellent judgment. Capt. W. Strettell Miller has a good head, and rode throughout in the most praiseworthy manner. G. H. Cassie (4 Douglas) takes his hairpins too fast, but, being a Highlander, he probably likes that sort of thing. Fairley (4¼ B.S.A.) is only nineteen years of age, and had not ridden a B.S.A. till the day before the trial, so his performance reflects credit both upon its makers and himself.

Of the silver medallists, Hill's (8 Morgan) judgment and the pluck of Mrs. Hill, his passenger, deserve special comment, while Mrs. Bell (A.J.S.) has, of course, put up a wonderful performance. A. H. Alexander (4 Douglas sc.) lost his gold medal only by his contact points working loose at the top of Glendoe, but he has achieved his purpose, in that he has proved the 4 h.p. Douglas as capable as a sidecar machine of climbing the worst hills in Scotland under the most strenuous conditions. Milne (4¼ B.S.A.) also is a steady rider. Among the third-class awards, Claude Duncan (4 Douglas) was "priceless." Eight punctures a day have been his average, and his gold and silver medals gone, leaving him with two hours to play with at every check; he instituted a system of tea parties and fishing expeditions, which were a source of endless merriment to the tale-end officials. The organisation and arrowing have been perfect, and the true sporting spirit of the event in every way upheld. McGregor, in his Ford, has covered the entire route and climbed every hill with the competitors—a most praiseworthy performance.

The pictures of the Scottish Trials are by "The Motor Cycle" photographer. Copies of prints published may be obtained from our Photographic Department, 20, Tudor Street, E.C. Half plate prints, 1/6 unmounted; whole plate, 2/6 unmounted, postage extra.

Incidentally.

The Motor Cycle representative rode one of the new 3½ h.p. spring frame Douglases. He covered the entire route, and observed every competitor on every hill—a feat which would probably have been impossible, owing to fatigue, on a rigid frame machine.

Every wheel of Downie's A.J.S. outfit is perfect, no side shake, and no broken spokes—the only time he has experienced such immunity in a Scottish Six Days'. He puts it down to larger wheels and tyres.

The lesson of the Scottish Six Days': "Go canny with unknown hairpins."

Macrae got his bit of fishing. Two fine trout on Friday and one on Saturday.

One competitor uncertain of the route eventually found a dead cat in the middle of the road and further on a dead rabbit. He was then sure he was right. Curiously enough McGregor's Ford was the only vehicle that preceded him.

There were sixteen failures on Aultnaharie, on Amulree only twelve.

A competitor, after a day of tyre troubles, went into a shop to buy a collar, and when questioned as to the size demanded 26 × 2½.

Emerson was a late starter, and midway on a mountain road ran out of petrol. A sporting car driver, thinking it was a race, rushed up to him, and insisted on instantly filling his tank, refusing payment, and urging him on in pursuit of the others.

Baker's Scott simply bristled with gadgets, which are the subjects of patents.

Claude Duncan (4 h.p. Douglas) ascending Kenmore.

Scottish Six Days Reliability Trials.—

The Results.

FIRST-CLASS AWARDS.

J. W. Wills (5-6 Rover-Jap).
N. Black (4 Triumph).
J. A. Newman (3½ Sunbeam).
W. Westwood (4 Triumph).
H. E. Fairley (4¼ B.S.A.)
Vivian Olsson (4 Douglas).
E. W. Choldcroft (4 A.J.S.)
Capt. Hay-Will (6 A.J.S. sc.)
R. B. Clark (4 Douglas).
H. G. Cassie (4 Douglas).
A. Downie (6 A.J.S. sc.)

SPECIAL AWARDS.

Capt. Strettell Miller (3½ P. and M.)
D. M. Brash (7-9 Harley-Davidson sc.)
A. F. Downie (6 A.J.S. sc.)

SECOND-CLASS AWARDS.

D. S. Milne (4¼ B.S.A.)
A. H. Alexander (4 Douglas sc.)
Jas. Beck (3½ Sunbeam).
J. A. Jeffreys (6 A.J.S.)
G. C. Stead (A.C. Light Car).
Alan Hill (8 Morgan).
A. L. Downie (2¾ A.J.S.)
Mrs. Bell (6 A.J.S. sc.)
Duncan Bell (5-6 James sc.)
A. Downie (6 A.J.S. sc.)

THIRD-CLASS AWARDS.

Claude Duncan (4 Douglas)
D. S. Alexander (8 Enfield sc.)
E. J. Tunbridge (6 A.J.S. sc.)

Summary.

To summarise the results, the solo machines are in the majority where gold medals are concerned on account of their larger entry, but the proportion of awards is very little higher than in the sidecar class.

This year's starters included twenty-nine solos, eighteen sidecars, two Morgans, and one light car. Of the solo machines nine secured gold medals, one special award, four silver medals, one bronze medal, and fourteen retired.

The sidecars secured two gold medals, one special award, four silver and two bronze medals, and eight retired. One Morgan obtained a silver medal, as did the only light car in the trial.

Retirements in the solo class represented nearly 50% of the starters, while in the sidecar class the proportion was a little over 55%.

Only those who have driven a sidecar through a Scottish Trial can appreciate the difficulties to be overcome, and the latter results, therefore, compare very favourably.

J. A. Newman (3½ h.p. Sunbeam) near Glendoe. He obtained a first-class award.

The withdrawal of the trade entries appeared to be a somewhat risky experiment, as most of the manufacturers were represented in the trials by sporting amateurs, and it must be a source of great satisfaction to most makers that these entrants have succeeded in riding to victory in a trial which is the most severe of any Six Days event to be organised. Road and climatic conditions added to the severity of the gradients made the winning of an award an achievement of which to be proud, and we congratulate the competitors, especially those who are newcomers to the competition field, upon their performances.

There can be no doubt that if the makers would now interview the competitors who rode their machines—especially those who were compelled to retire—some very valuable lessons could be learned.

There were no single-cylinder sidecar machines in this year's trial. In 1914 there were several, but Applecross proved their Waterloo. Hugh Gibson still retains the honour of being the only single-cylinder exponent to take a single-cylinder sidecar machine over Applecross in a Scottish Trial. This was in 1913, when he drove a 4 h.p. Bradbury.

Overheard at the Trials.

"What was yhond went up like yhond?"

"A Ford."

"It wa'na Ford. It were a wee Indian."

English Competitor: "What is the going like between B and A? Is it as bad as reported?"

Old Scot Competitor: "It's no easy mon, but—well, it's a *road*."

"Spring frames for next year's Six Days."

CLUB NEWS.

A Motor Cycle Club for Cardiff.

Motor cyclists residing in and near Cardiff who are interested in the formation of a motor cycling club for that district, are requested to communicate with Mr. R. B. Williams, Gowerton, Sully, near Cardiff.

Reading and District M.C. and L.C.C.

Reading and district motor cyclists and lightcarists are reorganising the local club, and the hon. secretary *(pro tem.)*, Mr. T. L. Morley, 40, King's Road, Reading, would be glad to hear from any prospective members in the locality.

Birmingham M.C.C.

Owing to the action of the Traders' Union withdrawing its support of open events until the English Six Days, the B.M.C.C. has been compelled to make the hill-climb of August 23rd a closed event.

Ilkeston and District M.C.C.

A sixty-five minutes' non-stop trial run was arranged by the Ilkeston and District M.C.C. last week, and three awards were made to the competitors doing the whole course nearest to schedule time.

1. (Gold medal.)—G. A. Calder (4¼ Campion sc.). 65m. 5s.
2. (Silver medal.)—F. Trueman (3½ Premier sc.). 65m. 10s.
3. (Silver medal.)—F. Johnson (3½ Rudge). 66m. 5s.

Abersychan and District M.C.C.

Twenty riders competed in the slow hill-climb recently held. There were two classes, solo and sidecar, the former being won by H. Plaister (2¾ Juno-Villiers), with E. Woolley (4¼ B.S.A.) second, while the first and second places in the sidecar class were gained respectively by W. H. Oliver and F. William, both riding 4¼ B.S.A. sidecars.

Newcastle and District M.C.

A week-end "go-as-you-please" run to Keswick is being arranged for the August Bank Holiday by the Newcastle and District Motor Club. A non-stop section from Keswick to Kirkstone will be incorporated, and also a 20 m.p.h. hill-climb on the return journey. Competition work in the North is being greatly hampered by scarcity of new machines.

N.M.C.F.U. (Leeds).

The run organised recently by the N.M.C.F.U. (Leeds) for the benefit of limbless soldiers still remaining in the local military hospitals was quite a success, despite the weather, and about seventy were taken out to Harrogate and Knaresborough. The intention is to repeat the outing next month for the benefit of those who could not be taken on the first occasion.

A SIMPLE RUNABOUT.

J.A.P. Engine, 85.5×85 mm., 976 c.c. Friction Drive. Chain Transmission.

BUILT on original lines, and of comparatively small dimensions, the 8 h.p. Richardson has several interesting features, particularly in connection with the body and framework.

Although the track and wheelbase are only 3ft. 10in. and 6ft. 9in. respectively, and the total weight is under 6 cwt., the vehicle is reasonably roomy for the normal pair of occupants, and has an excellent turn of speed where gradients are concerned, as we learned on a recent trial run in the hilly districts round Sheffield.

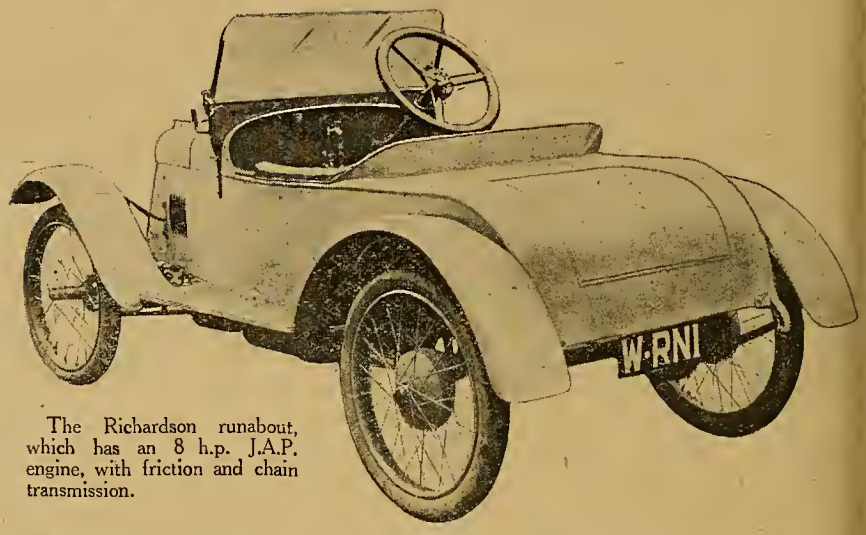
The engine is an air-cooled J.A.P. V type twin-cylinder with a bore and stroke of 85.5 and 85 mm. respectively (976 c.c.) and side-by-side valves. It is supported by four cradle plates across the frame, and, immediately in front of the crank case, the magneto is mounted on a small platform and driven by enclosed bevel wheels from the valve timing gear.

The carburetter is an Amac, controlled by air and throttle levers in the centre of the steering wheel, and gravity-fed from a petrol tank of 4½ gallons capacity housed immediately under the dashboard cowling. Lubrication is by semi-automatic pump and sight drip-feed from an oil tank under the bonnet and next to the petrol tank.

The Transmission Described.

Transmission from the engine to the rear wheels is taken through a friction gear located under the seat. Immediately behind the engine is a large fabric-type universal joint connected to a shaft which rotates the driving friction wheel at its rear extremity. In front of this disc, the shaft is supported by a self-aligning ball bearing in a hinged cross bracket, which, on being moved by the clutch pedal, causes the shaft to move forward and brings the driving disc out of engagement with the driven friction disc mounted on a cross shaft immediately behind it. The forward movement of the driving disc and shaft is taken up by the universal joint behind the engine.

The driven disc, when alterations of gear ratios are required, is moved on its keyways on the cross shaft by a fork engaging with a collar on the friction wheel and connected by a right-angle lever and links to the gear control lever on the right-hand side of the body. Adjustable stops are provided for controlling the maximum movement of both the clutch and brake controls, the former having a special heel pedal to allow of extra pressure being exerted between the two friction discs on abnormally steep hills.

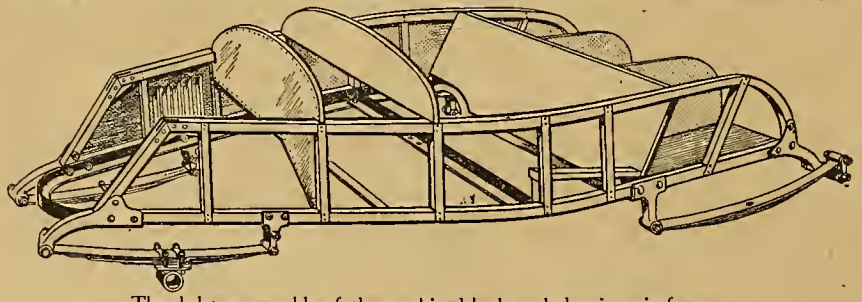


The Richardson runabout, which has an 8 h.p. J.A.P. engine, with friction and chain transmission.

The friction wheels are 13in. in diameter, and four speeds and reverse are provided, the top gear ratio being 4 to 1. A ⅜in. roller chain transmits the drive from the driven disc cross-shaft to a sprocket on the back axle, which has no differential and is supported in large ball bearings mounted in sleeves above the rear underslung springs.

Front view of the Richardson runabout.

Some original features are shown in the construction of the framework and body. The frame proper consists of a length of angle steel, bent in the form of a V, with the rounded corner at the front. On this angle steel construction is assembled the ash framework of the body, as shown in the sketch, and it is built permanently in position in order that the wood and angle steel shall reinforce each other and form one complete unit. By this method it has been possible to produce a light, but strong and flexible, frame, while, at the same time, the accessibility of the engine and transmission is not seriously interfered with, since the framework of the body is built comparatively low to enable the driver and passenger to step over it into their seats. The body is strengthened laterally by metal cross pieces between the angle steel side members and by wooden cross members under the dashboard cowling, while the ash side frames of the body and rear locker are covered by three-ply wood.



The skeleton assembly of the combined body and chassis main frame.

Novel Bodywork.

This built-up combination of chassis and body goes far to eliminate innumerable loose parts and fixing bolts such as are usually found, while the absence of doors likewise makes for lightness, rigidity, and freedom from rattle.

Semi-elliptic springs are fitted fore and aft, the front springs being bolted at an angle on the tubular axle in line with the converging side members of the frame, while the rear springs are of the underslung type.

With a lightweight vehicle of this description the direct steering gear fitted to the Richardson should be satisfactory. Spring clips are employed at the front of the body to enable the dummy radiator and bonnet roof to be detached when attending to the engine. An internal expanding brake is mounted in the hub of each rear wheel, one brake being operated by the hand brake lever and the other by a pedal.

The price of the runabout is provisionally fixed at £175 by the manufacturers, Messrs. C. E. Richardson and Co., Ltd., Finbat Works, Aizlewood Road, Sheffield, and arrangements are being made for deliveries to begin within the next few weeks.

CURRENT CHAT

Times to Light Lamps.

SUMMER TIME.

July	31st	... ...	9.19 p.m.
Aug.	2nd	... ...	9.16 ,,
,,	4th	... ...	9.12 ,,
,,	6th	... ...	9.9 ,,

N.E.A.A.

The Motor Cycle Board of the North-Eastern Automobile Association is making arrangements for holding a gymkhana near Newcastle during August.

York-Edinburgh-York Trial.

It has been decided to award a silver cup to all successful competitors (rather than the customary gold medals) in the York and District Motor Club's open trial to Edinburgh and back.

Surplus Motor Cycles from France.

A shipload of motor material from France is on its way to Newcastle-upon-Tyne, when it will be sold by auction by Messrs. Cooper, auctioneers, at the Aircraft Acceptance Park, Town Moor, on July 30th. The consignment includes sixty-eight motor waggons or cars, and a number of motor cycles and pedal cycles.

Sidecars as Taxis.

Our Paris correspondent writes: "Some months ago, when taxi drivers became smitten with the prevalent mania for making excessive profits, permission was given to owners of sidecars to ply for hire. It was thought that Paris would be over-run with public sidecars, but none appeared, and we had forgotten all about them until one was put on the streets a few days ago. This is a Triumph machine driven by its owner. The sidecar is equipped with hood and screen. The lack of enterprise on the part of sidecar owners is very curious, for there ought to be plenty doing amongst that large class of business men who would be glad to use these machines for getting about rapidly, and probably cheaply, for the sidecar owner can well afford to cut his taxi rival, who has become a modern knight of the road. There is quite a large number of English sidecars driven by French owners in Paris. There have never been so many on the streets. The fine work done by these little vehicles during the war has made them very popular amongst the French, and the great majority of those in use are not reformed military machines, but are brand new."

From "The Gazette."

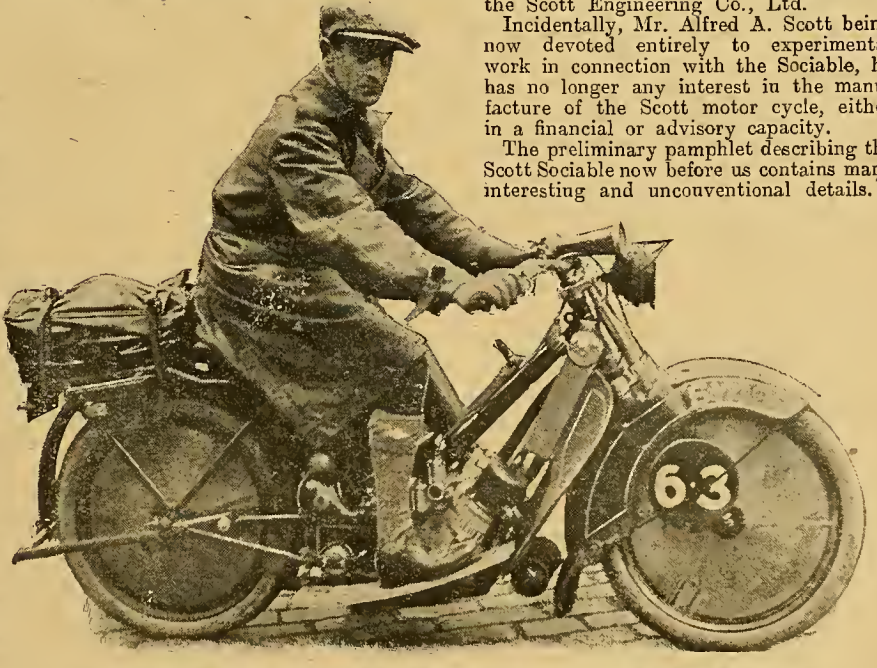
Maj. Brev. Lt.-Col. A. E. Davidson, D.S.O., R.E., was mentioned in Sir Douglas Haig's last despatch. Col. Davidson is a vice-president of the Auto Cycle Union.

Motor Cycles in Canada.

A correspondent from Vancouver writes: "I have just bought a 1912 model Triumph for £21, and it runs like a charm. There should be a good sale for English motor cycles over here. There is a 1919 model B.S.A. and sidecar coming soon, which is the first since the war started, I think."

Motorclub Zuid Holland.

During the mobilisation of the Dutch Army, the Belgian sportsman, Count J. du Monceau de Bergeudal, promised a cup for a long distance competition through Holland. About twenty-five motorists took part in this match, over a distance of 622 miles, which had to be covered at an average speed of 21 m.p.h. for lightweights, and 24 m.p.h. for heavy machines. The competitors, who mostly used American machines, were started from The Hague.



A smart Scott ridden by J. Baker in last week's Scottish Trials. This machine has a specia lubricating system by which the flow of oil to the two cylinders is separately controlled.

Special Features.

INCIDENTS OF THE SCOTTISH TRIALS.
A SIMPLE RUNABOUT.
SOUTHEND SPEED TRIALS.

Flying Ground Wanted.

An airman reader of *The Motor Cycle* wishes to obtain the use of a ground near Coventry conforming to Air Ministry requirements, as follows: To be at least 300 yards square, reasonably good surface, and free from obstructions in the vicinity, such as large trees, etc.

The Scott Sociable.

During the war period three experimental models of the Scott Sociable have been made and tested, and a new company, the Scott Autocar Co., Ltd., Clayton Road, Lidget Green, Bradford, has been formed to manufacture the completed machine. This company has no interest in the Scott motor cycle, which will continue to be produced at Saltaire, by the Scott Motor Cycle Co., Ltd., which, with an issued capital of £80,000, has taken over the business of the Scott Engineering Co., Ltd.

Incidentally, Mr. Alfred A. Scott being now devoted entirely to experimental work in connection with the Sociable, he has no longer any interest in the manufacture of the Scott motor cycle, either in a financial or advisory capacity.

The preliminary pamphlet describing the Scott Sociable now before us contains many interesting and unconventional details.

London-Liverpool-London Trial.

This trial, which was to have been organised by the Liverpool Club to take place last Saturday, has been postponed.

Open Event Cancelled.

Owing to the withdrawal of trade entries from competitions, the Sutton Coldfield and Mid-Warwickshire A.C. motocyclette trial for the Calthorpe Cup was postponed.

Coventry and Warwickshire M.C.

The hon. secretary of the Coventry M.C. (Mr. M. Sampson, 19, Hertford Street, Coventry) would be glad if members who desire to obtain a place in the club team for the M.C.C. Team Trials, to be held in September, will kindly send in their names, together with the makes of the motor cycles they ride (solo or sc.), to him. In the event of a number desiring to take part, an eliminating trial will be arranged.

Sales of Surplus Government Property.

The latest official figures of sales of surplus Government property show that the sum realised is now over £141,000,000. Of the amounts received in one week, the following are noteworthy: Mechanical transport, £272,096; ferrous metals, £131,682; non-ferrous metals, £722,760; and chemicals and explosives, £204,476. The sales of motor cars, lorries, and motor cycles at the Agricultural Hall and Kempton Park are being largely attended. The total mechanical transport sales to date amount to £1,739,000.

Alcohol as Motor Fuel.

Recently, in the House of Commons, Mr. Manville asked the Prime Minister if he would state what action, if any, had been taken to give effect to the recommendations of the Inter-departmental Committee on alcohol motor fuel, that an official organisation, permanent in character and provided with the necessary funds, should be established forthwith by the Government to encourage and develop the production and utilisation of power alcohol as an alternative to petrol. Mr. Bonar Law replied that the matter was now being considered by the Scientific and Industrial Research Authority, with special reference to the recommendations.

Welcome Home for Midland Riders.

Previous reference has been made to a proposal suggesting some form of "welcome" for the returned despatch riders and motor cyclists of the Birmingham district. A committee has now been formed with the object of arranging a dinner and entertainment worthy of the occasion, and Sir William Bowater has kindly accepted the presidency. An appeal for additional subscriptions for this purpose is being made, and in the event of a sufficient amount being forthcoming it is intended that suitable mementoes shall be presented to the parents of those who have fallen and those whose presence is prevented by injuries or military duties. Subscriptions will be gladly received by the following, who will act as the financial committee: Alex S. Ross, 95, Wheelwright Road, Birmingham; Charles F. Dawes, Hall Green Works, Birmingham; Norman T. Downs, 43, Princip Street, Birmingham.

The 1920 Paris-Nice Trial.

The popular trial from Paris to Nice is to be organised in 1920 by M. G. Sweerts, editor of *Motocyclisme*, 1, Cité Paradis (Xe), Paris, France. It is likely that the trial will include the Esterel Road, which is picturesque. Entries from British riders will be heartily welcomed; American, Belgian, Swiss, and Italian teams are also expected to compete.

Improved Roads as War Memorials.

An excellent idea is that put forward in a pamphlet reproduced from *The King's Highway*, and circulated by The Roads of Remembrance Association. It is to improve the roads by removing dangerous corners, building bridges, the construction of "ring" roads round important towns, and the widening and beautifying of existing roads—all this to be done in memory of those who fell valiantly in the war, and suitable inscriptions to be set up recording the facts.

Steel Supply of B.S.A. Co.

We understand that the B.S.A. Co. has proposed to purchase the issued shares of William Jessop and Sons, Brightside Works, Sheffield; the latter firm has supplied the Birmingham Small Arms Co. with all its steel during the last seven years. The Sheffield firm would remain a separate company in the same way as the Daimler Co., of Coventry (which is also allied with the B.S.A.), and would be responsible for the supply of raw material used in the associated businesses.

Capt. W. Strettell Miller (3½ h.p. P. and M), awarded a special prize in the Scottish Trials.

8 h.p. Opposed Twin Light Car.

Readers who have leanings towards the light four-wheeler will be interested in the description of the H.F.G. design which appeared in last week's issue of *The Autocar*. This vehicle is quite on cycle car lines, and comprises flat-twin engine (85 × 110 mm.), aluminium pistons overhead valves, copper-plated steel cylinders with cast iron heads, and has a tubular chassis construction and friction drive.

Petrol Licence Refunds.

The Automobile Association urgently advises motorists who have not yet applied to the Association for refunds in respect of unexpired petrol licences to do so without delay. Unexpired licences with a short request for refund of duty paid in respect of unused vouchers may be addressed to the Secretary, A.A. and M.U., Fanum House, Whitcomb Street, London, W.C.2, up to August 2nd.

STILE COP HILL-CLIMB. Official Results.

THE following are the official figures of Sutton Coldfield and Mid-Warwickshire A.C. hill-climb on the 19th inst. The fastest times were for the most part given in our last issue.

CLASSES 1 AND 2.—FOR SOLO MACHINES (SINGLES AND TWINS) UP TO 275 C.C.

	Time	Formula. Secs.
1. Newey, H. (2¼ Levis, 198 c.c.)	3.167	67
2. Butterfield, W. H. (2¼ Levis, 198 c.c.)	3.088	70⅝

CLASS 3.—FOR SOLO MACHINES (SINGLES AND TWINS) FROM 275 C.C.—300 C.C.

1. Pugh, R. E. (2½ Levis, 293 c.c.)	2.202	65⅝
2. Hall, N. (2½ O.K.-Junior, 292 c.c.)	2.144	75⅝

CLASS 4.—FOR SOLO MACHINES (SINGLES AND TWINS) FROM 300 C.C. TO 350 C.C.

1. Kuhn, G. (2¾ Levis, 349 c.c.)	3.172	51
2. Fidgeon, B. (2¾ N.U.T., 347 c.c.)	2.660	60⅝

CLASSES 5 AND 6.—FOR SOLO MACHINES (SINGLES AND TWINS) FROM 350 C.C. TO 600 C.C.

1. Smith, J. (3½ Triumph, 499 c.c.)	3.136	49
2. Petty, H. (3½ Norton, 490 c.c.)	2.900	50⅝
3. Riddell, H. (3½ Norton, 490 c.c.)	2.795	52⅝

CLASS 7.—FOR SOLO MACHINES (SINGLES AND TWINS) UNLIMITED CAPACITY.

UP TO 300 C.C.

On formula:

1. Butterfield, W. H. (2¼ Levis, 198 c.c.)	3.195	69½

On time:

1. McIntosh, G. J. (2½ Singer, 299 c.c.)	2.629	60⅝

OVER 500 C.C.

On formula:

1. Harveyson, H. R. (6 Matchl's, 770 c.c.)	2.196	50⅝

On time:

1. H. Taylor (8-10 Matchless, 964 c.c.)	1.573	49⅝

300 C.C. TO 500 C.C.

On formula:

1. Emerson J. (3 A.B.C., 398 c c)	3.001	56⅝
2. Smith, J (3½ Triumph, 499 c.c.)	2.964	50⅝
3. Petty, H. (3½ Norton, 490 c.c.)	2.877	49⅝

On time:

1. Petty, H. (3½ Norton, 490 c.c.)	2.877	49⅝
2. Smith, J. (3½ Triumph, 499 c.c.)	2.964	50⅝

CLASS 8.—SCOOTERS.

Skinner, J G (2¾ Autoglider, 269 c.c.)	.997	102⅝

CLASSES 9 10, AND 11.—SIDECAR MACHINES OF UNLIMITED CAPACITY.

1. Emerson, J. (3 A.B.C., 398 c.c.)	2.603	78⅝

CLASSES 14 AND 15.—LIGHT CARS UNDER 1,500 C.C.

1. Godfrey, H. R. (10 G.N.)	1.376	76⅛
2. Underwood, H. (10 Calthorpe)	1.225	101⅛

CLASS 16.—MOTOR CARS (INTERNAL COMBUSTION).

1. Underwood, H. (10 Calthorpe)	1.463	92⅝

CLASS 17.—UNLIMITED MOTOR CARS (INTERNAL COMBUSTION).

1. Hands, L. (25 Talbot)	3.250	54⅛
2. Machlin, N. (10 Eric Campbell)	1.852	75⅛

LETTERS to the EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

SPARE PARTS.

Sir,—One hears so much these days of discourtesy and indifference in regard to the supply of spare parts that I think, in the interest of motor cyclists generally, you should publish from time to time the names of those firms who treat their customers well. Two firms I can speak well of, *e.g.*, the Enfield Co. and the Watford speedometer people. It is a pleasure to deal with either. Usual disclaimer.

Bristol. SATISFIED.

BENZOLE AND PETROL.

Sir,—For some considerable time past I have been running my motor cycle on locally produced benzole, and had made up my mind that I could in future depend on a home product, and so do without a very good old friend—petrol. It has recently been brought home to me, however, that to drive out petrol is to depend entirely while travelling, either by rail or road, on coal or benzole derived from the same source. At the present moment motor vehicles are the only means of transit, in certain extensive held-up districts of Yorkshire, and people are gladly availing themselves of the use of various motors to relieve an otherwise impossible situation; the obvious moral is to encourage both industries and have two strings to your bow.

Wakefield. LOOKING AHEAD.

PILLION RIDING.

Sir,—I should indeed like to endorse every word quoted by "Live and Let Live" in *The Motor Cycle* of July 24th *re* pillion riding.

I have ridden a 5-6 h.p. Indian with my wife on the pillion carrier for many, many miles, and I am confident that the risk is very small and not nearly so dangerous as combination riding (I have driven combinations), and I am certain there is more sport and pleasure in pillion riding than combination work. It appears to me that the man who shouts "Down with pillion riding" has never taken part in the pleasure, and has no desire for "good sport." In any case, if there is any danger in pillion riding the risk is only run by the riders.

Is it not dangerous to fly, walk, ride in trams, trains, etc., and will not some busybody try to stop these privileges and pleasures also in time to come?

Harpenden. REASONABLE.

Sir,—A good deal of correspondence has appeared in the press lately condemning pillion riding on motor cycles. No doubt there is some reason for condemning *reckless* pillion riding, but why condemn it wholesale when there are those who seek to make it as safe and, in dry weather, even less dangerous than riding in a sidecar? I take it for granted that no sensible person would dream of taking a passenger on wet and greasy roads. My wife has ridden pillion thousands of miles without accident. Once, in particular, when on a journey, if our sidecar had been attached we should have had a serious accident, through no fault of our own, but, as my wife was riding pillion, I was able to take the pavement, and so avert it, which would have been impossible with a sidecar. Of course, I have taken every precaution to make pillion riding safe and comfortable, having fixed a special dress guard and Tan Sad spring seat with foot and back rests. I would suggest that one way of lessening *reckless* pillion riding would be for those who wish to ride in this way to hold a pillion riding licence, which would be forfeited for reckless riding. This licence should be connected with one particular motor cycle, and only the person thus registered would be able to ride. This would prevent inexperienced and reckless persons being taken as passengers. If this mode of riding is prohibited altogether, it will come as a great disappointment to many careful and competent pillion riders. MOTOR CYCLIST.

Porthleven.

ENGINE DESIGN.

Sir,—I recently read an article on motor cycle design, and, dealing with the question of inside and outside flywheels, an assertion was made that the balance of advantage of the outside flywheel over the other type is "overwhelming."

I am not an engineer, but as a motor cyclist of long standing I have ridden every type of machine, including a Blackburne, which, I believe, is the only four-stroke single with outside flywheel in existence.

Personally, I have my own opinions on the subject, and it would be a difficult matter to convince me that the Triumph and Norton singles are less smooth running than the Blackburne, and, in power and speed that they are not infinitely superior. However, my object in writing is, if possible, to elicit from experts in the matter some technical and scientific arguments for and against the two types of engine, as I think your readers will agree that it would make very interesting reading. And if the designers themselves of these three engines could be induced to give us their views from the point of view of balance, speed, power, durability, and accessibility it would serve a useful purpose.

London, E.C. ENTENTE.

A Harley-Davidson descending a steep hill in a country village in Spain Note the *pavé*.

TO HILL-CLIMBERS.

Sir,—May I recommend a new "freak hill." I refer to the track from Ewden Bottom to Bolsterstone, in the Ewden Valley, near Sheffield.

R. W. WILKINSON, Sec.-Lt., R.E.

MERCURY AS AN AID TO COOLING.

Sir,—G. Madge, Major, R.E., does not think the action between Hg and Cu or Al would be serious! Well it all depends on one's idea of what constitutes a joke.

Joke or no joke, I think it would be well to warn the unwary that a small application of mercury to copper or aluminium would render it rotten, especially at high temperatures. W. H. C. BOURCHIER.

PASSAGE TO THE ISLE OF WIGHT.

Sir,—I notice your reference, on page 40 of July 10th, to the ferry charges to the Isle of Wight.

During the last fortnight I have crossed to the island twice *via* Portsmouth Harbour and Ryde with an Enfield combination. The particulars may be of interest to your readers, because no details could be obtained beforehand from the office of the superintendent of the line at Waterloo. There are plenty of joint railways steam packet boats, and there is no cause for delay beyond emptying the petrol. The crossing takes about thirty minutes. The charges are: Motor cycle 1s. 6d., sidecar 1s. 6d., and toll for both on Ryde Pier 1s.

Ryde Pier is rather long, but the officials are kind, and, if one remembers to "hae a wee drappie" put aside, no difficulties are presented. DP 1061.

Twyford.

IGNITION TIMING.

Sir,—I am writing in the hope that any two-stroke owner who chances upon this letter, and who has noticed any unaccountable loss of power in his mount, may benefit by my experience.

My machine (a Calthorpe two-stroke) was recently overhauled at a garage, and the ignition was so re-timed that, with spark fully advanced, the platina were just separating when the piston was at top dead centre. This timing is, of course, too late for a two-stroke. The result was great weakness, and refusal to run with spark other than fully advanced.

Upon re-timing correctly (platina just separating with piston on top dead centre, and spark fully retarded), the engine regained its normal vivacity.

Although this is a very elementary trouble, it is quite probable that it is one from which two-stroke owners will long suffer; for it is remarkable how many mechanics are ignorant of the correct timing for two-strokes.

H. M. SAYERS.

PETROL CONSUMPTION.

Sir,—I would like to bring to the notice of other readers my experience of economy in petrol consumption.

My machine is a 1914 T.T. 2¾ h.p. Douglas with Amac carburetter. I have fitted up the hot air jacket, and, as I wanted to try benzole, which I understood required more air, fitted an ordinary petrol drain tap in the induction pipe just beyond the carburetter. After trying various mixtures I decided that half petrol and half benzole was the best all-round fuel. The machine also ran better with a smaller jet on the mixture than that employed with "pure" petrol. With this mixture and a 27 jet in the carburetter I recently got the following astounding results.

I had my tank, which holds just a gallon, full when I set out from Finchley to Godalming in Surrey. The return journey was made a few days later. On measuring the remainder in the tank I found that there was still half a gallon left. I am not sure of the mileage of this journey (*via* Willesden, Acton, Kew, Richmond, etc.), but it is certainly forty miles each way, giving what seems an impossible consumption of 160 miles to the gallon. The journey was done at a reasonable speed, the outward time being 1h. 45m., and the return 1h. 55m.

At any speed over 25-28 the engine will take the extra air tap in the induction pipe fully open. It is also a great asset for hill-climbing, as, once the throttle is opened over a certain amount, the carburetter does not supply enough air. The movement of the control is, therefore, opposite to the usual method where the air usually requires to be cut down a little on hills. Naturally, the engine is in fairly good tune as regards valves, compression, etc.

I have no interest in any of the firms mentioned beyond that of a satisfied customer.

Apologising for the length of this letter, with which I would not have troubled you had it not been for the hope that the tip might prove useful to other riders who pay attention to the amount of petrol consumed by their mounts,

Finchley. A.A.B.

HOT OR COLD INDUCTION?

Sir,—In reference to Mr. Gleghorn's letter in your issue of July 17th, may I burden your columns with an extension and defence of my article on "Hot or Cold Induction," published on July 3rd?

In the first place, I should point out that space prohibited a complete exposition of the matter. The exact mathematical and thermodynamical treatment alone would probably fill one issue, and, I am sure, would only interest a few.

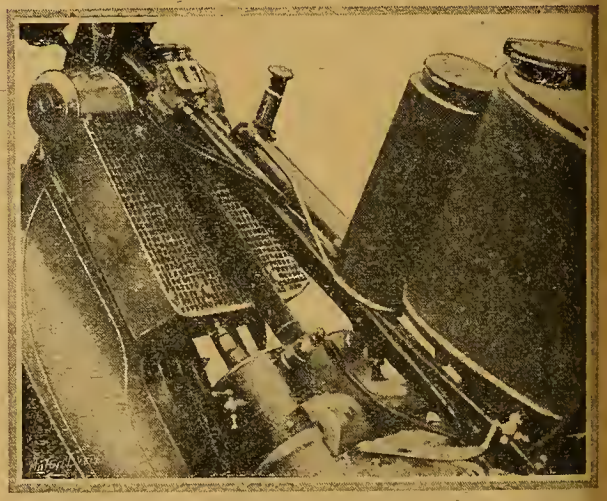
Perhaps Mr. Gleghorn was justified in assuming that the experiments quoted were the sole basis for the opinions expressed, but may I take this opportunity of correcting that idea? Experience, by close contact with a fleet of forty odd motor lorries (principally Seldens), with cars, motor cycles, and an experimental stationary engine of my own, confirmed my conclusions.

I am quite aware that heat has to be supplied to vaporise the fuel, heat obtained almost entirely from the induced air, lowering its temperature thereby. But I doubt whether the air in any carburetter in Mr. Gleghorn's possession ever sinks to the temperature indicated by the intersection of the petrol No. 3 curve (exterpolated) and the horizontal explosion line.

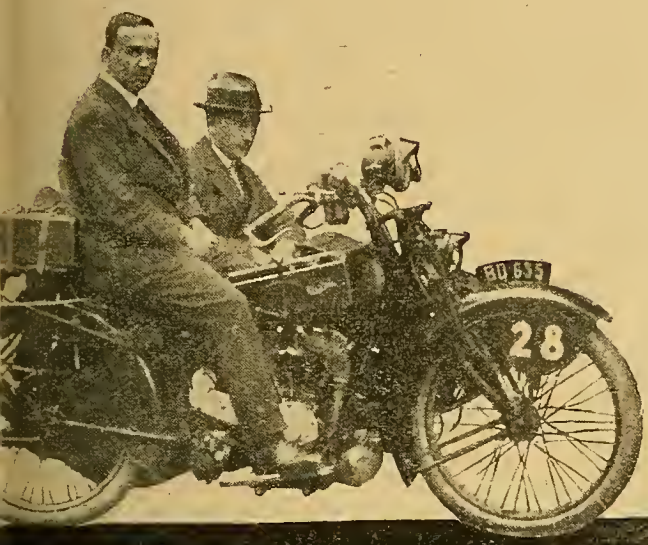
With regard to the question of working speed and gas velocity, I should like to point out that the rapidity of dissipation of the petrol cloud depends on the fineness of the drops, which is itself roughly proportional to the air speed over the jet (the higher the speed the finer the cloud). As I mentioned in the article, whether the air becomes saturated or not, in passing the jet, is the carburetter manufacturer's business. My results merely indicate the physical limit beyond which lies the miraculous. H. J. POOLE.

SUMMARY OF CORRESPONDENCE.

G. R. Martin writes to say that while he was in trouble with a tricar, a motor cyclist offered assistance and finally left his bag behind. This will be restored to him if he will send his name and address, together with particulars of the bag.



A new lubrication system on the Scott ridden by J. Baker in the Scottish trials. A Best and Lloyd drip feed works in conjunction with an R.W.S. two-drip sight-feed. When the B. and L. drip is screwed down oil is sucked by the engine past the plunger and into the R.W.S. drips. By unscrewing the former the whole of the charge passes to the gear.



barred

Cycle—as our machines are entirely new models, which we are particularly desirous of testing under official observation.

Past years have clearly shown that we are always ready to put our products to the severest tests, and we shall do so again as and where circumstances permit.

Meanwhile we have decided to put the above machines—1920 models, mark you—to an even greater test. With this object, our Mr. Frank Smith, and Mr. H. Gibson and Mr. A. F. Knight, are at this moment testing these machines over a course of more than 2,000 miles of even worse roads than the classic competition would have offered.

The Clyno Engineering Co
WOLVERHAMPTON.

LONDON-EDINBURGH RUN
1919

both A.B.C. Solo Mounts and A.B.C. Combination gained

GOLD MEDAL AWARDS.

THE TALBOT GARAGE, Ltd. STOCKPORT,

Are the sole distributing Agents for Lancashire and Cheshire for the famous

Greatest engine efficiency and power for all purposes by air-cooled, flat twin power unit.

15% reduction in fuel consumption. Luxurious riding comfort by scientific leaf springing. Greater resiliency by **30%** lighter frame construction, with **100%** greater strength. Four-speed gear box. Automatic lubrication.

Send for particulars and early delivery dates, and secure your mount for this season's riding.

'Phone. 500, Stockport.
Grams: "Talbot Garage Stockport."

We worked at our trade all through the war.

BRITISH COVENTRY

PISTON RINGS.

Unlike many firms our Works were not turned outside-in to make something foreign to our ordinary business.

We made Piston Rings for Aircraft and Land and Water Transport all through the war period.

To-day we know more about Piston Rings than before; our staff is larger and more efficient; our facilities for manufacturing are six times larger than in 1914.

There is no "getting back" to pre-war trade with us. Your orders for Piston Rings, Shackle Bolts, Gudgeon Pins, and Greasers can be executed practically off the shelf and on the exact date you specify. Will that suit you?

Write now for our new Price List H

THE
BRITISH CHUCK AND PISTON RING Co., Ltd.
HOLBROOK LANE, COVENTRY.

Telegrams: 'Pistorings, Coventry.' *Telephone: Coventry 1214-1215*

"TWO" Grains of Salt wanted here ! ! !

Wiseacres will assure you that every advertised statement should be taken with "a grain of salt." That implies a *need for caution.* The Wiseacre will say "Always doubt until you have proved." **We agree.** In fact, we suggest *two* grains of salt, *i.e.*, a *double* dose of **caution.** Our

Coventry-Eagle

3½ h.p. Model with 3-speed Countershaft Gear

can stand even *three* grains if you like. You'll think so too if you study the Photos of this model in our New Catalogue. Illustrations and full descriptions of all our 1919 models. Copy free.

THE COVENTRY-EAGLE Cycle & Motor Co.,
COVENTRY.

QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Magneto Voltage.

I should be glad if you will kindly let me know the highest approximate voltage of the high-tension and low-tension currents in an ordinary motor cycle magneto.—V.P.

The primary voltage of a magneto rises to about 24 volts. The voltage of the secondary winding at the plug points under normal conditions is 3,000 to 5,000 volts, but it is quite possible to exceed 10,000 volts.

For Tropical Use.

My brother, a Government official in Kedah, F.M. States, is requiring a motor cycle out there to answer the following specifications, as nearly as possible; can you suggest one? 2¾ h.p. two-stroke, two-speed gear box, T.T. bars, foot levers on left-hand side (owing to stiff right leg), footboards, 2¼in. tyres, all enamel, no plating, discs to wheels perhaps, and spring frame; steel tool-boxes, no leather.—S.W.

Several makers of two-stroke machines have a specification very close to the one you require, but there are certain things which would have to be fitted specially for you. We do not know of any light-weight two-stroke at present on the market which has a spring frame. Your best course is to write to several of the leading makers stating your requirements in the hopes of getting some alteration from the standard models.

Scott Queries.

I have a Scott motor cycle, and should be pleased if you will answer the following: (1.) Why does the engine overheat so much as to stop it? (2.) Are both gear chains running whilst on one gear, *i.e.*, when in low gear both the low and high gears are running? Should the high gear be stationary whilst in low gear?—E.S.S.

(1.) The overheating of your engine is probably due to excessive carbon deposit. Other contributory causes may be unsuitable plugs, choked-up and dirty cylinders, and defective operation of air valve dashpot (if Scott carburetter). (2.) Both high and low gear chains run continually. When the high gear is in operation the low gear drum runs freely on the gearshaft and *vice versa*. If you consider the action, you will see that it is necessary for the high gear to be continually running, since the magneto is also driven from it.

Fitting a Gear.

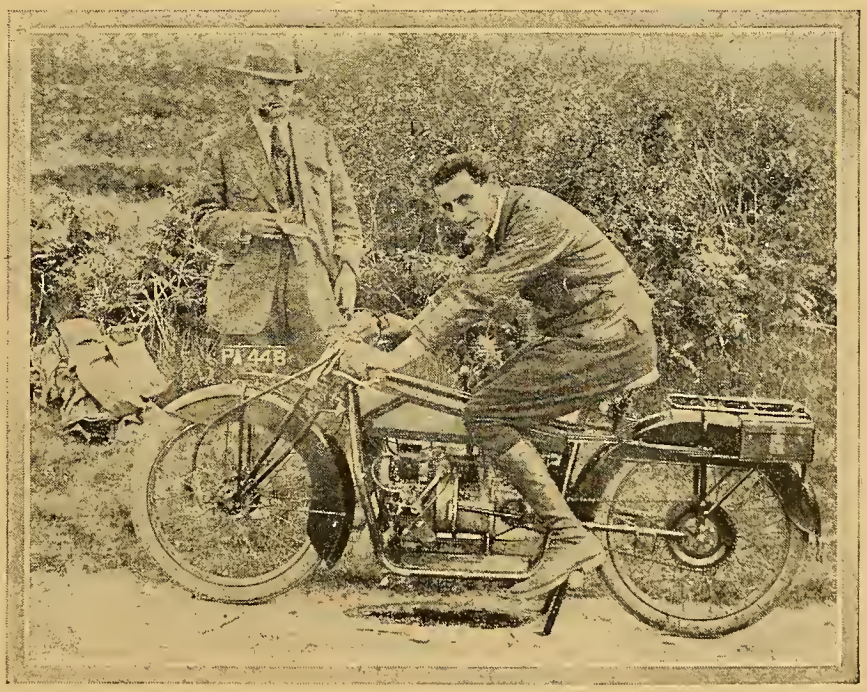
I have a 1913 single gear Triumph, and would like to know if it is possible to fit a Sturmey-Archer three-speed gear, W.D. model as fitted to 1919 Triumphs. The chief point is whether the chain sprocket would fit the crankshaft and yet allow the belt to run true. If this is not suitable, which of the following would you advise and the order of suitability: (1.) N.S.U. two-speed gear. (2.) Sturmey-Archer three-speed hub gear. (3.) Armstrong three-speed hub gear. (4.) The Rigby gear. —C.H.S.

It may be possible to convert your Triumph to countershaft drive, but you would require special rear stays and other fittings. Probably the expense would prove greater than selling the machine and buying a new countershaft model. Of the gears you mention, the N.S.U. may be fitted without alterations. The Sturmey-Archer and Armstrong three-speed hubs involve considerable structural alterations to the machine. The Rigby gear is made to fit Triumph machines, amongst others.

Dry Battery Lighting.

Referring to the dry battery lighting sets advertised in *The Motor Cycle*, I am contemplating purchasing one, but, before doing so, should like to know the following: (1.) Does the head lamp give as good a light as an average acetylene lamp? (2.) Does the light "keep up" after, say, two hours' continuous use? (3.) Do the lamp filaments stand the vibrations and bumps on poor roads? —E.S.

(1.) With four-volt dry battery lighting the illuminating power is not so great as with the large acetylene lamps, but is quite satisfactory at ordinary speeds. (2.) They are more convenient and suitable for short and intermittent journeys than for runs extending over two hours. (3.) Good quality lamps will stand an enormous amount of vibration without filament breakages.



I. Emerson (3 h.p. A.B.C.), who put up a good performance at the recent Stile Cop hill-climb and was in Edinburgh next day for the Scottish Six Days' Trials on the latest A.B.C. Standing is Mr. F. S. Whitworth.

Tyre Wear and Brakes.

To settle an argument, could you tell me whether a brake—other than a tyre brake—has any wearing effect on the tyre, provided the tyre does not drag, *i.e.*, provided the wheel continues to revolve?—A.J.C.

Since a rapid acceleration tends to wear the tyres, it follows that braking, which is merely a negative acceleration, will have a corresponding effect, even though you do not skid the wheel.

Two-stroke Queries.

Having purchased a Connaught two-stroke cycle, I should be pleased if you would advise me if the projection on the piston top goes to the inlet ports or outlet ports; also the best way to time it.—F.B.

The deflector on the piston top should be nearest the transfer ports. Its object is to direct the incoming gases to the cylinder head and prevent them mingling and escaping with the exhaust. Time the ignition as follows: Contact breaker points just breaking, piston on top dead centre, and magneto control lever almost fully retarded.

Belt Slip.

Would you please be good enough to let me know what you consider a good preparation to put on a belt to stop belt-slip? Is Belticum any use, and if so could you tell me where I could purchase it? I want it for sand racing purposes, where one has to go through watersplashes, etc. Is it any use to drill holes in the pulley, say $\frac{1}{8}$in. deep all round?—R.W.

Probably the preparation you require is Belticum, which is sold by the Service Co., Ltd., High Holborn, London, W.C.1. It is quite an effective preparation for use on leather belts, but we have no personal experience of it on rubber belts. For racing purposes it will certainly be of some small advantage to drill the pulley as you suggest; you must take care, however, that the holes are not left with sharp edges, otherwise they will ruin your belts. Under the conditions you describe, it will be necessary to have the belt adjustment exceedingly tight and protected, otherwise you will not be able to avoid slip.

Brakes and the Law.

The other day a country policeman pulled me up for my driving licence; after inspecting my speedometer drive, he asked me how that brake worked. I enlightened him! I explained that I had two independent brakes, hand and foot, fitted to the rear wheel (5-6 h.p. F.N.). He told me that I must have brakes fitted to *both* wheels. How am I fixed in this matter? Both my brakes are in perfect order.—C.M. 338.

The law states that two independent brakes must be provided, but there is no mention of them having to be on the two wheels. You are perfectly in order with both brakes on one wheel.

Misrepresentation.

A few weeks ago I advertised in *The Motor Cycle* for a Sturmey-Archer three-speed wheel, and subsequently bought one for ten guineas, described as in perfect condition, as, indeed, it looked when I received it, and I wrote the seller to this effect. Being very busy, five weeks elapsed before I touched the wheel, which was to replace a free engine wheel in a Triumph frame. Now the Sturmey-Archer will not fit a free engine frame, so not being able to put it in I opened out the gear in my spare time and discovered all the gears broken or stripped, the cages broken, the springs missing from the clutch, but no broken bits inside the hub. I wrote and told the seller, who at once disclaimed responsibility, blaming either the railway or myself. The railway labels are still on the wheel. Would I have a good claim on the seller to either make it good or to refund the money?—R.J.

If you can prove your statements you have very good grounds for a claim against the seller. *The Motor Cycle* deposit system was introduced to avoid such cases.

READERS' REPLIES.

Petroil on a Scott.

In reply to "Scottite," who enquires in the issue of July 3rd, I should like to tell him that I have now driven my Scott for several hundred miles on a petroil mixture of one quart of oil in three gallons of spirit, and intend continuing with it, as I obtain very satisfactory running.—T.W.

Scott Timing.

In my opinion, and I have had much experience of Scotts, it is best to time the ignition with the piston dead on top and the points just breaking when the lever is fully retarded.—H.M.B.

RECOMMENDED ROUTES.

GRIMSBY TO CLAYDON (SUFFOLK).—H.W.

Grimsby, Louth, Spilsby, Boston, Sutterton, Fosdyke, Holbeach Plough, Long Sutton, Kings' Lynn, Stoke Ferry, Mundford, Thetford, Ixworth, Stowmarket, Needham Market, Claydon.

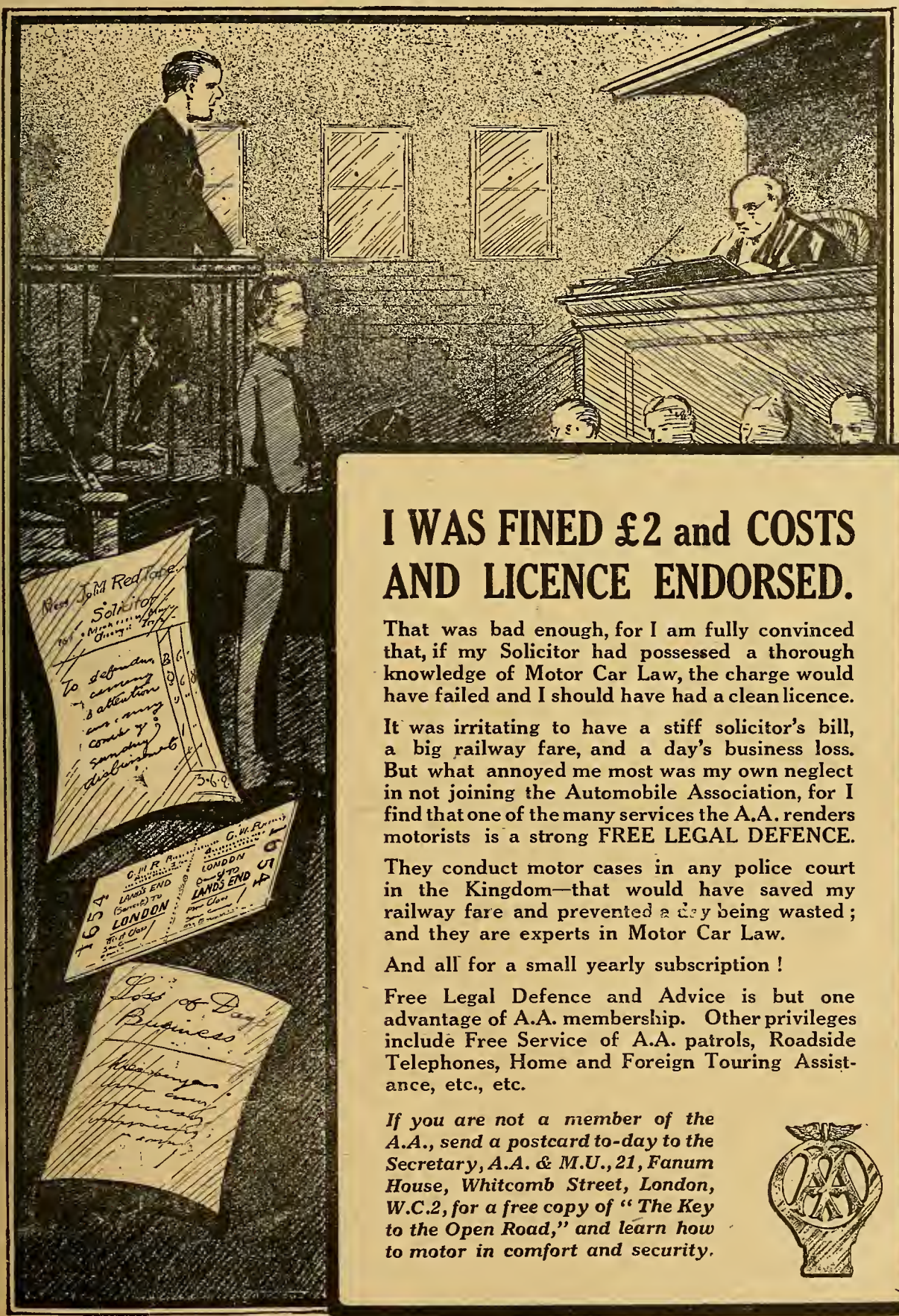
BIRKENHEAD TO BRIGHTON.—F.C.

Birkenhead, Chester, Whitchurch, Hodnet, Wellington, Bridgnorth, Kidderminster, Worcester, Tewkesbury, Cheltenham, Cirencester, Lechlade, Faringdon, Wantage, Streatley, Panghourne, Reading, Wokingham, Bracknell, Bagshot, Bisley, Guildford, Horsham, Brighton. Approximately 240 miles.

PECKHAM (LONDON) TO HUDDERSFIELD.—N.E.

Peckham, Camberwell Green, Kennington, Vauxhall Bridge, Vauxhall Bridge Road, Grosvenor Place, Park Lane, Marble Arch, turn right down Oxford Street, turn left for Baker Street, Wellington Road, Finchley Road, which follow through Barnet on to the Great North Road, and proceed through Hatfield, Welwyn, Stevenage, Baldock, Biggleswade, Eaton Socon, Stilton, Stamford, Grantham, Newark, Tuxford, Retford, Bawtry, Doncaster, Barnsley, Flockton, Huddersfield. Approximately 200 miles.

The Biella-Oropa hill-climb. The interest of the Italian public is manifest, and no doubt, as in this country, the potential demand for motor cycles has greatly increased since the war. (See page 106.)



I WAS FINED £2 and COSTS AND LICENCE ENDORSED.

That was bad enough, for I am fully convinced that, if my Solicitor had possessed a thorough knowledge of Motor Car Law, the charge would have failed and I should have had a clean licence.

It was irritating to have a stiff solicitor's bill, a big railway fare, and a day's business loss. But what annoyed me most was my own neglect in not joining the Automobile Association, for I find that one of the many services the A.A. renders motorists is a strong FREE LEGAL DEFENCE.

They conduct motor cases in any police court in the Kingdom—that would have saved my railway fare and prevented a day being wasted; and they are experts in Motor Car Law.

And all for a small yearly subscription!

Free Legal Defence and Advice is but one advantage of A.A. membership. Other privileges include Free Service of A.A. patrols, Roadside Telephones, Home and Foreign Touring Assistance, etc., etc.

If you are not a member of the A.A., send a postcard to-day to the Secretary, A.A. & M.U., 21, Fanum House, Whitcomb Street, London, W.C.2, for a free copy of "The Key to the Open Road," and learn how to motor in comfort and security.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co. Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. 000, c/o "Motor Cycle," 20, Tudor Street E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

☞ DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½ %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Cattyos, Ltd., Easthourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

CROW Bros., High St., Guildford, have contracted largely for the new A.B.C. Order now for earliest delivery. [5298

LIVERPOOL and District Agents for A.B.C., Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Parr St., Liverpool. [0003

MAUDE'S MOTOR MART

READY FOR IMMEDIATE DELIVERY FOR BANK HOLIDAY.

DOUGLAS, 2¾ h.p., W.D. Model..... **£70**
DOUGLAS, 2¾ h.p., W.D. Model..... **£65**
DOUGLAS, 2¾ h.p., W.D. Model..... **£75**
DOUGLAS, 2¾ h.p., W.D. Model..... **£80**

As the Government Surplus Property Disposal Board give no guarantee with these machines, we are unable ourselves to do this, and the machines are sold on this understanding.

But we do put all machines in good running order before delivery. The machines are complete with toolbags, but no tools, lamps, or horn.

SCOTT, W.D. Model **£75**
SUNBEAM, 2¾ h.p., W.D. Model **£84**
JAMES, 3½ h.p., Twin, W.D. Model **£70**
IVY, 4 h.p., Twin, 1916, 3-speed..... **£85**
ARIEL, 3½ h.p., 1915, Comb., 3-speed **£115**
HARLEY-DAVIDSON, 7-9 h.p., 1919, Comb., as new..... **£230**
HARLEY-DAVIDSON, 7-9 h.p., 1916, Comb. **£150**
DOUGLAS, 2¾ h.p., 1913, Standard **£55**
ZENITH, 6 h.p., 1916, Torpedo Sidecar ..**£135**

W.D. Models sent on approval against cash, provided carriage is paid both ways.

BEST
PRICES PAID.
SPOT CASH
For Modern
MOTOR CYCLES
& LIGHT CARS.

MAUDE'S MOTOR MART

100, Gt. Portland St., London, W.1.

Telephone: Museum 557.
Telegrams: "Abdicate, Wesdo, London."

MAUDE'S MOTOR MART
THE SEAL OF SATISFACTION

IMPORTANT NOTICE.

Owing to the August Holidays, the issue of "The Motor Cycle" for August 7th must be closed for press earlier than usual. All copy and instructions for Miscellaneous Advertisements in that issue must, therefore, be in our hands not later than first post on Thursday, July 31st.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C. Distributors for Radnorshire. Book your orders now to ensure early delivery.—Owens, Buveno Garage, Llandrindod Wells. [7863

A.B.C.—Sole agents for these famous machines. Orders booked now for early delivery.—Chandler, Reyre, and Williams, Sun St., Hitchin. [0996

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

Abingdon.

ABINGDON King Dick, 3½h.p., Grade Multi clutch, pedal starter, modern, and in good condition; £45.—Dykes, Moorpark, Stevenston, Ayrshire. [8148

ABINGDON King Dick, 4h.p. B.S.A., 2-speed, free engine, Bosch, Senspray, ride away; £48; after 6 p.m.—27, Cecil Av., Enfield, Middlesex. [8437

ABINGDON King Dick, 3½h.p., 2-speed, clutch, handle starter, good condition, suitable for sidecar; seen by appointment; £37.—Maryland, Bulstrode Way, Gerrard's Cross. [X7700

:: DEPOSITS ::

SPECIAL NOTICE.

The attention of Advertisers is called to the fact that Deposits are now dealt with at

20, Tudor St., London, E.C.4,

to which address all communications relating to deposits should be directed

3½h.p. Abingdon King Dick, clutch, new condition throughout, all accessories; £42, near offer.—'Phone: Streatham 1390. Crescent Magneto Works Norbury, S.W. [8584

ABINGDON King Dick Combination, 1914, 2 speeds chain and belt drive, free engine, clutch, lamps horn, mechanically perfect; £55; after 6.—101, Talfourd Rd., Peckham, S.E. [7938

ABINGDON K.D., 1915, just fitted new 4h.p. Triumph engine, variable gear, K.S., free engine Bosch mag., speedometer, perfect order; £43.—2, Fielding Terrace, Ealing Common, W. [7892

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [5601

JACK HEALY, Cork.—Official A.J.S. agent.—Garage and works, Drinan St. [X8336

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4082

A.J.S. Combination, July, new, all complete; nearest offer to £200.—Townhill, 49, Cope St., Barnsley.. [7911

A.J.S., 6h.p., 2-speed, just rebushed, gears perfect, ride away; 79 gns.—Major, Chalfont, Harpenden, Herts. [8536

A.J.S. Combination, 6h.p., late 1914, splendid condition, all accessories; £115.—13, St. James Rd. Kingston, Surrey. [8331

MOTOR CYCLES FOR SALE.

B.S.A.

.A. Modele de Luxe Auto-Wheel, nearly new condition; £17.—8, Netherton Grove, Fulham S.W.10. [8027

.9 B.S.A. 3½h.p., clutch, kick starter, as new; offers over £55; after 7 p.m.—37, High St., m, Kent. [8090

.p. B.S.A., hub clutch, disc wheels, all accessories, perfect condition, sporting machine; £58.—Wallis, ligh Rd., Ilford. [8460

.A., 3½h.p., 2-speed, free engine, clutch, pedal start. Bosch, lamps, horn, etc.; £60.—23, The , Hammersmith, W.6. [7572

9 B.S.A. Model K Combination, fully equipped, mileage 600; £120; Hammersmith.—Box L3,069. *he Motor Cycle.* [8110

.A., 1913 (about), 2-speed, clutch, Bosch lamps, good tyres, running well; £45.—80, Kinveachy ns, Charlton, S.E.7. [X7403

.A. and Coachbuilt Sidecar, 1915, chain drive, countershaft gears, in good reliable order; 78 47, Hamilton Rd., Reading. [8026

LEN-BENNETT Motor Co.—1915 4¼h.p. B.S.A. and coachbuilt sidecar, splendid condition; £105.— yal Parade, London Rd., Croydon. [7866

. B.S.A., 2-speed, all chain drive, perfect condi- ion; £75.—Hardie, 24, Woodstock St. (off Oxford Bond St., London, W.1. 'Phone: Mayfair 6559.

.A. 3½h.p., 3 speeds, free engine, clutch, with hand and foot control, will take sidecar anywhere; price R.E.A., 85, Clifford St., Newcastle-on-Tyne. [X7678

.A. Combination, 1919, April, 3-speed, belt, Lucas lamps, special sidecar, spares; best over £140; s only.—Franklyn, Faircroft, Mill Hill, N.W.7. [8310

.A., 1919, Model H, brand new, not ridden, chain drive, 4¼h.p., 3-speed countershaft gear, kick r; what offers?—Box L3,055, c/o *The Motor Cycle.* [8002

.A. C.B. Combination, 2-speed, 3½h.p., chain drive, K.S., lamps, screen, speedometer, tools, and , splendid condition; £95.—Cliff, Well Hall, Par- Eltham. [7957

.A., 1912-13, 4h.p., clutch model, good condi- tion, tyres as new, lamps, C.B. sidecar, very £60, or separate.—Pritchett, Allbrook, near igh. [8413

.A. 1914 4¼h.p. Motor Cycle, wicker torpedo side- car, chain drive, 2-speed, kick starter, Bosch series, good condition; £65.—F., 29, de Beauvoir Reading. [8165

.A. The Birmingham City Agents and B.S.A. Specialists, County Cycle and Motor Co., 307 508, Broad St. All replacements in stock. Tel.: cyco, Birmingham. [6311

.A. 1916 4¼h.p., C.B. sidecar, K.S., good condi- tion, ride away; £92; reason for selling, owner med, unable to operate left foot brake.—7, Graf- Rd., Bedford. [8492

16 B.S.A. 4¼h.p. Chain-cum-belt Combination, Cooper sidecar, guaranteed perfect running ; any trial; £110.—Gee, 21, Flora Rd., South ley, Birmingham. [X7737

.A. 3½h.p. 1912 Combination, Watsonian light- weight sidecar, 2 speeds, lamps, horn, etc., splen- ondition; any trial; £50.—Southgate, St. Mildred's ge, Westgate-on-Sea. [8526

.A., 1919, 3-speed C.S., with 1917 coachbuilt sidecar, delivered this month, guaranteed not done than 200 miles, unscratched, bought car; bargain, ; after 6 p.m.—93, Brond Lane, Tottenham. [7936

.A. 1916 4¼h.p., all-chain drive, coachbuilt side- car, 3-speed, lamps, etc., splendid condition, not 2,000 miles, practically new Dunlop rubber-studded ; £100.—Taborn, 9, Church Drive, Daybrook, Not- am. [X7833

15-16 B.S.A. Combination, 3 speeds, clutch, chain- cum-belt, recently overhauled, new cylinder, pis- belt, chain, tyres, equal new machine, lamp, horn, built sidecar, smart appearance; £95.—11, South- St., Gloucester. [8143

.A. Combination, 1916, 4¼h.p., 3-speed, chain-cum- belt, kick starter, mechanical horn, speedometer, Cascelet sidecar with hood, screen, and luggage r, 3 lamps, good spares and tools; £100.—Major nson, P/W. Camp, Felixstowe. [8478

E B.S.A. Motor Cycle for sale, 4¼h.p., and side- car, everything complete, lamps on both; reason for , going in for small car; still one month's guar- with firm; price £150, or near offer.—E. Pout, Kite Farm, Swinecliffe, Whitstable. [X7465

.A. 1916 4¼h.p. Coachbuilt Combination, 3-speed countershaft, chain drive, kick start, good tyres, horn, accessories, spare chain and valve, splen- ondition, very little used during war; 85 gns., or st.—Capt. Sumner, Waverley, West Bay, Bridport, t. [7887

Cacco.

.p. Cacco, 1912, 3-speed, clutch, excellent con- dition, fast, reliable, £37/10; 3½h.p. 1912 aph, semi T.T., fixed engine, extremely sound trustworthy, £38.—Patterson, Sawston, Cambs. [8438

THE BIRMINGHAM HOUSE

P.J.EVANS

FOR MOTOR CYCLES & LIGHT CARS

HAVE YOU?

Ordered your New Mount

MY AGENCIES INCLUDE the following machines, for which a limited number of orders can be accepted for delivery during September or October

BLACKBURNE,
INDIAN,
ENFIELD,
NORTON,
TRIUMPH,
EDMUND,
ROVER,
JAMES,
ZENITH,
CALTHORPE,
NEW
IMPERIAL.

ARE YOU?

Thinking of Buying

You cannot do better than consult me before coming to a decision.

Write, call or 'phone,—

P.J.EVANS

Phone: Mid. 662. 87-91, 'Grams: "Lytcar, B'ham."

JOHN BRIGHT ST.,
BIRMINGHAM.

MOTOR CYCLES FOR SALE.

Calcott

CALCOTT, 2¼h.p., nearly new; bargain, £30, or near offer.—Oswell, Hadley, Salop. [X7707

Calthorpe.

1916 Calthorpe-Jap 2¾h.p., Enfield 2-speed, lamps, etc., in good condition; £45.—Boorer, Horsham. [X7523

CALTHORPE, 2-speed, new Dunlops, splendid running, £31; also Auto-Wheel, £9.—Doe, Aylesford, Kent. [8107

CALTHORPE Junior, 2¼h.p., 2-speed, excellent condition; 32 gns.; after 7.—10, Baronsmead Rd., Barnes. [8259

1915 Calthorpe-Jap, 2¾h.p., 2 speeds, Enfield gear, as new; offers over £45; after 7 p.m.—37, High St., Eltham, Kent. [8091

1916 Calthorpe-Jap, 2-speed, excellent running order, good appearance, little used; £45.—G. Letts, jun., Semer Lodge, Ipswich. [7963

CALTHORPE, 1915, 2¾h.p., 2-speed gear, with lamps, in perfect condition.—F. G. Dixon, The Forge, Swingfield, Dover. [8275

1916 Calthorpe-Jap, 2 speeds, lamps, overhauled week ago, splendid condition; 42 gns.—Budd, 20, Catherine's Cross, Darlaston, Staffs. [X7416

1915 2½h.p. Calthorpe-Jap, 2 speed, quite new condition, little used; £46.—Walbro Motor Cycle Works, Saffron Walden. 'Phone: 45. [X7548

3¾h.p. Calthorpe-Precision, 2-speed countershaft gear, with clutch, powerful machine, in good order; £45.—Pannett, High St., Lewes. [7567

1914 Calthorpe Precision 2½h.p. 4-stroke, 2-speed, stored 4 years, new condition, footboards tools, lamps; £39, near.—39, Chesilton Rd., Fulham, S.W. [7893

1918 Calthorpe 2¾h.p. 2-stroke, Enfield 2-speed, splendid condition, ride away; bought higher power; £50.—84, Shaftesbury Rd., Crouch Hill, N.19. [8503

CALTHORPE Junior, Precision 2-stroke, 2-speed, free engine, B. and B., variable pulley, good running order; £35.—Day, Brereton Rd., Rugeley, Staffs. [X7756

CALTHORPE Combination, 4¼h.p., variable gear, F.E., new tyres, tubes; £48; good solo mount considered part exchange.—391, Lordship Lane, Dulwich, E. [7896

CALTHORPE-PRECISION, 2¾h.p., 2-speed, free engine, heavy new Dunlop, splendid runner, guaranteed absolutely perfect; 28 gns.; bankers' references given.—Bee, 31, The Pavement, Clapham Common. [8118

CALTHORPE-PRECISION Combination, 6h.p., 2-speed, free engine, kick start, Binks carburetter, coachbuilt sidecar, in good condition, working every day and ready to ride away; £90.—Beardmore, Foxholes Farm, Werrington, Stoke-on-Trent. [X7367

Campion.

CAMPION 2-stroke, Villiers engine, not done 200 miles, good as new; any trial here; £35.—Hammond, Saltfleetby, Lincs. [8495

6-8h.p. Campion-Jap Combination, 3-speed gear and clutch, Bosch mag., wicker sidecar, powerful outfit; £75.—Waite, Axbridge, Somerset. [X7323

1914 4h.p. Campion-Jap Coachbuilt Combination, 2-speed, clutch, tyres excellent, perfect running order; £55.—1, Othello St., Liverpool. [8074

1913 4¼h.p. Campion-Precision, single, Bosch, B and B., excellent running order; what offers?—Bloodworth, 28, Austerly, Bourne, Lincs. [X7338

1912 4h.p. Campion-Jap, Sturmey-Archer 3-speed, clutch, Bosch mag., tyres new, Miller lamps, stored 3 years; £45.—Edwards, Sotwell, Wallingford. [8648

1916 Campion-Jap 6h.p. Combination, coachbuilt sidecar, with Jardine 4 speeds, luggage grid, speedometer, P. and H. lamps, horn, windscreen, and few spares, tyres as new, in perfect condition; any trial; £125.—Speechley, 33, St. Catherine's Grove, Lincoln. [8290

C.C.R.

C.C.R. Twin 5-6h.p. Combination, C.B. sidecar, 3-speed Sturmey.—G. Bowles, 24, Glentworth Rd., Nottingham. [X7584

Centaur.

2h.p. Centaur Lightweight, in good running order; £22; owner bought higher power.—W. Pepper, 89, Mill Rd., Lincoln. [X7811

Chater-Lea.

SOUTH Lancashire Only.—Chater-Lea enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7040

1913 Chater-Lea No. 7 Combination, best cane sidecar, 3-speed, countershaft, good condition; any trial or inspection; offers.—Chapel House, Blendon, Bexley, Kent. [8512

CHATER-LEA, 6h.p., and sidecar, 2 speeds, lamps, horn, splendid climber; £50; after 6 p.m.—1, Russell Rd., Walton-on-Thames. [8159

£75.—8h.p. Chater-Lea combination, 3-speed countershaft, all-chain drive, lamps, speedometer, etc., coachbuilt sidecar; seen any time.—1, Vale Rd., Tunbridge Wells. [X7387

MOTOR CYCLES FOR SALE.

Chater-Lea-Antoine.

CHATER-LEA Antoine 6b.p. Twin, free engine; £25; ride away.—49, Parish Lane, Peoge, S.E. [X7540

Chater-Lea-Fafnir.

3½h.p. Chater-Lea-Fafnir, B. and B., mag., good tyres, belt, good running order, re-enamelled; £16. —A.D., 29, Nelson Rd., Chelmsford. [8469

CHATER-LEA-FAFNIR, Bosch, B.B., excellent condition; ride away; £30, or offer.—Gentry, 59, Aldenham St., St. Pancras, N.W.1. [8368

Chater-Lea-Jap

CHATER-LEA 5-6h.p., twin J.A.P., powerful, suit sidecar; bargain, £47/10.—32, Akerman Rd., Brixton, S.W. [8701

CHATER-LEA No. 7, Coachbuilt Combination, 8h.p. twin, J.A.P. engine, 3-speed countershaft clutch, any trial; £95.—67, Gordon Rd., Wanstead, E.11. [8033

£35.—4h.p. Jap-Chater-Lea, in good condition, new tyres, very fast and powerful, climb anything at 40; trial.—T. Coleman, 14, Elderberry Rd., Well Hall, S.E.9. [X7732

CHATER-LEA-J.A.P. No. 7 C.B. Combination, 8h.p. J.A.P. engine, 3-speed countershaft, clutch, splendid condition; £95.—Littlecot, Sutton-at-Hove, Dartford, Kent. [7973

CHATER-LEA-J.A.P. 5-6h.p. C.B. Combination, 3-speed countershaft, all-chain, handle start, 650×65 tyres, stored 2 years, mileage 7,000, lamps, horn, speedometer, etc.; £80.—D.R., c/o The Lodge, Great Holland, Kirby Cross, Essex. [8580

Chater-Lea-Rex.

CHATER-LEA-REX, 3½h.p., Bosch, strong, powerfully built, ready to ride away; £35.—Sheldon, Wheatley, Oxon. [7900

Chater-Lea-T.D.C.

CHATER-LEA-T.D.C., 1914, 4h.p., Bosch, Druids, B. and B., adjustable pulley, low, fast; bargain, £29/10.—16, Oateo Hill Place, Canterbury. [X7568

Chater-Lea-White and Poppe.

CHATER-LEA, 3½h.p. White and Poppe engine, U.H. mag., wheel discs, new tyres and belt; £28. —Knight, 4, Pavement, Conlsdon, Surrey. [8123

Clyno.

CLYNO Combination, 6h.p. twin, 1915, first-class condition.—39, Parkside, Cambridge. [X7499

GROVER, Smith, and Willis, Basingstoke, Clyno Agents.—Deliveries in strict rotation; order now. [5778

CROW Bros., High St., Guildford, West Surrey agents for the new Clyno.—Order now for early delivery. [4084

6h.p. 3-speed Clyno Combination, detachable wheels, spare wheel; £85.—29, St. Leonards St., Bromley-by-Bow. [8351

5-6h.p. Clyno, 2-speed, Bosch mag., tyres extra good, splendid condition; nearest £60 secures.—Box L3,016, c/o *The Motor Cycle*. [7994

CLYNO, 2-stroke, 2½h.p., 2 speeds, and clutch, very good mechanical condition; £50.—After 6 p.m., at 10, Chester Rd., East Ham. [8328

CLYNO 5-6h.p. Combination, condition as new, stored during war; best offer over £100.—C/o 113, Kingston Rd., Wimbledon, S.W.19. [8054

CLYNO 1912, coachbuilt sidecar, 2-speed, 6h.p., kick start, in good condition; £60; seen after 5.—Hatcher, Bisley Old Rd., Stroud, Glos. [X7670

1915 Clyno, 3-speed, interchange wheels, large tyres, clutch, bulhons back sidecar, lamps, horn; after 6.30; 95 gns.—126, Perry Rise, Forest Hill, S.E. [8506

6h.p. Clyno Combination, 1917 model, in excellent condition, just overhauled; £120, or best offer.—Captain Langley, The Cottage, St. Thomas Bridge, Salisbury. [8640

CLYNO, 6h.p., 1914, 3-speed, kick, combination, spare wheel, interchangeable, in splendid condition, ready for anywhere, smart appearance; £100.—Oswell, Hadley, Salop. [X7706

CLYNO Combinations and Lightweights. Write, 'phone, or call for particulars of deliveries.—Kays, 8, Bond St., and 116-122, Pitshanger Lane, Ealing. 'Phone: 553 Ealing. [7084

CLYNO Combination, 3-speed countershaft clutch, K.S., detachable wheels, enclosed chain drive, appearance like new, genuine, first-class outfit; 100 gns.; bargain.—21, Newton Av., Acton, W. [8706

1915 Clyno 6h.p. 3-speed Combination, chain drive, kick, detachable wheels, one spare and tyre, lamp, horn, and tools, condition as new; £115; too strong for rider.—Ward, West Common, Redbourn, Herts. [8099

CLYNO Combination, 5-6h.p., 2-speed countershaft, all-chain, clutch, kick starter, Clyno coachbuilt sidecar, good tyres, good running order, lamps, and horn; £75.—209, Broadway, West Heudon, N.W. [8295

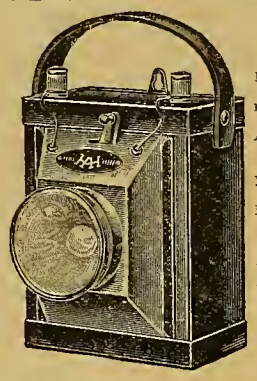
REGISTERED

TRADE MARK

SPECIALITIES.

H.A.H. ELECTRIC HAND LAMP.

Safe, Clean, Always Ready for Use.



Requires no Attention Long Life Post Paid.

Price 25/-

Fig. 1040.

H.A.H. WIRING SUNDRIES

Complete Sets as illustration.

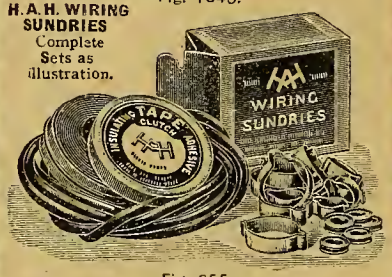


Fig. 255.

Set "A" for Solo Machines ... 4/3.
6yds. single lighting wire, tape clips, ring termina's, etc.

Set "B" for Sidecar Combinations, 6/6.
12yds. single lighting wire, tape, clips, ring terminals, etc.

Fig. 358. INSPECTION LAMP, 8/6 each.

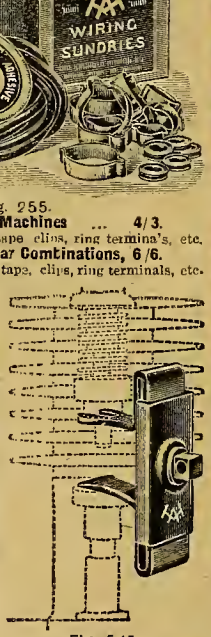


Fig. 545. Valve Lifter, 2/6 each.

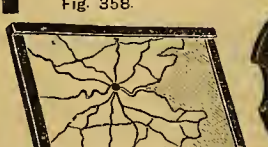


Fig. 395. ROUTE CARD HOLDER Price 6/- each.

Fig. 551. "MIXA FAN" Fits induction pipe ½-in. Increased power, Decreased consumption. 1/6 each.

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MOTOR CYCLES FOR SALE.

Clyno.

CLYNO 1914 6h.p. Coachbuilt Combination, 3-sp countershaft, interchangeable wheels and spa lamps and horn; £98, or exchange solo and cash; vate owner.—Seen at 462, Lea Bridge Rd., Leyt E.10. [8

CLYNO 1914 6h.p. Coachbuilt Combination, 3-sp countershaft, quick detachable interchangeable wh all-enclosed chain drive, kick starter, clutch, Bos Amac, Jones speedometer trip and maximum, Klax Lucas lamps, fully ensured, many gadgets fitted; £1 —Apply, after 6 p.m., 16, Iffley Rd., Hammersmith. [7

Connaught.

HOVE Engineering Works, Davigdor Rd.—Sole trict Connaught agents; deliveries from stock; accessories and repairs. [7

1914 Connaught, 2-speed, very fast, good conditi lamps and horn, complete, stored daring w £40.—Keates, 12, Newport St., Burslem. [X7

Coventry Victor.

COVENTRY Victor, 1919, 6h.p., 3-speed, kick st mileage 900, too powerful solo; first cheque o £90 secures; seen appointment.—Head, Moody Terr Cousleton, Cheshire. [X7

Coulson.

SOUTH Lancashire, North Cheshire, and Isle of M Only.—Coulson B. enquiries.—J. Blake and Official Dealers, Liverpool-Manchester. [7

Dayton.

DAYTON 2-stroke, good climber; £28; no offer Allison, Church Rd., Acton, W. [8

De Dion

DE DION 3½h.p., mag., ride away; £27.—16, Mary Abbott's Terrace, Kensington, W. [8

2¾h.p. De Dion, B. and B. carburetter, C.A.V. in 4 in good running order; £30; seen after 6 p.m 2, Wolseley Gardens, Chiswick. [8

3½h.p. De Dion (nuts only missing), carburet 2 Chater-Lea frame, tank, controls, pump, han bar, coil; lot £6, offers.—14, Park Rd., Wallasey. [X7

Douglas.

2¾h.p. Douglas.—Several W.D. models for immed 4 delivery from stock; £62-£72.

ALSO 4h.p. Models, solos and combinations; £75 wards; first callers secure.—Clapham (Moto 119, King George St., Greenwich. [7

DOUGLAS, 1914, T.T., 2-speed, splendid conditi £48.—32, High St., Reigate. [8

DOUGLAS, 1911, 2¾h.p., good order; first £1 B. Walshe, Glin, Co. Limerick. [X7

2¾h.p. 1915 Douglas T.T., 2-speed; £55.—35, R 4 mond Rd., Kingston-on-Thames. [8

DOUGLAS 2¾h.p., 1915, 2-speed, perfect conditi £46.—36, David Lane, Shadwell [8

DOUGLAS 2¾h.p., 2-speed, delivered last week; gns.—7, Cannon St., St. Albans. [X7

DOUGLAS, 2-speed, new condition, ride away; £ —Allison, Church Rd., Acton, W. [8

1917 4h.p. Douglas, beautiful condition; chea 18, Wix's Lane, Lavender Hill, S.W. [8

2¾h.p. 1914 Douglas, 2-speed, in good going or 4 £45.—371, High St., Lewisham, S.E. [8

4h.p. Douglas, 1917, 3-speed, clutch, kick sta new; 90 gns.—2a, Sistova Rd., Balham. [8

DOUGLAS 4h.p. combination, late 1916 W.D. mo £95.—9, Church Rd., Willesden, N.W. [8

DOUGLAS.—We are doing our best for deliveri Moffat, Douglas Agent, Yeovil. 'Phone: 50. [1

2¾h.p. Douglas, new, and new sidecar; 89 gns., 4 separate.—52, Thornhill Rd., Barnsbury, [7

2¾h.p. Douglas, 2 speeds, Bosch, accessories, sple 4 condition; £58.—1, McBean Rd., Wolverhamp [X7

DOUGLAS 2¾h.p., good condition, new Dunlops belt; £35.—Allison, Church Rd., Acton, [8

FOR Sale, new 4h.p. Douglas combination.—4, side Mansions, Jacksou's Lane, Highgate, N.6.

DOUGLAS, 2¾h.p., single, good running order, tyres; £25; after 7.—82a, Bedford Rd., Claph

DOUGLAS, new, 2¾h.p., W.D., in crate; £72; ings after 8.—35, Sydney Rd., Richmond, S [7

DOUGLAS 2¾h.p. Twin, very fast; any £27/10.—29, St. Leonards St., Bromley-by-B

1919 Douglas 2¾h.p., new, Lucas lamps and h best offer over £82.—Eveson, The Dingle, St bridge. [8

W.D. 2¾h.p. Douglas, patent buffer forks, ridden, No. 33628; 62 gns.—Grainger, F Row. [8

DOUGLAS 2¾h.p., single speed, about 1911; £ Waygood, Pinewood Villas, Ninemile Ride, Wok ham. [X7

MOTOR CYCLES FOR SALE.

Enfield.

17 3h.p. Enfield Twin, 2-speed, clutch, perfect condition, fully equipped, spare tyre, mileage 1,000; £70; no offers.—Rowe, Alexton, Uppingham.

16 Enfield Twin, 2-speed, kick starter, mechanical horn, all accessories, splendid condition; any trial; £58; after 6.—2, Cowhurst Rd., Charlton Rd., Shepperton, S.E. [8176

FIELD 3h.p., July, 1915, 2-speed, kick start, Binks carburetter and Watsonian sidecar, perfect running order; 65 gns.—40, Salcott Rd., Clapham Junction, S.W. [8494

14 6h.p. Enfield Combination, in first-class condition, mileage 7,500, stored during restrictions, owner owned; price £115; S.E. district.—Box 4,407, *The Motor Cycle.* [X7818

REAL ENFIELD 2¾h.p. Twin 2-speed, lamps, bulb and mechanical horns, plating as new, perfect order, been stored; £45.—15h, Peabody Estate, Grey Rd., Walworth. [8271

REAL ENFIELD 6h.p. C.B. Combination, late 1913, perfect running order, Bosch mag., J.A.P. engine, speedometer, lamps; £95, or best offer.—8, Rd., Waterfoot, near Manchester. [X7558

REAL ENFIELD, twin lightweight, waterproof Bosch mag., B. and B. carburetter, engine, etc., rebuilt last month and re-enamelled; ride away; £31.—Box L3,052, c/o *The Motor Cycle.* [7999

6 6h.p. Enfield Combination, perfect condition, 3 lamps and generators, speedometer, child's sidecar, pinion out, watch, muffs, tools; £120. Farm, Windrush, Burford, Oxfordshire. [X7509

ENFIELD 3h.p. Twin, 2-speed, chain drive, Bosch mag., Amac carburetter, just overhauled, new front horn, and lamps; ride away; 60 gns.—The King's Upper Tooting Rd., S.W.17. (Seen after 7 p.m.) [8136

6 Enfield Combination, 6h.p., good mechanical condition, accumulator lighting, Klaxon, speedometer (less cable), mirror, tools; £112.—Buck, 2, Ivy Cottages, Stoughton St., Leicester. Evenings after 6. [X7726

GRAND New 2-stroke, 2-speed 2½h.p. Enfield, 1918 model, not run 100 miles, in perfect condition fitted with electric light attachment; £55; by appointment.—Pioneer Wood House, Pinner, Middlesex. [8181

19 Enfield (Easter) 8h.p., Combination, owner's model, electric lighting, ample spares, enormous hood, ready for holidays; offers over 160 gns.—Call for appointment, 20, Temple, Fortune Hill. [8434

REAL ENFIELD Combination, late 1916, little used, Lucas dynamo lighting, electric horn and side lamp, oversize tyres, Klaxon horn, trip speedometer, and mirror, hood, screen, apron, new spare tyre and tubes, full tool kit, chains, all spares, etc., the outfit in new and perfect condition, a luxurious outfit.—165.—168 Church Hill Rd., Handsworth, Birmingham. [X7469

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2h.p. Excelsior, Bosch, B. and B., good condition; £35.—32, Marquis Rd., Finsbury Park. [8140

LANCASHIRE, Cheshire, North Wales, Isle of Man only.—American Excelsior; enquiries.—J. Blake Ltd., Official Dealers, Liverpool-Manchester. [7038

AMERICAN Excelsior Combination, 7-9h.p., Gradua gear, powerful machine, in splendid condition; £ns.—Seen, 160, Ordnance Rd., Enfield Lock, Middlesex. [8281

9h.p. American Excelsior Combination, late 1916, dynamo lighting, 3-speed, speedometer, Millford, in splendid condition; £120 cash.—Gay, Lydcombe, Som. [X7650

EXCELSIOR (American), latest model, 7-9h.p., dynamo lighting, 3-speed countershaft, coach sidecar, practically new; £155; good solo part exchange. 5, Victoria Av., Surbiton. [7882

AMERICAN Excelsior Motor Cycles.—Sole distributers for the counties of Warwicks., Worcs., Staffs., and Leics. Place your order now to secure delivery.—The Premier Motor Co., Aston Rd., Birmingham. [7981

EXCELSIOR, American, 1916-17, 7-9h.p., T.T. 3 speeds, clutch, kick start, racing metal sidecar, and rear lighting, speedometer, horn, spares, lot, perfect order; any trial; £120.—Broad's, Fuller, 7c, Hornsey Rise, Holloway, London, N. [8016

Excelsior 3h.p., 2-stroke, special sidecar model, 2-speed countershaft, all-chain drive, hand clutch, Amac, E.I.C., Brooks B170, Dunlop 1". and H. large lighting sets, horn, tools, mileage under 500, new condition; owner badly wounded; nearest offer.—Lieut., 26, Victoria St., Scarborough. [8084

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9h. Fafnir, everything complete, in running order, frame broken; £8.—13h, Peabody Estate, Grey Rd., Walworth. [8272

1!—Fafnir, 3½h.p., clutch, B. and B., mag., engine perfect, fast, reliable; any trial; £27, 27.—27, Notting Hill Gate, London. [8270

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A.J.S. and BRITISH EXCELSIORS.

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MOTORING GLOVES.

Black Asbestol Gauntlet.

13/6.

Tan Leather Gauntlet.

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Will lift any weight up to 5 cwt., yet weighs only 1½ lb., and, when closed, measures only 8in. high. By far the cheapest and most efficient jack on the market to-day.

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HANS RENOLD CHAIN.

Size ½in. × ¼in. ..... Price, per ft. **2/10**

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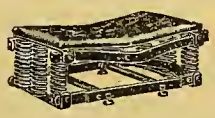

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Springwell Seats, strongly upholstered, and fitted with box springs ..... Price **17/6**

Postage on pillion seats, 8d. extra.

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T.W.R. TAIL LAMPS.

Electric, complete with bulb, **9/11** (postage 4d.)

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DISC WHEELS, for A.J.S. Motor Cycles.

There is nothing to equal disc wheels for enhancing the appearance of a Motor Cycle, or simplifying the task of cleaning. Price per wheel **22/6**

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Garage: Tottenham Court Road. 'Phone—Museum, 1240. Telegrams—"Dynametro, Westcent, London."

MOTOR CYCLES FOR SALE.

F.N.

2¾h.p. F.N.; ride away; £25.—22, Park Rd., Enfield Wash. [X7664

F.N., 2¾h.p., 2-speed, Bosch; £20.—Vogan, Mill St., Deckhead, S.E. [8452

F.N. Combination, 5-6h.p., 4-cyl., 2-speed, overhauled; £40.—Sunnyfield Lodge, West Heath, Hampstead. [8289

F.N. 2¾h.p., overhauled, re-enamelled, T.T., watertight mag.; £24.—85, Galbraith St., Cubitt Town, Poplar, E.14. [7581

F.N., 2½h.p., 2-speed, perfect order, accessories; £35.—8, Half Moon Lane, Herne Hill, S.E. 'Phone: Brixton 1964. [8569

2¼h.p. F.N., shaft drive, 2-speed, clutch, Bosch, B. and B., perfect condition; £26.—231, Lordship Lane, Wood Green, E. [8468

F.N. 2½h.p., shaft drive, 2-speed, clutch, perfect condition, as new; offers.—Elger, 65, Mulberry St., Hulme, Manchester. [X7645

F.N. 2¾h.p., Bosch, B. and B., Druids, Lycett, Millers, all perfect, running order; £22.—24, Lower Park Fields, Putney, S.W. [8204

F.N., 4-cyl., shaft drive, Bosch, Senspray, nonsed 4 years, good order throughout; genuine bargain, £28 cash.—Nicholson, 53, Oxford St., Stoke-on-Trent. [X7489

2¼h.p. F.N. Lightweight, shaft drive, 2-speed gear, plate clutch, good tyres, ready to ride away; lowest £28.—Beesley, 106, Barlow Moor Rd., West Didsbury, Manchester. [X7592

F.N., 2½h.p., Dunlop tyres and belt, wants mag., splendid condition; £10, or exchange C.B. sidecar (fit Rex), letters only.—Simonds, Pimlico, Hemel Hempstead, Herts. [8449

F.N. 4½-5h.p., 4-cyl., 2-speed, handle-bar clutch, engine thoroughly overhauled, late Amac, Bosch combined mag. and distributer, dropped frame, lamp, horn; £38/10, lowest.—75, St. Dunstan's Crescent, Worcester. [X7276

F.N., 5h.p., 4 cyls., 2 speeds, clutch, kick start, late model, in new condition, lamps, Stewart warning signal, speedometer; £75; consider good single part exchange.—Bramlea, Charlton Rd., Shepperton-on-Thames. [8283

F.N. 4-cyl. 7h.p., 3-speed, clutch, kick starter, F.R.S. lamp set, Cowey speedometer, tools and spares. This is their last model, with mechanical inlets, late 1914-15, stored 4 years, new condition; 100 gns., or offer.—Walters, 20, Park Rd., Enfield Wash, Middlesex. [8043

F.N. 4-cyl. 5-6h.p., dropped frame, 1913, footboards, 2-speed, clutch, Bosch mag., kick starter, new L. and H. head and tail lamps, stored 2 years, just thoroughly overhauled, all worn parts renewed, re-enamelled and plated, only done 100 miles since, £45; also low-built sidecar, 2-seater, coach body, just delivered, never used, new tyre, £20; private owner.—17, Southend Av., Darlington. [X7679

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1917 Harley-Davidson Combination, as new; offers.—J. Capps, Papermakers Arms, St. Leonard St., Bow, E. [8501

ALLEN-BENNETT Motor Co.—1916 Harley-Davidson combination, beautiful condition; £145.—9, Royal Parade, London Rd., Croydon. [7869

HARLEY 7-9h.p., short-couple racing model, fastest Harley in England; 98 gns.—Baragwanath, 9, Bartholomew Rd., Kentish Town, N. [8704

HARLEY-DAVIDSON, 1915, T.T., Klaxon, speedometer, lamp set, just overhauled, a red-hot solo mount; £95.—A. Alston, 96, West Hill, Sydenham, S.E. [X7555

HARLEY-DAVIDSON and Coachbuilt Sidecar, 1915 model, lamps, Klaxon, new tyres, hood, screen, in excellent condition; £115.—Black Bull, 192, High St., Stoke Newington. [8246

HARLEY-DAVIDSON 1916 Combination, good condition, acetylene lighting, Orto wind screen, Klaxonette; £130 for quick sale.—Fanthorpe, High St., Dereham, Norfolk. [X7662

HARLEY-DAVIDSON 7-9h.p. Combination, 1915, new hood and tank re-enamelled, engine overhauled; owner too nervous to drive; 120 gns.—Lambert, Goose Yard, St. John St., Angel, E.C.1. [8688

HARLEY-DAVIDSON 1915 Electric Model, just re-enamelled and overhauled by Harley-Davidson, 3-speed, kick; 110 gns., or best offer.—13, Seymour Mews, Wigmore St., Oxford St., W. [8316

HARLEY-DAVIDSON, late 1916, 4½h.p., 3 speeds, kick starter, clutch, hand and foot control, lamps, horn, etc., genuine, reliable, fast; 80 gns.; no offers.—Smith, 2, Ford St., St. Mary, Nottingham. [X7836

7-9h.p. Harley-Davidson and Bramble Sidecar, Nov., 1915, condition almost as new, just thoroughly overhauled, painted khaki, almost unscratched; best offer over £130.—Bell Motor Works, Hendon, N.W. [8128

1919 Harley, mag. model, latest luxurious Harley coachbuilt sidecar, hood and screen, lamps, trip speedometer, mudshields, tool kit, all accessories, perfect condition, mileage 1,000; £220, or best offer secures; appointment.—Wells, 20, Red Lion Sq., Holborn. [8182

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SOLE Midland Distributers, The Premier Motor Co., Aston Rd., Birmingham.

HENDERSON 4-cyl., the aristocrat of motor cycles; orders now booking for delivery in rotation.—Sole distributers for the counties of Warwicks., Worcs., Staffs., Salop, and Leics., The Premier Motor Co., Aston Rd., Birmingham. [7982

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7036

HENDERSON 1914 Solo, gears, clutch, Claudel, new tyre and chain, disc wheels, sporting appearance, and very fast; £85, no offers.—93, Sydney Rd., Wimbledon. [8534

Hobart.

1915 Hobart 2½h.p. 2-stroke, used few weeks only, perfect condition; 45 gns.—Johns, 27, St. Gabriel's Rd., Cricklewood, N.W. [8525

1916 Hobart-Villiers Lightweight 2-stroke, 2-speed, counter-shaft, new condition; £45.—31, Richmond Park Rd., Kingston-on-Thames. [8190

HOBART 1916 Combination, 3h.p., 2-speed, F.E., disc wheels, smart sporty outfit, lamp set, etc.; £68, offers; evenings.—87, Truro Rd., Wood Green. [8330

HOBART-J.A.P. 1916 Combination, 6h.p. twin, countershaft 3-speed, kick start, splendid condition, lamps and Klaxon; a bargain, £110.—Coventry Motor Mart, Ltd., London Rd., Coventry. [X7767

Humber.

3½h.p. Humber, 2 speeds; £34.—35, Richmond Rd., Kingston-on-Thames. [8388

HUMBER 2h.p., M.L., Amac, new condition; £25.—73, Derwent Rd., Palmer's Green, N.13. [8133

1915 Humber, 3-speed, kick start, new condition.—223, Lloyd St., Moss Side, Manchester. [8035

2¾h.p. Twin Humber for sale, excellent condition; £44.—Apply, 16, Meadow St., Coventry. [X7742

HUMBER Lightweight, unused 4 years, as new; £32.—Bambridge, 43, Riverside, Kingston-on-Thames. [X7419

HUMBER Lightweight, good running condition; £23.—Apply (evenings), 41, Gresley Rd., N.19. [7924

HUMBER, 3½h.p., 2-speed, 1912, like new, with or without C.B. sidecar; offers.—Webb, Warmley, Bristol. [X7752

HUMBER, 4h.p., 2-speed, handle start; £50, or nearest.—30, Vernon Terrace, Long Lane, East Finchley. [8623

3½h.p. Humber, good condition; ride away; seen evenings; £25, or offer.—42, Beechhill Rd., Eltham, S.E.9. [8489

3½h.p. Humber, Roc 2-speed, running order; £35; write, or call after 6.30 p.m.—J. W. Bennett, Scotter, Lincoloshire. [8378

HUMBER, 3½h.p., believed 1915, gears and K.S., semi-T.T., excellent order; first £45.—c/o Wallis, Church St., Rugby. [8450

HUMBER Lightweight, nearly new tyres, excellent condition; £28/10.—Armstrong, 17, Goldhawk Rd., Shepherd's Bush, London. [8076

HUMBER 2¾h.p. Twin, T.T., 3-speed, clutch, absolutely perfect, new heavy cover, tube, and belt; 40 gns.—9, Meckleoburgh St., Holborn. [8299

HUMBER 3½h.p., 1911, running order, tyres, etc., good; £33, for quick sale; first m.o. secures.—Sherwood, Kelsale, Saxmundham, Suffolk. [8021

HUMBER 3½h.p., Bosch, B. and B., good tyres, in running order, free engine; £30, or good offer.—J. Johnstone, Pica, Distington, Cumberland. [X7560

HUMBER 1913 2h.p. Motor Cycle, single-speed, good tyres, Bosch mag., splendid order and condition; £30, or offer.—Dewdney, 34, Magdala Rd., N.19. [8570

BRAND New 1919 Flat Twin 3½h.p. Humber, fully equipped, lamps, horn, etc.; best offer over £110; owner disabled.—Dawe, 26, Hobart Rd., Cambridge. [X7888

HUMBER Motor Cycle, 2 speeds, free engine, everything in perfect mechanical order, ready to ride away; £32.—Bennett, "E" Block, R.A.S.C., Grove Park, S.E.12. [7934

3½h.p. Humber, 2-speed, free engine, handle start, good running order, lamp, horn, new tyre, trial; owner buying lightweight; £45.—Cathedral House, Ely, Cambs. [7971

1914 3½h.p. Humber Combination, 2-speed, clutch, adjustable pulley, almost new Canoelet sidecar, ready for the road; worth writing for particulars; £65.—Thos. Smith, 18, Glebe Rd., Kilmarnock. [8160

UNIQUE Sporting Featherweight Combination, 2¾ h.p. twin Humber, 60×60, very low and fast, specially tuned engine, long exhaust, T.T. bars, rubber grips, 3-speed, clutch, fitted Watsonian Model E sidecar, all tyres and tubes recently new, unpunctured, acetylene and electric lighting, most reliable and economical to run, splendid condition; cash £75; after 6 p.m.—Wilson, 35, Shakespeare Rd., Acton, W.3. [8321

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IMP-J.A.P., 1914, 2½h.p., 2-speed, perfect order, all accessories; £48.—8, Half Moon Lane, Herne Hill, S.E. 'Phone: Brixton 1964. [8568

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PRICES:

Gents'.

Size.	Per Pair
10-11	3/6
8-9	3/3
6-7	3/-

Ladies'.

Size.	Per Pair
6-7	2/8
4-5	2/4
2-3	2/-

Boys' and Youths'.

Size.	Per Pair
4-5	3/-
2-3	2/10
1-13	2/8

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Size.	Per Pair
1-13	1/6
11-12	1/3
9-10	1/-

Sol-fix Solution:

In Tins, 8d., 1/3, 2/6, and 4/6. An 8d. tin is sufficient for 2 pairs of soles.
Solution Brush, 4d.

Please remit 6d. to cover cost of postage. Any excess will be refunded.

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VICTORIA, S.W.1.

MOTOR CYCLES FOR SALE.

Indian.

2¾h.p. Indian; £25, or offers; after 7 p.m.—15, field Rd., Harlesden. [8

7-9h.p. Indian, clutch model, 1914; £8 Wauchope's, 9, Shoe Lane, London. [8

INDIAN 5-6h.p. Twin Clutch Combination, C.B. gns.; will separate.—176, South Ealing Rd., [8

INDIAN Combination, 5-6h.p., 3-speed, clutch, start, Gloria car; offer.—12, Bridge St., bridge. [X7

INDIAN Combination, late 1915, T.T., sporting car, fast; £95.—30, Riggindale Rd., Streath S.W.16. [7

5-6h.p. Indian, semi-T.T., good throughout, geared, sporting; 90 gns.—17, Elmwood Gard Acton Hill, W.3. [8

INDIAN, 1916, 5-6h.p., 3-speed, clutch, kick s electric lighting set, and horn; £115.—39, side, Cambridge. [X7

INDIAN, 1914, 7-9h.p., 2-speed, disc wheels, fast, good condition; £68.—29, St. Leonards Bromley-by-Bow. [8

1914 Indian, 7-9h.p., 2-speed, good condition, stored, overhauled; £65; ride away.—Appl Strand, Exmouth. [X7

7-9h.p. Indian, T.T., 1914, clutch, fine lamps, machine, good order; £60, quick sale.—Saw Long St., Sherborne. [X7

INDIAN 1916 T.T. Coachbuilt Combination, 3 spe kick, clutch; 105 gns.; after 6.—449, Ful Palace Rd., S.W.6. [8

INDIAN, late 1915, 7-9h.p., 3 speeds, clutch, condition; £80.—S. Floaete, 10, Downs Rd., mont, Sutton, Surrey. [8

1915 T.T. Indian, 7-9h.p., clutch, perfect condit fast, ride away; £70.—Humphries, 8, The lage, Old Charlton, S.E.7. [8

7-9h.p. Indian, clutch, spring frame, and pillion overhauled, believed 1915; £66.—Vale Cott South Alkham, near Dover. [8

INDIAN, 7-9h.p., 1914, T.T., clutch, torpedo side £90; good condition, stored 3 years.—After 6, Ranelagh Rd., South Ealing. [8

1915 5-6h.p. Red Indian Combination, 3-sp clutch, torpedo sidecar, good condition; £7 Chapman, 10, Norris St., Lincoln. [X7

1916 Indian 7-9h.p. Combination, clutch, 3-sp electric light, Indian sidecar; £105.—Taylor, Rosefield St., near Waterloo Station. [8

INDIAN 1914 Combination, spring frame, 7-9h 2-speed, clutch; 75 gns., or near offer.—13, mour Mews, Wigmore, Oxford St., W. [8

INDIAN 7-9h.p., 2-speed, kick starter, and side electric lamps, accumulator, in splendid condit £100.—Longman, Fisherton, Salisbury. [8

1915 7-9h.p. Indian Combination, 3 speeds, tyres, and in sound order; £115.—Walbro M Cycle Works, Saffron Walden. 'Phone: 45. [X7

INDIAN 7-9h.p., 1914, clutch model, the best on road, disc wheels, plated and enamelled, a real mount.—Albyns, 872, Forest Rd., Walthamstow. [8

7-9h.p. Indian Combination, 1914, 2 speeds, with handsome coachbuilt sidecar; £1 Wauchope's, 9, Shoe Lane, Fleet St., London, E.C [8

INDIAN Combination, 1915, 3-speed, clutch, starter, Millford coachbuilt sidecar, in good c tion.—Bathing House, Howick, Lesbury, Northu land. [X

INDIAN 1915 5h.p. 3-speed Combination, except condition, Lucas horn, and 3 lamps; any nearest to £125 secures.—141, Morton Rd., Wi don. [

1915 7-9h.p. Indian Combination, 3-speed, s frame, electric lamps, horn, screen, hood, gage grid; £105.—27, Southfields Rd., Wandsw S.W. [X

INDIAN 1915 Spring Frame Combination, 7-9h speed, K.S., lamps, horn, tools, perfect order; bought car; 95 gns., or offer.—Fox, 17, Clonmel Fulham. [

INDIAN Combination, 1915, 7-9h.p., 3-speed, condition, recently overhauled, electric ligh tools, etc.; £100; after 7.30 p.m.—1, Christchurch Ilford, Essex. [

INDIAN, equal to new, not scratched, fast, and sound, 3 speeds, clutch, kick start; c seen by appointment; no offers; £100.—Clarke, Hill, Bromsgrove. [X

INDIAN 7-9h.p. Road Racer, clutch, lamps, ometer, not used from December, 1916, till ary, 1919, in good running order; £55.—Lon Fisherton, Salisbury.

1914 7-9h.p. Indian Combination, 2 speeds, lamps, speedometer, new tyres, spare tubes, sories, etc., stored; £90, near offer; after 6.30 p. Tennyson Rd., Stratford, E.

INDIAN, 1915-16, 7-9h.p., 3-speed, new heavy lops, brand new C.B. sidecar, red, 3 tooll splendid condition, fast; £120, or near.—53, Dun Rd., N.19. 'Phone: Hornsey 1012.

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ATCHLESS-J.A.P. 8h.p., Binks carburetter, 2-speed, top-hole condition; first £52/10 secures.—Rosendale Rd., West Dulwich, S.E.21. [8029

ATCHLESS Combination, 8h.p. M.A.G. engine, complete with spares, lamps, etc., in excellent tion; £135.—32, Balfour Rd., Derby. [X7710

ATCHLESS Combination, perfect condition, counter-abart 3-speed, all accessories; £125, or near.—124, d's Rd., Finsbury Park. 'Phone North 2827. [8232

12 6h.p. Twin Matchless-Jap, enamel shabby, otherwise sound, new tyres, very fast; £47.—ro Motor Cycle Works, Saffron Walden. 'Phone: [X7547

p. Matchless-Jap Coachbuilt Combination, 2-speed, free engine; ready to ride away; 72 gns.; lealers.—11, Brook St., Northumberland Heath, [8419

ATCHLESS-J.A.P. 6h.p. Combination, 1913, 2-speed hub, powerful, good running order; trial cheap; bought car.—89, Hartshill Rd., Stoke-on-[8049

ATCHLESS 1919 Victory Model, 8h.p. combination, new as delivered, used for a few miles only, s accessories, spare wheel, etc.; best offer.—Faith, Essex Rd., N. [8497

ORTING 6h.p. 7-speed Matchless, 1913 model, mechanical condition perfect, good tyres and very fast and well balanced engine; £63.—Port-Lodge, Lyme Regis. [8151

ATCHLESS Combination, 8h.p., as new, including lamps, horn, luggage grid, interchangeable wheels spare, tools, etc.; any trial; 160 gns.—Seen 18, Av., Golder's Green, N.W. [8185

18 Matchless Combination, 8h.p., 3-speed, interchangeable wheels, spare wheel, Lucas lamps, spares, new back tyre; £150; magnificent out-Mawson, Draper, Morecambe. [X6988

ATCHLESS-J.A.P. 7-9h.p., 7-speed variable gear, electric lights, splendid condition, fitted with built sidecar, climb anything; nearest offer £120.—s, Heaton Row, Bingley, Yorks. [X7834

ATCHLESS 8h.p. 2-speed Combination, just overhauled, tank re-enamelled, frame painted, coach-sidecar varnished, in excellent running order; —12, Cornwall Rd., Dorchester. [8491

p. Matchless-Jap Combination, 2-speed, free engine, kick start, all accessories, guaranteed perfect ition; expert examination invited; 110 gns., or offer.—70, Arlington Rd., Teddington. [8241

19 Victory Model 8h.p. Matchless Combination, as new, interchangeable wheels, and tools, 90 tyres, hardly used; examination welcomed; .—Tompsett, The Moors, Marden, Kent. [7897

ATCHLESS Victory Combination, 8h.p., Dunlop ear tyre on back wheel, spare wheel, extra tyre, on horn, Lucas head light, perfect condition, care-run in; 160 gns.—24, Esplanade Terrace, Joppa, burgh. [X7476

ATCHLESS Combination, 6h.p. J.A.P., recently overhauled, new tyres, 2-speed, free engine, com-lamps, horn, fine coachbuilt sidecar; £98, or est.—Seen, 115, Green Lanes, Palmer's Green, don, N. [8126

ATCHLESS-J.A.P. 8h.p. Victory Model Combination, as new, 3-speed countershaft gear, 4 inter-geable wheels, complete Lucas lighting; approval; gns.—Harrison, 2, Marlborough Rd., Buxton, byshire. [X7840

ATCHLESS 8B. Combination, 1915, M.A.G. 7-9 h.p., 3-speed, Silent chain drive, Palmer cord light tyres, Stewart trip speedometer, F.R.S. 1,000 and rator, splendid condition; £105.—Bibby, Mill Lane, tley, Cheshire. [X7692

ATCHLESS 1919 8h.p. Combination, C.B. sidecar, new end of April, complete with 3 lamps, horn, screen, spare wheel, all tools; £175; seen by appointment at Chelmsford.—Jones, Rosemount, Dan-, Essex. [8067

13 8h.p. 2-speed Matchless, coachbuilt sidecar, perfect condition, not used during war, low age, lamps, spares, luggage and petrol carrier, s perfect, 3in. on back wheel; £85.—Merstham ge, Merstham. [8547

ATCHLESS New Model H, spring frame, 8h.p J.A.P. engine. Write at once and book for earliest very. Lucas dynamo outfit at option, 5% on deposit. Decide now and order the best com tion.—J Tassell, 1a Bloomfield Rd. Plumstead [4791

ANS and Dunn, 93, Mason's Hill, Bromley, Kent, placed a good contract long ago for Matchless binations, and are now booking orders strictly in tion for earliest possible delivery; be early on our ing list, satisfaction assured. 'Phone: Bromley [4068

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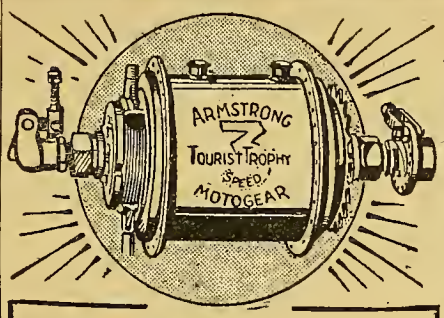

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Metro.

METRO-TYLER.—Sole agents for Hertfordshire, Chandler, Reyre and Williams, Snu St., Hitchin [0998

ALLEN-BENNETT Motor Co.—1919 model, Metro-Tyler, disc wheels, very hot; £57/10.—9, Royal Parade, London Rd., Croydon. [7874

1919 Metro-Tyler, fixed, complete, delivered and insured April; £48; after 6.0.—Benstead, 36, Braydon Rd., Stamford Hill, N. [8088

METRO-TYLER, 1919, done 300 miles, like new, 2-speed, disc wheels, long exhaust; £60, no offer.—Scott's Dental Surgery, 433, Brixton Rd., S.W. [8562

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MINERVA, 3½h.p., m.o.v., low, in good condition; £14.—Stallard, 109a, Albion Hill, Brighton. [8404

MINERVA, less magneto, £4/5; twin connecting rods and pistons 39/-.—Robinson, Sandy, Bedfordshire. [8456

£14, or nearest.—2½h.p. Minerva, mag., mechanical valves, perfect running order very low.—Young, 46, King St., Bedworth. [X7741

3½h.p. Minerva, Bosch, Druids, new belt, stand, carrier; any trial; £25, or good offer.—Goodall, "Capthorne," Chase Rd., Epsom. [7921

6h.p. Minerva Combination, 2-speed gear, free engine Bosch mag., Amac carburetter, wicker torpedo sidecar; first £45.—Tyler, Axbridge, Somerset. [X7322

Montgomery.

6h.p. Montgomery Combination, fitted with Coventry Victor horizontal twin, U.H. mag., B.B. carburetter, 3-speed, K.S., special wide tank, built January, 1919; a bargain, £85, no offers.—175, Sovereign Rd. Coventry. [X7467

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4h.p. Moor, 1911, overhauled and re-enamelled, splendid condition, Bosch, B. and B., Cowey, tyres new; £35.—Call after 6 p.m., M. Bland, 137, Parkdale Rd.. Plumstead [8560

Moto-Reve

MOTO-REVE, spring fork, 2¼h.p., good condition £24.—Allison, Church Rd., Acton, W. [8058

MOTO-REVE Twin Lightweight, mag., Druids, good condition, ride away; £25.—Henson, Melton Rd. Oakham. [X7562

MOTO-REVE 2¾h.p. Twin, spring forks, Hutchinson tyres, mag. requires adjustment; £15.—Mann Hollywood, Grove Hill Rd., Harrow. [7976

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MOTOSACOCHE 2¼h.p., 1914, new back tyre, leather belt, in good condition; ride away; £25.—Fredk Mudd, Royal Hospital, Richmond, Surrey. [8080

MOTOSACOCHE 2h.p. Lightweight, Bosch mag., B and B., nearly new tyres, in running order; bargain, 10 gns.—Clark, Brickworks, Crowle Wharfe, Doncaster. [X7494

MOTOSACOCHE Combination, C.B. Bramble, twin M.A.G., 2-speed, clutch, all-chain drive, shaft-driven Bosch, excellent condition; £65, or offer.—Mountbell, Ladywell Bridge, S.E. [8170

MOTOSACOCHE and Middleton Sidecar, Bosch, free engine, clutch, Amac, Palmer cord tyres, speedometer, carrier, pannier bags, stand, etc.; sacrifice £32; ride away.—Ben, 152a, Swaby Rd., Earlsfield. [8230

New Hudson

3½h.p. New Hudson, semi T.T., single, fast; £35.—Shand, 14, Brandram Rd., Lee, S.E. [8168

NEW HUDSON.—Early delivery all models. Book orders now.—Parker's, Bradshawgate, Bolton. [X7789

NEW HUDSON 3½h.p. Coachbuilt Combination, 3-speed, in splendid condition.—Oakleigh, Charlestown, Weymouth [8279

NEW HUDSON, late 1916, C.B., 4h.p., countershaft, 3-speed, K.S., lamp etc., like new; £95; seen any time.—C.S., 14, Swaton Rd., Bow, E.3. [8411

1913 New Hudson, 2¾h.p. J.A.P. engine, 3-speed hub, good tyres, running order, but requires tuning; £17/10 cash no offers.—Cairns, Castlefin, Co. Donegal. [X7712

NEW HUDSON Combination, J.A.P. engine, 4h.p., 3 speeds, Bosch, B. and B., in excellent running order; £45, or nearest.—176, Gerrard St., Lozells, Birmingham [X7676

NEW HUDSON Big Six Combination, 3-speed countershaft, excellent coachbuilt sidecar, good condition and running order, accessories; £95.—Bourne, Horsmonden, Kent [8606

NEW HUDSON, 1915, very fast 2-stroke, excellent condition, spare belt, tool case complete, new lamps and horn; £47; at Bayswater. London.—Box L3,015 c/o *The Motor Cycle* [7993

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NEW HUDSON 1913-14 3½h.p. Coach Combination, 3-speed, clutch, smart, excellent caondition, beeu stored 4 years, spares; any trial; 65 gas.—108, Qneenswood Rd., Forest Hill, S.E.23. [8484

BIG 6h.p. New Hudson 1914 Combination, 3-speed, clutch, kick start, coachbuilt sidecar, Easting wind screen, luggage grid, lamps, horn, etc.; any trial; £125.—Bristow, 11, Richmond St., Brighton. [X7333

4h.p. New Hudson, 1914, coachbuilt sidecar, 3-speed, clutch, kick start, Jones speedometer, P. and H. lamp set, rear lamp, Bosch, new sidecar tyre, good condition; £75.—Newton, 23, London Rd., Bognor. [8531

NEW HUDSON, 4¼h.p., 3-speed countershaft, kick start, clutch, coach sidecar, lighting set, speedometer; this machine has only done 3,000 miles; smart turnout; first £90, or sell solo.—152, Camberwell Grove, Camberwell. [8582

1914 3½h.p. New Hudson-Jap Combination, 3-speed, clutch, lamps, £75; two cycle car chassis, incomplete, £55; £125 the whole, lowest; appointment by letters only.—Lieut. Hall, Oulton, 52, Pretoria Rd., Streatham, S.W.16. [8233

NEW HUDSON 4h.p., 1914, 3 speeds, Armstrong hub gear, clutch, handle start, electric light, new set tools, new horn, good tyres, tubes all round, wicker sidecar, splendid order, ready to ride away; what offers over £75; seen after 6 p.m.—Gilliland, 4, Claremont Place, Uckfield, Sussex. [X7530

New Imperial.

NEW Imperial.—Caffyns, Ltd., Eastbourne, are booking orders for delivery shortly. [0018

1919 New Imperial-Jap 2½h.p., 2-speed; £65.—Chapman, 289, Liverpool Rd., Islington, N. [7885

NEW IMPERIAL-J.A.P., 1914, 2-speed, good condition; £40.—Bucks, "Shenfield," Nuns' Close, Hitchin. [X7331

NEW IMPERIAL 1919 Model Lightweight, new, unused; what offers?—Box L3,075 c/o *The Motor Cycle.* [8400

NEW IMPERIAL 2½h.p., 2-speed, in good condition; 40 gns.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [7807

NEW IMPERIALS. Call and inspect the latest models.—Sole London agents, Rey's, 173, Great Portland St. 'Phone: Mayfair 879. [9677

NEW IMPERIAL-J.A.P., 8h.p., 3 speeds, and clutch, and K.S., all enclosed chain drive, with C.B. sidecar, all brand new; £150.—Raynham, Saffron Walden. [8360

1914 2½h.p. New Imperial, 2-speed countershaft, Bosch, mechanical horn, just overhauled, ride away; 38 gns.—Newnham, Thornedene, Homesdale Rd., Bromley, Kent. [8356

NEW IMPERIAL Lightweight, 2¾h.p. J.A.P., 2-speed, fast, reliable, ride away.—George Smith's (opposite Arding and Hobbs), Lavender Hill, Clapham Junction, S.W. [8395

NEW IMPERIAL-J.A.P., 2¾h.p., as new, 2-speed countershaft gear, E.I.C., Amac, disc wheels, Stewart speedometer, ride away; £52.—Fairhairn, Bootmaker, Station Approach, Sidcup, Kent. [8257

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, kick starter, hand clutch, new December, 1917, done about 800, equal to new; £57; owner buying combination.—Murphy, 4, Caroline Place, Aberdeen. [X7326

NEW IMPERIAL-J.A.P. Combination, 8h.p., late 1918, 3-speed countershaft gear, clutch, kick start, coachbuilt sidecar, lamps, horn, etc., a splendid machine; £145.—Bristow, 11, Richmond St., Brighton. [X7332

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed countershaft, new tyres, new belt, complete lamp set, horn, tools, etc.; £46, or Auto-wheel part payment.—18, Bellevue Gardens, Clapham Rd., S.W.9 (2 mins. "Swan," Stockwell). [8595

1915 2½h.p. New Imperial-Jap (No. 8957), 2-speed, E.I.C. magneto, B.and B. carburetter, lamps, Stewart speedometer, tyres good, running excellently, not used during restrictions; after 7 p.m.; £47/10, lowest.—Glamnire, Highfield Av., Aldershot. [8214

Norton.

JACK HEALY, Cork.—Norton official agent for the South of Ireland. [X8335

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FOR Sale, fourth place on waiting list for Nortons; what offers.—Box 4,398, c/o *The Motor Cycle.* [X7510

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NORTON 3½h.p., 1916, T.T. model, Philipson, Bosch, h.b.c., very fast, like new; £65.—Chapman, Gt. Broughton, Stokesley, Yorks. [X7677

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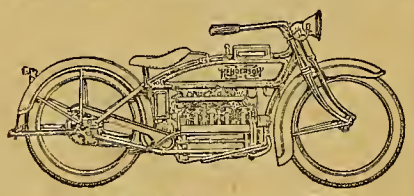

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1917 3½h.p. Norton, B.S. engine, aluminium 2 lamps, generator, horn, all spares, full kit, Binks, genuinely second-hand and equal to £80.—Hill Cottage, Faraborough, Kent.

NORTON Big Four, coachbuilt sidecar, Stur Archer 3-speed gear, speedometer, lamps, wind screen, excellent condition; seen by appointm £80.—16, Golden Mews, near Lancaster Rd., No Hill, W.11.

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N.S.U. Lightweight, economical; good order; £ 42, Prince's Rd., Holland Park.

3½h.p. N.S.U., good machine; £25, or near of Rev. Wilson, Abdon, Craven Arms, Salop.

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N.S.U. 6h.p., running order, 2-speed, F.E.; £ Monty, 6, Hichisson Rd., Peckham Rye. dealers.)

N.S.U. 3½h.p., new mag and tyres, in running o £25; after 6.—12, Palace Rd., Crouch End, sey, N.

N.S.U. 3h.p., variable gear and free, light mac overhauled, good appearance.—Lewis, Cha town, Weymouth.

N.S.U. 4½h.p., 2-speed, free engine, twin, with car, good condition, very powerful; £35.—13 Portland Place, Hull.

1913 N.S.U, 3½h.p., 2-speed, F.E., new tyres, mileage 5,000, £38; with C.B. sidecar, £ 167, Holland Rd., Shepherd's Bush.

N.S.U., 1914, 2½h.p., T.T., 2-speed, free, o Palmer tyres, good condition; after 6.30; or nearest.—27, Burlington Av., Kew Gardens.

6h.p. N.S.U. Combination, N.S.U. gear, new P cord on back, other tyres good condition, regularly; £53.—59, Church Hill Rd., Waltham

MOTOR Cycle, N.S.U. 4h.p. twin, low frame, mag., Sensprav carburetter, lamps, horn, spring forks, 2 brakes, fast, smart appearance; after 6.—146, Broadway, West Hendon, N.W.9.

3¾h.p. N.S.U. and Coachbuilt Sidecar, Bosch, B B. corburetter, 2-speed, free engine, new tube, sidecar, wants slight attention; first letter taining £20, sent carriage paid.—Baker, 49, M St., York.

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STANLEY RUSSELL, Newport, sole Isle of agent for N.U.T.-J.A.P. motor cycles; delivery.

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JONES' Garage, special agents for O.K. mach Broadway, Muswell Hill, N.10, and Woo Parade, North Finchley.

O.K. Lightweight 2-stroke, T.T. bore; bargain, Geo. Smith's Motor Cycle Depot (opposite A and Hobbs), Clapham Junction.

1914 O.K. T.T. 4-stroke Lightweight, 2-speed tershaft, brand new tyre and tube, lamp, ator, horn, spares, little used; £36.—Batchelor Prince's Av., Church End, Finchley, N.

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OMEGA-J.A.P., 1916, 2¾h.p., 2-speed, new lamps, horn, and accessories; £46.—26, Rd., Woking.

OMEGA 3h.p. 2-stroke 2-speed Combination, derson sidecar, good climber; 66 gns.; separate.—Chew House, Paragon Rd., Weston- Mare.

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9 Rudge Multi 3½h.p. Combination, lamps, horn tools, hood to sidecar; £118.—Chester, d, Rugby. [X7823

4 Rudge Multi, 3½h.p., all accessories, splendid condition, £63; or with sidecar £70.—58, Old d Rd., Luton. [8658

)GE, 3½h.p., new Hutchinson T.T. cover, mag., is new, overhauled; cost £3/10; £30.—Hughes. Dawel," Llanrwst. [X7810

EN-BENNETT Motor Co.—1914 Rudge, clutch nodel, very fine condition; £47/10.—9, Royal Par- ondon Rd., Croydon. [7878

)GE Multi, I.O.M., completely equipped, and bsolutely as new, 88 gns.; sidecar 12 gns.—A. Eccleston, Chester. [X7598

)GE Multi, late 1917, lamp, speedometer, Klaxon, erfect condition, unscratched, little used; £80.— igh St., Wimbledon. [X7436

)GE, 3½h.p., clutch, lamps, horn, re-enamelled, ood condition, fast; £40.—Harbour View, Fair Rd., Wyke, Weymouth. [X7772

)GE 3½h.p. C.B. Combination, Mabon clutch, mps and generator; £50, or best offer.—14, ourne Rd., Islington, N.1. [8543

)GE Multi 3½h.p., hand clutch, all accessories, ccellent condition; any trials; £55.—Potter, Else- Cottages, Priory Rd., Ascot. [X7413

)GE-MULTI, 1914, 3½h.p., very fast, just ov- auled, tyres good, lamps, Klaxon; after 7.—Fox, eld, Cecil Rd., Cheam, Surrey. [8448

). Rudge Multi, tyres and belt nearly new, 2 lamps, top-hole condition; any trial; £60.— s, 2, Island Villas, Mayfield, Sussex. [X7498

GE 3½h.p., 1914, T.T., adjustable pulley, long pper exhaust, lamps, horn, very fast; £50, or fer.—Duff, St. Austell, Belmont, Surrey. [8686

GE Multi, 1914, 3½h.p., very fast, heavy Dun- p on back, belt good, lamps, Klaxon; after 7; .—Fox, Northfield, Cecil Rd., Cheam, Surrey. [8708

T.T. Rudge, almost like new, very fast achine, too powerful for owner; £60. Wanted, ight.—Lindfield, Post Office Rd., Crawley. [8532

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GE Combination, 1913, 2-speed and F.E., re- atly overhauled, good reliable outfit.—First en- and best offers near £50 to Lt. Evans, Bar- landycroft, Chester. [X7566

GE 3½h.p., 1914, T.T., single gear, C.A.V. g., Senspray carburetter, wide tank, excep- fast, and in splendid condition; £45.—Watson, gh St., Aldeburgh, Suffolk. [8010

GE, 1914 (late), just been overhauled, rebushed, w rings, new Senspray carburetter, new belt and d tubes, clutch, all in good condition; £45; any owe, Wyberton, Boston, Lincs. [X7495

3½h.p. Rudge, countershaft, 2-speed, clutch, ust overhauled, enamelled, plated, lamps, etc., llent condition, exchange higher power; sell, nes, Dee Rd., Connah's Quay, Chester. [X7549

GE Multi Combination, 1915, 3½h.p., hand- atrolled clutch, 3 lamps, pump, horn, tools, ccessories, new tyres, Canoelet sidecar, excel- ndition; £85.—Currington, 4, Byron Place, head, Surrey. [7974

GE Multi 3½h.p., 1915, Montgomery sporting ohhuit sidecar, Lucas lamps, horn, speedometer, mer heavy, others new condition, spare tube, erfect condition; £80.—Fowler, 1, Triangle, th, Woking. [8370

T.T. Rudge Multi, fitted with clutch, Purcell's luminium sporting sidecar, Watford speedo- ucas King of Road lamp and horn, mileage ndition as new; best offer over £100.—Stan- akdene, Castle St., Luton. [X7744

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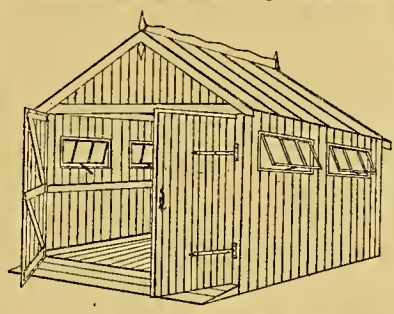

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SCOTT, very good condition, kick start, free engine, 2-speed, water-cooled, owner getting 1919 Scott; £53.—Williamson, 3, Southend Villas, Tredegar. [8301

SPECIAL Scott, sporting model, discs, T.T. bars, fully equipped, like new, ready to ride anywhere, very fast; £80.—32, Hartley St., Ulverston. [X7780

SCOTT 1912, semi T.T., and cane torpedo sidecar, disc wheels, speedometer, mechanical horn, F.R.S. lamp; £50, no offers.—1, Chandos Rd., Tottenham. [8483

SCOTT Twin Water-cooled 2-stroke, Bosch magneto, Amac carburetter, new driving sprocket and chains, complete with coachbuilt sidecar, new lamp sets, horns, tools, tyres as new, recently overhauled; snip, 70 gns.—29, Alderbrook Rd., Balham, S.W.12. [8601

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SINGER 2¾h.p., in good running order; £35.—Apply, C. Tredwell, Tingewick, Buckingham. [8014

SINGER, 1914, 3½h.p., single-speed, B. and B., Bosch, ride away; 33 gns.—30, Constance St., New North Rd., N.1. [8217

SINGER 4h.p. Combination, 1914, Dunlop tyres, Bosch mag., 2-speed countershaft, new belt, tools, lamps; £65.—Reve, Wyboston, St. Neots. [8353

SINGER, 4½h.p., 1914, chain drive, 2-speed, free engine, excellent order; £50; new driving chain just fitted.—25, Derby St., Burton-on-Trent. [X7816

1913-14 Singer, 3½h.p., Villiers clutch model, footboards, recently overhauled, good order and appearance; £39.—37, Powis Rd., Ashton, Preston, Lancs. [X7743

SINGER Motor Cycle, 3½h.p., clutch model, just overhauled, complete, lamps, horn, trial invited; ready to ride away; £40.—Barnes, 89, Midland Rd., Wellingborough. [8237

1914 Singer 4¼h.p., 2 speeds, countershaft, pedal start, foot clutch, torpedo cane sidecar, new tyres and belt, lamps, horn, etc., in excellent condition; trial given; £65.—16, Century Rd., Walthamstow. [X7682

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2¾h.p. Sparkbrook 2-stroke, 1916, 2-speed countershaft good, brakes, tyres, belt, chain, starts walking, pull anywhere, perfect mechanical order; £45, or very near offer.—R. Ramuz, 427, London Rd., Westcliff. [8276

Sun.

SUN 2¾h.p., V.T.S. engine, excellent condition.—25 Fishpond Rd., Hitchin, Herts. [X7820

SUN-VILLIERS 2-stroke, good going order; £40.—205, South Croxted Rd., Dulwich. [8226

1916 Sun-Villiers, stored 18 months; £45, or near offer.—Gaterell, Easton Lodge, Dunmow, Essex. [X7667

1916 Sun V.T.S. 2½h.p., 2-speed, clutch, K.S., excellent condition; £42; call or write.—Jackson, Glapthorn, Oundle. [X7561

ALLEN-BENNETT Motor.—1915 2½h.p. Sun, 2-speed, excellent condition; £49/10.—9, Royal Parade, London Rd., Croydon. [7879

SUN-VILLIERS 2¾h.p., perfect condition, lamps, horn, and tools; any trial here; £32/10.—Taylor, 5, Gladstone Place, Sandy Lane, Camp Hill, Birmingham. [X7633

Sunbeam

1919 8h.p. Sunbeam, ridden 30 miles only; offers.—Pickering, Mardol, Shrewsbury. [8549

SUNBEAM Combination, 1914, 6h.p., lamps, and horn; £140.—21, Park Vale Rd., Leicester. [7724

SUNBEAM Combination, 3½h.p., new 1919.—Particulars on application, Simpson, Chemist, Ilstock. [7832

SUNBEAM 1919 Models, several done few hundred miles only.—Parker's, Bradshawgate, Bolton. [X7791

1919 Sunbeam, 3½h.p., hardly used, perfect, accessories; £130, or near offer.—Horn, "Trefusis," Dunstable. [8657

ALLEN-BENNETT Motor Co.—1916 Sunbeam and Swan sporting sidecar, very sporting outfit; £117/10. [7880

BRAND New 1919 3½h.p. Sunbeam, black and gold; accept 1913 or later Triumph part.—278, Bolton Rd., Ashton-in-Makerfield. [X7778

1919 3½h.p. Sunbeam, French military model, and Sunbeam sidecar, equal new; offers.—A. C. Pickering, Mardol, Shrewsbury. [8550

SUNBEAM, 1919, 3½h.p., just delivered, best Lucas fittings, not used; £130, or best offer.—Box L3,085, *c/o The Motor Cycle.* [8672

LATE 1916 Sunbeam 3½h.p., 3-speed, with Canoelet sidecar, spares and tools, perfect condition; £130.—Pine Cottage, Heath Rd., Weybridge. [8379

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Sunbeam.

SUNBEAM 3½h.p., 1919, new, Lucas lamps and horn, accessories; price £120; owner going abroad. Write, F.E.I., 27, Wathen Rd., Dorking. [8051

1919 8h.p. Sunbeam Combination, delivered April, wind screen, all lamps, mirror, watch, horn, and spares; £180.—Eaton, 129, St. Vincent St., Glasgow. [X7557

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SUNBEAM Combination, 3½h.p., 1916, little used, perfect order, all accessories and spares; any trial; best offer.—The Limes, Rickmansworth, Herts. [8559

1919 3½h.p. Sunbeam Combination, only ridden 200 miles, 3 lamps, horn, all accessories; best offer over £150.—Peper, Landcross, Bideford, Devon. [X7651

1917 3½h.p. Sunbeam, perfect; photo and full particulars on application; exchange for monocar considered.—McGowan, "Dolavon," Bala, N. Wales. [X7808

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1919 3½h.p. Black and Gold Sunbeam, Millford sidecar, Lucas lamps and horn, as new; offers over £160.—Holland, Common Rd., Ely, Cambs; seen London by appointment. [8040

1919 Sunbeam, 3½h.p., green, Army model, Lucas acetylene hack and front, Klaxon, not done 200, perfect running and appearance; £110; seen Tidworth. —Box L3,051, c/o *The Motor Cycle*. [7998

1914 3½h.p. Sunbeam, 2-speed, chain drive, excellent condition, ready to drive away; price £100. —Hardie, 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [6173

5-6h.p. Sunbeam-Jap, with Gloria sidecar, 1913-14, tyres almost new, rear wheel with Palmer light car cord studed, front Palmer heavy motor cycle; genuine; state price.—Paul, Ninfield, Battle. [7898

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1918 8h.p. Sunbeam Combination, khaki model, all-chain drive, 28×3in. interchangeable disc wheels, spare wheel, luggage grid, mechanically perfect, all tyres as new; £160.—Stratton, Evesham St., Redditch. [8082

1915 Sunbeam, 2¾h.p., 2-speed countershaft, hand-controlled clutch, kick starter, oil bath gear case, lamps, accessories, perfect condition in every way, equal to new; any trial; £65.—Durose, Scropton Farm, Foston, Derby. [8661

SUNBEAM, 1915, 6h.p., 3-speed, countershaft, K.S., Sunbeam C.B. sidecar, for disposal after August Bank Holiday; £150; folding grid screen and all accessories; used only by proprietor.—H. B. Lee, Kenley Motor Cycle Works, Kenley, Surrey. [X7819

SUNBEAM, 8h.p. M.A.G. engine, 1916-17 combination, 3-speed, kick starter, hand clutch, condition as new, 700×80 new Dunlops; any expert examination; any trial; Lucas lamps, horn, etc.; price 167 gns., no offers.—Reeves, Warrington Rd., Ashton-in-Makerfield, Lancs. [X7779

1915 6h.p. Sunbeam Combination, fitted with Sunbeam engine, No. S. 8021, interchangeable voiturette wheels, including spare wheel, nearly new Dunlop tyres, large Sunbeam sidecar fitted with hood, wind screen, and locker, spare coupling, etc., accessories, Cowey speedometer, spares, tools; £170, or near offer.—Box 4,403, c/o *The Motor Cycle*. [7777

Swift.

1914 Swift Combination, 3-speed countershaft, C.B. sidecar, with screen; £75.—371, High St., Lewisham, S.E. [8524

3½h.p. Swift, 2-speed, free engine, Bosch mag., running order; offers; also 6h.p. 2-seater Rover car. —Hayward, 95a, Hawkstone Rd., Rotherhithe, S.E.16. [8487

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DE LUXE T.D.C., 2-stroke, excellent condition; £34; ride away.—Hilton's, Bicester, Oxon. [X7471

T.D.C. De Luxe, 2¾h.p., 1914-15, Hutchinson tyres, new Pedley belt, Amac, Miller's lighting set; ready to ride away; £35.—Budding, Linden Cottage, Park Rd., Uxbridge, Middlesex. [X7807

T.M.C.

1914 T.M.C. 7h.p. Combination, 3-speed countershaft, kick starter; stamp for photo or particulars.—Barham, 24, Broad St., Truro, Cornwall. [X7411

Triumph.

3½h.p. Triumph, sound, any trial; £29.—Robinson, Sandy, Bedfordshire. [8455

1914 Triumph, 3-speed model, top-hole; £59.—Clapham, 119, King George St., Greenwich. [7833

3½h.p. Triumph, clutch model; best offer over £30.—Wright, 27, Larcom St., Walworth Rd. [8684

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TRIUMPH 3½h.p., 2-speed, free engine, lamps, any trial; £50.—36, Mineral St., Plumstead. [7

TRIUMPH.—I am riding this every day; come try it; £25.—Hammond, Saltfleetby, Lincs. [8

1911 Triumph, clutch model, running order; no offers.—Cairns, Castlefin, Co. Donegal. [X7

TRIUMPH 3½h.p., 1911, clutch model; £40; 6.—12, Buckland Crescent, Swiss Cottage, N [8

TRIUMPH.—To secure 1919-20 models, order no Enquire delivery, Parker's, Bradshawgate, Bol [X7

TRIUMPH 4h.p., countershaft 3-speed, clutch, per condition; £75.—53, Pelham St., S. Kensing [8

TRIUMPH, 4h.p., 3-speed, late 1914, practically do 60; nearest £75.—5, Syr. David's Av., Car [8

1919 Triumph and Gloria Sidecar, mileage £140.—H. Martin, 10, West Chapel St., [8

TRIUMPH 1915 3½h.p., 3-speed, clutch, lamp, machine; £67.—48, Prince George Rd., Dal N. [8

1912 3½h.p. T.T. Triumph, clutch, accessories; —Wembleydene, Wembley Park Drive, Mid sex. [X7

TRIUMPH 3½h.p., 2 speeds, F.E., clutch; £38.— good, Pinewood Villas, Ninemile Ride, Wok ham. [X76

1916-17 4h.p. Triumph, countershaft, beautiful dition; cheap.—18, Wix's Lane, Lavender S.W. [8

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TRIUMPH 3½h.p. T.T., first-class condition; cheque near £41.—M., 18, Malvern Rd., don, E.8. [8

1919 4h.p. Triumph, 3-speed countershaft, etc., unpacked (unridden); £110.—Durose, Fo Derby. [8

TRIUMPH.—Triumph spare parts supplied Coventry Motor Mart, Ltd., London Coventry. [X0

4h.p. Triumph, 1917, 3-speed countershaft, starter, nearly new; 78 gns.—2a, Sistova Balham. [8

TRIUMPH, 1912, just overhauled, new piston, best offer over £40.—Hicks, Thrintoft, No allerton. [8

NEW 3-speed Triumph, delivered July 22nd; highest bidder over £110.—Box L3,056, c/o *Motor Cycle*. [8

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4h.p. Triumph, Bosch, good tyres, belt, engine 19 ride away; £40.—695, Moselle Gardeus, High Tottenham. [8

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TRIUMPH, 1911, single gear, excellent condit perfect working order, ride away; £35.—H Fairford, Glos. [X7

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TRIUMPH, 1912, 3½h.p., running, but needs handing; £28, or near offer.—Lusher, 48, St., Norwich. [8

TRIUMPH, F.E., clutch, torpedo sidecar, just hauled; 55 gns.—43, High St., Colliers W Merton, S.W.19. [8

£28.—1914 3-speed Triumph, incomplete & damaged.—Speechley, 1, Gunnersbury Lane, A Hill, London, W.3. [8

TRIUMPH, very late, T.T., 1913, clutch model, hole condition; £47.—9, Bartholomew Kentish Town, N. [8

TRIUMPH 4h.p., countershaft model, almost to new; accept £85 cash.—24, Grosvenor East Sheen, S.W.14. [8

TRIUMPH, genuine 1919 model, just delivered guaranteed unused; £155.—2, Albert Stu Albert Bridge Rd., S.W.11. [8

3½h.p. Triumph, clutch, Bosch mag., perfect run order, with lamps; £45.—Chemist, 4, Stra Rd., Marloes Rd., W.8. [8

LATE 1914 Triumph, with Gloria sidecar, 3-s clutch model, lamps, etc.; £79.—Moss, 68, Rd., Stoke, Coventry. [X

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BABY Triumph, 1919, 2-speed, brand new, b car; 65 gns for immediate sale.—Belmont, ston Lane, Teddington. [

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UMPH, late 1913, clutch, 2-speed, and sidecar, omplete, stored during war; £70.—Palmer, 16, ham Rd., Salisbury. [X7668

UMPH 3½h.p., lamps, 3-speed Armstrong, belt rive, new coach sidecar, spares; ride away; £70.—arence St., Gorton. [X7803

UMPH, 1912, clutch model, 2 speeds, enamel, ickel, etc., as new, sound throughout; £55.—66, ia Rd., Dorking. [8205

JMPH, 3½h.p., N.S.U. 2-speed, variable pulley, ew Amoc, in good condition; £35.—Hughes, Dawel," Llanrwst. [X7809

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EN-BENNETT Motor Co.—1914 Triumph 4h.p., -speed, excellent condition; £60.—9, Royal Parade, ondon Rd., Croydon.

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Triumph, T.T. Roadster model, 1914-15 enine, 3-speed, accessories, splendid condition; £70.—36, Southwark Park Rd., S.E. [8130

JMPH 2-stroke Motor Cycle, 2-speed gear, 1915 odel, perfect condition; £55, near offer.—H., Lodge, St. Andrew's Drive, Skegness. [X7440

JMPH Combination, 3-speed, 1913, 3½h.p., imb anywhere, carefully used; any trial; £65. 2, Birchington Rd., Hampstead, N.W. [8200

4h.p. Triumph and Sidecar, coachbuilt, excelent condition, special engine, complete with lamps ns; £85.—55, North St., Guildford. [X7470

Triumph Combination, 3-speed, nearly new tyres, enamel plate and engine perfect; near-3.—54, King Richard St., Coventry. [X7886

JMPH 3½h.p. Combination Machine (without idecar), 3-speed, clutch, free, grand machine; , £58.—6, Cavendish Rd., Merton, S.W. [X7552

Triumph 4h.p., 3-speed, clutch, in absolute erfect condition, Bosch mag., new tyres, lamps, tc.; £68.—Robinson, Fulbourne, Cambs. [8078

JMPH, 3½h.p., late 1913, wicker sidecar, 3-eed, new tyres and belt, in perfect order; £65. derson, Eldon, Bishop Auckland, Durham. [X7553

JMPH, 1913, and Swan sidecar, in nearly new ndition, 3 speeds, good tyres, P. and H. lamp 0.—Findon, Church Hill, Becley, near Redditch. [8490

Triumph, 4h.p., 3-speed, Mills-Fulford sidear, with child's seat, screen, etc., complete; 0 offers.—Box 4,400, c/o *The Motor Cycle.* [X7639

JMPH, 4h.p., 3-speed, kick start, overhauled and novated, like new, incomplete, few parts miss-48.—262, Blackborse Lane, Walthamstow. [X7657a

JMPH, 1913, clutch model, T.T. bars, very fast d powerful, fully equipped, with accessories; 50, no offers.—Box L3,057, c/o *The Motor Cycle.* [8004

JMPH 3½h.p. Coachbuilt Combination, 2-speed, od condition, first £60 secures; Stewart's eter, perfect, 70/-.—26, Bath St., Rugby. [X7714

4h.p. Triumph with Glorin sidecar, wind screen, peedometer, lamps, horn, mirror, and spares, all £140.—Eaton, 129, St. Vincent St., Glasgow. [X7556

THE H·C·M MOTOR COMPANY LIMITED

have the following Second-Hand and New Machines in stock at the date of sending in this advertisement (24/7/19). All guaranteed overhauled and perfect.

247 **B.S.A.**, 1912. 3½ h.p., single-speed, T.T. model good order .. .. **49 Gns.**
243 **Chater-Jap** 1914, 6 h.p., 2-speed N.S.U., very fast machine, just overhauled .. **45 Gns.**
179 **Dene-Precision**, 1914, 4 h.p., 3-speed, clutch, as new throughout .. .. **55 Gns.**
173 **Diamond**, 1919, 2½ h.p. new machine, single speed, T.T. .. .. **45 Gns.**
248 **Douglas**, 1914, 2¾ h.p., T.T. model, 2-speed, just overhauled, very fast, special engine **45 Gns.**
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Ivy, 1919, 2½ h.p., 2-speed, T.T. model, delivery in August .. .. List Price

Exchanges. Machines bought for cash. Machines sold on commission. Sidecars. Accessories. Any new machine supplied. Sporting car conversions.

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347, FINCHLEY ROAD, N.W.3.

Grams: "AICHSEMOTO, Swiss, London."
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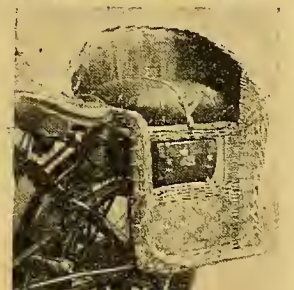
THE LEAMINGTON PILLION SEAT.

Patent

Child's size. With guard and extra straps to hold child in **34/-**

Full size **40/-**

Complete with Hair-stuffed cushion Spring cushion **6/-** extra.



Spring Cushion for Carrier Riding

With 2 Clips and Under-plate, **12/6**

Spring Cushions for Sidecar made to order from **10/6.** Send paper pattern, shape and size of seat.

60, Highdown Road,
Hove, Sussex.

Sir,

Very pleased to receive early delivery of Pillion Seat with Spring Cushion. It is proving most satisfactory. I find the curved padded sides and low seating are a great comfort to the passenger and an advantage which effects perfect balance. Shall be pleased to recommend same.

Yours faithfully,
H. C. HOUGHTON.

W. J BRADLEY, Patentee and Manufacturer,
69, Regent Street, LEAMINGTON SPA.

MOTOR CYCLES FOR SALE.

Triumph.

1914 3½h.p. Triumph, T.T., P. and H. lamps, mirror, good tyres, mechanically perfect, appearance as new; £65.—R., 153, Murray Rd., Rugby. [8527

TRIUMPH Solo 3½h.p., clutch model, perfectly tuned, new belt, Dunlops; a bargain, £55.—Geo. Smith's Motor Cycle Depot, Clapham Junction. [8396

TRIUMPH, clutch model, N.S.U. 2-speed, believed 1912, engine No. 10341, in real good condition; £42; after 6 p.m.—45, Luna Rd., Thornton Heath, Surrey. [8191

1916 4h.p. New Triumph, engine, decompressor, brand new, sloping frame, together with wheels and tyres; £25.—Hardy, Maldon Lodge, Maldon Rd., Wallington. [8516

JUNIOR Triumph, 1916, unused for 2 years, like new, with lamps, horn, tools, and speedometer; 55 gns.—13, Bevan Rd., near Borstal Hill, Plumstead, S.E. [7970

TRIUMPH, 4h.p., kick start, clutch, 3-speed, decompressor, perfect, new P. and H. lighting set, horn, etc.; £65, no offers.—Raby, Linton, Burton-on-Trent. [X7715

TRIUMPH, 3½h.p., 1912, N.S.U. gear, speedometer, new C.B. sidecar, wind screen and apron, splendid condition; £70.—Matthews, Station Parade, Gerrard's Cross. [7926

TRIUMPH, 1914 engine, Bosch ZE1, new Triumph carburetter, Phillipson, new condition; trial by appointment; £38.—Power, White House, Tatsfield, Surrey. [X7642

TRIUMPH, 3½h.p., clutch, pedal start, new tyres, ride away; £42.—S. Ball, 53, Milton Av., East Ham, E. [8585

TRIUMPH 1914 4h.p., 3-speed, Bosch mag., new belt and saddle, in very good condition; £60.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [7810

1916 Triumph, 3-speed, kick starter, 4h.p., top-hole condition, enamel and plating perfect, the whole machine as new; £75.—262, Blackhorse Lane, Walthamstow, E. [X6386

1912 Triumph 3½h.p., N.S.U. 2-speed, free engine, new 1in. belt, tyres good, lamps, generator, horn; any trial; £35.—R. Richards, 59, Egerton Rd., Bishopston, Bristol. [X7472

3½h.p. Triumph, done up by makers, guaranteed good running order, fast, fine condition and appearance, adjustable pulley, powerful; £40.—43, Henleaze Av., Bristol. [X7325

TRIUMPH, 4h.p. countershaft model, 3-speed, very recent date, approximate mileage 1,000, enamel and plating unscratched.—27, Langley Rd., Small Heath, Birmingham. [X7765

TRIUMPH, 3-speed, clutch, C.B. sidecar, carefully stored during war, in perfect condition, very little used, £10 worth spares; £90.—Bonfield, Victoria Grove, Bridport. [8343

TRIUMPH 3½h.p., excellent condition, tyres and belt, as new, adjustable pulley, speedometer, lamps, pump, etc.; £45.—Allcock, Shirburn, Belmont, Sutton, Surrey. [8338

TRIUMPH, 4h.p., 3-speed countershaft, and dual-purpose sidecar, new February, 1917, engine overhauled by Triumphs; best offer near £95.—Kilby, 16, The Mount, Reading. [8557

2½h.p. Triumph, kick start, lamps, horn, speedometer, mileage indicator, new condition; first cash 55 gns.; bargain; Co. Durham.—Box 4,397, c/o *The Motor Cycle.* [X7478

1919 4h.p. Triumph, 3-speed countershaft, hand clutch model, tools, and horn, not done 200 miles; Bournemouth district; price £112.—Reply, Box 4,394, c/o *The Motor Cycle.* [X7355

TRIUMPH, 1914, semi-T.T., 4h.p., 3 speeds, equal new, £72; also 1913, 3 speeds, pedal start, replated and enamelled, £62.—Coventry Motor Mart, Ltd., London Rd., Coventry. [X7769

1919 Triumph, 3-speed countershaft, clutch, and Gloria sidecar, in splendid condition, only done 500 miles; first £144 secures.—Rhosha Motor Co., Mawneys Rd., Romford. [8594

TRIUMPH, 1914, 3 speeds and clutch, £48; also 1913 Triumph, 3 speeds, and clutch, £43; 1912 3½h.p. Triumph, free engine model, £34.—Hole, 129, Park Lane, Carshalton. [X7317

TRIUMPH, 1914, 3-speed, Lucas lamps, horn, new extra heavy Dunlops, trip speedometer, Mills-Fulford sidecar, splendid condition; £52.—Ashby, 13, Owlstone Rd., Cambridge. [X7663

TRIUMPH, 1913, 3½h.p., Sturmey-Archer 3-speed, clutch, Bosch, heavy Dunlops, all accessories, spares, in excellent condition; £62.—Capt. Jones, 13, De La Warr Rd., East Grinstead. [8545

1919 Triumph, 4h.p., 3-speed, countershaft, Montgomery coachbuilt sidecar, very little used, perfect condition; £130, no offers.—Reynolds, Gunnersbury Park Gardens, Acton, W.3. [8564

TRIUMPH 1913 3½h.p., wicker sidecar, tools, speedometer, lamps, spare tyres and tube; £43, or offer.—Apply, after 5, Wright, 10, Moncrieff St., Rye Lane, Peckham, London. [8502

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 1913, clutch, new Grado pulley, new Dunlop tyres, tubes and belt, with good coach-built sidecar, nearly new; £80; after 6.30 p.m.—25, Ablett St., near S. Bermondsey Station. [X7760

1914 Triumph, 3-speed, clutch, completely overhauled and guaranteed in perfect running order; £65, or with new coachbuilt sidecar £85.—Yates, 101, Tubbs Rd., Willesden Junction, N.W.10. [8372

TRIUMPH Combination, 1914, 3-speed, belt, horn, lamp, generator, speedometer, good covers, completely overhauled March, 1919, Bramble coachbuilt sidecar; £80.—Bentley, Stocklake, Aylesbury. [X7644

TRIUMPH, late 1914, 4h.p., 3-speed, splendid condition and running, coachbuilt Gloria sidecar, spring suspension, new extra heavy Dunlops; £90; seen after 7.—13, Middlewich Rd., Northwich. [X7597

TRIUMPH 1914 Combination, 4h.p., Sturmey-Archer 3-speed, Bosch, coachbuilt sidecar, not run for 3 years; owner in France; just overhauled by Triumphs, as new; offers, post.—Baker, 16, Lavington Rd., Ealing. [8100

1919 4h.p. 3-speed Countershaft Triumph and light wicker sidecar, lamps, horn, speedometer, extra tools, spares, overalls, carrier-bag and straps, 6 months' insurance; £95.—Booth's Garage, Henley-on-Thames. [X7761

TRIUMPH 1914 4h.p., 3-speed and clutch, Phœnix sidecar, spare inlet and exhaust valves complete, splendid condition; £85; seen any time, preferably after 7 p.m.—62, Sunningfields Rd., Hendon, N.W.4. [8105

TRIUMPH 4h.p., W.D. model, 3-speed countershaft, Sturmey-Archer gear, perfect condition throughout, date on tank 16/3/19; first offer over £80 secures.—Asquith, c/o Peacock Garage, Broad St., Reading. [X7647

TRIUMPH, late 1913, 3h.p., all-black model, 2-speed N.S.U., Bosch, B. and B., good tyres, excellent condition, ideal sidecar machine, guaranteed perfect running order; £42.—209, Broadway, West Hendon, N.W. [8294

TRIUMPH 3-speed 1914 4h.p. Coachbuilt Combination, just overhauled, splendid condition, tyres nearly new, lamps, mechanical horn; £90, or near offer; after 6 p.m.—Morgan, 17, Atherfold Rd., S.W.9, near Clapham Rd. Tube. [8285

3½h.p. Triumph Combination, 1913, 2-speed, kick, clutch, new oversize tyres and belt, Binks, wicker car, raised toe, felt-lined, and apron, beautiful condition; any inspection; 4-45 m.p.h.; £70.—Linford, 53, Riverview Grove, Chiswick, W.4. [8369

TRIUMPH, 3½h.p., 1913, 3-speed, coachbuilt sidecar, screen, spare cover, belt, lamps, whole outfit recently overhauled and enamelled, and in excellent condition; £70, or exchange big twin solo.—322, Shobnall St., Burton-on-Trent. [X7815

TRIUMPH (1910½) 3½h.p., adjustable pulley, frame stove enamelled, new belt, outer covers and tubes, tank renovated, T.T. bars, will do over 55 easily, spares, etc.; trial run given; price £40, or very near offer; unused for 4 years.—Webb, Barkingside, near Ilford. [8093

TRIUMPH Combination, 3½h.p., N.S.U. 2-speed, B and B., large wicker sidecar, lighting set, horn, accessories, first-class running order and appearance; trial; nearest £50.—Theobald, 49, Winslow Rd., Hammersmith, W.6. [8209

TRIUMPH 4h.p., late 1914, stored during war, absolute tip-top condition, T.T. bars, lamps, generator, and horn, 3-speed and clutch, spare tube and belt case, spare belt, tools, pump, extra petrol tank; also Triumph engine, complete, less rings and B. and B. carburetter; £85 the lot, no offers.—Fisher, 26, Water Lane, Watford. [8171

1919 4h.p. 3-speed Countershaft Triumph, with sporting model Burbury C.B. sidecar, equipped with D.R. handle-bars, Cameo wind screen, 3 lamps, disc wheels, mechanical horn, whole outfit in excellent condition; price £160; consider exchange Grand Prix Morgan or G.N., cash adjustment either way.—Write, Geoffrey Humble, 41, Kingsway, Goole, Yorks. (1) [8485

TRIUMPH, clutch model, Nov., 1911, fitted new Binks, hot air intake, new Philipson, new big and small end bushes, new main bearing ball races, new inch Pedley belt, discs, long copper exhaust, enamelled Indian red, special wide handle-bars, P. and H. head and rear lamp, tyres good, good reliable bike with accessories, been stored last 3 years; £50.—Castle House, Nunney, Frome. [8633

Trump.

4h.p. Trump-Jap, Bosch mag., tyres new, also belt, Chater-Lea fittings, requires new big end bush, otherwise perfect; £33.—Edwards, Sotwell, Wallingford. [8649

Velocette

VELOCETTE 2-stroke 2-speed, new 1916, new mag. fitted last month, lamps, and horn, mechanical oiling, enamel perfect; best offer over £30.—275, Hills Rd., Cambridge. [8115

VELOCETTE, late 1915, 2¼h.p., 2-speed, all-chain, E.I.C., Senspray, Lucas lamps, horn, tools, just thoroughly overhauled, guaranteed absolutely perfect every detail.—2, Cranes Park, Surbiton, after 5. [8291

HALIFAX MOTOR EXCHANGE,

UNION STREET SOUTH, **HALIFAX.**

MOTOR CYCLES IN STOCK.

1915 (Dec.) 2¾ h.p. 2-speed **DOUGLAS** **£52 10**
1914 3-speed F.E. **ROVER** **£67 10**
2½ h.p., 2-speed, Lightweight **P. & M.** **£34 10**

SIDECAR COMBINATIONS.

MATCHLESS, 1918 (Nov.), 8 h.p., 3-speed **175 gns.**
DOUGLAS, 4 h.p., 3-speed, almost as new **118 gns.**
DOUGLAS, 4 h.p., 3-speed, fine condition.. **112 gns.**
DOUGLAS, 4 h.p., 3-speed, good order ... **105 gns.**
ROVER, 3½ h.p., 3-speed, free engine, and new coach sidecar ..... **80 gns.**

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Requiring repairs.	Come and inspect.
DOUGLAS, 4 h.p., 3-speed, countershaft ..	**£38 0**
TRIUMPH, 4 h.p., 3-speed hub.....	**£17 10**
DOUGLAS, 1917, 2¾ h.p., 2-speed.....	**£19 10**
TRIUMPH, 4 h.p., 3-speed hub.....	**£18 10**
TRIUMPH, 4 h.p., 3-speed hub.....	**£20 0**
RUDGE, 3½ h.p., spring forks	**£19 10**
TRIUMPH, 4 h.p., 3-speed hub.....	**£27 10**
TRIUMPH, 4 h.p., 3-speed hub.....	**£21 0**
TRIUMPH, 4 h.p., 3-speed hub	**£26 10**
B.S.A., 4¼ h.p., 1915 frame, forks and engine, less cylinder and piston.....	**£9 10**
TRIUMPH, 4 h.p., 3-speed countershaft ..	**£17 10**
TRIUMPH, 4 h.p., 3-speed countershaft....	**£27 10**
TRIUMPH, 4 h.p., 3-speed countershaft ..	**£35 0**

Also a few **UNISSUED 2¾ h.p. W.D. DOUGLASES** (surplus Government stock) in makers' crates.

Triumph Parts for 4 h.p. models: Wheels, Frames Forks, Tanks, and Engines from Stock.

Cameo Screens. **£3**; Easting Screens, **£4 10**; "Perfection" Coach Sidecars, **£16 16**; "Perfection" Coach Bodies, **£73.**

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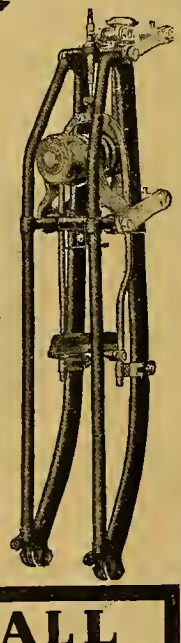

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Saxon Spring Forks are the embodiment of all that is necessary to absorb the vibration on **YOUR** machine. No others are exactly like them, nor quite so good, because Saxons are the only anti-vibratory spring forks that

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Send postcard to-day for full particulars.

S. R. RIDGWAY,
Digbeth, BIRMINGHAM.

MOTOR CYCLES FOR SALE.

Villiers.

VILLIERS 1915 2-stroke, Bosch, Amac, P. and lamp set, semi T.T. bars, Pedley grips, p and mechanical horn, in perfect condition; 39 g Stored at Wood's, 76, Stockwell Rd., Stockwell, [

Vindec.

6h.p. Vindec, Bosch mag., 2-speed, engine w assembling; £15.—5, Newlands, Ilminster. [X

8h.p. Zenith, countershaft, kick starter model; £ Clapham, 119, King George St., Greenwich, [

2¾h.p. 2-stroke Vindec, 2-speed, free engine, la in perfect condition; £38.—31, Chapel Addlestone, Surrey. [

VINDEC Special 6h.p., Bosch mag., wicker sid in going order, single speed; £35.—H. T. Ba 24, New St., Bideford, N. Devon. [

VINDEC 1916 2-stroke, 2-speed, Amac, Dun Lucas lamps, horn, Jones speedometer, spring boards, fine condition; genuine; £47.—43, Chap Rd., Kilburn. [

VINDEX, special 5-6h.p. twin, Bosch, B. and 2-speed N.S.U., free engine, clutch, coachb sidecar, tyres and condition equal new; £55. Heddesden Rd., Belvedere. [

V.S.

V.S. Motor Cycle and Sidecar, 6h.p. twin, 2-sp free engine, lever change, Bosch, B. and B., r ride away; £48, or near, or part exchange small treadle lathe; trial, appointment.—24, Faversham Catford. [

Werner.

WERNER 2¾h.p., good going order, fast mach £10 secures.—Bartlett, Milford-on-Sea, Hant [

White and Poppe.

3½h.p. White and Poppe, Bosch, B. and B.; Baugh, Green St. Green, Orpington. [

Williamson

8h.p. Water-cooled Williamson Coach Combina hood, wind screen, lamps, etc., topping condi £110.—28, Mitcham Rd., Tooting, London, S.W. [

8h.p. Williamson and Canoelet Car, Stewart spe meter, F.R.S. lamps, hood, screen, luggage rier; £95, or offer.—Hollinghurst, 74, Burnt Ash Lee, S.E.12. [X

WILLIAMSON 1914 8-10h.p., water-cooled, 2-sp foot clutch, roomy C.B. sidecar with screen cently repainted; £110.—158, Rosendale Rd., Dulwich, S.E.21. [

WILLIAMSON 8-10h.p. Combination, 1916, w cooled, 2-speed, clutch, very fine sidecar, l screen, lamps, new tyres; best offer over £105. Seymour Mews, Wigmore St., Oxford St., W. [

WILLIAMSON.—1915 8h.p. water-cooled Dou coachbuilt combination, just overhauled, pe tyres nearly new, fully equipped; £115, or ne A. E. Hull, 10, Cademan St., Whitwick, Leices [

1916 Williamson Combination, 8-10h.p., w cooled, lamps, generator, horn, speedom wind screen, machine stored 2 years, done 950 m as new; bargain, £130, or exchange for lower p —Smith, 3, Parade, Staines Rd., Bedfont, Middl [

WILLIAMSON 8h.p. Combination, 1914, w cooled, 2-speed, clutch, kick start, lamp speedometer, tools, spares, etc., luxurious coach car, pillion seat with back rest, mechanically pe and absolutely new condition, new heavy tyre round, stored 3½ years, finest outfit on the £135.—Martin, 8, Grenville St., Brunswick Sq., W [

Wolf

4h.p. Wolf-Jap, 3-speed, kick start, clutch, in condition; £65.—Harris, Jeweller, Parrock Gravesend. [

WOLF 2½h.p., 2-speed countershaft, just panel as new, speedometer; £47.—36, David Shadwell, E.1. [

1916 Wolf-Jap 4h.p., 3-speed countershaft, start, free engine, hand clutch, all chains lamp, Watford speedometer, Bates tyres; £60.—H Warmwell, Dorset. [

WOLF 1917 2¾h.p. 2-stroke, 2-speed, free, l and horn, tyres and belt as new, and is in fect condition throughout; £39.—Watson, 132, St., Aldeburgh, Suffolk. [

WOLF-J.A.P. 4h.p. (494 c.c.), modern combin 3-speed countershaft, kick starter, hand cont clutch, B. and B. carburetter, Splitdorf mag., all drive, X'all saddle, aluminium footboards, sidecar coachbuilt body, all new tyres, heavy Palmer cord extra heavy Dunlop back (both 2½in.), heavy D sidecar, with pump, foolbag, and spares, privately o good running order; £85; view and trial Becke (by appointment).—Box L3,070, c/o *The Motor C*

Wooler.

JONES' Garage, special agents for Woolers, F way, Muswell Hill, N.10, and Woodside Pa North Finchley.

MOTOR CYCLES FOR SALE.

Zenith.

TH, 4h.p., good condition; £28/10.—176, South lling Rd., W.5. [8555

6h.p. Zenith; 96 gns.; delivery August.—Motor-sts' Advisory Agency, Ltd., 89, Wigmore St., W. [8639

TH-GRADUA 8h.p., J.A.P. engine, fine con-tion; £60.—F. Hardy, Peacock, Market Place, oo. [X7637

TH-GRADUA, 4h.p., T.T. model, in fine condi-on, all accessories; £60, no offers.—20, Spencer's awley, Sussex. [7925

TH-GRADUA, 1914, 6h.p., 1919 coachbuilt lecar, new Dunlops, all accessories, stored during l gns.—13, Bute St., Luton. [8083

TH-GRADUA-J.A.P. 4h.p. 1914 Combination, nditioa A1; £60, or best offer.—Robbins, 15, wer Rd., Newington Green, N. [7888

-14 8h.p. Zenith-Gradua and coachbuilt sidecar, lutch and kick starter, in good condition; £85, rest.—44, Cavendish St., Barrow-in-Furness. [X7533

TH Combination 6h.p., long drive countershaft, od, screen, and lamp set, powerful, any test; ter 6 p.m.; £98.—Menote, 196, Browning Rd., am. [7979

TH-GRADUA Coachbuilt Combination, splendid ndition; £75; evenings.—14, Pembroke Rd., mstow. [X7822

TH-GRADUA 1915-16, 5-6h.p., discs, one of the iartest and fastest machines on road, as new, etc.; £85.—Russell, Clutha, Molton. [X7830

Zenith Combination, counter-shaft gear, kick art, 3 lamps, mechanical horn, first-class con-any trial; £125.—198, King St., Hammersmith. [8427

TH 1915 5h.p., clutch, Gloria sidecar, 2 new res, spare cover, new spare Dunlop tube, spare goggles, lamps; £90.—61, Brougham Terrace, lartlepool. [7966

Zenith-Gradua Combination, fine running ler, Canoelet C.B. sidecar, new tyre and belt, just been overhauled; £85.—McClelland, y Rd., Glenluce. [7917

5-6h.p. Zenith Combination, countershaft, ick starter, speedometer, lamps, horn, perfect n, not done 200 miles; £155. — 40, Golder's Drive, Golder's Green, N.W. [8277

TH-GRADUA, 4h.p. J.A.P., 1914 T.T., B. and , Pilot, 2 new belts, tyres excellent, accessories, chine, splendid condition; any trial; 55 gns., no Sawtell, Long St., Sherborne. [X7673

-17 4-5h.p. Zenith Sporting Combination, in splendid condition, ready to drive away; price Hardie, 24, Woodstock St. (off Oxford St.), t., London, W.1. 'Phone: Mayfair 6559. [6174

). Zenith-Gradua and sidecar, 1914, mechanical ondition perfect, appearance good; fast and ; all accessories, spare belt, tube, tools, tyres 676.—Hill Cottage, Farnborough, Kent. [8238

TH, 1914, 90 bore, o.h.v., twin, special racing odel, special engine parts and special lubrica-ng exhausts, enamel and plating excellent; £95. ode, "Wekira," Blundell Av., Birkdale, Lancs. [X7342

TH, 3½h.p. J.A.P. engine, Bosch mag., couch-uilt sidecar, newly overhauled, Gradua gear, o ride away; call any time after 6 p.m.; no —W.W., 63, Ralph St., Borough, S.E.1., Lon-[X7551

TH 8h.p. Combination, Gradua variable gear, ills-Fulford 4-point attachment sidecar, Bosch mmac carburetter, lamp, horn, tools, spares, etc.; o given; price 75 gns.—Webb, Barkingside, near [8092

8h.p. 90 Bore Counter-shaft Zenith with Mil-ford Empress coach sidecar, Hutchinson tyres, belt, mechanical horn, Lucas lamps, Tan-Sad seat; £90.—Bateson, 5, Poynter Rd., Hove, n. [8444

TH Nearly New 5-6h.p. Countershaft C.B. mbination, lamp, horn, speedometer, a real utfit; expert examination and trial invited; r offer; seen any time.—C.S., 14, Swaton Rd., 3. [8412

95h.p. Counter-shaft Zenith Combination, k.s., clutch, hnlhous back underslung sidecar ckers rear and under seat, luggage and petrol electric lights, etc.; £150.—Top Flat, 17, l Rd., West Hampstead. [8429

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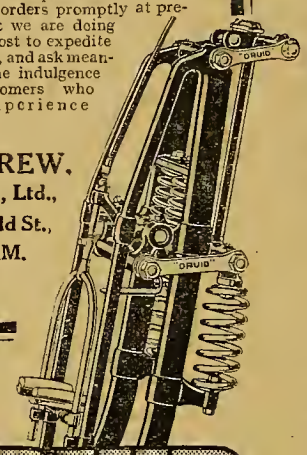

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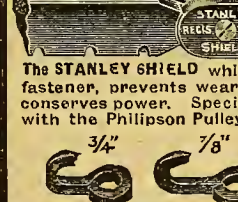

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PHŒNIX 10h.p., 2-cyl., 4-seater, smart; £150.—Railway Garage, Staines. 'Phone 139. [3266

6h.p. Peugeot 2-seater, less tyres and mag., good engine; price £50.—123, Woodstock Rd., Oxford. [X7425

PILOT Car, 8h.p., thoroughly reliable, engine running order, accessories; £100.—36, Napier Av., Hurlingham. [8676

10h.p. Twin 2-seater Light Car, Blumfield engine, w.c., electric side and tail; nearest £150.—Hill's Garage, Woodford Wells, Essex. [8675

9h.p. Renault 4-seater, 2-cyl., 3 speeds, reverse, live axle, hood, screen, running order; £70.—Murray 37a, Charles St., Hatton Garden, Holborn. [X7542

CARS FOR SALE.

2-SEATER Car, 8-10h.p. J.A.P. engine, Bosch mag., B. and B. carburetter, splendid condition, ready to drive away; trial run given; £150.—W.H.C., 256, Fore St., Edmonton. [8329

SWIFT 7-9h.p. Baby, staggered seats, 3 speeds and reverse, live axle, hood, screen, lamps, just been overhauled and repainted; £190.—158, Rosendale Rd., West Dulwich, S.E.21. [8030

8h.p. Morgan, 1914, J.A.P., complete with hood, screen, lamps, front and rear, 2 spare chains, in perfect running order; first cheque secures, £165.—The Sidney Motor and Cycle Depot, 29, Green St., Cambridge. [8141

DOUGLAS S. COX, The Absolutely Straight Motor Man, 6c, Lansdowne Hill, West Norwood, S.E., has all the following actually in stock. Please call. Hours: 9 to 6.30, including Saturdays. No business Sundays.—Below.

8h.p. De Dion Chassis, 2-speed reverse, £25; 9h.p. chassis, single-cyl., running order, £50; 6h.p. De Dion 2-seater, magneto, Solex, £65; 16-20h.p. Sunbeam chassis, 4-speed, gate, £75; 12h.p. Minerva van, magneto, 3-speed, £85; 12h.p. Darracq traveller's brougham, £90; 12h.p. Darrack 4-seater torpedo, smart, £95; 16-20h.p. Clement van, Zenith, magneto, £100; 12-18h.p. Riley van, detachable wheels, Zenith, £100; 18-24h.p. Deasy chassis, monobloc, enclosed valves, £125; 14-16h.p. Darracq traveller's 'bus, monobloc, £150; 10-14h.p. Renault chassis, late type, £150; 18h.p. Vivinus torpedo 3-seater, £150; 12h.p. Unic lorry, Zenith, magneto, good, £150; 24h.p. Wolseley chassis, gate, dual, £175; 20h.p. Cadillac 2-seater, gate, £185; 20-28h.p. Darracq van, 4-speed, gate, £185; 12h.p. Unic taxicab landaulet, £195; 15h.p. Charron landaulet, repainted, £200; 10h.p. 2-cyl. De Dion 2-seater, dickey, £225; 20h.p. live axle Daimler lorry, Zenith, £225; 12-16h.p. Mors chassis, monobloc, gate, £250; 15h.p. Charron ¾ landaulet, pointed radiator, £250; 13.9h.p. Jackson torpedo, Chapuis-Dornier, £285; 14-16h.p. Fiat van, monobloc, gate, £285; 11.9h.p. Briton torpedo, detachable wheels, enclosed valves, £295; 15-18h.p. Buick torpedo, gate, detachable rims, £315; 10h.p. 1915 Singer streamline 2-seater, £315; 11.9h.p. Colibri streamline torpedo, £325; 10h.p. 1914 Singer, dynamo, detachable wheels, £325; 1915 Studebaker 4-seater, streamline, £350; 30h.p. Bronhot 2-seater, 70 m.p.h., racer, £350; 15.9h.p. Arrol-Johnston 2-seater, detachables, £385; 13.9h.p. Sperber streamline torpedo, £385; 1-ton Clydesdale lorry, 1915, £385; 60h.p. Napier tourer, live axle, £450; 16-20h.p. 1915 Wolseley chassis, £500; 14h.p. De Dion super taxi, 1913¾, pass S.Y., £550; 12h.p. Knight-Daimler Coupe, 4-cyl., dickey, £550; Rolls-Royce sporting 2-seater, 20h.p., 4-cyl., £575; 12-15h.p. 1913½, Fiat ¾ landaulet, £585; 1914 Sunbeam 12-16h.p. chassis, overhauled, £600; 1914 18-24h.p. Siddeley-Deasy chassis, £650; 1915 16-22h.p. Napier chassis, £700; 1914 Sunbeam 12-16h.p. torpedo, almost new, £775; Prince Henry Vauxhall sports 4-seater, £850; 1915 Sunbeam torpedo, high radiator, underslung, £875; 1916 20h.p. Knight-Daimler chassis, cantilever, £900; 1914¾ 20h.p. Daimler interior drive saloon, £1,325.

COMMERCIALS (twin solid tyres).—2-ton Milnes-Daimler van, Zenith, 4-speed, £90; 1-ton Lacre van, magneto, gate, £175; 1¼-ton Berliet lorry, 18-24h.p., Zenith, £185; 3-ton De Dion chassis, worm drive, late, £200; 3-ton Milnes-Daimler chassis, L.G.O.C. engine, £250; 3-ton De Dion lorry, worm, enclosed valves, £295; 3-ton 1914 Seabrook lorry, £385; 3-ton 1915 Seabrook, enclosed valves, gate, £450; ditto, overhauled and all new tyres, £525; 2½-ton 1914 Karrier platform lorry, O.H., £550, 30-cwt. Dennis lorry, latest type, £550; 2-ton 1915 Burford lorry, overhauled, £585; 3-ton 1916 Vinot lorry, worm, monobloc, £625; 3½-ton 1914 Napier, overhauled, new tyres, £685; 4-ton Scout workshop lorry, worm, £850.

ABOVE are all absolute bargains, some completely overhauled and almost equal new. Call and you're sure to find what you want.—Douglas S. Cox (above). [8587

10h.p. Morris-Oxford 1914 De Luxe Model, fully equipped with hood, screen, speedometer, watch, original paint, in nice condition; £350; motor cycle and sidecar, or motor cycle taken as part payment.—Wauchope's, 9, Shoe Lane, Fleet St., London. [8621

DE DION 8h.p. Single-cyl. 2-seater, with platform behind for luggage or passengers, 3 speeds and reverse, quadrant gear change, leather hood and apron, lamps, speedometer, tools, Stepney, all good tyres; ready for any journey; £90, or exchange.—Bunting, Masons Av., Wealdstone. [8656

10h.p. Alldays Light Car, small 4-seater body, 2-cyl. engine, 3 speeds, reverse, complete, and guaranteed in good running order, £95; also 10h.p. Napier, 4-cyl., mag., Zenith, small covered van body, suit traveller, or light trade, guaranteed in perfect order; any trial, £140.—Yates, 101, Tubbs Rd., Willesden Junction, N.W.10. [8371

RAILWAY Garage, Stains ('Phone 139), offer: 4-seaters—Phœnix £150, Swift 7-9h.p. parcels van £195; 2-seaters—smart Sizaire, 10h.p., quiet, £145; smart Whiting-Grant, electric starting, lighting, dickey, £275; Vauxhall 25-30h.p., de luxe hotel tender, £750, nearest; Carden monocars, 1919 models, 120 gns.; call and inspect, week-days only; close 7.30. Cars bought. [8265

ENGINES.

8h.p. 1917 Second-hand Twin J.A.P.; £25.—Brookes, 141 New Kent Rd., S.E. [7933

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SIDECARS from £20 to £32.

Lamps sets from 32/6. Horns from 12/6. Tools, every description.

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Tyres, all makes and sizes. Belts, all makes and sizes. Chains, all makes and sizes. At to-day's list price.

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ENGINES.

6h.p. A.J.S. Engine, mag., silencer; £15.—Mitt Hanson St., Great Harwood.

FAFNIR Engine, 15h.p., m.o.i.v., and clutch; —12, Thesiger Rd., Penge, S.E.

MINERVA 3½h.p., m.o.v., mag. ignition, i order; £5.—23, Jupiter Terrace, Eltham.

JAMES 3½h.p. Unit Complete, engine, Bo and B., splendid condition; £15.—Perrin. Miscellaneous.)

BRAND New 6h.p. Antoine Twin Engine, 45 neto platform; first wire £14.—36, Wir St., Coventry.

TRIUMPH 4h.p., £12/10; Douglas 4h.p. £19/19; 2¾h.p., £12/10.—Halifax Motor Ex Union St. South, Halifax.

1915 B.S.A. Engine, £14; frame for same, Indian gear box case, 10/-; Indian bac der, £1.—Hole, 129, Park Lane, Carshalton.

ENGINES.—Brand new 4h.p. twin M.A.G., wi £34, without mag. £28.—Maudes', 100 G land St., London, W.1. 'Phone: Museum 557.

QUICK Delivery.—1½-2h.p. 2-stroke motor c gines and 2-speed gear boxes to suit, fi quality, proved efficiency.—Box L3,076, c/o *Th Cycle.*

KERRY 2¾ Power Unit, complete with all c B. and B. lightweight, adjustable pulley, and platform ready for bolting in frame; £8.—J. Melrose, Argoed, Mon.

DOUGLAS, 4h.p., complete with mag., carb and gear box, 2-speed, and kick start, r fit in frame; £60.—W., 2, Sylvan Rd., Fores E.7. After 6 p.m.

1912 4h.p. J.A.P. Engine, with Zenith-Gradua magneto platform and chain cover, B. carburetter, in good condition; £12.—Hodkin Devonshire St., Dalton-in-Furness.

1916 Douglas 4h.p. Engine and gear bo plete, £20; 1915 Douglas 4h.p. engi gear box, less kick starter and part clutch, £17 Triumph engine, £11; 1916 Triumph engine 1917 Triumph engine, £16.—18, Wix's Lane, L Hill, S.W.

6h.p. 1919 Twin-cyl. J.A.P. Engines, brand ne plete with magneto driving sprockets, val ing mechanism, union nuts for exhaust pipes, tion pipes complete, compression taps, also u key for engine sprocket, and 2 oil feed unions, able tappets, and special set of spanners fo engine; £42/10.—Wauchope's, 9, Shoe Lane,

IGNITION APPLIANCES.

CHARLES PARKER and Co. make a feature of guaranteed magneto repairs.

CHARLES PARKER and Co. suggest th send that magneto to them by first pa train, observing these instructions *re* despatch

REMOVE every possible item, such as hasl sprocket, fixing screws, etc.

AFFIX label to magneto bearing type and of same, together with your address.

PACK in strong wooden box, address in printed characters.

IMPRINT upon the label: Electrical goods, Despatch of magneto will then be made w days ordinarily, but inside 48 hours where stances permit.

CHARLES PARKER and Co., Magneto Spe 75, Park Rd. North, Acton, London. Chiswick 1518. T.A.: Aparkeros, 'Phone, 3 mins. from South Acton (District and Railways).

U.H. Magnetos.—We have a special departm the repair of U.H. magnetos, but regret ability at the moment to issue spare parts fo machines.

CHARLES PARKER and Co., Magneto Spe 75, Park Rd. North, Acton, London.

DIXIE Twin, 50°, anti-clock, unused; £4.- 19, Ann St., Hillhead, Glasgow.

BOSCH Magneto, watertight, absolutely a £6, bargain.—152a, Swaby Rd., Earlsfield

BOSCH, clockwise, 50°, D.A., sell; £4/10 clock, 50°, wanted.—Gosnold, Draper, Foll

4½-VOLT Brand New Dry Batteries, fully teed; 12/9, post free.—Palmer's Garage,

DIXIE Twin Magneto suit Indian; £5, or e single- anti-clock.—Hole, 129, Park Lan shalton.

BOSCH, watertight, single, never been fi cycle, clock; £7/10.—Bristow, 11, Richm Brighton.

180° Clockwise Dixie, suit Douglas, etc., £5 cyl. waterproof new magnetos £4/5.— Thornhill Edge, Dewsbury.

SPROCKETS for Magnetos in any metal, size ing, or taper, from 5/6; terms to trac hugh, 6, Temple Row, Birmingham.

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SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

The Importance of Research Work.

WE have previously urged the great desirability of the formation of a communal research laboratory, and pointed out how, if manufacturers, or at least the most prominent firms, combined in this matter, Government assistance might be obtained, and very great results reached at a minimum of cost.

In the first place, the great advances which have been made in metallurgy have given the designer a great variety of most excellent materials suitable for every part. By varying the heat treatment, the same piece of steel can be made to give very different results, and its tensile strength altered accordingly. In consequence, by choosing for every separate part that material most suitable to withstand the strains to which it is subjected, a great saving in weight can be secured in the whole engine. This is desirable, not only for itself, but because lightness in the moving parts, the reciprocating parts in particular, removes a large amount of stress from the bearings, which are at present far too small in most motor cycle engines for the loads they have to carry. Light reciprocating parts also mean great powers of rapid acceleration.

So much for strength and lightness! Secondly, very greatly improved cooling will result from a wise choice of those metals which are best able to conduct the heat quickly to the outside of the engine, where it can be dissipated into the surrounding atmosphere. In this respect, copper and aluminium (with its alloys) are vastly superior to cast iron. Moreover, the latter can, weight for weight, be made very much thicker, this in itself aiding considerably in the rapid conduction of heat.

In thus sketching briefly a few of the advantages which will naturally follow the formation of a research laboratory, we do not for a moment suggest that we have exhausted its possibilities, but merely touched their fringe.

Water-cooling.

A WRITER recently contributed a few practical notes on the subject of water-cooling, which in these days of efficiency and change is one we should not entirely overlook. Our own experience of water-cooled motor cycles—and we believe the experience of most of our readers acquainted with them—has been highly satisfactory, and there is one side to the question which should not be ignored, viz., the matter of economy.

A water-cooled engine can be run normally at a much wider throttle opening than can an air-cooled engine, which means a higher output of power per c.c. Thus a small water-cooled engine, running at threequarter throttle, maintains the same power output over a given distance as, say, a 700 c.c. running at quarter throttle, and the question arises as to whether the small engine is sufficient for the needs of a certain class of rider who desires reliability and economy above all other merits. In car practice we have comparatively small water-cooled engines running normally at almost their full power output; when a gradient is encountered the gears are utilised, and owing to the "revving" capabilities of modern engines very little time is lost. In motor cycle practice we have large engines, which normally run on a much lower gear than is necessary in order that hills may be taken without changing gear. This is very pleasant, just as it is pleasant to possess a high-powered car which has sufficient reserve to ascend all normal gradients on top gear, but the expense of maintaining such a car is enormous!

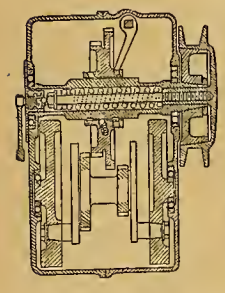
We incline to the opinion that there still remains some opening for a light, water-cooled sidecar outfit, designed essentially for economy, and having a sufficient range of gears to enable it to compete successfully with, say, the 10 h.p. light car as regards road speed. There is no reason why such an outfit should not be capable of an average petrol consumption of 120-150 m.p.g., and great economy in oil.

An Index to the advertisements in this issue will be found on the page facing the back cover.

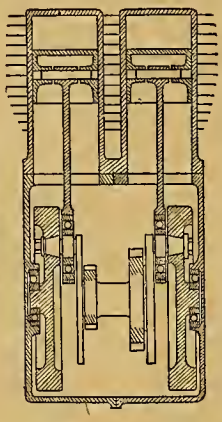
ANZANI MOTOR CYCLE ENGINES.

New French Designs.

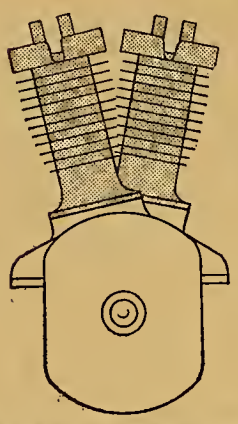
ANZANI, the Franco-Italian one-time motor cyclist, later an aviator, and now an engine designer, is responsible for an interesting motor cycle engine, in which the engine and two-speed gear box form a complete unit. The engine has two cylinders, 60 mm. × 90 mm., 508 c.c., and is said to develop 5-6 h.p., and in order to secure even torque both pistons are arranged to rise and fall together, the crank throws being side by side with the primary gear wheels between them.

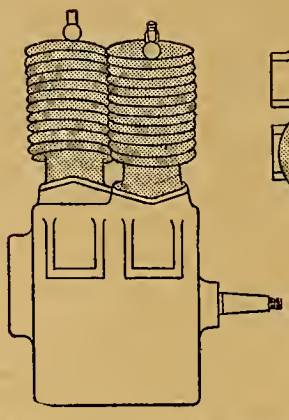


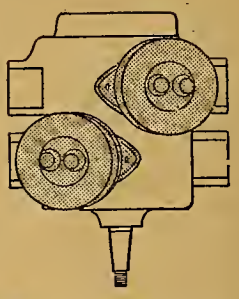
Plan view of the gear box, which is integral with the crank case.



Cross section of Anzani's unit, showing the main drive pinions integral with the main-shaft.







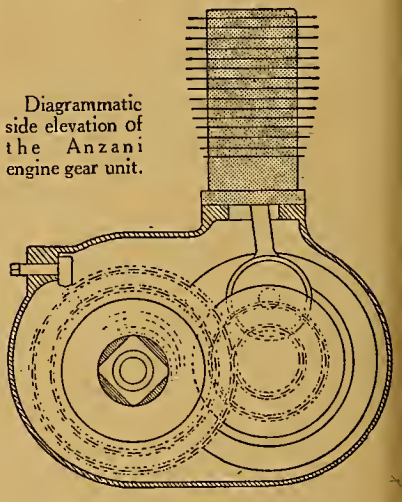
M. Anzani's unconventional V twin with cylinders set at 30°.

There are two internal flywheels running on ball bearings, with the low and high-speed pinions cut out of the solid on the short crankshaft midway between the two cylinders. The two sliding pinions are mounted on the secondary shaft, which also runs on ball bearings. At one end of the hollow countershaft is the clutch, upon which the driving pulley is mounted. Overhead valves are worked from a camshaft, the valve mechanism following aviation practice.

A V Twin.

M. Anzani is also producing a V engine for a cycle car, but the angle at which they are set is an extremely small one, the object of which is to reduce the irregularity of the firing intervals as much as possible, and to simplify the ignition. The cylinders are staggered, consequently forked connecting rods are not necessary, and better cooling should result when the engine is placed with its crankshaft across the frame. The bore and stroke are 75 mm. × 125 mm. respectively, and the capacity 1,104 c.c., while the power developed is stated to be 12-15 h.p. The lubrication is by pump.

In view of the success of Anzani with his aviation engines, it is reasonable to suppose his motor cycle engines will be well finished and efficient.

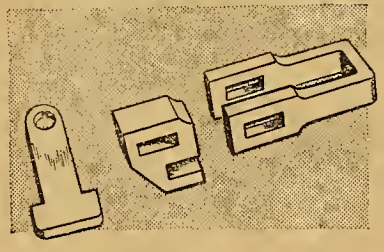


Diagrammatic side elevation of the Anzani engine gear unit.

A Thief-proof Lock for Gear Levers.

THE device shown in the illustrations is principally intended for sidecar combinations, and is designed to fit on the quadrant bracket and secure the gear lever in a "neutral" position, so rendering the machine unusable under its own power except to an authorised person.

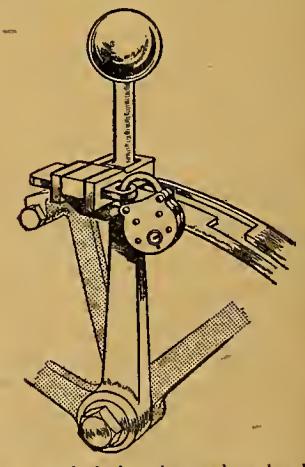
The attachment consists of three pieces of hard steel or phosphor-bronze, which, on being fitted together, lock the gear lever immovably on the quadrant bracket. A forked link is slipped over the gear lever in a horizontal position until it engages with a stout metal block attached to the arc of the quadrant bracket. A pin of substantial proportions is then passed through slots both in the link and block, and secured by a padlock to prevent removal.



The locking members of the Dewar device

This device can readily be fitted to machines where the gear lever has to be moved sideways into a slot in the bracket; on shifting from any gear to "neutral," as when the lever is locked by the forked link, no transfer from neutral to any gear can be negotiated, since the lever cannot be moved sideways. In the case of motor cycles fitted with gear levers having a straight run through from one gear position or another to neutral with no lateral movement, then the block to which the link is held in the locking process is either brazed or riveted to the quadrant bracket.

Arrangements are being made by the makers, the Dewar Manufacturing Co., 7, Houndsditch, London, E.1, for this attachment to be adaptable to most makes of machines at a moderate price. For medium or heavyweight sidecar combinations, which are not easily stolen at a moment's notice, the device should be very useful, and it has the advantage at the same time of being very handy and convenient to operate.



Gear lever locked to the quadrant bracket

Dismountable Plugs.

IN 1914 every motor cyclist's junk corner was piled high with dud sparking plugs. This was not altogether the fault of the rider or of the sparking plug manufacturer. If riders devoted insufficient attention to accurate lubrication, and if manufacturers designed plugs which could only be cleaned by stewing them in vitriol, it must be conceded that the average motor cycle engine did not possess a lubrication "system": in lieu of that necessity, it was usually disfigured with an oil tank, a hand pump, and a flywheel bath. It was hoped that within the near future all motor cycle engines would be equipped with a systematic lubrication; and I am still sanguine enough to cherish such dreams, believing that oil-cooling is no longer a necessity, that the demerits of colossal piston friction are being recognised, and that ball or roller bearings will oust the quondam phosphor bronze bush of insufficient area. Be that as it may, certain sparking plug makers are coming to our rescue with plugs which can be taken to pieces and cleaned by any duffer in two minutes; yes, and refitted with a pukka gas-tight joint at the first attempt. Needless to say, any rider afflicted with an oily engine or careless lubricating habits should confine his custom to such plugs.

Running to Time.

ONE of the first essentials of transport is that it shall be punctual. Some of us admittedly use our motor cycles for pleasure, and can put up with roadside delays of half an hour or so on occasions. Others again employ machines on business, but the duties are not super-urgent, and the user's time is not necessarily spaced out in minutes, so that delays are not unpardonable. But a third class of motor cyclist rides under conditions resembling those of a six days trial, when a quarter of an hour spent on tyre repairs may prove very serious and even expensive. Manufacturers have already eliminated the risk of grave mechanical trouble. On the modern machine we expect to ride out and home in one piece, with two conceivable exceptions. The first exception is of a trivial nature, and relates to the momentary stoppage required to tighten a nut, adjust a belt, or change a plug. The second exception is of a graver character, and consists of the risk of tyre troubles. Tyres, as they are now constructed and fitted, are the Achilles heel of the modern motor cycle. They are responsible for our chief anxieties on urgent rides. They are to blame for our late arrivals or alternatively for those absurdly early starts by which a canny rider ensures himself against failure to keep an appointment.

For Example.

IT is, of course, true that any practised rider can mend an ordinary puncture in a quarter of an hour with the modern quick-drying solutions of the holdfast type. It is also true that a standard tyre may stall a clever motor cyclist indefinitely without the least warning. Only last week a member of our staff was held up on the road because the valve patch of his rear tyre peeled clean off the inner tube, and his repair kit (like most such outfits) contained no patch large enough for the tricky job which resulted. Or, again, a tyre valve may rip clean out of a tube if a large puncture is sustained at speed. Or a broken bottle may gash a cover across from bead to bead. Or a hidden flaw in a casing may cause part of the bead to come away from the wall. Or a speed puncture may practically destroy a new inner tube. Such catastrophes are not of daily occurrence, and some riders have been on the roads for years without once encountering such a Waterloo. On the other hand, there are few veterans who cannot cite several occasions on which they have been absolutely and completely stalled for several hours by tyre trouble of the more serious type. Such trouble may attack any of us without warning. In the long run no regular road user can escape it.

Provision Against a Tyre Hold-up.

THE only motor cyclists who enjoy absolute immunity from a tyre hold-up are those sidecar merchants who use detachable wheels, and always carry a spare cover and tube complete. The rest of us are perennially at the mercy of our understandings. Manufacturers do not trouble to equip our machines against such contingencies. The new machine, costing perhaps over £100 in these days, is not provided with a spare tube. Its repair outfit must often be bought separately, none being included in the purchase price. When bought, the repair outfit seldom contains a valve patch: spare valve tubing is quite criminally omitted from many kits: the supply of French chalk is only adequate for one good-sized repair; and the largest patch is only sufficient for a half-inch tear, and quite useless for a bad nip, blow-out, burst, long gash, or irregular tear caused by running off the impetus after a puncture at high speed.

Some Possibilities.

IT is clear that existing tyre conditions are grossly unsatisfactory from the standpoint of a rider who wants to keep time. They compare unfavourably with the insurance against long stops provided on every first-class sidecar, cycle car, and motor car. It is thinkable that Mr. Rapson may presently furnish us

Occasional Comments.—

with unpuncturable tyres. If he disappoints us, what remains to be done? The following suggestions are the commonplaces of six days trial work, and should be adopted by all motor cyclists who ride for business purposes:

1. Always carry a properly stored inner tube in reserve.
2. Supplement the standard repair kit by an extra supply of very large patches, valve tubing, a large gaiter for protecting damaged parts of the cover, and a big tin of French chalk, carefully packed.
3. If the riding be done over really bad roads in lonely districts, a spare cover should be carried (light covers may be rolled round the tank to serve as knee grips).

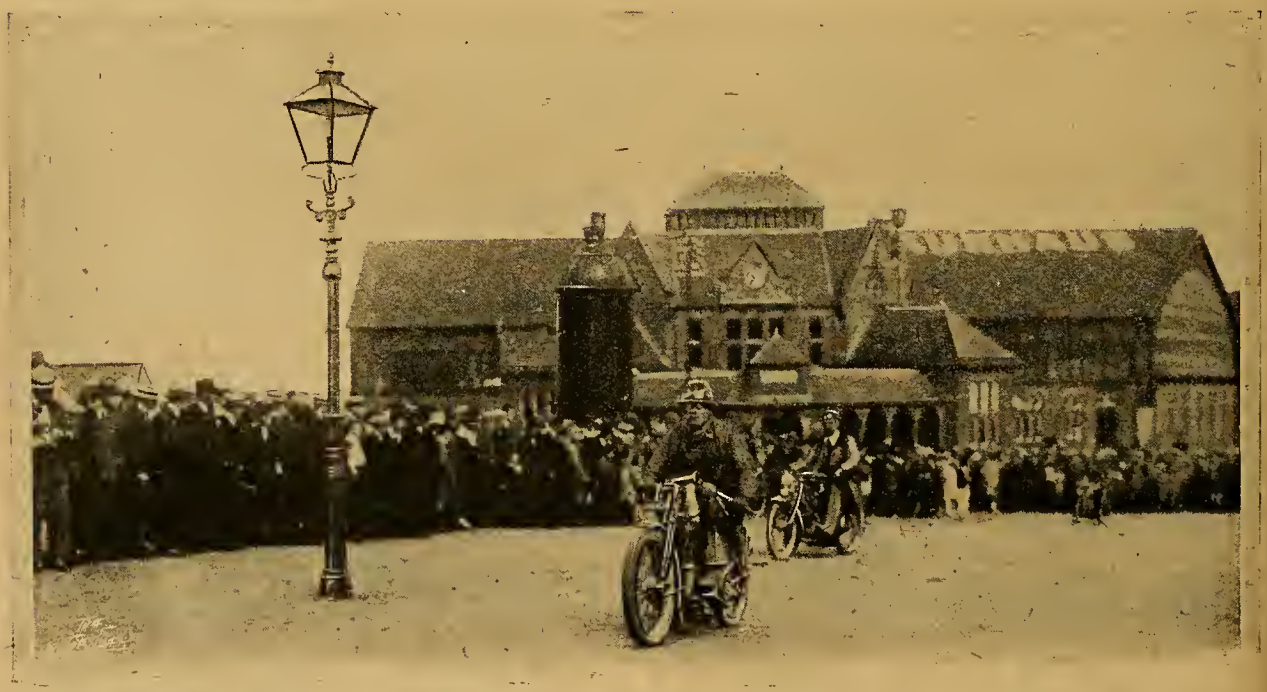
These precautions are doubly necessary in the present day, when it is far from certain that even a big garage can produce either tubes or covers in any desired size.

Jointed Inner Tubes.

THE above precautions furnish no guarantee against prolonged roadside delays when a peculiarly wicked tyre stop is encountered; they merely ensure the continuance of the journey after a greater or less delay. What we need is insurance against lengthy delays of any kind. In other words, we need one of three alternatives:

1. An unpuncturable tyre.
2. A drop-out back wheel.
3. Jointed inner tubes.

The first remedy is still problematical. The second is less common than it was a few years ago, when belt drive plus a T.T. type of rear spindle enabled a duffer to clear his back wheel, fit a new endless tube, and take the road again, all within ten minutes. Some of the modern knock-out spindles and drop-out wheels are extremely ingenious, but they are neither foolproof nor universal. I have known a rider spend ten minutes in getting such a wheel out, and another ten minutes in getting it back. Only the other day I had to change a rear inner tube on a modern machine which was not fitted with a drop-out wheel; I got the wheel cleared in about ninety seconds, but it took me a quarter of an hour to get it back, since four hands were really needed for the job. In other words, there is still a great opening for detachable inner tubes. None have been advertised since the Armistice. In pre-war days I searched in vain for the perfect jointed tube. The Rich, with its continuous air chamber, was excellent; but its joint was apt to leak when the caulking of castile jelly had perished with age and heat; the caulking was easily renewable, but riders dislike carrying a squashy tube of dope in their toolbags, or being stopped on a pleasant run to airproof a tube which is not punctured. The butt-jointed pattern of tube has never proved as reliable as the endless type. I have had excellent service from some of them; but sooner or later the butts chafed into a leak of some kind. We have quite enough trouble with the endless tube, and do not want a tube which contains extra possibilities of annoyance. It is for this reason, presumably, that motor cycle makers continue to fit endless tubes, instead of delivering each machine with three jointed tubes. I submit that every rider should carry three tubes as a precaution: two in his covers and one in reserve. If his rear wheel is not of the drop-out type, these tubes should be jointed. It is up to the tyre trade to produce either an unpuncturable cover or a genuinely reliable jointed tube. The standard of reliability and timekeeping has stiffened. Motor cycles must compete with vehicles which can run to time. They require absolute insurance against prolonged tyre stoppages.



The interest of the public in motor cycle matters in Holland is very keen, judging from the photograph above, which shows a rider arriving at Scheveningen on the occasion of a long-distance competition for a cup presented by Count J. du Monceau de Bergendal. This trial was referred to in last week's issue on page 127. —*De Auto.*

Shortcomings of Motor Cycle Engines.

Some Impressions and Deductions derived from a Study of Aero Engines Part I.

SINCE the introduction of the high-tension magneto, remarkably little improvement has taken place in motor cycle design. It is true that detail improvements have been made in many directions, which have contributed to the general reliability and (in some cases) efficiency of present day machines, but with the exception of these details there is little difference between such machines as, let us say, the Triumph of 1907 and the present day single-cylinder.

This stagnation in design is caused to a large extent by the fact that motor cycle manufacturers (with one or two notable exceptions) have not kept up with the advances made by modern internal combustion engineers, steel manufacturers, etc., and, in brief, have contented themselves with turning out good selling models without worrying about the mechanical possibilities of the future. Commercially this may have been all very well in the past, but with the spread of engineering knowledge amongst the buying public it is not likely to be a successful policy in the future.

The war has taught us many things, and anyone who has been intimately connected with aero engines during the last five years will admit that he has learned more in that time than in any previous period.

Undoubtedly the experience gained from aero engines is going to have a great effect on motor cycle engines, not perhaps immediately, but as soon as manufacturers have adapted themselves to altered conditions.

The most outstanding evils of motor cycle engine construction are: reciprocating parts of approximately twice the necessary weight; totally inadequate bearing surfaces, especially big end bearings; absence of lubrication system; and bad distribution of cooling surfaces: and these evils are mainly due to the fact that designers have insufficient knowledge of the subjects or are content to turn out "something that will work."

Experimental testing plants, or at any rate testing plants from which really accurate data are obtainable, are vitally necessary, and yet such plants are probably confined to one or two firms whose goods are of world wide repute.

I am aware that the foregoing remarks may sound unduly critical to some ears, but it is hoped that they will be taken in good part, for the motor cycle industry is sadly in need of a "shake-up."

Experimental Work.

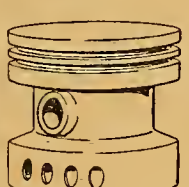
An enormous amount of experimental work has been carried out during the war, old ground has been covered and re-covered, with the result that some old theories have been confirmed and others have been exploded. Much new ground has been ploughed and many interesting possibilities have been brought to light. Some of the information obtained has been published—much more will be published—and unfortunately a small proportion will probably be kept secret, and remain in the hands of one or two firms for some time to come.

Yet in spite of all the work which has been done, an ever growing wall of research work appears to be necessary—the more that is known the more there is that needs to be known. I hold the Utopian idea that one of these days a laboratory will be instituted for research work on internal combustion engines (which will be supported by the State or by manufacturers), and that the results obtained from this laboratory will be published for the use of every one concerned, or at least for the use of such firms as support the institution. [This has already been advocated in *The Motor Cycle*.—ED.] If such an advance were ever brought about motor cycle manufacturers would have not only to support it vigorously, but also to insist that experiments suitable to their requirements be carried out.

And here comes a word of warning: remember that a feature which may be eminently suitable for aero engine work is not necessarily suitable for motor cycle work. The experiments carried out for the benefit of aero engines are almost invariably on engines having considerably greater volume per cylinder than is the case in motor cycle engines, and though this in itself is an advantage rather than otherwise, the conditions under which an aero engine runs (as regards cooling, constant speed, etc.) are very different from those obtaining in motor cycle work.

As an instance of the need for this warning, a rumour obtained currency

The aluminium slipper type introduced by Mr. Ricardo.



The Zephyr steel piston. Modifications of this design have been produced both in aluminium and cast iron.

A skeleton piston, the design of which originated in the U.S.A., the "Pondeleck."

The ultra short type of aluminium piston as used on some war aero engines.

The Shortcomings of Motor Cycle Engines.—

not long ago that a certain motor cycle firm was experimenting with a cylinder which was a copy in miniature of the cylinders used on a well-known and eminently satisfactory rotary engine. Now the construction of this cylinder is curious, and is *suitable only for a rotary engine* owing to the fact that, though the cylinder barrel is admirably cooled, the cylinder head relies for its cooling *on the speed with which it passes through the air*, whereas it has been definitely confirmed that for high efficiency engines the temperature of the cylinder barrels is unimportant (within very wide ranges), though it is of the utmost importance that the cylinder head should be kept cool. Instances could be multiplied, but the above is sufficient to show that it is useless to copy promiscuously without a proper knowledge of "the reason why."

Failing the idea of a communal research works, each manufacturer who has the future of the firm and the motor cycling public at heart will have to lay out at some expense a small research department which will very soon repay its initial cost. For, apart from improvements in design and material, it is possible to carry out endurance tests in a week in a properly equipped shop which would take months (and then be inconclusive) if carried out on the road.

Let us turn our thoughts to some of the most blatant faults of the average motor cycle and see what can be done to improve matters.

Reciprocating Parts.

Though strictly speaking valves and tappets come under this heading, valve gear is such an important item that it deserves to be dealt with separately, therefore I intend to include only piston, gudgeon pin, and connecting rod. Compared to aero engine work, the piston of a motor cycle engine is usually a horror to be gazed at with wonder and disgust, and, though bearing surfaces cannot be cut to the same degree that is possible in war aero engine practice, where long life is not of primary importance, a little careful study will show that a great deal of weight can be saved by reasonable design. For instance, I have seen a piston from a 60 mm. bore motor cycle engine, the skirt of which was just double the thickness used in the skirt of an air-cooled aero engine of over 100 mm. bore, and both were made of cast iron.

Aluminium will do much to rectify the weight question, and will also improve piston cooling, but some research will still be needed before the most suitable alloy and satisfactory clearance are decided.

An important departure in connection with piston design has been introduced by Mr. Ricardo with his slipper type piston, which has much to recommend it, as it reduces weight and piston friction to a very large degree, and permits the use of a very much lighter and stiffer gudgeon pin. It has also other advantages with regard to lubrication which need not be discussed at this juncture. There is, however, a point to be watched, in that the contact area between piston and cylinder is so much reduced that the cooling of the piston may be affected on hot-running air-cooled engines. This, however, is a debatable point, and, be it as it may, there is certainly very much unnecessary metal and friction surface in most motor cycle pistons. Narrow, deep piston rings have come much into favour, especially with aluminium pistons, where they are used partly for constructional reasons and partly for the excellent results obtained from this type.

If care be taken to support the gudgeon pin adequately and a suitable steel is used for this part, a considerable amount of weight can be saved by using hollow pins. (Half an ounce is of great importance in reciprocating parts of a high speed engine.)

Connecting Rod Design.

It is, however, when we get to the connecting rod that the most curious growths appear, and, oddly enough, some of the best known firms are the worst offenders in this respect. Large flat lumps of unsuitable steel are used, and in certain particularly vicious cases are fantastically shaped at certain points, the shapes having no relation to the strains imposed.

Even before the war racing car manufacturers were well ahead of motor cycle practice in this respect, and nowadays, with special steel, wonderfully light section rods can be used. A certain car of 88 mm. bore is fitted with tubular rods of 14½in. centres, ¾in. O.D. tube, 1 mm. thick in the wall. Another engine of 100 mm. bore has a connecting rod of 11in. centres of H section, and is only 2 mm. thick in the web; and yet many motor cycle engines of infinitely less power per cylinder are content to stagger around with solid lumps of ⅜in. steel just where an ounce or two saved would make an enormous difference to efficiency, smooth running, and bearing wear. I can almost see the "satisfied owner" rise against me in his wrath while the manufacturer says words to the effect that "your bicycles will cost you more." To the former I would say, "You may be satisfied with the results obtained, but that is no reason why they should not be improved." To the latter, the answer is, "Possibly, but it's worth it."

It is not suggested that the designs need be carried to extremes, except in racing machines; but a study of metallurgy and contemporary design will enable great improvements to be made at little cost.

It should be realised that a few ounces saved in the piston and connecting rod of a high-speed engine will have a very beneficial effect on the wear of bearings, etc., owing to the decreased reciprocating loads.

(To be continued.)

The P. and M. in Mesopotamia The photograph was taken 600 miles up the Tigris by B. J. Hands, who speaks of the splendid work performed by these machines under most trying circumstances and in terrific heat.

A Searching Test of the New 3½ h.p. Mechanically-lubricated Model during the Scottish Six Days' Trials.

IF ever a favourable opportunity existed for trying out a new spring frame machine, it was in the recent Scottish Six Days' Trials, and I doubt whether any British spring frame has been put through a more complete gruelling than the new 3½ h.p. Douglas with which this article deals. The machine was kindly lent for the event by Messrs. Alexander and Co., of Edinburgh, and was Alfred Alexander's property: the identical machine on which he won the speed contest at Lanark the Saturday previous to the trial.

Anyone who has ridden in the classic Highland event knows the nature of the roads traversed: knows, too, the difficulty and hardship of keeping to schedule time over the appalling surfaces, while one has only to glance at the records of the trial to appreciate the fact that it is as much a test of frames as it is of engines and transmissions: in fact, there were this year, and usually are, more retirements from frame breakage than from engine defects. A frame that will stand up to the gruelling our machines were given is undoubtedly a sound proposition, so far as strength and durability are concerned; and, since the only competing spring frame Douglas fell out for reasons in no way reflecting on the machine, it may be as well to set down the exact nature of the test to which my particular mount was put.

The Work to be done.

Up in the morning with the competitors; and if there were a check between the starting point and the first test hill, I usually rode along with the early starters, averaging about 30 m.p.h. to the check, where it was possible to steal a lead of ten minutes or so on the first starter, who had to await his time. This enabled one to scale the precipice, note the most likely spot for failures, and observe the various performances till the last man, who was often very late, had passed. If the hill were tackled in the morning, one was usually able to catch up with the crowd at the lunch control, where all the bits of news are picked up. After lunch one fared the same as the competitors.

The Method Thereof.

In this way, then, the entire route was covered, and every competitor was observed on every non-stop hill. True there was no need to make up time by blinding at considerable personal risk over impossible roads, but the little Douglas was kept hard at it the whole of the time, maintaining an average above the legal limit, covering the actual course in less running time than the competitors were allowed. It made a clean ascent of each of the observed hills, ticked round the hairpins at the merest crawl, and picked up with a roar on the stiffest parts of the gradients.

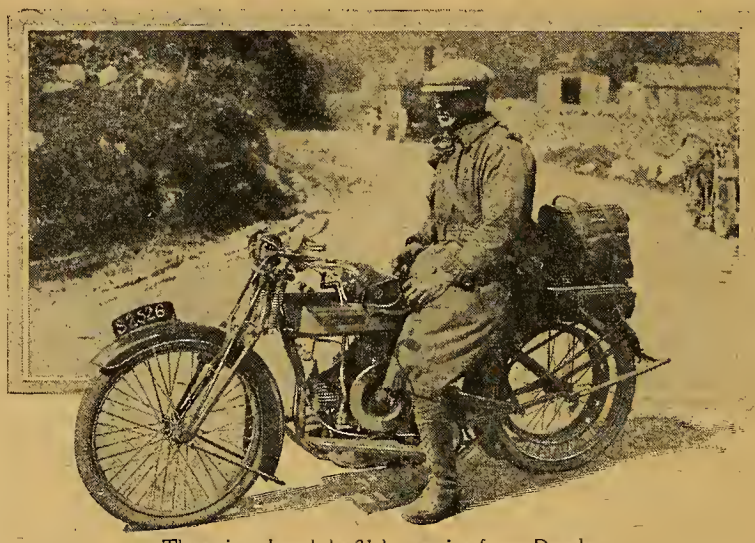
No troubles at all, outside tyre troubles, were experienced, and it goes without saying that only on the very best machine is it possible to keep in such close touch with the competitors. It must be easy to handle, gentle with its rider, capable of terrific revs. and able to accomplish climbing feats sufficient to tax the skill of an antelope—to all of which the new Douglas aspired. The fact that this particular rider is anything but a "crack"—is, in fact, a very average type of jockey who hates personal risk of any kind—reflects further on the merits of the machine: in fact, I believe

A Spring Frame Douglas on the Scottish Hills.—

anyone with an atom of experience in competition riding could have gained a gold on this superb little 'bus.

The Rear Springing.

As regards the springing, never again will this scribe tackle a six days' trial on a rigid frame. The springing of the Douglas saved one from all those fatiguing spine jolts which make the Scottish Six Days, in particular, so tiring an affair for most of the performers. On several occasions the competitors complained of the roughness of the roads, and were seen holding their backs when evening came, and I do not recall having ridden in any strenuous trial without experiencing spinal fatigue. In this event, however, the Douglas simply glided over the pot-holes, and many times the only thing that drew attention to the roughness of the surface was the clanking of the front forks.



The writer aboard the 3½ h.p. spring frame Douglas.

Saddle soreness was certainly experienced after the fourth day, as the machine was fitted with a miniature stiff-spring saddle of the racing type, affording about as much comfort as the top of an Applecross pinnacle. Had the frame been rigid, the discomfort would have been awful, and I should have retired after Amulree. My experience of spring frames is that even a machine so fitted requires every bit as efficient a saddle as does a rigid frame, and for this reason: The springing must be stiff, otherwise the machine floats and is an impossible proposition on hairpins. All that is required of the frame springing is to absorb the shocks, and road vibration, therefore, must be absorbed by the saddle. Since the saddle is spared all spring-breaking jolts, it can advantageously be fitted with even lighter springs than usual.

A Practical Rider's Requirements.

In my opinion, a spring frame that is floating the whole time is a mistake for a solo 'bus. It upsets the steering where such delicacy is required as in the Scottish Six Days. A good present-day saddle is perfectly capable of absorbing road vibration; where it falls short is in absorbing the big jumps. Therefore, let the springing be set as it is in the Douglas, the machine riding like a rigid frame until such jolts are encountered as are beyond the shock absorbing capabilities of the saddle, and which the frame automatically takes up. Even then it will be found that the frame springs are seldom idle for more than a few seconds, and that the worst array of pot-holes is passed unnoticed.

At the end of the trial I tested the rear wheel for rigidity in every direction. There was no suggestion of play anywhere, and Alexander tells me that for weeks past he has been using this machine for running in and out from business—between thirty and forty miles per day—with a sidecar and pillion passenger. One day I carried a petrol tin tied on with a bit of string; it never moved from its moorings, and even the shaving soap in the bag on the carrier retained its original rotundity of shape.

Steering.

My particular style of wobbling round corners never did suit the Douglas, and perhaps the fact that I am accustomed to a Scott accounts for my clumsiness with other mounts. It must be admitted that I have ridden machines easier to steer than the new Douglas, but it is probably well up to the average. The 4 h.p. Douglas riders did not seem to experience much difficulty with their corners, and the 3½ h.p. is certainly easier to steer than the 4 h.p.—though less easy to steer than a Scott.

The engine is an absolute gem. It hummed away like a little dynamo, and seemed to improve as the days passed—no vibration, no noise, just a faint hissing purr, which changed to a deep roar when the throttle was yanked open. Some tremendous averages were put up over long distances and bad roads with perfect ease and comfort—in fact, I have never ridden a machine in which time could be made up with such absolute effortlessness. One merely opened the throttle a shade and was floated along till the crowd hove in view. It is faster than the 4 h.p., though perhaps a shade less powerful.

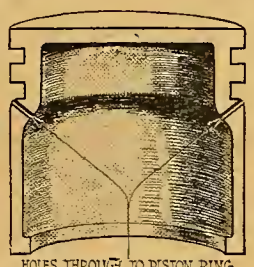
The Lubrication System.

The mechanical oiling system is foolproof. One merely needs to set the drip and leave it there. The hand pump can be resorted to if desired, but it never seemed necessary, and the engine ran the whole time with that silken smoothness that indicates perfect lubrication. The only improvement one might suggest is that the hand pump be entirely separate from the mechanical system, so that it is not necessary to reset the drip after using the hand feed. The engine required an absolute minimum of oil, and, in spite of the atrocious conditions, petrol consumption usually averaged out at about 55 m.p.g.

On the last day of the trial the engine was flooded with oil to see what would happen, as Alexander claimed that it was impossible to "oil her up." Oil streamed from the overflow ere the exhaust became blue, and the plugs remained dry. This is due to the

A Spring Frame Douglas on the Scottish Hills.—

arrangement of the lower piston ring, which acts as a scraper, preventing oil reaching the cylinder head, as shown in the sketch. The oil banks up behind the bottom ring, and is returned to the inside of the piston by way of the small holes provided for that purpose. Thus one is given latitude on either side for error in oiling, and when once the crank case is charged the engine will run perfectly for twenty or thirty miles without drying up.



Section of 3½ h.p. Douglas, piston showing holes for return of surplus oil from cylinder walls.

A Criticism.

The spring frame Douglas is a distinctly fast mount, and this is perhaps why the unsuitability of the present position of the brake pedal is brought home with such stunning force. It is tucked under the carburetter forward of the right footboard, and if it were under the tank it could not enjoy greater immunity from the foot of the rider. I was annoyed with that brake to the end. One simply had to grope blindly for it, curling one's right leg into serpentine attitudes, and when wanted in a hurry it was never there. Also, in wet weather, when eventually found, it was apt to jam the rear wheel when applied unless the block was kept greased, which was bad for the belt.

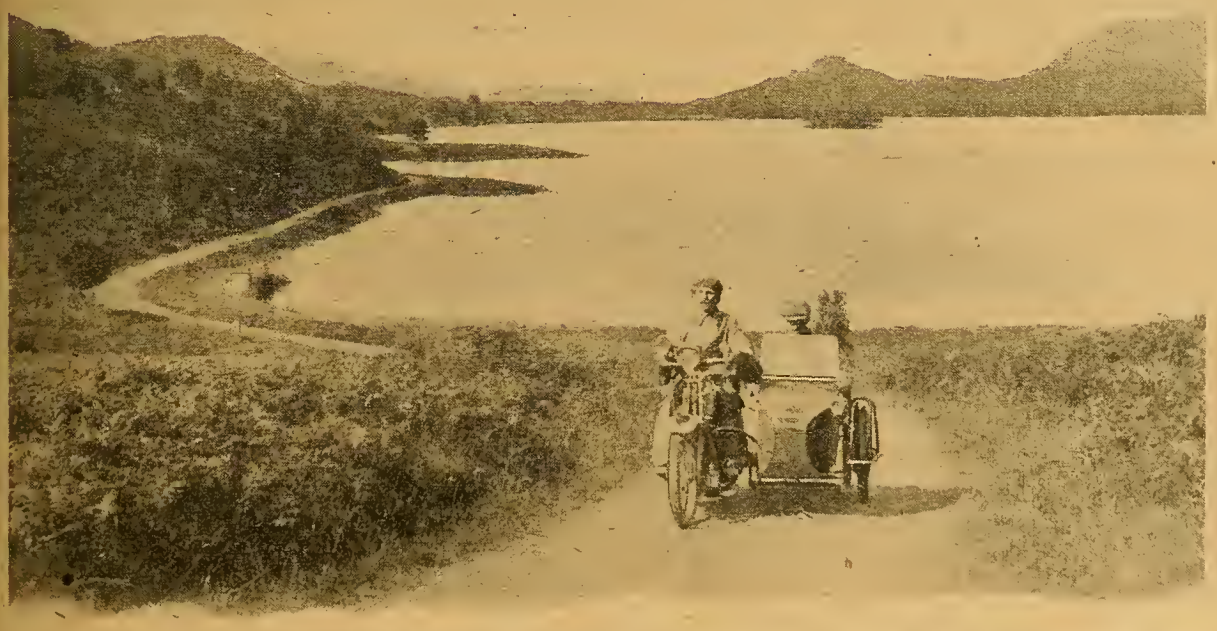
This is the only point I would criticise in a perfectly delightful machine. The brake of the 4 h.p. Douglas occupies a proper position accessible to the heel of the rider. The kick starter of the 3½ h.p. gets in the way on the right-hand side, but there is no reason why the brake should not be carried to the left side, occupying the same relative position.

It is sincerely to be hoped that next year this model will be available to the public by the score. This is no journalistic puff, and I candidly admit that it was fully intended to break Alexander's springs during the event, then point out the weakness which he claimed not to exist. But there was no breaking anything, for we floated through the trial from beginning to end—the very best 'bus for the job one could wish for! The hand clutch is delightful, and the new model will fill the bill for practically every rider, from the elderly potterer in search of maximum comfort and docility to the speed merchant who wants something that will hold the road and "rev." like nothing he has ever tried before.

Tyres and Transmission.

As regards belt and tyre wear, this trial can be set down as equivalent to at least 2,500 miles ordinary touring, yet the Hutchinson studded tyres of the Douglas still carried perfect treads at the end of the event, the front tyre being imperceptibly worn, while the back had only two slight scratches. Aultnaharie stretched the belt, which had to be taken up, but some of the chain-driven machines experienced continual transmission breakages.

Finally, let me say that on previous strenuous trials, when a strange machine has been picked up at the eleventh hour, I have vowed every time never to do so again. One's own mount is the best for long rides, but this time the eleventh hour choice far surpassed anything previously tried. After all, what can anyone desire more than a properly insulated seat and an engine which "revs." gigantically or pulls as well at 50 m.p.h. as at 10 m.p.h.? Moreover, the new Douglas is foolproof. It seems automatic, asking practically nothing of the rider. CHINOOK.

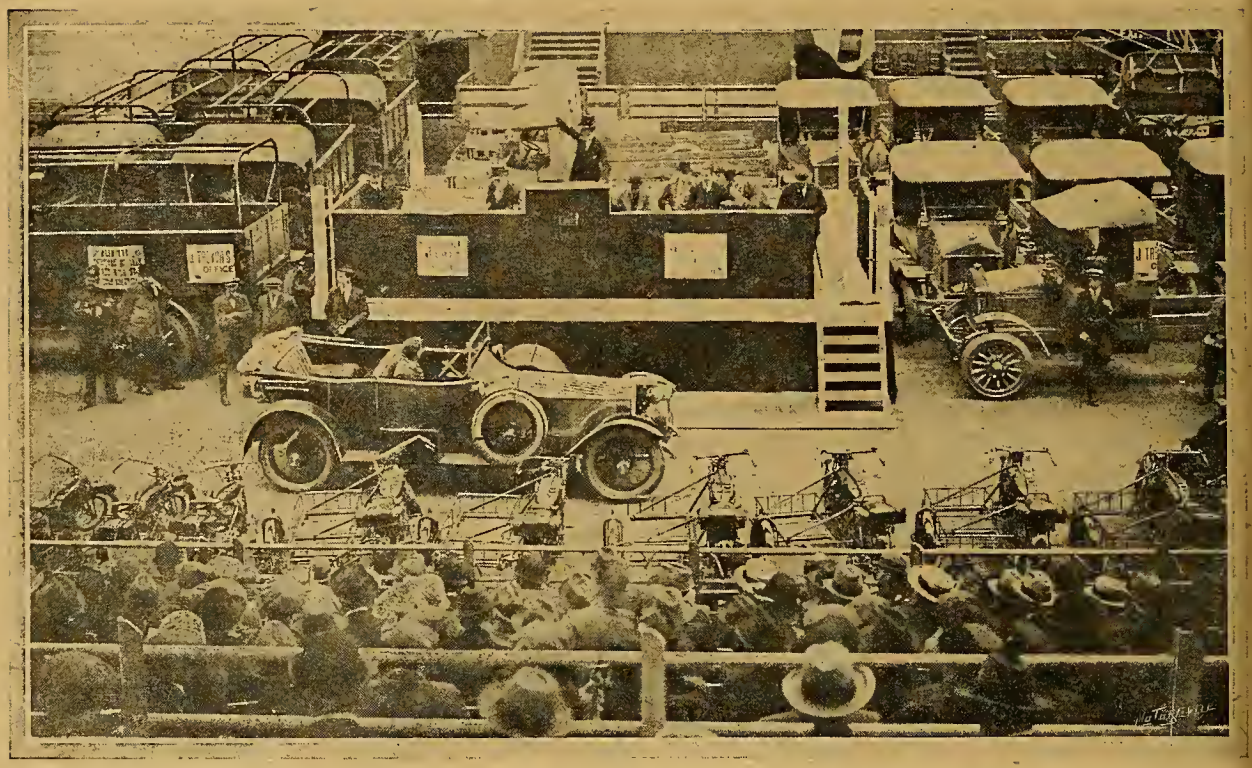


The course of the Scottish Six Days is through some of the most magnificent scenery in Great Britain, although rarely can the entrants appreciate it to the full, being too engrossed in piloting the machine over the "roads." The above photograph, taken near Glendoe, conveys a slight idea of the beauty of the route.

B7

AUCTION SALE AT OLYMPIA.

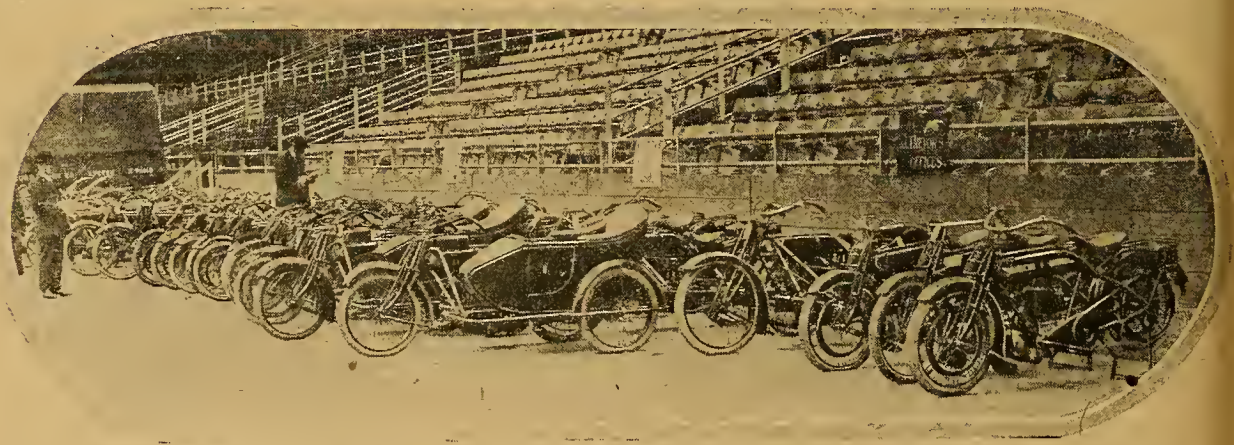
B.S.A.'s, Clynos, Rudges, and Sunbeams Realise Good Prices.



Several Rolls-Royce cars were driven up to the rostrum at the first Government auction sale at Olympia. A similar demonstration of the "running order" of motor cycles no doubt would have been appreciated by the bidders for machines.

THE first Government auction sale at Olympia took place under the auspices of the Surplus Government Property Disposal Board on Tuesday, July 29th, the auctioneer being Mr. J. Trevor, F.A.I. Than Olympia, no building is better suited for this purpose, since the tiers of seats rightly belonging to the tournament are still there, the auctioneer's rostrum being placed conveniently in the centre of the arena. A large crowd assembled early, and waited patiently to obtain motor cycles while thousands of guineas changed hands for lorries and cars. The machines, for the most part B.S.A., Rudge, or Clyno, were badly painted, it is true, but were apparently in good order and certainly complete. Some had coloured tanks, some were all black, and some preserved still the Government green. To several of the Clynos an ammunition carrier sidecar was fitted; one B.S.A. still had a carrier cushion seat, and several appeared to have been fitted with new cylinders. There were very few sidecars, and those present were not in good order, as one would expect after hard Service usage.

So far as prices are concerned, the following are the highest and lowest figures obtained during the sale by the various makes offered: B.S.A., lowest price 50 gns., highest price 60 gns. average price 55 gns.; Sunbeam, lowest price 50 gns., highest price 77½ gns. average price 55 gns.; Clyno, lowest price 107½ gns., highest price 115 gns., average price 110 gns.; Rudge, prices ranged from 50 gns. to 55 gns.



A few of the Clynos and B.S.A.'s that were sold at very good prices. Although the bidding was good, buyers showed more caution than they did at sales four or five months ago.

CURRENT CHAT

Times to Light Lamps.

SUMMER TIME.

Aug.	7th	...	9.8	p.m.
,,	9th	...	9.4	,,
,,	11th	...	9.0	,,
,,	13th	...	8.57	,,

Eight Hundred Miles Trial in Italy.

A trial run from Genoa to Trento and Trieste, over a course of 800 miles, was recently organised by the Genoa Army Command, and was open only to men who had served in the Italian Army. Sixty-six competitors participated.

Sidecars as Taxis.

Recently the Edinburgh magistrates had before them the question of licensing motor cycles and sidecars under the Hackney Carriage Acts, and decided that these were not suitable subjects for such licences. We should like to know the grounds upon which this decision was made.

The Tanks Journal.

One of the best and largest service papers we have seen is *The Tank Corps Journal*, published monthly by the Tank Corps Training Centre, Wool. As its title suggests, the organ is devoted to those who make and man the tanks, and it is the official organ of the Tanks Association. The contents are of a more serious nature than the majority of semi-service papers, and it includes as a serial a short history of Tanks in the Great War issued by the War Office. The subscription is 5s. per annum post free, or 3d. per copy, 4½d. by post.

A Brain Wave.

One of our readers hit upon the brilliant idea of removing the long tappet rod from the overhead inlet valve mechanism of his 3½ h.p. Rudge-Multi with the object of preventing a motor cycle thief from driving away the machine.

Having had an exceedingly good tea, and being of a forgetful disposition, he drove the machine straight away home. After having discovered what he had done, he forthwith penned a letter to the Editor, asking how it was that the machine had arrived at its destination without any visible means of operating inlet valve. Had our friend been as long acquainted with motor cycles as ourselves, and been a motor cyclist in the days when automatic inlet valves were the rule and mechanical valves the exception, the letter referred to would not have been written.

Life Membership of the A.A.

The rules of the Automobile Association limit the number of life members. That limit has now been reached, but it has been decided to accept 1,000 additional A.A. life memberships at an increased compounded subscription of twenty guineas.

Stolen Machine.

Five pounds reward is offered by Mr. E. R. Gibbons, 102, Disraeli Road, Putney, S.W.15, for information leading to the recovery of his 2¾ h.p. three-speed Douglas, registered No. PA 2684, engine No. 20974, frame No. 20671. The machine was stolen on the 25th of July.

Special Motoring Facilities for the Army of Occupation.

In view of the recent Order whereby officers in France, Belgium, and the Rhine Army of Occupation are permitted to have their motor cars and motor cycles for their own use, the Automobile Association has placed the services of its Foreign Touring Department at the disposal of all officers serving in these countries.

The Association offers to supply international passes, which entitle the holder to drive his car in practically any country of Europe, and triptyques to pass cars and motor cycles through the Customs of France and Belgium on the same terms on which these papers are supplied to its members. This means that, instead of depositing the amount of duty with the Association or with the foreign Customs, the officer need only give the Association a banker's undertaking to indemnify it against any loss it may incur through his failure to comply with the Customs regulations of foreign countries.

The A.A. Touring Department will also make all the necessary shipping arrangements.

Special Features.

SHORTCOMINGS OF MOTOR CYCLE ENGINES.

IMPRESSIONS OF THE SCOTTISH SIX DAYS.

FROM WAR TO PEACE.

The Setting of Plug Points.

A reader sends us a cutting from the motor and cycle column of the *North Star*, in which we find the following:

"The reason for this particular case of misfiring was that the points were too far apart. The correct width of the gap should be about *the width of a postcard.*" (Italics are ours.)

THE FAMILY SIDECAR.

A well-designed sidecar, very distinctly of the "family" variety, was seen at the Stile Cop hill-climb on Peace Day. Apparently each of the five people on the outfit are accommodated in tolerable comfort. The machine is a Williamson 8 h.p. horizontal twin, and certainly for such a load no smaller power would be satisfactory.

Motor Cycles, Ltd.

A PROSPECTUS, inviting the public to subscribe for shares in the above company recently appeared in several London and provincial papers. We feel it our duty to point out that, as we were unable to approve of the business methods of Messrs. Rider Troward and Co., Ltd., whose business, Motor-Cycles, Ltd., is acquiring, we recently found it necessary to refuse the advertisements of that company. The prospectus in question was, presumably on that account, not offered to *The Motor Cycle*, but, had it been so offered, it would not have been accepted by this journal. The highly speculative nature of the investment, to use a mild expression, is apparent from the prospectus. No certificate is given showing the tangible assets to be acquired by the new company, and the only profit figures given show the gross profits derived from the first four months of trading in each of the last four years. If the remaining portion of each year was as favourable as the first four months, it is difficult to understand the object of withholding the total gross profits of each year.

Then again, the profits shown are gross profits only. The term gross profits is one which has no exact meaning, and it may refer in this instance to the difference between the cost of the machines purchased and the amount for which they were sold, in which case there would be a charge against the gross profits of the whole of the expenses of working the business, which might quite easily be greater than the amount of the gross profits disclosed.

Mr. Eric Rider Troward, who is apparently responsible for the company, states that it is estimated that during the first year of the incorporation of the new company, at least 5,000 new motor bicycles and lights cars will be disposed of, at a profit of £75,000. There is no apparent reason why he did not make the figure £750,000. Indeed, Mr. Troward says that the only limit to the profits of the company is the difficulty of obtaining machines fast enough from the makers, and in order to alleviate any anxiety upon that point he stated that he has placed orders for over 4,000 machines, which have been "accepted by the manufacturers."

Mr. Ronald C. Power, the chairman of the new company, is, it is stated, managing director of the British and General Aviation Co., Ltd.

Scottish Six Days' Trial.

The official results are as follows:

FIRST CLASS AWARDS.

J. W. Wills (5-6 Rover)
N. Black (4 Triumph)
J. A. Newman (3½ Sunbeam)
D. Westwood (4 Triumph)
H. E. Fairley (4¼ B.S.A.)
V. Olsson (4 Douglas)
E. W. Choldcroft (4 A.J.S.)
Capt. Hay-Will (6 A.J.S. sc.)
G. Grinton (7-9 Harley-Davidson)
R. B. Clark (4 Douglas)
H. G. Cassie (4 Douglas)
A. F. Downie (6 A.J.S. sc.)
A. L. Downie (2¾ A.J.S.)
W. Strettell-Miller (3½ P and M.)
D. M. Brash (7-9 Harley-Davidson)

SPECIAL AWARD.

A. F. Downie (6 A.J.S. sc.)

SECOND CLASS AWARDS.

D. S. Milne (4¼ B.S.A.)
A. H. Alexander (4 Douglas sc.)
J. Beck (3½ Sunbeam)
J. A. Jeffreys (6 A.J.S.)
G. C. Stead (A.C. light car)
B. Alan Hill (8 Morgan)
A. Downie (5-6 Ariel)
Mrs. Bell (6 A.J.S. sc.)
Duncan Bell (5-6 James sc.)

THIRD CLASS AWARDS

Claude Duncan (4 Douglas)
D. S. Alexander (8 Enfield sc.)
E. J. Tunbridge (5-6 A.J.S. sc.)

Coventry and Warwickshire Hill-climb.

This year the Coventry and Warwickshire Club's hill-climb, which, before the war, was one of the classic events, may be for members only. Provided suitable arrangements can be made regarding the hill, the event will take place on August 23rd. Applications for membership to the club should be made to the hon. secretary, Capt. M. Sampson, 19, Hertford Street, Coventry. As in the case of several other clubs, the latest decision of the Manufacturers' Union regarding competitions may cause the Coventry club to make the event an open one.

Miss Hough (A.B.C. Skootamota), who, in the North Birmingham A.C. Trial, won the premier award, the Bayliss trophy, also gained gold medal and special award for best fixed gear performance.

Important Appointment.

We have pleasure in announcing the appointment of Major H. R. Watling as general manager of the Cycle and Motor Cycle Manufacturers' and Traders' Union. Major Watling is succeeding Mr. Alf. Bednell, who has so capably filled the position since the formation of the Union in 1910, but who is now retiring from active connection with the management.

A Stolen Motor Cycle.

Last week a new 6 h.p. standard Zenith motor bicycle (no clutch and kick-starter) disappeared from the Zenith Co.'s works. The machine had red panels on the tank and red lining to the mudguards, which is contrary to Messrs. Zenith Motors' usual practice of grey panels and lining. The frame number is stamped on the head lug just above the crown race, and is 5253, and the engine number is 65697.

Obstructing the Police.

In the paragraph which appeared on page 91 of the issue of the 24th ult., dealing with a case of alleged obstruction at Enfield, it was stated that the motor cyclist was defended by the A.A. solicitor We are asked to state that he was defended by Mr. G. D. Dean, who is solicitor to the Royal Automobile Club, and the Auto-Cycle Union.

The Circuit de l'Eure.

The Circuit de l'Eure will be held near Vernon on August 16th and 17th. The weighing and sealing of the competing machines will take place on the 15th inst. at Vernon. On the first day of the race, sidecars and cycle cars only will run, while on the 17th inst. the motor cycle events will take place. Among the entrants we notice an Indian and a Morgan, to be driven by Darmont, formerly a Zenith rider in France. On the occasion of the last Circuit de l'Eure, a good many English competitors took part. Entries should be sent to The Moto-Cycle Club de France, 94, Boulevard Richard Lenoir Paris.

Trade Support of Trials.

An important decision was made last week by the Motor Cycle Section of the Manufacturers' Union concerning trade support of competitions. The resolution responsible for the withdrawal of competitors in the Scottish Six Days' and other events has been rescinded, and the members have now agreed to support twelve events between August 1st and November 30th. Ten of these competitions have been decided, and the remaining two will be settled during the next few days. No doubt this decision will effect several club announcements referred to in this issue The ten events selected are as follow:

Aug. 16.—North Birmingham M.C.C. Open Reliability Trial
Aug. 23.—Birmingham M.C.C. Open Hill-climb.
Aug. 23.—Redditch and D. M.C.C. Open Reliability Trial.
Aug. 30.—Bristol M.C. Open Speed Trials at Weston super-Mare.
Sept. 6.—York and Dis. M.C. Open Hill-climb
Sept. 15-20.—A.C.U. Six Days' Trial.
Sept. 27.—Wolverhampton Open Hill-climb.
Date not yet arranged.—Sutton Coldfield Reliability Trial (Caithorpe Cup).
Date not yet arranged.—Liverpool, Birmingham, and London 24 Hour Open Reliability Trial.
Date not yet arranged.—Coventry Hill-climb.

A SEARCHING MAGNETO TEST.

Engines Running in Two Feet of Water. "Shower-proofness" Demonstrated.

ON Thursday last a very interesting demonstration was given of the waterproof qualities of the E.I.C. magneto by a number of B.S.A. testers, these machines being now equipped with this make of magneto as a standard fitment.

In the first place, the idea of driving and "stunting" in a deep watersplash was quite unofficially conceived by the testers for their own sport, and coming to the ears of Mr. Bryan, the B.S.A. publicity manager, he at once suggested to the makers of the E.I.C. magneto that a special display of this nature would be a very thorough demonstration of the immunity of the machines from ignition troubles due to moisture, even moisture in excess.

B.S.A. testers in the watersplash. No magneto trouble was experienced after about an hour's thorough testing.

A Thorough Testing.

Mr. W. T. Turner, managing director of E.I.C. Magnetos, Ltd., was even a little doubtful of the success of the experiment, the company never having claimed more than the ordinary degree of shower-proofness for their instruments. However, at his invitation, several interested members of the firms concerned, together with representatives of the press, foregathered in Redditch at the B.S.A. works.

After lunch, under glorious weather conditions, the party were led to the chosen watersplash by a group of testers mounted on standard B.S.A. machines, which were subsequently driven through at depths varying from a few inches up to 2ft.

The machines were also driven up and down a steep bank in and out of the water, and pillion passengers were also taken; several stops and restarts were made in the water, and one machine, with no part of the engine unit out of the water except the cylinder and carburetter, was kept running for two minutes until it stopped from back pressure set up by exhausting under water. On being wheeled to the bank after one or two preliminary kicks to eject the water which spouted from the silencer and crank case release in great quantities it started up without difficulty. Indeed, none of the machines were put out of action, despite the fact that no special preparations were made, other than in one or two cases only, a coating of grease had been applied to the carbon brush holder.

For an hour the machines were splashing their way through the water, and at the end of that time they were all running perfectly and no misfiring was evident.

Any magneto manufacturer might well be proud of this demonstration of waterproofness. After all, the test was in every way more searching than would be found in ordinary riding conditions.

Running a machine with the magneto totally submerged

For Motor Cycles Only.

E.I.C. Magnetos, Ltd., are indeed to be congratulated, and their specialisation on motor cycle types is meeting with great success, the following firms having already commenced to fit this make, so we are informed: B.S.A., P. and M., Levis, Douglas, Allon, Rover, Sunbeam, and Morgan.

Referring to the flat twin magnetos, we were informed that much greater accuracy in the angle of the cams is required than in the V twin machine, and in the case of the magnetos made for the Douglas engine, certain of the dimensions are worked to a finer limit than even A.I.D. requirements demand.

We were satisfied that the makers are using every endeavour to place the E.I.C. magneto in the front rank.

Road Locomotion.

The average boy loves to imitate any new form of road locomotion, and adopts ingenious methods. The other day we saw a youth mounted on a pair of roller skates, balancing on his feet a large suit case, the motive power being provided by another boy, who pushed behind. Apparently the idea was to imitate a scooter.

M.C.C. Team Trial for "The Motor Cycle" Cup.

Rules and Regulations for the Club Championship Event on Saturday, Sept. 6th.

THE twelfth M.C.C. Team Trial will be held at a place within easy access of London on Saturday, September 6th. Already promises of entries have been received from several important motor cycle clubs. The competition is run for *The Motor Cycle* challenge cup, which, up to 1914, was competed for annually since 1904 by teams of six riders. This year three will drive solo motor bicycles and three passenger machines.

The M.C.C. presents a gold medal to each rider of the winning team, and a silver medal to the winners of the teams making a full score. The following is a list of the clubs which have held the trophy :

1904. Coventry M.C.C.
1905. Motor Cycling Club (walk-over).
1906. Motor Cycling Club.
1907. Coventry M.C.
1908 Coventry M.C. (who won the old trophy outright).
1909. Motor Cycling Club.
1910. Coventry and Warwickshire M.C.
1911. Derby and District M.C.C.
1912. Nottingham and District M.C.C.
1913. Sheffield and Hallamshire Club.
1914. Motor Cycling Club.

The following are the conditions for this year's trial which, as hitherto, will be run under the competition rules of the A.C.U.

1. This cup is a challenge trophy, entitled *The Motor Cycle* Challenge Cup, of which the Motor Cycling Club is trustee and administrator.

2. It is to be awarded in a competition between teams of riders, members of and nominated by recognised automobile and motor cycling clubs. In case of doubt as to whether any entrant is or is not a recognised club the Motor Cycling Club shall adjudicate. No club may enter more than one team.

3. If the cup be won three times, not necessarily in succession, by the team representing any one club, it shall become the absolute property of that club.

4. Each team shall consist of six riders, three of whom shall drive solo and three passenger machines, such as tricar, side-car, or three-wheeled cycle car. A passenger must be carried. The joint weight of passenger and driver shall not be less than 20 stone. Passengers for the passenger machines must be provided by the entrants. A passenger shall not leave his or her seat during any part of the competition, excepting at the tea halt, and shall not assist the driver in any way whatsoever. Pedalling or assisting with the feet for the purpose of propulsion shall count as a stop. To qualify for starting each team shall provide an additional rider (and machine) to act as an observer, who shall be at the disposal of the Motor Cycling Club during the progress of the competition. Lady drivers will not be permitted.

5. The competition shall consist of a non-stop course to be covered three times. Total distance, 100 miles.

6. A competitor covering each of the three circuits at 20 m.p.h. will gain the maximum number of marks.

7. Sufficient fuel and oil must be carried for the whole of the trial. Competitors may replenish from a metal receptacle carried by them, provided such replenishment is effected by the driver while the machine is in motion. Such fuel or oil must be carried from the start and not taken up after starting.

8. The number of miles accomplished by each rider of each team without stoppage, other than stoppages due to exigencies of traffic, will be added together, and the team scoring the highest mileage thus arrived at shall be the winner, but in the event of more than one team making a

The Motor Cycle Fifty Guinea Challenge Cup.

full score in mileage the award will be given to the team making the best performance in the consistent driving test. Unavoidable stoppages due to traffic must be reported, but will not count against the rider. No adjustments are permissible during any such stop.

9. A consistent driving test will be held on a hill, which will be ascended on each circuit during the trial. It will be divided into two sections, of which the first part must be climbed at an average speed of not more than 10 m.p.h., and the second part at an average speed of not less than 15 m.p.h. The times taken by a competitor will be noted on two occasions, and the team of riders who most closely repeat their performance of the first ascent on the second occasion will be adjudged to be the winners, in the event of more than one team making a non-stop run.

10. Competitors must carry two numbers, and those who complete the course, after filling in details of their performances, such as non-stop or the number of stops and their cause, must hand these numbers to the captains of their teams. The captains or their deputies shall place them in the order of the programme, and hand them in at headquarters within half an hour of the completion of the competition.

11. The competition will start at 1 p.m.

12 The entry fee shall be two guineas per team up to the first post August 23rd, when the entries close.

13. Clubs must send the special entry form duly filled in, together with the entrance fee, to Mr. Southcomb May, 34, Gower Place, London, W.C.1.

14. The judges shall be three in number, one nominated by the donors, one by the Motor Cycling Club, and one by the Auto Cycle Union. The judges' decision shall be absolute, and without appeal.

15. The Motor Cycling Club reserve the right to refuse any entry.

16. Any organised assistance will disqualify the whole team.

17. Should it be deemed advisable, in the interests of the competition, these regulations may be revised or added to by the Motor Cycling Club.

18. The Motor Cycling Club shall not be held liable for any damages, caused accidentally or otherwise, to the competitors' machines whilst in charge of the officials of the club.

The following clubs are likely entrants for the M.C.C. Inter-team Trial for *The Motor Cycle* challenge cup : The Motor Cycling Club, the Ealing and District M.C.C., the Essex Motor Club, the Middlesex M.C.C., the Nottingham and District M.C.C., the Woolwich, Plumstead, and District M.C.C., the Birmingham M.C.C., the Coventry and Warwickshire Motor Club, and the Public Schools M.C.C.

Club secretaries are invited to bring the trial to the notice of their committees with a view to selecting a team to represent them in this club championship event.

BIRMINGHAM M.C.C.

The open hill-climb arranged for August 23rd has been cancelled, and a club event will be held in its stead. In order to cater for sporting amateurs who are not members of the club, it has been decided that they may become members of the club for the current year on payment of entry fee of 5s. and a reduced subscription of 3s. 6d. Entries should be addressed to the hon. sec., Mr. W. H. Egginton, 76, Earlsbury Gardens, Birchfields, Birmingham.

IMPRESSIONS of the SCOTTISH SIX DAYS

An old Competition Rider's Experiences on a Morgan

HAVING been passed as "unfit for further service" by the medical board, and sent off on "indefinite leave pending discharge," something had to be done to make the most of the leave. With pleasant recollections of glorious times spent during four previous Scottish trials, I decided that the 1919 Scottish Six Days was the very holiday I needed. Accordingly, at the last minute almost, I entered my long-waited-for G.P. Morgan, and hoped that the delayed delivery would materialise in time for me to reach Edinburgh for the start. It was Thursday prior to the start of the trial before I succeeded in getting time to visit the Morgan works at Malvern, where, to my great delight, I found the machine finished with the exception of a few details. After a short run round Malvern, including the ascent of the Old Wyche and the notorious Beacon Hill, I left on the run North. My wife, who had decided to come as my passenger, met me at Birmingham, and on Friday morning the real journey to the Northern capital was started in earnest. It was a quite uneventful and very pleasant run, the roads for the most part being in wonderfully good condition. We put up for Friday night at Penrith. The little car had run throughout the day in a delightful manner, showing a considerable turn of speed, and its ascent of Shap on top gear augured well for the future.

On filling up for the second stage of the journey, I was pleasantly surprised to find that we had been averaging nearly 60 m.p.g. During the trial this mileage dropped to 50 m.p.g. average for the week, which was not surprising in view of the condition of the roads, the length of the hills, and the high speed which it was necessary to maintain practically the whole time in order to average 20 m.p.h. and adhere to schedule time.

For the second stage of the run, I decided to proceed *via* Moffat and the "Devil's Beef Tub," this route being to my knowledge in good order, very pretty, and also able to provide me with some idea of the car's capabilities on long pulls. At Carlisle I had to enquire the way, and, when asking for Gretna Green, the genial policeman smiled as he directed us. Whether or not he thought the Morgan, with its pile of bags, etc., on the carrier was the modern equipage for flights to the historic blacksmith's shop, I cannot say; anyhow, he was most courteous, and his brogue indicated that we were fast nearing the border.

We arrived at Edinburgh in time to get thoroughly mixed up in the wild "Peace Day" celebrations, which at the time of our arrival had developed into a violent firework bombardment in the streets. Having arrived at our hotel, with no worse injuries than one torn stocking, a scratched shin, and a bruised ankle, we decided to continue our admiration of the firework display from the upper windows.

Sunday morning found us at Croall's garage making our final adjustments, fixing number-plates, filling in numerous forms as to starting condition, etc.

It was a most pleasant day, for as the time went on and other competitors began to report, the meeting of old friends and rivals of many a pre-war trial passed the time rapidly away. With the arrival of the others came very disquieting rumours of the condition of the route, roads which were never noted for their excellent surface were now reduced to the like of nothing on

earth by the haulage of timber. Perusal of the official programme did not improve one's spirits, especially when one was looking forward to a nice quiet tour! for, instead of the allowance of ten minutes either side of mean time and a further allowance of five minutes for passenger machines which had rendered previous Scottish trials so peaceful for the man with a machine which gave no real trouble, four minutes only early or late was the total allowed for error this year; also the programme indicated that checks would be placed every twenty miles or thereabouts. In the old days every fifty miles was nearer the mark, and so from the very start it was easy to see that this was to be no "joy ride" even for a solo rider, and that if any passenger machine got through and qualified for a first class award, its performance would be one of which to be truly proud.

Monday morning's ride from Edinburgh to Crieff over excellent roads dispelled to a great extent the qualms caused by Sunday's rumours. Lunch at Crieff at 4s. per head was an indication which was afterwards proved that another attraction of pre-war Scottish trials was likely to be missing this year, *i.e.*, the excellent, well-served and comprehensive meals at a low cost. The first twenty miles after lunch through the delightful scenery of the Sma' Glen lost some of its charm owing to the near approach of the first non-stop observed hill—Amulree.

Amulree.

Although I have ascended this hill on six occasions, once in the A.C.U. End-to-end trial and five times in Scottish trials—and on each occasion made a clean ascent, my mounts having two, three, and four wheels, my respect for this hill in no way decreases. This year it was undoubtedly in its best form to ensure the loss of "golds." Loose stones, boulders, and grass, with a moist surface all combined to make the really severe gradient and acute hairpins even worse than they were. However, determined not to be outed on the first day, we went at it with grim determination; as the hairpins loomed in view we clenched our teeth, shut our eyes (I think), opened the throttle wide, gave the steering wheel two violent wrenches in alternate directions, and as someone in the little knot of spectators shouted, "Well done, Air Force," I realised we had succeeded in negotiating the corners—the only really fatal part of the ascent—and the little 'bus made light work of the remainder of the climb. We even had to wait outside the check at the top, as I was more than my four minutes ahead of schedule.

Rain was falling quite heavily now, and the descent of Kenmore and the covering of the succeeding ten miles to the Aberfeldy check was an absolute nightmare owing to the terrible road surface, which hurled the poor little Morgan about like a cork on a rough sea. At the night control at Perth it was seen that the first day's run—an easy one in comparison with some to come, had claimed not a few victims—at any rate, so far as first-class awards were concerned.

The Devil's Elbow.

Tuesday's run from Perth to Inverness *via* the Devil's Elbow, Braemar, Tomintoul, to Inverness, over the highest road in Great Britain, I believe, was undoubtedly the stiffest day's run; and the weird blinding which had to be indulged in to keep anywhere near schedule time was simply appalling. Undoubtedly this section, with its awful surface, was the prime cause of a good many of the broken frames and sidecar chassis. Rain had made Corgaff, or Cockbridge Ladder, the second non-stop test hill of the day, slimy to the last degree. We were among the first competitors to ascend, and we roared up over the loose slimy surface hurling the stones and earth in every direction, leaving deep, slimy ruts behind us. I was not surprised to hear that numerous failures were recorded among the later arrivals.

The Grand Prix Morgan going well on Aultnaharie.

It was curious to note that at the foot of this hill competitors were directed round an acute hairpin, while a disused road with a grass-grown surface led straight up the hill. This was the cause of an amusing incident and the filling in of a green protest form at the end of the day. Brady, the rider of a Douglas, resides at the foot of the hill. He knew it like the palm of his hand, and with great confidence took it at speed, in spite of the surface. It appears that, instead of taking the bottom hairpin, he rode straight up the steep grass bank at the bottom, and so direct on to the hill, and at the end of the day's run was much surprised to see that he had lost marks on his pet hill. When told of his error in failing to take the hairpin, he was surprised, as it appears that when a boy he had actually assisted in making the road round the bend, as the direct road was too severe for the horses. He naturally concluded the officials would not choose the easier route.

Impressions of the Scottish Six Days.—

This trial is the first long trial my wife has been through, and this second day's run finally decided her that all of us who rode through the Scottish trials and enjoyed it must be mad, and that this was her last trial. I must say at the time I was inclined to agree with her, but now we are safely back home and look back on the incidents and scenery I am, and my wife is, inclined to look forward to next year's event with as much relish as before.

Aultnaharie.

The third day was only exciting, so far as I am personally concerned, owing to the now famous Aultnaharie hill. We were introduced to this acclivity by easy stages, first by descending it with the full knowledge that if we failed to reclimb it our fate was to remain there for ever or until some kindly steamer or ferry or something chose to remove us. However, in spite of the fact that this hill was the cause of my first lost marks, in company with thirteen or fourteen others I was much disappointed in the hill as a whole. The only really difficult part being the first twenty yards or so, in which distance the road climbed some thirty or forty feet and turned two right-angle bends, the road (I beg its pardon, I mean river bed !) was only about eight feet wide with a high bank on one side and a sheer drop to the beach on the other, and the surface consisted of huge boulders. The way in which we slithered rapidly down this portion with locked wheel had caused us to have great respect for the surface and gradient of this last piece. The one and a half hours' wait in drizzling rain, during which time we all walked up the hill and made mental notes on the best course to steer, did not do anyone any good, and I must admit that by the time it came to make a start the majority of us had keen "wind up."

My first difficulty was to get away at the foot, the non-stop section commencing within five yards of the starting point. It was wet grass, and my wheel flew merrily round for some seconds before I even moved an inch. I then covered the distance to the first corner with much wheel slip, and here the front wheel rested against a substantial boulder, leaving the back wheel nothing to do but spin wildly. After some heaving, with the assistance of several spectators we got the wheels on to a reasonable track, and made a restart. We sailed to the top in excellent style, the gradient past the bends being more or less easy. The knowledge that our "gold" had at last slipped beyond our grasp did not give me such regrets as it might, as I was in most excellent company, for, as was only to be expected, the great majority of passenger machines failed at this point, and, in my opinion, it was almost miraculous that any two-track machines were able to overcome the boulders on the lower stretches at all. Running to schedule was not such a difficult matter as on previous days, as the roads, though only tracks, had quite decent surface.

Applecross.

The *pièce de résistance* of the fourth day's run was the ascent of Applecross, or, to be more correct, Tornapress, as it was this side of the hill which had to be climbed non-stop. The run out was over good surfaces for the most part, with the exception of one stretch near Auchnashellach of about five miles, where the road had been torn to pieces through timber hauling.

In the early part of the day's run there was no difficulty in finding the way, for, apart from the excellent arrowing, the route was strewn with dead livestock, apparently the unfortunate victims of the earlier members. The list included a rabbit, bird, chicken, and, finally, a black cat. Speculation was rife as to which of the various unfortunates in that day's casualty list was the culprit of this deed of ill-omen.

Compared to previous years it seemed to me that Applecross was in better condition, and it was quite a significant fact that this dreaded hill only accounted for two failures, and one of these was due to a stone fouling between the wheel and mudguard. In previous years the majority of failures have been due to overheating. Whether the absence of this trouble this year was due to more efficient engines, three-speed gears, or to the fact that the condition of the hill had improved, would be interesting to know. My only difficulty here was to average 20 m.p.h., as the hill was too steep for high gear and not steep enough for low, and to average 20 m.p.h. for five miles on a 10 to 1 gear was a somewhat trying undertaking. However, apart from somewhat violent boiling, no difficulty was experienced. The Auchnashellach check was missing, and at Jeantown, some ten miles further on, Downie, on the A.J.S. sidecar, presented a somewhat comic spectacle, careering along, wildly shouting for the check; he evidently had "some" fright, for his was one of the very few passenger machines still in for a "gold." The last two days were practically the first two days' routes reversed, the only improvement being that fine weather prevailed. Many cases of hard luck occurred as usual during these two days; for instance, A. H. Alexander (Douglas and sidecar), who up to this point had a clean sheet (a marvellous performance for a 4 h.p. and sidecar), failed on Glendoe owing to the contact screw working loose. An even harder case was that of Dean on the Ariel, who fell, and before he could get out of the way a Harley-Davidson and sidecar had run into his machine, putting it out of action.

Few Tools and Spares.

My only troubles in the last two days were a puncture in the Tomintoul-Cockbridge section. A broken high gear chain in the last section completed my list of troubles, but I fitted a new link in eight minutes.

It was fortunate for me that my troubles were so few, for never before have I ridden through so arduous a trial with so few spares and tools. My tool-kit consisted of one spanner (adjustable), wire screwdriver, hammer, three tyre levers, a chain punch, and tyre pump. As the hills gradually faded away in the blue distance when we neared Edinburgh again I found myself feeling relieved that the strain of driving to so strict a schedule over such trying routes was over.

A few hours spent in preparation for the homeward trip, which was started on Sunday morning: two days' glorious blind without fear of checks, and we find ourselves at the end of, on looking back, a most pleasant holiday.

The Morgan weighed 8 cwt. 3 qr. 14 lb. complete with passengers, luggage, spare petrol, oil, water, etc., as ridden in the trial. It caused much amusement among the Scottish children, and was generally designated as "The wee red 'un." B. ALAN HILL.

CLUB NEWS.

Bristol M.C.C.

The Bristol Motor Cycle Club will hold a members' hill-climb at Blagdon. There will be eleven classes, ranging from miniatures to light cars, which will be run off in pairs, as the hill is wide and safe.

The Dunheved (Launceston) and District M.C.C.

The Launceston district not being provided for in the shape of a motor cycling club, several leading riders recently foregathered and inaugurated the above, appointing Mr. Maurice Prout as secretary.

Woolwich, Plumstead, and District M.C.

Members and friends of the above club are invited to assist in the marshalling and marking of the course for the South-eastern Counties Inter-team Trial on Saturday, August 16th, 1919.

All communications to be made to the hon. sec., Mr. F. J. Ellis, 3, Nightingale Place, Woolwich, S.E.18.

Reading and District M.C. and L.C.C.

The first run of the newly formed Reading Club was held on July 27th, and an attendance of twenty-five was recorded. Alms Hill was the venue, and, the surface being excellent, several made good climbs.

Ballymena and District M.C.C.

A novel competition was recently arranged by the Ballymena and District Motor Cycle Club, with a view to demonstrating the advantage of benzole in the matter of consumption. The course was accurately measured, and to secure consistent driving a speed judging test was included, the first circuit of twenty-three miles being covered on petrol and the second on benzole. All the competitors found decreased consumption with benzole, in one case the rider obtaining a 50% better mileage per gallon, the average increase of mileage being 30%.

Future Events.

Aug. 9.—Bristol M.C.C. Members' Hill-climb at Blagdon.
Aug. 10.—East Midlands Associated Clubs. Social Run, Monsal Dale.
Aug. 10.—Reading and District M.C. and L.C.C. Run to Burnham Beeches.
Aug. 10.—Birmingham M.C.C. Social Run to Monsal Dale.
Aug. 10.—Rochester, Chatham, and District M.C. Secretary's Surprise Run.
Aug. 16.—Rochester, Chatham, and District M.C. Competition for Woolwich Cup.
AUG. 16.—S.E. COUNTIES INTER-CLUB TEAM TRIAL.
AUG. 16.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR THE PALMER CUP.
Aug. 16-17.—Oldham and District M.C. Reliability Trial for Bradbury Cup.
Aug. 16-17.—Wolverhampton M.C.C. Reliability Trial to Barmouth for the Eric Williams Shield.
Aug. 17.—Rochester, Chatham, and District M.C. Run to Herne Bay.
Aug. 22-23.—Essex M.C. Annual Run, Woodford to York and Back.
Aug. 23.—Birmingham M.C.C. Hill-climb.
Aug. 24.—Rochester, Chatham, and District M.C. Run to Wateringbury.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
Aug. 31.—Birmingham M.C.C. Social Run.
Aug. 31.—Rochester, Chatham, and District M.C. Run to Hawkhurst.
Aug. 31.—Woolwich, Plumstead, and District M.C. Picnic and Gymkhana at Brasted Hill.
SEPT. 5.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
Sept. 6.—Birmingham M.C.C. Reliability Trial for Songster Cup.
SEPT. 15-20.—A.C.U. SIX DAYS' RELIABILITY TRIALS.
Sept. 19.—Essex M.C. Gymkhana.

Sheffield and Hallamshire M.C.C.

The recent trial of the above club for the Stacey Cup from Sheffield to Pickering and back *via* Thirsk and Sutton Bank proved very interesting, in so far as eight of the fourteen entries were unsuccessful in climbing the famous hill at the first attempt. Only three competitors checked in on time at the top of Sutton, these being D. Kaye (4 Triumph), S. Sawyer (4 Norton sc.), and A. Flint (8-10 Morgan), and as they all finished without trouble the cup winner is amongst them, but the check sheets are not yet in.

The Public Schools M.C.C.

At a recent committee meeting twenty-three new members were elected. A full programme has been arranged for the month of August, so as to give public school boys on their holidays a chance to take part in these competitions, and to make the acquaintance of their fellow-members. The events decided upon are the following:

August 16th.—Surprise competition. Meet at Purley Corner 2 p.m. Entries close August 12th.

August 23rd.—Day run to Alms Hill. Novel hill-climbing competition.

August 30th.—Hill-climb. Entries close August 12th. The usual classes will be run, and a special prize is offered to riders of two-stroke motor cycles if at least five entries are received of this class.

Ealing and District M.C.C.

Major Low's Petrol Consumption Trial will be held on Saturday, 16th August, at 3 p.m. The venue will be on the Portsmouth Road, 1 mile before the Hut Hotel, Wisley (at the corner of the by-road on the left travelling from London).

A 1½ mile course will be taken by competitors. Horse-power, weight, age of machine, and windage will be taken into consideration in determining results.

After the trial a ticket will be given to each competitor, showing the consumption of his machine. Competitors will choose their own speed up to legal limit. Major Low will act as one of the judges and is presenting a Thermos flask to the winner. The trial is open to members at an entrance fee of 2s. 6d., but all riders are invited to come and witness this interesting event.

Major Low's special apparatus, which up to the time of the signing of Peace was a jealously-guarded secret, will be used for the first time in a public trial. The event will be closed by a social run and tea at a near-by hostelry.

A SPORTING HALF-DAY TRIAL.

THE closed reliability trial held by the North Birmingham Motor Cycle Club on Saturday, July 26th, was one of the most successful half-day events yet held in this district. The course was a secret one, and the route cards supplied at the start were not marked by any names of places, but had been drawn up very clearly, and gave directions such as "Turn right at stone cottage, over brook bridge, first turn left," and so on. Of course, this meant that the careless unobservant rider very soon lost his way. The start was from headquarters, the Acorn Hotel, Erdington, where twenty competitors faced the starter. Among then was Miss N. Hough on a Skootamota, the only scooter entry. The speed allotted to the motor cyclists was 18½ m.p.h., but the officials made a special concession for the scooter to run at 13½.

The course ran through Sutton Coldfield on to Lichfield. Here the non-stop section commenced.

Leaving Lichfield, and getting into the by-lanes, competitors soon realised the nature of the trial—a steep, rutty hill, under observation, soon hove in sight. No one appears to know the name of this hill, but quite a few will respect it in future.

Gentleshaw Hill was the next item. The gradient here is 1 in 7, but the surface very bad. Here the official reported that the tiny scooter scored over the others.

The watersplash (which was fairly deep in places) presented no difficulties to the scooter, which reached the other side without any mishap. Other competitors who were still in the running got across well, some charging it at speed, and others using more discretion. Two more rough hills and the brake test followed. The hills knocked out one or two more riders, and the brake test was rather severe. A warning of thirty-five yards was given, but this was not sufficient for some. J. R. Brock did not pull up his big combination until fifty yards past the tape. J. R. Roberts (2¾ Douglas) shot past and pulled up in thirty-five yards.

Several competitors approached from the bottom of the hill, having lost their way, and naturally, wondered what the tapes were for. Every competitor had commenced the run with a hundred marks to his credit, and the penalty here was a mark for every foot past the tapes. The last observed hill followed immediately, and was in the neighbourhood of Stile Cop, Rugeley; this hill was in better condition than the previous climbs.

At the start of the trial each man had received a sealed envelope with instructions not to open unless hopelessly lost. One or two men who had lost no marks on the course had lost their envelopes, so were disqualified.

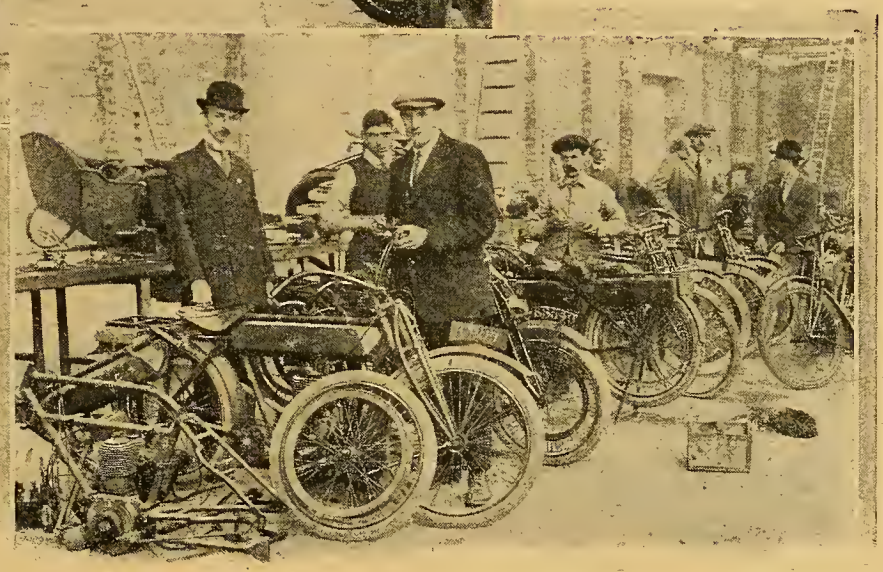
The chief award for best performance of the day went to Miss N. Hough, 1¾ A.B.C. Skootamota, who climbed all hills, passed the hairpin, watersplash, and brake tests satisfactorily and without loss of marks, and finished within 1m. 24s. of her allotted time schedule of 13½ m.p.h. This lady, therefore, takes the Bayliss Trophy, club gold medal, and also the special prize for best performance by a fixed gear machine.

The second prize, together with club silver medal, goes to Seymour Smith (2¾ h.p. Ivy two-stroke).

Third prize, and club bronze medal was won by F. Southern on an 8 h.p. Morgan.

FROM WAR TO PEACE.

A Visit to the Slough Motor Depot.



(Left) Overhauling engine at the Slough motor cycle repair shops.
(Right) Inspectors examining work.

SO much has been heard of the Slough Motor Depot scandal that it is somewhat refreshing to be able to give a short account of the work carried on there.

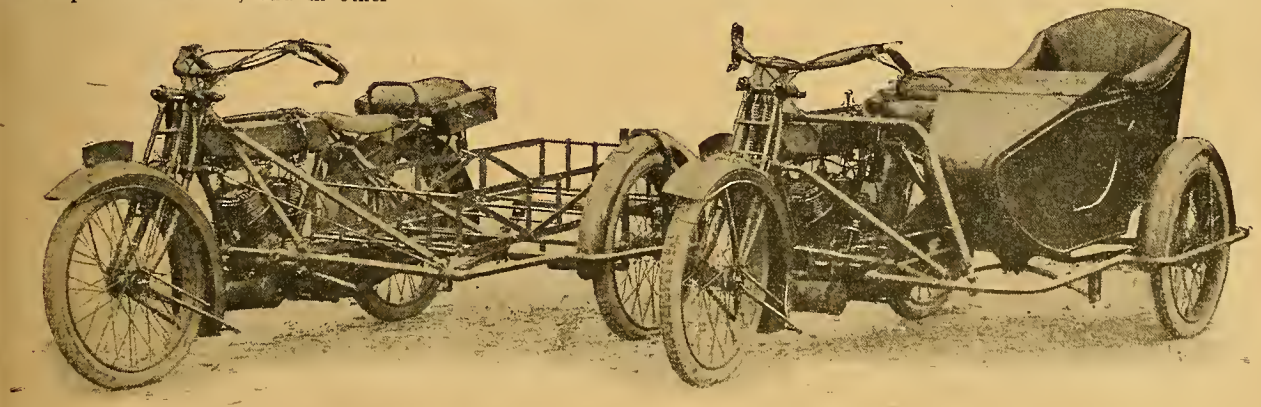
Few of our readers have ever had any inkling that a large number of motor cycles of all kinds are overhauled at the Slough Motor Depot. At the present time some 200 machines per week are turned out, but the output is shortly to be increased to 250 to 300 per week. All machines to be repaired are mounted on special benches 2ft. high, so that the men can work upon them conveniently. A special depot is set aside for the repair of magnetos, while the vulcanising of tyres is also carried out. A sound job is made of all the repaired machines, but no attempt is made to finish them artistically.

We were shown over a whole shopful of repaired motor cycles ready for disposal. Among them were a number of J.A.P.-engined Clyno sidecar outfits, provided with special carriers for ammunition. These are in some cases being used for the transport of milkcans, and in other cases they are being removed altogether so that any sort of box body may be fitted.

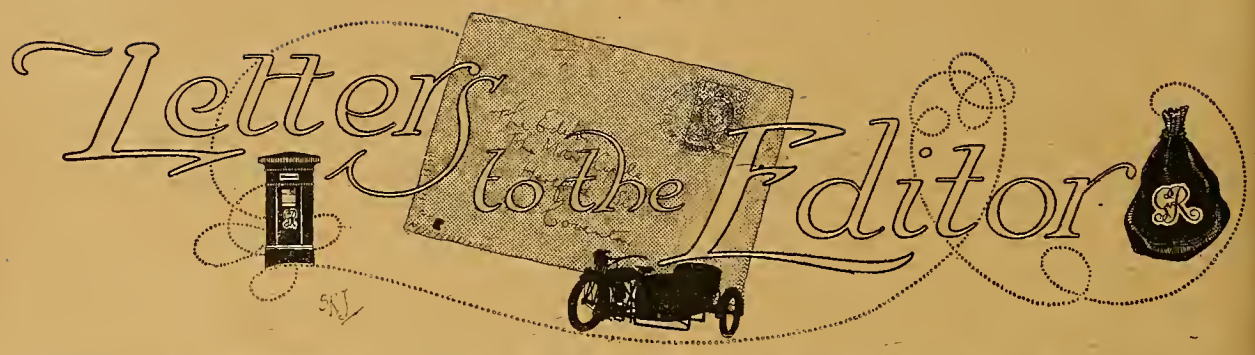
War Motors Association.

In view of what has been written lately concerning the War Motors Association, we had a long conversation with Col. Holbrook on this subject, and the information he gave us did not exactly agree with that given to us by the Association. According to Col. Holbrook, the machines will not be sold on application through the A.C.U. to the War Motors Association at a reasonable price, but at full market value, less some trivial sum of, say, 2½%. The Disposal Board is openly out to obtain the best possible prices for Government stores, consequently the discharged soldier will have merely the privilege of buying direct and not through an auction, and very little reduction in price will come his way.

This information will no doubt be received by our ex-Service readers with considerable disappointment, and we regret that there seems little likelihood of any special consideration being given.



The machine on the left is a Clyno fitted as an ammunition carrier, and that on the right a rejuvenated passenger outfit. Several of the ammunition carriers have been sold as they are for carrying milk cans.



The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

AN EMERGENCY TUBE.

Sir,—I recently got stranded with a burst tube on my Harley-Davidson machine, and was unable to get another. An idea suddenly struck me that perhaps I could manage to use a "push" bicycle tube 28in. × 1½in. in my 28in. × 3in. cover. This I did quite satisfactorily, and put enough wind in the tube to make the tyre quite hard, and rode a further sixty miles, non-stop, to my destination. My machine is a very heavy one. C. P. BESWICK.

SMART WORK.

Sir,—It was my misfortune to break the chain-stay connection of my combination last Saturday, between Reading and Basingstoke (and I noticed that I was not the only one with that complaint, owing to the shocking state of the roads). But I write this in praise of the manner in which Messrs. Grover and Smith, of Basingstoke, tackled a very nasty repair, notwithstanding the works being closed for the holiday. Mr. Grover himself undertook the case, and turned me out a really "top-hole" job at an extremely moderate price, in double quick time. It is refreshing, after being "told off" recently by five repairers in Clacton for quite a simple matter, to find a quick and willing man.
Saffron Walden. H.K. 4441.

FINDING A WINNER.

Sir,—In your issue of July 17th you publish a letter from Mr. J. L. Norton setting forth certain tests to be embodied in the Birmingham motor cycle open passenger trial. This letter was most unfortunate on the eve of the trial, and was likely to mislead competitors as to what they had to do, the allowances to be made, and the method of carrying out the tests.

Mr. T. Silver and myself were joint hon. trials secretaries for this trial, and if publication affecting it were left to the officials appointed by the club, conflicting statements would be avoided.

The details given by Mr. Norton were discussed at a meeting, but the trial printing was then already out. However, I hope the "Stable" information did not upset the riders, and that for the future those responsible shall be the ones to rush into print. S.-KEMPSON JONES.

AMATEURS IN COMPETITION.

Sir,—I should like to call the attention of particularly the various club officials and committees to the present position of the genuine amateur in competitions, especially hill-climbs, which, I am afraid, is far from satisfactory, and could do well with reform.

To begin with, why is it that in all competitions the "professional" rider, or one who is interested directly or indirectly with the manufacturer, is allowed to compete with the amateur on the same level when the former has such a huge and unsporting advantage over the latter? Or, to put it more fully, is it fair for a genuine amateur who can only make a few minor adjustments to his machine in his spare time, prior to entering for a hill-climb, to compete against a man whose work it is to know every particle of his machine and how it is made, who is given by the makers a machine in absolutely tip-top trim both mechanically and in every other conceivable detail (and this absolutely regardless of time and expense), and who in some cases actually brings his machine to the venue of the climb on a conveyance from the works?

And yet these two are asked to compete against each other on the very same footing. It cannot for one moment be contended that the unfortunate amateur has the slightest chance against the "pro," and to overcome this unfairness why cannot there be a class or classes for amateurs only, and, if only one class, for the result to be worked out on formula?

Again, even in a reliability trial, the "pro." who has ridden in so very many of these, and whose firm will spend plenty of money on new tyres, etc., has an undoubted advantage over the amateur who takes his motor cycle just as it is for the sport of the thing.

I think it would be a really good move for the club officials and committees to reform their usual arrangements in this respect, as the tendency now is without doubt for the real amateur, however keen and however sporting, to give up all hope of taking part in competitions under the present arrangements. C.L.W.

Malvern Wells.

SERVICE.

Sir,—While the question of service is receiving attention in your columns, may I draw attention to the habit of some manufacturers of making promises of despatch which they have no intention of keeping.

Their promise of despatch in a few days tempts one to keep an engine running with a makeshift device. When the part eventually does arrive it is found the makeshift has caused serious wear or damage.

Manufacturers would be better advised to state a date by which they will despatch rather than "promise." One could then make adequate arrangements.

A purchaser feels satisfaction when goods arrive on or before the specified date, but his feelings are the reverse when he has sent cash with order and waits several weeks after the promised date.

Manufacturers should realise that their advertisements carry no weight when one of their customers advises one not to deal, and also that motor cyclists do compare experiences with one another. DAMAGED PULLEY.

Co. Meath, Ireland.

THE CHEAPEST MOTORING FOR TWO.

Sir,—In *The Motor Cycle* of July 24th, I notice a letter by "Private Owner" on the subject of "Cheapest Motoring for Two." I have been a motor cycle enthusiast for about four years, commencing with the smallest of lightweights and ending with a 6 h.p. sidecar outfit, sampling various types of machines in the interim up to that horse-power. I fully appreciate "Private Owner's" point when he says: "'overalled, disreputable, up to one's eyes in dust or mud' days of motor cycling."

I am now in possession of a runabout, and, without doubt, for those who want a private motor vehicle with protection from the elements and efficiency, and yet who cannot afford a car proper, a runabout type of machine is certainly "the goods." In short, two persons can travel enjoying the comfort of a car and with the speed of a sidecar outfit, and, in some cases, possibly faster. These miniature cars, moreover, have amongst their ranks excellent hill-climbers. Petrol consumption may be slightly heavier, but surely that is not a great fault. Expensive sidecar outfits have a serious rival in cycle cars, for, over a three-wheeled runabout, a sidecar outfit has no points to commend it.
Chatham. SPEED AND COMFORT.

SPARE PARTS.

Sir,—I had the misfortune to be run into by another motor cyclist who came round a corner on his wrong side. The two bottom shackles and the back bottom spindle of my front forks were rendered useless. That same afternoon I wrote to Messrs. Robinson's, of Green Street, Cambridge, asking them to forward me the parts by letter post, and enclosing an amount which I was certain would easily cover the cost. The parts arrived by return of post.

Egglescliffe. HIGHLY SATISFIED.

Sir,—In these days when repairs seem to take such a time to be done, it is most gratifying to find a firm who not only have spare parts available for early models, but, futhermore, give immediate attention to the needs of their customers. I refer to Messrs. Chater-Lea, Ltd., of Banner Street, E.C.

Having some trouble with the clutch on a second-hand machine of their make I took it to London and had it dismantled, the necessary new parts supplied and fitted, and the whole thing reassembled and adjusted in under ninety minutes, and received from everyone with whom I came into contact at the works both courtesy and interest of a type which must not only ensure old customers remaining satisfied but make new ones.

I am not interested in the firm in any other way than as a private rider of a Chater-Lea machine, who appreciates treatment of this description, and trust you will find space in your paper to publish the foregoing. E.M.

Worthing.

Sir,—I see by the letters from the readers of *The Motor Cycle* that there is a large amount of negligence in regard to the supply of spares to second-hand machines. I have had a similar occurrence myself, and it will probably save many people a good deal of inconvenience if it was published. Fifteen weeks ago I sent an Armstrong gear to a firm near London, who were advertising repairs to any gear inside twenty-four hours. A week later the invoice arrived asking for it to be settled at once so as to get the repairs in hand. The cash was sent by the following post, and three weeks later I received the wheel, but as it was very unsatisfactory and could not be used I had to return it again to the repairers.

Since then they have not acknowledged the receipt of the wheel, or answered any letters written to them about it. Recently I wrote asking them to return the wheel repaired or otherwise, but again they refuse to acknowledge the letter. I should be very pleased to give the name of the firm to anyone interested, or who may have hub gears to repair, to prevent any similar occurrence. H. HAWES.

TWIST GRIP CONTROL.

Sir,—May I add a word in support of the letter of "Captain, R.H.A.," in your issue of July 10th with regard to what "Ixion" calls "Yankee stuff"?

The superiority of the twist grip over the ordinary system of control is incontestable both as regards reliability and easy working. I only know of two cases of breakage in three years' experience of pre-war Indian motor cycles. Other advantages of this American twin which come to memory are: A smoother running and more accessible engine, stronger wheels and, last but not least, the great civility shown by the manufacturer to the private owner in small matters. I ran a 1913 6-h.p. twin fitted with what was popularly supposed to be the best British engine of its type for a year, but cannot say that, either in reliability or workmanship, it came up to what I hoped after the "Yankee stuff," but, of course, I may have been unfortunate. CAPTAIN, R.E.

France.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—I have noticed correspondence in your journal from motorists who criticise the motoring bodies, and assert that they are merely receivers of subscriptions, giving nothing of value in return.

I am a member of the A.A. On the 16th June I reported the theft of my motor cycle combination to the Association, and they immediately circulated among the A.A. road patrols a description of the machine. On the 19th I was agreeably surprised to learn by telephone that a patrol had found my machine in a country garage sixty miles from my house. Within three hours I identified it as mine!

Others may belittle the advantages of membership of the A.A. and doubt the efficiency of and necessity for A.A. patrols. Personally I never had any doubts on the matter, and now I have had an experience of their value.

R. POLITI.

SPEED JUDGING.

Sir,—I was very pleased to see in *The Motor Cycle* dated July 24th that the Sheffield Club intend organising a speed-judging competition, when the police will be invited.

I was recently stopped, and subsequently fined, for driving a motor cycle to the public danger. The uniformed representative of law and order who stopped me informed me in a very authoritative tone that I was travelling at 40 m.p.h. Of course, it is not always wise to argue with "Robert," so I let the remark pass by, saying my speedometer never told lies. As a matter of fact, I was travelling at 28 m.p.h. according to my speedometer, which was perhaps above the limit at the spot where I was stopped.

However, the above incident goes to prove that the pedestrian generally has very little notion of speed-judging.

Abergele. A SPEED MERCHANT.

PLEASE QUOTE PRICES!

Sir,—I feel that a statement made by H. T. Bartlett in in your issue of the 24th of July should not be allowed to pass unchallenged.

While expressing his opinion on the question of the inclusion of prices in manufacturers' advertisements appearing in your columns, he refers to the lack of courtesy shown by some firms through failure to answer enquiries even when stamped addressed envelopes are enclosed.

The statement is wholy illogical, since failure to reply to a communication may be due to a number of causes, discourtesy being the least likely of any.

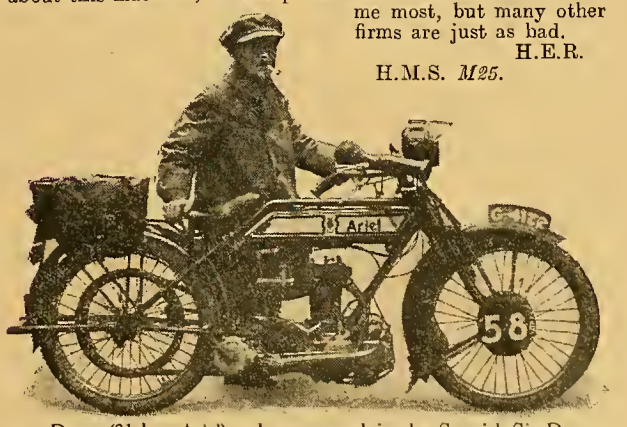
The most prevalent reason is that the resources of nine out of every ten firms are, owing to the changing over from war to peace-time production, hopelessly overtaxed, with the result that both works and offices are congested to a degree never known before. Add to this the unprecedented number of enquiries for machines, engines, and parts due to five years' "famine," and it will be seen that the manufacturers are not so black as painted by your correspondent.

R. W. PAUL.

Sir,—I have been a subscriber to *The Motor Cycle* since 1906, and, as far as I can remember, regularly, every year the same complaint has appeared about the lack of information contained in the advertisements. Many advertisers seem to be quite indifferent to the fact that *The Motor Cycle* penetrates into many inaccessible parts of the world. Take my own case, for example. By the time *The Motor Cycle* has managed to get through the barrage of postal and transport officials up to the North Dvina front about six weeks have gone. Having at last received my paper, I eagerly turn to the Scott advertisement, as I am very much attracted by this machine, but what do I find? Not a word as to the price or date of delivery; not the name of a single agent. Personally, I feel very much inclined to bother no further about this machine; I have picked out the case that interests me most, but many other firms are just as bad.

H.E.R.

H.M.S. *M25*.



Deans (3½ h.p. Ariel), who competed in the Scottish Six Days Trial, had a clean sheet until the fifth day, when he fell in front of another competitor, receiving slight injuries to himself and having his machine badly damaged.

MERCURY AS AN AID TO COOLING.

Sir,—The letter of "C.O.P." will by now have caused a tremendous stir in all chemical and metallurgical circles. Here we find announced a most epoch-making discovery, *i.e.*, that mercury Hg in contact with aluminium Al in a confined space so reacts as to form aluminium oxide.

This constitutes getting something from nothing, or, rather, oxygen O from two other *elements*, upsets the whole atomic theory, and should revolutionise modern chemistry, giving grounds for new processes for the manufacture of oxygen, corundum, alundum, and many other substances. Perhaps "C.O.P." will be kind enough to give us a few details of his brain-wave, or, at any rate, the equation by which he gets his reaction. Failing that, he might perhaps give us a few tips on perpetual motion, which comes in more or less in the same street. F.M.

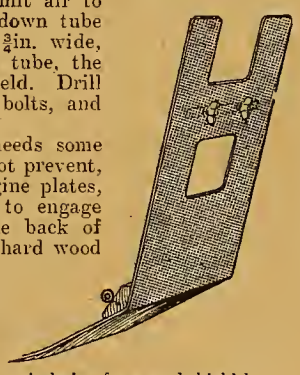
Aylesbury.

THE MUDGUARDING PROBLEM.

Sir,—I wonder why motor cyclists, especially those who use motor cycles in all weathers for business purposes, do not exercise a little ingenuity and provide themselves with front mudshields. Even in fine weather the town rider has to ride over watered roads, and the front wheel invariably sprays his legs with muddy liquid.

I have used a solo machine for occasional professional journeys since 1911, and I soon found that overalls did not enhance my appearance on such occasions. The remedy was simple, and so easily applied that I have not ridden without a shield for at least seven years.

My method was to take a sheet of three-ply wood, about 18in. wide and long enough to reach from the top of the tank to near the bottom of the crank case. Cut a slot for the tank, a square hole to admit air to the cylinder, and clip to the down tube by two flat iron strips, about ¾in. wide, one bent to go half round the tube, the other flat on the back of the shield. Drill the strips and shield for two bolts, and secure with wing nuts.



A design for a mud shield by "Anti-overalls."

The bottom of the shield needs some staying. If the silencer does not prevent, an easy way is to drill the engine plates, and push a ⅜in. rod through to engage with ⅜in. screwed eyes on the back of the shield. Distance pieces of hard wood screwed to the shield to carry the eyes make a better job, and may be utilised to carry a backward extension of the shield under the crank case.

The comfort of the arrangement has to be experienced to be believed. Your feet and legs escape all mud, and may be garbed to taste, provided your engine is not of the oil-slinging breed; also most of the draught is kept off your legs. The engine, and all parts from the steering head to the back mudguard, keep much cleaner.

For wet weather, wear leather leggings to keep the rain out, and to protect from the knee upwards there is nothing to beat a good length Burberry (*not* the motor cycling design, which is too short). Take a full length coat which has a long slit behind. Attach press buttons to front edges of coat (inside) and to back of skirts (outside) in such positions (found best by experiment) that, when sitting with the tails brought between the legs and turned each side over the thigh and *under* the edge of coat and press-button fastened, the pair of loose knickers so formed reach well over the knees. You can "paddle off" without opening the fasteners, and, if you *do* get caught up on any projection, the fasteners open to a pull and relieve the strain.

As to appearance, the dress looks quite "Christian" either on or off the machine—undo the press buttons before you call on your rich aunt!—and the shield is certainly not unsightly. The best disguise for the shield, if of wood, is a coat of *dead* black paint.

The most effective and best-looking of proprietary shields that I have seen is a moulded (*papier mâché*, I think) shield which is supplied as an extra with the "James" big single. I used one on a sidecar outfit for two years in all weathers doing special police duty, and never wore overalls; yet the spotless condition of my black boots and leggings (black was "regulation") in bad weather always roused comment.

A mudshield is certainly worth while, but, to be satisfactory, it needs to be designed for the machine, and if the manufacturer of your particular "iron" does not specialise a shield to fit I should say "make one yourself." But—anchor it firmly, or the rattle will drive you crazy.

As to windage and inadequate cooling, I know a solo with 2¾ h.p. (75 mm. × 75 mm.) engine of about 1908 vintage, fitted with shield as above described, which will touch 40 m.p.h. and keep up 30 m.p.h. indefinitely without any signs of overheating, which isn't bad for an "old 'un."

ANTI-OVERALLS.

PILLION RIDING.

Sir,—Mr. A. C. Robbins's remarks on pillion riding make me feel more sorry for him than anything else. If the passenger on the carrier sits well forward and the rider assumes a semi-T.T. position, the resultant centre of gravity of the two bodies works out at practically the same position as the rider who uses touring bars and sits bolt upright. For instructional purposes I always sit on the carrier with people riding their first motor bicycle, and find it a simple matter to balance the machine. I have ridden many thousands of miles with various passengers on the carrier, and have ridden on the carrier for many more. I have, incidentally, tried several sidecars, and have, on each occasion, come to grief. On more than one occasion I have travelled at speed with two people on the carrier, and have never had any accident. Y.C.

H.M.S. *Barham.*

Sir,—I have been interested in the opinions expresed in recent issues regardiug the dangers of pillion riding.

My own experience on all the machines which I have owned or ridden is that the danger is almost entirely due to weight distribution on the machine, and not to carelessness or lack of skill on the part of the driver.

With a heavy person in the saddle and a lighter one on the carrier, very little difference is noticed in steering or control, but, when the positions are reversed, the machine immediately becomes unmanageable and dangerous.

Bramcote. F.W.H.

Sir,—I should like to endorse the statements of "Regular Flying Officer (Pilot)" on the above subject.

Though my machine is capable of taking a sidecar, I do not care to pay the exorbitant prices now in vogue. Also, I have not, as a demobilised officer, the means of affording even a cheap one. Therefore, if I want to take a passenger my carrier must do the work.

I cannot agree with your correspondent, Mr. A. C. Robbins, in your issue of the 24th ult., wherein he points out that "motor cycle pillion riding is most dangerous, and acknowledged as such by those *who indulge in this practice.*" Surely those who consider it a dangerous pastime should be the very people to abstain from indulging in it. Of course they may be, and probably have been, carelessly unfortunate—history does not record.

There certainly is no necessity for a spill, when proper care is observed through villages, past turnings, etc.

Many will agree that, when once pillion riding has been made an offence, motor cycling as a sport will lose a great deal of its charm, and the stranded rider will be without that friendly lift, which is part of the courtesy of the road.

Stevenage. RUDGE MULTI.

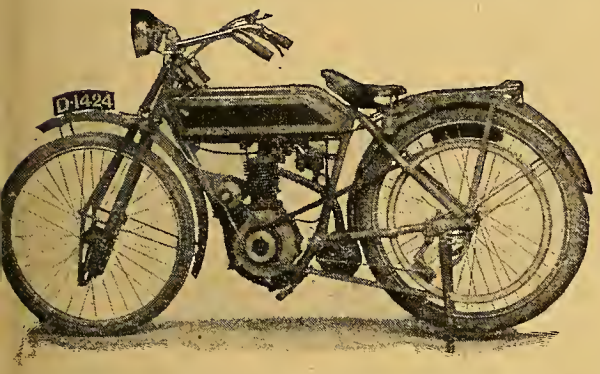
Useful Books and Maps for Motor Cyclists.

	Price	By post
"THE MOTOR CYCLE" ROAD MAPS. England and Wales, Scotland, London (showing roads into and out of London and avoiding London). Mounted on linen. Set of three, complete in case	net.. 4/6	4/10
"HINTS & TIPS FOR MOTOR CYCLISTS." Full of useful "wrinkles" and little items of sound advice on the management, repair, equipment, and general care of a motor cycle. It will be found invaluable to all those who are thinking of overhauling their machines. *Sixth edition (2nd reprint)*	2/-	2/3

Obtainable by post (remittance with order) from ILIFFE & SONS Ltd., 20, Tudor Street, London, E.C.4, or of leading Booksellers and Railway Bookstalls.

A New Dynamo Lighting Set.

A Compact Generating Unit. Minimum of External Wiring.



The Mortley motor cycle dynamo set fitted up in 1913 to a 1904 Quadrant and still working satisfactorily. In this case the generator supplies current for the ignition as well as the lamps.

MOTOR cyclists will be interested in a dynamo lighting set suitable for solo machines which Messrs. G. E. Mortley and Co., Nelson Road, Tunbridge Wells (now engaged upon aircraft wireless generators), hope to manufacture in quantity in time for the next lighting season.

The set is very neat in appearance, and is well finished, the equipment comprising the dynamo, which incorporates the governing device, and an automatic battery switch; a compact battery specially designed to stand vibration; a light but robust head lamp, with enclosed focussing lamp holder and a well made reflector; a cast aluminium tail lamp, the holder withdrawable for use as an inspection lamp; and a combined switch, battery, and meter box designed to be fitted to the top tube.

Tested Since 1913.

The automatic switch referred to above is operated by centrifugal force, which renders the whole of the electrical output of the generator available for lighting.

A noteworthy feature of the outfit is the extreme simplicity of the wiring. The whole equipment requires but three leads radiating from the switch box: one to the generator, one to the head lamp, and one to the rear lamp. This has been made possible by the simple system of switch gear, details of which are not available for publication at the moment.

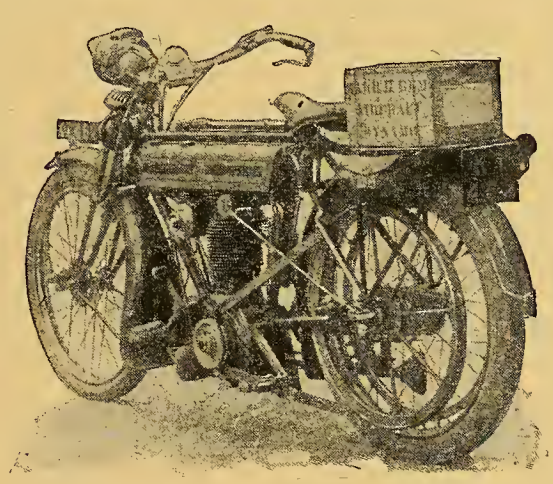
The Mortley dynamo and ammeter showing the pulley for attachment to the engine shaft.

One of the illustrations shows an outfit fitted in 1913 to a 1904 Quadrant, one of the earliest dynamo lighting sets fitted to a motor bicycle. In this case, the dynamo supplies current for the ignition as well as for the lamps and horn.

The dynamo has a normal output of 20 watts, a voltage of 5 volts (15 volts open circuit), the battery weighs approximately 5 lb., the head lamp 2 lb. 3 oz., the tail lamp 4 oz., the Popular type of switch 9 oz., while the total wiring weighs 7 oz.

Two sets are to be supplied to the public: one known as the Popular, and the other as the De Luxe.

The dynamo set in question is on view at the British Scientific Products Exhibition, Westminster Hall, London, S.W.1.



A dynamo lighting set fitted to a 3½ h.p. Triumph. Note the ammeter on the handle-bars.

LIGHTING REGULATIONS.

FOR the benefit of those who are not *au fait* with the requirements of the authorities for England, Scotland, and Wales, the Automobile Association has issued the following simple digest of the lighting regulations:

Between half an hour after sunset and half an hour before sunrise every motor car and motor cycle with sidecar attached must carry:

(A.) Two front lamps displaying white lights—one on the *extreme offside* and the other on the *extreme near side* of the vehicle.

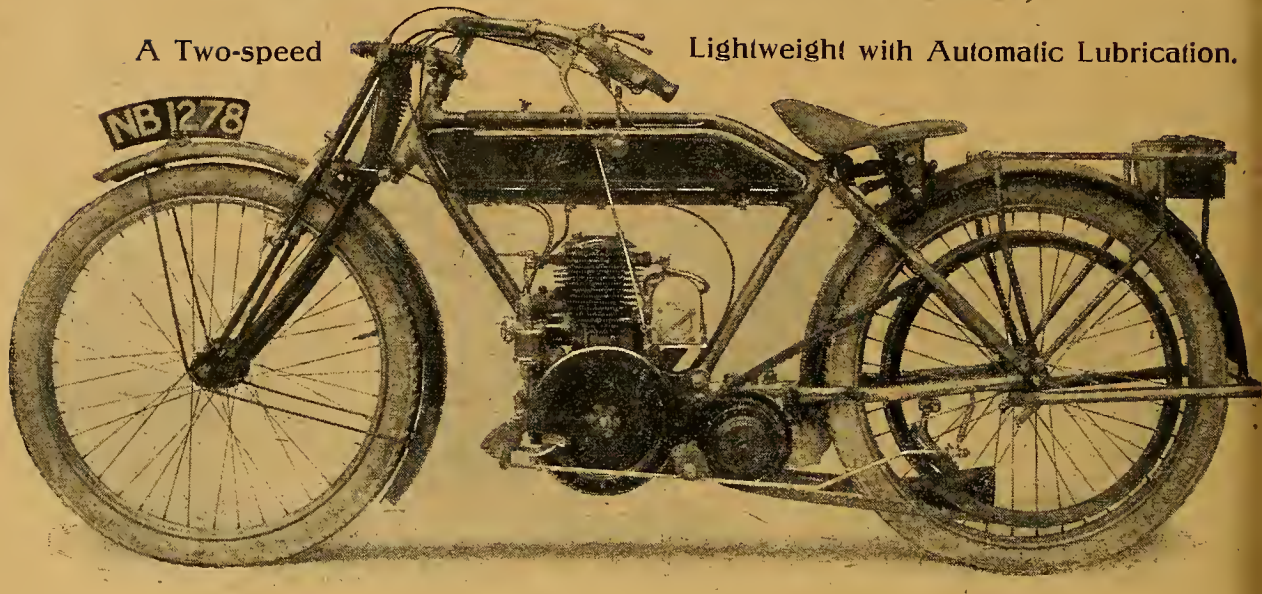
(B.) Rear lamp displaying a red light to the rear on the *offside of the vehicle.*

DON'T have an ELECTRIC lamp exceeding or giving greater candle-power than twenty-four watts.

DON'T have an ACETYLENE lamp consuming more than twenty-one litres (or threequarter cubic foot) per hour. If these powers are exceeded or the diameter of the front glass exceeds 5in., obscure (with a thickness of white tissue paper, or other material of similar obscuring effect), the whole of the front glasses of electric or acetylene lamps.

The Scale 350 c.c. Two-stroke.

A Two-speed Lightweight with Automatic Lubrication.



The improved Scale two-speed two-stroke model, fitted with a 350 c.c. engine and automatic lubrication.

THE Scale two-stroke motor cycles enjoyed quite a good reputation for sturdy construction before war requirements compelled their temporary withdrawal from public notice.

The makers, Roberts and Hibbs, Bank Street Works, Droylesden, Manchester, are now re-entering the field with a much improved model embodying the "Precision" 350 c.c. two-stroke engine which we described in our issue of May 29th last. This engine, as our readers are no doubt aware, is automatically lubricated from the sump, the magneto driving chain being used as the oil distributing agent.

Two types are being made, a plain two-speed model and a two-speed, clutch and kick-start model, listed at 65 and 70 guineas respectively.

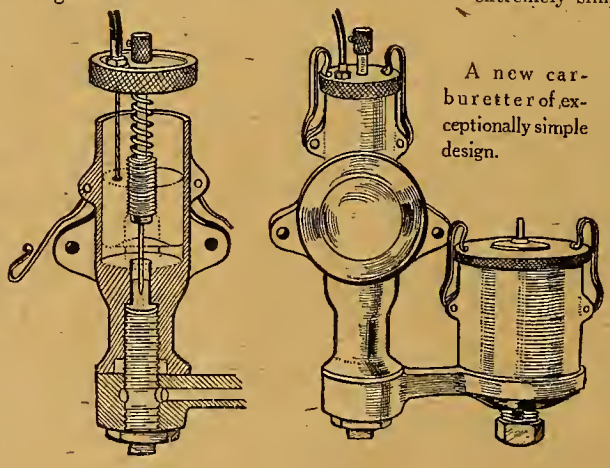
Frame construction is on standard lines, and special attention has been paid to securing comfort for the rider by corporating Brampton Biflex forks a an XL'All saddle. The tank tap slightly to the rear, and has a large pet capacity, since all the oil is carried the engine. 26×2¼in. tyres are fitt and T.B. magneto and Amac carburet complete the specification. The gene appearance of the machine is very go being finished in deep crimson, lir black and gold with grey panelled tan

The S.U. Single Lever Carburetter.

IT is exceedingly gratifying to note that several firms, who have studied the question of carburation for years, and have made their names by supplying carburetters to high-class motor cars, are at last turning their attention to developing an efficient one-lever carburetter for motor cycles.

The S.U. Carburetter Co., 154, Prince of Wales's Road, Kentish Town, London, N.W.5, are hardly new-comers into the motor cycle world, as they made quite an efficient little carburetter for motor cycles in 1914, and, with one of these, which worked on the well-known S.U. atmospheric principle, we gained a gold medal in the Edinburgh Run in that year on a 2¾ h.p. Douglas. The later model, however, no longer employs the atmospheric method.

The carburetter works in the following manner. In the vaporising chamber there is a barrel which is moved up and down by means of a Bowden wire controlled by a lever on the handle-bars. In this barrel there is screwed a tapered needle holder, and the tapered needle held in this passes up and down the jet orifice. In the closed position, the jet is completely cut off, and the air is also shut off, and it will be seen that the throttle barrel has the dual capacity of air and throttle control, with the result that we get the simplest form of carburetter known, namely, the straight-through pattern. The tapered needle holder is screwed into the barrel, and can be controlled from the exterior of the carburetter by means of a small milled nut, the spring shown in the illustration serving to prevent the nut from turning through vibration. As the throttle is opened, more petrol and more air, in correct proportions, are admitted to the engine.



A new carburetter of exceptionally simple design.

The external adjustment allows t driver to thin down the mixture so th he may run at ordinary touring spe as economically as possible, and when wishes to hurry or arrives in a hi district half a turn of the milled nut v enable him to get the full power out his engine.

One of the chief advantages of the S. motor cycle carburetter is that it extremely simple, and that there are o about ten moving pa It works on the w known S.U. princi except that in this c the control is mechani and not atmosphe

It must be underst that this carburetter not intended to be s denly opened, and it necessary, therefore, open the throttle gra ally, when excell acceleration, with ple of power, will be tained. The slow r ning is perfect, as it possible to do a fig 8 in the road on gear with the eng firing slowly and re larly.

QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Knocking.

My countershaft 3½ h.p. Rover motor cycle goes well on the level, but knocks and stops on a slight incline. I have tried a new carburetter without any improvement. The M-L magneto gives a good spark. Valves timed as follows: exhaust closes dead on top of exhaust stroke. Inlet opens immediately afterwards. Ignition platinum points open with piston dead on top of compression stroke, lever two-thirds retarded. I have lowered compression by inserting cardboard washer (1/16in.) between cylinder and crank case.—M.J.J.

The adjustments and timing of your engine appear to be quite in order. We are therefore inclined to think that the engine needs decarbonising, probably the valves require grinding, and, further, it may be that the sparking plug is unsuitable for the engine. Try a plug having stouter electrodes, as the knocking may be caused by the plug points being overheated and incandescent after a certain amount of running.

Converting Single-speed Rudge.

I have a 3½ h.p. Rudge motor cycle, single gear, clutch, which I want to convert into a sidecar mount. (1.) What change-gear apparatus can I have fitted, and what firms can supply this? (2.) I have been advised that variable pulley gears are unduly severe on belts. Is that information correct? (3.) Any further advice *re* above not included in my questions will be appreciated.—J.F.W.

If your clutch is the Rudge engine-lift clutch, you might possibly obtain an Albion countershaft gear for chain or belt drive—the makers of which, Messrs. The Albion Engineering Co., Ltd., Upper Highgate Street, Birmingham, had a special model for free engine sidge machines. (2.) Expanding pulley gears are harsh on belts if used improperly, *e.g.*, by making rapid and extreme gear changes when running the engine "all-out." The correct method of changing is to work the gear lever notch by notch according to the road and engine speeds, when the belt wear will be quite normal. (3.) Your engine-shaft clutch precludes the adaptation of an engine-shaft gear, and the multi-gear would require structural alterations to frame and engine. If the Albion gear set is unobtainable, you would be well advised to sell your present machine and purchase one designed for sidecar work.

Choosing a Lightweight.

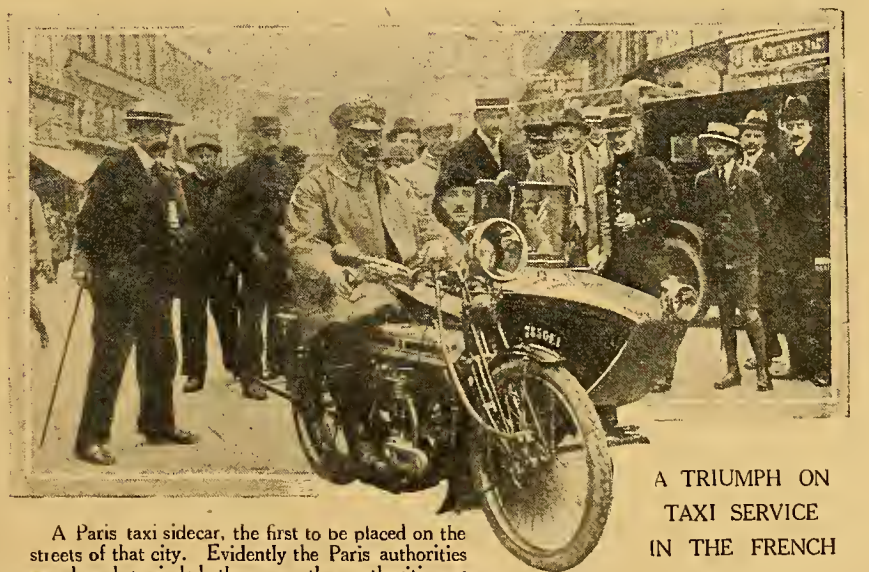
I hope to purchase a lightweight motor cycle when the prices go down, probably a second-hand one. (1.) Do you advise a four-stroke or a two-stroke? I should not be able to give more than about £40 to £45. I saw a letter in *The Motor Cycle* a week or so ago putting forth the merits and demerits of two and four-strokes, but am rather prejudiced in my opinion, having only ridden four-strokes. (2.) Is the petroil system on a two-stroke a serious drawback? (3.) Surely, if a petroil mixture is correct for level roads, when going up hill the engine requires more oil, and such a mixture would allow it to overheat? (4.) Is it a fact or merely an imagination that the prices of second-hand motor cycles are going down? (5.) Will the price of new as well as second-hand motor cycles go down when the American machines come in after November?—R.H.H.

(1.) Perhaps the general standard of four-stroke lightweights is higher, since they are mostly higher in price, but you would certainly have no cause for complaint in any of the better class two-strokes. (2.) The petroil system is declining in favour, but is by no means a drawback as you suggest. (3.) When ascending a hill you are correct in supposing that the engine requires a greater quantity of oil, but as the oil is supplied in proportion to the petrol consumed the larger throttle opening necessitated in hill-climbing allows for this proportionate increase. (4.) There appears to be a slight downward tendency in the price of second-hand machines at the present time. The American imports, when available, will probably be insufficient seriously to affect the prices.

Magneto for Lighting.

I have a Bosch magneto marked type 32. It is just the size of an ordinary motor cycle magneto. (1.) Can you tell me whether it is a high or low-tension? (2.) Were there ever any Bosch high-tension magnetos made without a contact-breaker? (3.) If it is low-tension, could it be used for lighting purposes?—A.L.

(1.) Your magneto is probably of the low-tension variety. (2.) We do not think that any Bosch high-tension magnetos were made without contact-breakers. (3.) It could no doubt be used for lighting purposes, but, if you wish to use four-volt bulbs, it will be necessary for you to have a choking coil in the system. You could obtain a lighting set to run from a high-tension magneto from F.R.S. Lamps, Pershore St., B'ham.



A Paris taxi sidecar, the first to be placed on the streets of that city. Evidently the Paris authorities are broader-minded than are the authorities at Edinburgh, where permission for sidecars to ply for hire was recently refused.

A TRIUMPH ON TAXI SERVICE IN THE FRENCH CAPITAL

Hub Gears.

I have recently purchased a B.S.A. two-speed and free engine hub gear (I believe it is a 1913 model), and although it gives top gear and free engine quite well the low gear clutch slips badly when the low gear is engaged. How can I adjust this clutch? The clutch consists of a steel cone acting against a phosphor-bronze one, which is very thick, presumably to allow for wear. As the phosphor-bronze cone is still about $\frac{3}{16}$in. thick, I do not think that it can be badly worn, especially as the rest of the gear is in excellent condition.—H.V.P.

The adjustment of the low gear clutch in the B.S.A. two-speed hub is effected by tightening the adjusting screw in the centre of the quick thread lever on the near side of the axle. If the push-rod in the axle is worn, of course it may require renewing, and also it may be necessary slightly to shorten the pedal control rod.

Drip Feed Lubricator.

My 1916 B.S.A. was recently decarbonised. Now, when running, oil accumulates in the drip feed glass at speeds over 15 m.p.h. As the compression was poor, I thought the gas was getting by the rings and blowing the oil back. New piston rings were fitted, and when run in compression was excellent. Oil, however, still accumulates in the sight glass, and does not get to the engine at speeds over 15 m.p.h. There is no stoppage in the pipe, as oil runs through freely to the crank case when the engine is not running. Can you suggest a cause?—C.R.T.

We think the trouble lies in the drip feed lubricator of your machine. Immediately behind the oil pump plunger you will find a small set-screw. On removing this you will find a small ball and spring. This is a vacuum valve, and should be quite clear and free from grit, etc.; also, beneath the drip feed body itself is another non-return valve, operated by a small pen steel disc. See that this is clean also; and, if your trouble still continues, try the effect of replacing this latter disc with a small steel ball.

Question of Taxation.

I should be glad if you could advise me in the following case. I paid £1 Revenue tax on No. 1 machine in February. No. 1 broke down and I could not get renewals, so I purchased and use a second machine. The Revenue people say I have failed to pay the tax on No. 2 and will probably summon me, while I maintain the tax already paid when No. 1 was running will suffice.—T.S.

Unless you used No. 1 machine after purchasing No. 2 you are not liable for a licence, though attempts are sometimes made to exact double payment. We should advise you to join the A.C.U., or the A.A. and obtain its help.

Spark Timing.

I have had occasion to take down my 6 h.p. N.S.U. twin and do not know how to retime it. The wheels are clearly marked for time of valves but not for spark. The magneto gear wheel is fitted on a chamfered or taper shaft without any key, and held on by a nut. Will you please let me know the way to do this?—H.M.O.

(1.) The spark timing is as follows: Set ignition control two-thirds retard, revolve the engine until piston is at the top of the compression stroke, set the contact-breaker so that the points are just breaking, and connect the magneto drive, taking care that none of the parts move from their positions. The magneto gear wheel is fitted on a taper shaft, and is not usually held by a key.

READERS' REPLIES.

Petroil on Scotts.

In a recent issue I noticed a correspondent, "Scottite," Eltham, asking for information *re* petroil system on a Scott machine. I have owned several Scott machines, and have often had some difficulty in oiling, owing to the very small outlet nipples becoming choked with fluff, cork, etc. On my last machine I discarded the oiling system and relied entirely on petroil, which gave absolute satisfaction in every way. Proportion of oil used, threequarters of a pint to a tank full of petrol.—CHAS HARBY.

Start of the first run of the Cambridge University Motor Cycle Club, which has recently been reformed. Judging from the enthusiasm shown by members, the club has every prospect of growing into a successful and important body.

Magneto Mystery.

Perhaps my remedy of a similar tro may be of service to "E.T.P." period of maximum density occurred of the limits of travel of the cam ring moved the cam on its ring to embrace period. This had the desired effect. G. SPEAKMAN.

With reference to the above ques by "E.T.P.," I had similar trouble a stationary unit. I found the caus be a breakdown on the insulation in armature, by testing with a Bri Meggis. The reasons for the mag sparking correctly on the bench, I th are: (1.) Firing under ordinary at pheric pressure. (2.) The earth re from the plug to the magneto practi becomes an insulated return, hence spark. When the magneto is refitte the engine, the frame is an easier for the current than the spark gap, I think, to the above-mentioned br down.—H. E. SINGLETON.

In attempting to solve a similar culty quite recently, I found that magneto was unconsciously held by contact breaker cover whilst turning armature by hand. On the engine t was no such support, and the cam ri fitted with arm for variable ignitio had worn so slack that it dropped so what and thus allowed too much varia in the opening and closing of the plati points. A new cam ring was the cur F.G.L.E.

RECOMMENDED ROUTES.

SUTTON-IN-ASHFIELD TO HUTTON RU —H.W.

Sutton-in-Ashfield, Mansfield, W sop, Doncaster, Selby, York, Easingt Thirsk, Osmotherly, Hutton Rudby.

SUTTON COLDFIELD TO RHYL.—J.E.B.

Sutton Coldfield, Brownhills, Ga Crackley Bank, Newport, Hinst Whitchurch, Wrexham, Mold, Treffi St. Asaph, Rhuddlan, Rhyl.

BLACKBURN (LANCS.) TO PONTYPOOL (M MOUTHSHIRE).—T.R.

Chorley, Wigan, Warrington, Tarpo Whitchurch, Shrewsbury, Church S ton, Craven Arms, Ludlow, Leomin Hereford, Monmouth, Usk, Pontypo

LONDON (HERNE HILL) TO MALVER D.O.A.H.

Herne Hill, Effra Road, Stock Road, South Lambeth Road, Vaux Bridge Road, Vauxhall Bridge, Grosv Place, Park Lane, Laucaster Gate, along the Oxford Road *viâ* Shephe Bush, Ealing, Uxbridge, Beaconsf High Wycombe, West Wycombe, T worth, Wheatley, Islip, Bletching Enstone, Chipping Norton, Moreto the-Marsh, Broadway, Evesham, shore, Upton, Malvern.

BIRMINGHAM TO EDINBURGH.—J.N.

Birmingham, Walsall, Gailey, P ridge, Stafford, Stone, Newcastle, Ho Chapel, Knutsford, Warrington, New le-Willows, Aston-in-Makerfield, Wi Preston, Lancaster, Kendal, Shap, rith, Carlisle, Longtown, Langho Teviothead, Hawick, Selkirk, Galash Stow, Gorebridge, Edinburgh. Appr mately 220 miles.

GODFREY'S

HAVE NOW IN THEIR SHOWROOMS

THE 1919 BIG POWERPLUS

Indian

Motocycle

AND WILL BE PLEASED IF Indian riders or others interested will call and inspect.

SOLO £136

COMBINATION £166

PROSPECTIVE CUSTOMERS SHOULD PLEASE NOTE THAT WE ARE UNABLE TO GIVE ANY DEFINITE DELIVERY DATES FOR ORDERS RECEIVED NOW, AS WE ALREADY HAVE A LONG WAITING LIST.

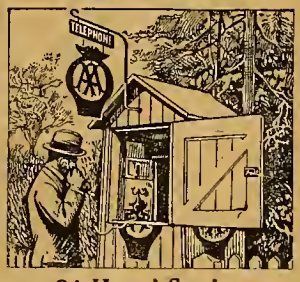
AS SUPPLIES IMPROVE WE HOPE TO EXECUTE ORDERS WITH LITTLE OR NO DELAY, BUT AT PRESENT CAN ONLY PROMISE THAT ALL ORDERS RECEIVED WILL BE EXECUTED IN STRICT ROTATION.

'PHONE: 7091 MAYFAIR (2 LINES).

GODFREY'S Ltd.,

208, GT. PORTLAND ST., LONDON, W.1.

Dressed in KHAKI.



24 Hours' Service.

Mechanical First Aid.

Village Sign.

Hotel Lamp.

LEST YOU

The A.A. Patrol was the FIRST ever seen on the roa Instituted in 1905 he typified the FIRST determined effort fight police persecution. It cost thousands of pounds and yea of effort to establish his right to remain on the road; he is no the best known and most popular figure on British highways.

The FIRST and *only* Roadside Telephone Service wa originated by the Automobile Association over seven yea ago. *All* A.A. patrols' sentry boxes are now equipped wit telephones and the service is being extended so that it will b available to every member both day and night.

The FIRST and *only* "mechanical first-aid" moto cycles were another A.A. innovation. These outfits (drive by A.A. *khaki*-clad mechanics) carry a complete equipme enabling light repairs to be done "on the road" so that th member can continue his journey after a breakdown and avoi being towed home.

The FIRST Village Signs were erected by th Automobile Association, and their number now exceeds 6,00 They make touring easy in any part of Great Britain and t you "where you are."

The A.A. was the FIRST to inspect and classify hote on a star basis. This system of Appointed Hotels exten throughout England, Scotland, Ireland, and Wales. Inspecto are always on the road to see that the hotels conform to th official classification.

The Automobile Association is FIRST in Power (Larg Motoring Membership in the World), Financial Resour (obtained without sacrifice of Efficient Road Service), Imagi tion, Initiative, and Efficiency.

In answering this advertisement it is desirable to mention "The Motor Cycle."

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Editorial Offices:
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Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

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NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin. INDIA—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Seats on Scooters.

THE success of a seat type scooter in a recent lightweight trial in the Midlands should give designers of such vehicles matter for serious thought. The course was over forty miles of indifferent roads, and included several test hills and a water-splash; and it is obvious that it would be almost a physical impossibility for a competitor standing on a platform to cover the course. This will be appreciated by anyone who has attempted more than a few miles in a standing position. Clearly then the seated scooter is in a different class from the stand-up type, and has a wider range of action.

In effect the scooter with a comfortable pan seat is nothing more than a miniature motor bicycle, and only limited in its range of action by the absence of a change-speed gear. The machine which won the short distance event in the Midlands was, of course, geared extremely low—approximately 16 to 1—and averaged 13⅓ miles per hour.

Manufacturers and Competitions.

AS announced in last week's issue, the "trade" has decided to support twelve competitions during August, September, October, and November. This decision, coming as it did immediately following a resolution which was responsible for the withdrawal of trade entrants in the Scottish Trials and the abandonment of many open competitions, no doubt will cause several club committees to rearrange their programmes. The reversal of opinion concerning trials may have caused some surprise, but it appears that, although the manufacturers will experience considerable inconvenience, they realise that the motor cycle organisations are desirous of trade support, and have decided to accord support to no less than twelve open events before November 30th. The decision is wise—albeit rather overdone—for, to withhold support from important events encourages the pseudo-private rider, which is very undesirable: at least from the trade point of view, since it leaves the way open for the more "enterprising" of the makers unofficially to participate in any trials that they may desire, and so obtain an advantage over their contemporaries, who may adhere strictly to the ruling of the Union.

Incidentally, the concession acknowledges the value of trials at the present time, and is a practical recognition of the good work of the clubs in the past in helping to develop the motor cycle to its present reliable stage.

Unrestricted Lighting.

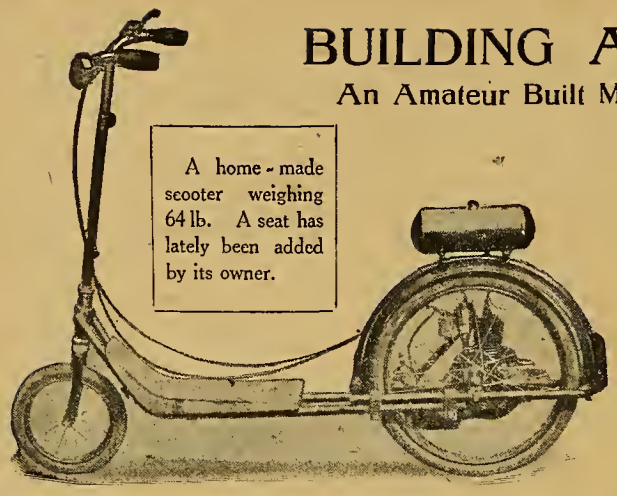
THERE is now in print a Home Office Order published revoking the vehicle lighting Orders issued during the war. At first sight it may seem that this is good news for motorists; head lamps may be of unrestricted size, any strength of light may be employed, and it would appear that everything is to be restored as it was in the good old days before the war. If, however, a little thought is given to the matter, it will be seen that motorists will have to put up with the insufficient lighting of bicycles and horse-drawn vehicles which caused many accidents in pre-war days. Now pedal cyclists are once more to be allowed to be the most unfettered user of the highway, and to ride an almost invisible machine by night with no rear lamp, and the same remarks apply to the user of the horse-drawn vehicle.

There is yet another objection, and that is that the new Order will withdraw the necessity for using a lamp on the sidecar to show the full width of the outfit, and if this is done it involves another hardship on the careful road user, who may find himself responsible for an accident which, if the said lighting regulations had been in force, would never have happened. We can only hope that in the near future legislation covering the whole question will be revised, and that the present reversion to pre-war conditions will be of short duration.

An Index to the advertisements in this issue will be found on the page facing the back cover.

BUILDING A MOTOR SCOOTER.

An Amateur Built Machine and How it was Constructed.



A home-made scooter weighing 64 lb. A seat has lately been added by its owner.

"THE Hawk" came into being when a motor cycle burnt up under me. After four years' daily experience with all types of cars, I got delivery of a little 2¾ solo bicycle of my own; it was good while it lasted, but after three weeks ownership it caught fire and was totally destroyed. The 2¾ had been used chiefly for short runs, shopping, business calls, etc., and was almost essential for my work. A new one was altogether out of the question. I thought it over for a long time, then sold the wreckage, and as the problem of building a motor cycle was beyond me, I started the scooter.

I carried out experiments on various details, and, unheeding the advice of friends, eventually designed "The Hawk." It has been an unqualified success. Scooting is one of the easiest things in the world to learn. The motor starts after a single push with the foot; the maximum speed reached on the level is 25 m.p.h., while in hill-climbing it is excellent. With its gear ratio of 8 to 1 steep hills may be easily negotiated.

The Frame.

No special apparatus is needed by the amateur, as the frame is of the very simplest construction. It is constructed of two 3ft. lengths of ordinary ⅞in. steel cycle tubing running from the forging at the fork head to the motor unit.

Bending the front end is not very difficult work. It was found that by heating the tube until practically white-hot, it could be easily brought to shape. It was not filled with sand, and no wrinkles occurred. First of all the length of tube was marked with chalk at the place where it was intended to be bent. It is a good plan to insert a cork into the end that is placed in the fire. This prevents the air circulating inside. Then, having heated the tube, water was carefully poured over the red metal until only about three inches remained red-hot at the place where it was to be bent. By applying a gentle pressure on the ends, the bend was made quite easily.

The collar which holds the steering-pillar and forks is an ordinary cycle head piece, which may be obtained for a few pence at almost any second-hand cycle shop. It is advisable to obtain a collar without the cycle lugs fitted, as, of course, these are quite unsuitable for use on a scooter. The forks are those used on an ordinary bicycle cut down with a hack saw to suit the size of the front wheel. At the top and bottom of the fork spindle or steering-pillar, ball races are fitted to take the weight off the steering. These thrust races, forks, and collar, can all be bought ready to fit, being standard bicycle fittings. The handle-bars are joined to the fork spindle by a length of ⅞in. tubing. This passes into the spindle, and is pegged in two places with ¼in. iron pegs put in through the two tubes at right angles, the ends of the pegs being filled quite flush on the outside. At the handle-bar end the joining tube goes over the handle-bar tube, and is clipped tightly by a steel band clip.

A forging, or lug, which holds the two main tubes to the collar, may have to be specially made, as it is a job far beyond most amateurs, but probably Messrs. Chater-Lea or the Metropolitan Machinists could supply.

The front wheel is of the type used on bath-chairs, having a 13 × 2¼in. tyre. It runs on two ball bearings. The whole spindle, ball bearings, and nut may be purchased ready to fit.

The back wheel is part of the Auto-wheel unit. It has a 20 × 1¾in. tyre.

The Engine.

This unit is simply an Auto-wheel, purchased second hand, and with a little adjustment it has given every satisfaction. Recently a man weighing 12 stone ran 215 miles on this scooter in one week, and no repairs of any sort were needed. 110 m.p.g. is the petrol consumption; and one filling of oil is sufficient for eighty miles. To clip the Auto-wheel to the frame four steel bands were made of 1½in. × ⅛in. sheet. These clips are just strips of steel bent up and bolted at the two ends. The tubes of the frame pass under the tubes of the Auto-wheel, and the clips go round both.

Details.

The footboard was sawn out of strong birch, 11in. wide. It is shaped to the tubes, as is shown in the illustration, and has the effect of taking all "whip" out of the frame; bolts and clips hold it in place. The top is covered with rubber sheet.

Having settled to my own satisfaction the vexed question, "To sit or not to sit?" I set about designing a seat, which, subsequent to the accompanying photograph being taken, has been fitted with great success. A brake has also been added, and is worked by a pedal on the footboard. It is, however, rarely necessary to use this brake, as the compression of the engine is generally sufficient. A larger wheel at the front is now fitted.

The total weight of the machine is 64 lb. loaded with petrol and oil. It can easily be carried about, and is quite simple to handle. The total length is only 4ft. 9in. The placing of the engine on one side has no ill-effect on the balance when running, and anyone can mount the scooter and ride it perfectly in a few minutes. It will be seen that the whole is quite simple and cheap to construct, and is well within the powers of an amateur.

J. F. LEEMING.

Why Not Standardised Controls?

I THOUGHT I was too old a bird to be caught napping by the throttle lever which opens in an unaccustomed direction. Indeed, in pre-war days I rather scoffed at a mild clamour in favour of standardised controls which was raised in this journal. I am wiser now. In those days, like most motor cycling journalists, I rode two or three different machines in the course of a week, and my ganglia never lulled themselves into the false belief that all handlebar throttles open clockwise. During the war I have perforce been loyal to a single mount for 99% of my riding, and I can now view the matter from the standpoint of the "one mount" man. I took delivery of a 1919 machine last week, and its throttle opened anticlockwise. In the first petty emergency—a mildish corner following upon the sort of hill on which one tries to break the speedometer—I opened the throttle to the very limit when I meant to shut it dead. Graceful parabola over the handle-bars. Abraded hips, elbows, knuckles, ears. Footrests indicating five and seven o'clock. Front number plate trying a side-loop. Front mudguard mistaking its functions and acting as a spoon brake. Oaths. Blood. Sticking plaster. Finally—these ripe reflections!

Chaos Supreme.

I SUPPOSE the throttle is the only control which should be standardised in the interests of safety, but several others might be considered with an eye to convenience. Car owners will stand no nonsense in the location of those controls on which safety depends: if a firm produced a car with the clutch pedal on the right and the brake pedal on the left, the innovation would not do it a bit of good. Ford is the only car designer who is allowed to be a law to himself in such matters, and he has only acquired freedom by appealing to the public with the cheapness of his car. But motor cyclists meekly take whatever the trade hands out to them. So I find that on one of my machines the brake is on the left, the clutch on the right: I buy a new machine, and the pedals are reversed. So when I want to make a lightning dab change up from third to fourth at high speed, I stamp on my foot brake and slam my gear lever over, or commit some such pardonable but disastrous *bêtise*. When I take over a new machine, I may not be able to tell which way the spark advances without uncovering the contact breaker, or describing airy circles with my forefinger to work out the direction in which the magneto sprocket runs. A little latitude in gear changing "gates" and quadrants is comparatively pardonable. But it is high time that brake and throttle controls were standardised as thoroughly as trade organisation permits.

The A.C.U. Six Days.

I DO not know whether I am suffering at all, but I am immensely tickled at the A.C.U. regulations in respect of the weight of machines entered for its September trial. It carefully specifies minimum weights, and sets them at impossible limits. A 250 c.c. solo mount is not to weigh less than 88 lb., for example, nor a 3½ h.p. solo less than 132 lb. Shades of John Bunney! These weights might have been doubled without much danger of enthusiastic makers getting inside them. Surely the A.C.U. bigwigs are aware that the trade dare not enter featherweight aluminium "specials," for the simple reason that the usual A.C.U. *olla podrida* of rough going, and a 20 m.p.h. schedule inclusive of tyre repairs, compels every entrant to be sturdy to a degree. On the other hand, no maximum weights are specified. Now, I am in a position to enter two machines rated at the same nominal horse-power, and scaling respectively 200 lb. and 320 lb. If they should encounter equal luck, and reproduce their normal behaviour, both should put up identical performances to within a mark or two. But the weight policy adopted by the Union would apparently fail to credit the 1919 model with the hundredweight reduction which it shows upon the 1914 model. The omission to inflict any penalty for dirtiness not ascribable to the roads is equally obvious in the rules. Is it too late to list penalties for leaky crank cases, tappet guides, gear boxes, etc.?

Relative Values.

THE A.C.U. scale of penalties could not be expected to evoke universal approval in a sport wherein every participant is more or less of a faddist. None the less it merits consideration. The Union ranks the merits or demerits of a motor cycle as follows:

	Marks.
PRIMARY.	
Reliability	50
Finishing condition	50
SECONDARY.	
Silence	10
TERTIARY.	
Acceleration	20
Maintenance of tune	20
QUAT—something (I forget my Latin).	
Brakes	10
Mudguards	10

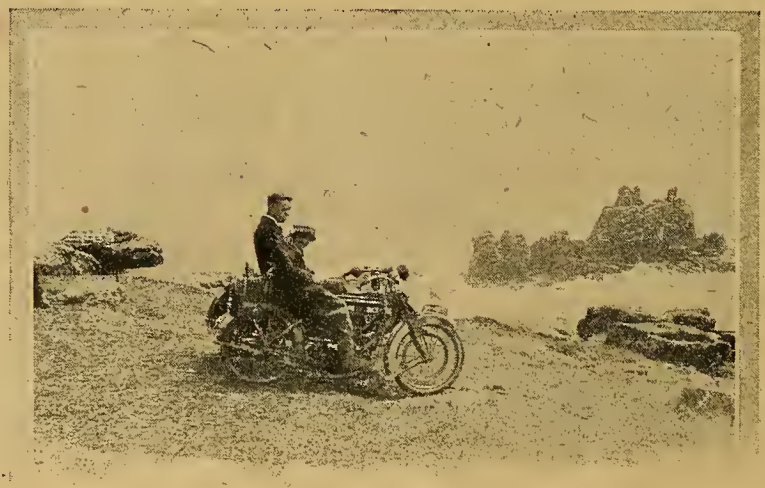
I remarked in the last paragraph that the average owner would rank low weight and mechanical cleanliness at least as high as some of the official desiderata (*e.g.*, silence and mudguarding). The few men who are familiar with good spring frames will note with quiet amusement that the super-primary question of

Occasional Comments.—

comfort is entirely ignored: perhaps for trade reasons, perhaps because of the equally practical difficulty of devising a simple comparative test of two rival springing systems. Apart from omissions, there are some astounding points in the selected awards. That silence should be graded as equal to brake power and maintenance of tune is obviously a sop thrown to the non-motoring public. Noise is a controversial question, and I admit that the A.C.U. has a strong case, though I disagree with it. I wonder if its audiometer will distinguish between mechanical noise and exhaust noise? Is not the best ideal a machine which is (*a*) mechanically silent, and (*b*) has a controllable silencer, capable of great silence on demand and of a reasonable noise when required? Acceleration interests the sportsman and the engineer, but five riders out of ten care nothing about it. It will be very difficult to estimate the worth of *standard* mudguards to a mark or two, and I do not envy the judges this part of their job. In the meantime it is excellent to see that a single tyre stop at an awkward moment, or a sooted plug, will not rob a good machine of its gold medal. The trial will be very strenuous, and for a variety of reasons it will completely fail to identify some of the fundamental differences between an absolutely first-class machine and a machine which is crude and rough, but sturdy and reliable.

That Empty Toolbag.

THE list price of a medium-powered 1919 machine is as near £100 as no matter. This figure does not usually include affixing numbers, a hooter, a pair of lamps, or a speedometer. For these omissions there are plausible excuses, *e.g.*, that such equipment costs anything up to £10, and many prefer their own selection. But my gorge rises at the toolbags. One is full, the other empty. The full bag contains a tool kit. In a few cases it contains a "designed" tool roll, fitted with cute little gadgets for all the tricky jobs which every machine sooner or later presents—*e.g.*, a thin open-ended spanner for the front wheel cones, a pair of duplicate spanners for tappet adjustments, a pair of miniature spanners for the Bowden adjusters, a valve spring remover, and other delights. In the majority of cases the tool roll is planned by a Sheffield toolmaker who has never seen the machine in question, has possibly never ridden a motor cycle of any kind, and generally drives a Rolls-Royce. The bag contains (I quote from a sample on my desk) a 6in. wrench (second-class quality), a tube spanner (which fits nothing but the rear spindle nuts), a screwdriver (too large for the magneto screws and too weak for other service), a pair of pliers (too clumsy for extracting split pins and not likely to be required for anything else), and a valve cap wrench. The latter is the only weapon of real value, except the magneto spanner, which is a free gift from another firm. I turn with beating heart to investigate the remaining tool pannier. What will it contain? I dream. Doubtless a handbook on management. A tyre repair kit. Some spare chain bits. A sparking plug in an armour-plated casing. Spare valves, suitably protected. Spare valve springs, ready compressed for immediate fitting when required. A few screws, bolts and nuts. I open the pannier. A vacuum. Nature abhors a vacuum, and I am a natural man. But I had forgotten. The machine only cost £100!



THE MOST WESTERLY POINT OF ENGLAND.

A B.S.A. sidecar in a region noted for its fine coastal scenery. The motor cycle has never been more fully appreciated than it has in the days of strikes, the most beautiful districts—often difficult of access by rail even in normal times—being open to devotees without any transport worry.

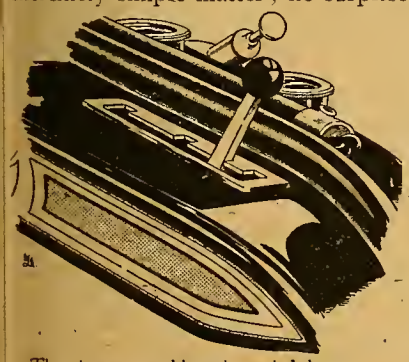
Why Keep the Push-cycle Saddle?

"OWEN JOHN," the famous *Autocar causeur*, aims some winged words at us motor cyclists and our peculiarities in the issue of that journal for June 14th; and amongst other humorous impertinences he wants to know why we continue to sit on push-cycle pattern saddles when we have almost universally discarded the pedalling gear for which those abominations were originally invented. I imagine "Owen John" is not a motor cyclist, or he would know better. To my mind, the push-cycle saddle is one of the most miraculous inventions in history. Hard, tiny, and all but springless though it be, it will carry a pedallist in comfort for a hundred miles or so per diem, with his leg muscles using it as a combination between a fulcrum and a bearing all day long. In its larger and more padded form, as applied to motor bicycles, it supports us in comparative idleness for as much as four hundred miles in a day; and I have yet to find a "pan seat" or driving chair to beat it on the rigid frames. The one-point suspension afforded by the super push-cycle type of saddle is almost ideal. I even go so far as to tell "Owen John" that the weight-carrying portions of my anatomy are usually far less weary after three hundred miles on a motor cycle saddle than after a similar distance in a very luxurious car. If one has got to be bumped, one may as well oscillate on a kind of hook: such a swaying motion is at least immune from rude shocks. But even the perfectly sprung frame will rightly retain the familiar saddle for some time to come. "Owen John" cannot know how little one "feels" a well-designed saddle on a sunset to sunrise jaunt.

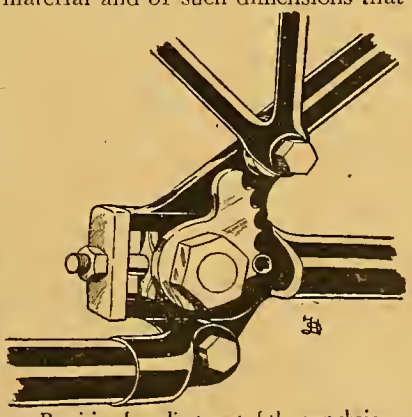
The Twin Rover on the Road

A Test of the 5-6 h.p. Model on the Edge Hills.

SOME motor cycles are so well and conveniently arranged in the matter of their controls that one may mount them and at once ride away with a feeling of familiarity. Such a mount is the Rover, the latest twin-cylinder specimen of which we lately had the pleasure of testing on the road. The 5-6 h.p. twin Rover-Jap is a wartime creation—it was originally produced to satisfy war demands, and right well it acquitted itself. Now that examples of the machine are available for private riders, it is, perhaps, not surprising, in view of the times in which we live, to learn that the order list is extremely lengthy. The machine to which we refer possesses no claim to novelty or even originality; it is the embodiment of well tried practice in motor cycle design, and to many makes a particularly strong appeal on that account. We tested the Rover with the standard sidecar attachment and a ten stone passenger. From the first starting was an extremely simple matter; no surprise in that, perhaps, for we had already learned to respect the care with which Rover products are examined and tested before issue from the works. Away we went through Warwick and Barford to our favourite testing ground—the Edge Hill range. Keeping up a lively pace through Kineton straight to the foot of Edge, we at once opened out and swept round the bend at a crackling pace. The second gear of 9 to 1 sufficed until well round the second bend, when a drop to low (17 to 1) was necessary on the 1 in 6 stretch. But on this ratio the engine naturally raced away and had to be throttled down; it was abundantly clear that with a slightly lower ratio for the middle gear, the lowest gear would never have been requisitioned. A second ascent confirmed this opinion. Observant readers well know that a favourite test of ours is stopping and restarting in the middle of a steep hill. It brings to light many things—good or bad—about a motor cycle. First, the brakes have to be first rate to hold the machine on the gradient; secondly, the engine must be properly adjusted and controllable; and thirdly, the clutch must be of such a material and of such dimensions that it is well capable of starting the not inconsiderable sidecar load on a single figure gradient. This new 1919 Rover answered everyone of those requirements; we repeated the operation three times "just to make sure," and on each occasion the machine performed consistently well.



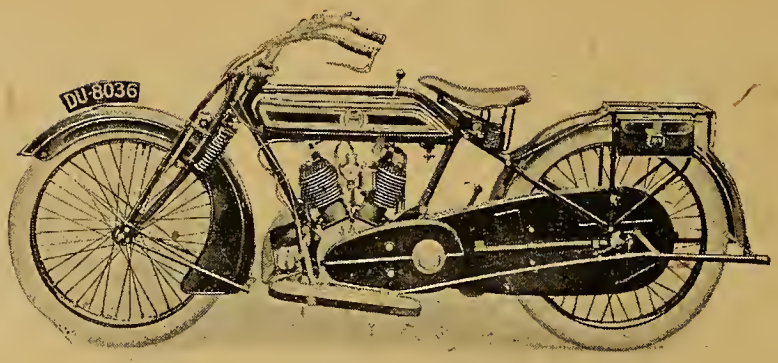
The change speed lever is carried through the tank, leaving the sides quite smooth Glass-topped filler taps are used.



Provision for adjustment of the rear chain on the Rover is by the draw bolts and serrated washers shown.

The Twin Rover.—

Double purpose twins are not as numerous as they might be. Manufacturers who favour sidecar attachments seem gradually to drift toward an 8 h.p. mount of a luxurious type fitted only for passenger work. In the case of a twin of the Rover type—whose J.A.P. engine of 70 × 85 mm. bore and stroke has a capacity of 654 c.c.—the machine is highly suitable and equally attractive to many as a solo or sidecar machine, for it is of medium weight as chain-driven three-speeders go, and consequently not a burden to handle. Smoothness of running is one of its virtues, and the silent running J.A.P. largely contributed to this happy state of affairs, for its valve gear was noticeably quiet. The gear box is exceptionally sturdy and apparently well up to its work, whilst the chain cases are a sound job and devoid of rattle. Our trip was purely a run of pleasure, for no untoward incident occurred, the Rover responding to every call. Toward the conclusion of the run one noticed a scraping sound when bounding over the pot-holes due to the new chain having stretched and fouling the casing. This experience only served to bring home the handiness of the special chain adjustment provided, which soon set matters right. The device, which deserves to be better known, is illustrated. First the spindle nuts are loosened and then the draw bolts used to tension the chain correctly. The serrated washers are then placed in corresponding positions on the pegs on each side of the fork end to ensure the wheel remaining central with the frame, thus taking all strain off the chain adjusters themselves.



The 5 h.p. twin Rover, the engine of which is 70 x 85 mm. (654 c.c.). The clean and workmanlike design of this model at once commends itself both to the sidecarist and solo rider.

An Exhaustive Benzole Test.

A Long-distance Trial arranged by the Automobile Association to ascertain the Effects of Benzole on the Engine.

EVEN at the present stage of automobile history there are innumerable people who do not consider benzole to be a suitable fuel for their machines. Many are so filled with doubts and fears for the mechanical condition of their engines that they steadfastly refuse to give the home-produced spirit a trial, despite the assurances of those of us who have used it for many years before war conditions gave it greater prominence as an alternative source of motive power.

Although it has become generally known that good quality benzole, such as that conforming to the specification of the National Benzole Association, has no deleterious effect on the engine, either as regards excessive wear on the bearings or corrosion of working or other surfaces with which it comes into contact, this freedom from attendant mechanical disadvantages accruing from its use has yet to be proved by thoroughly exhaustive and authoritative tests carried out by someone who has the motorist's, rather than the producer's, interests at heart.

An Unbiassed Trial.

Such a demonstration will be undertaken in the near future by the Automobile Association as a result of suggestions lately put forward in *The Autocar*, and, though primarily of interest to car owners, it will likewise provide material of much practical value to all users of internal combustion engines.

Briefly, the trials will be arranged on the following lines, the preliminary arrangements having been planned in conjunction with various suggestions emanating from the editorial staff of *The Autocar*. A new five-seated touring car of some popular make will be selected, and after it has been tuned up on petrol, the engine will be entirely dismantled and cleaned, after which a very thorough examination of all wearing parts will be made, the condition of all surfaces noted, and all bearing, sliding, and tappet clearances carefully recorded. After reassembling, the car will be used over all classes of roads on a tour extending to about ten thousand miles.

Observations to be Tabulated.

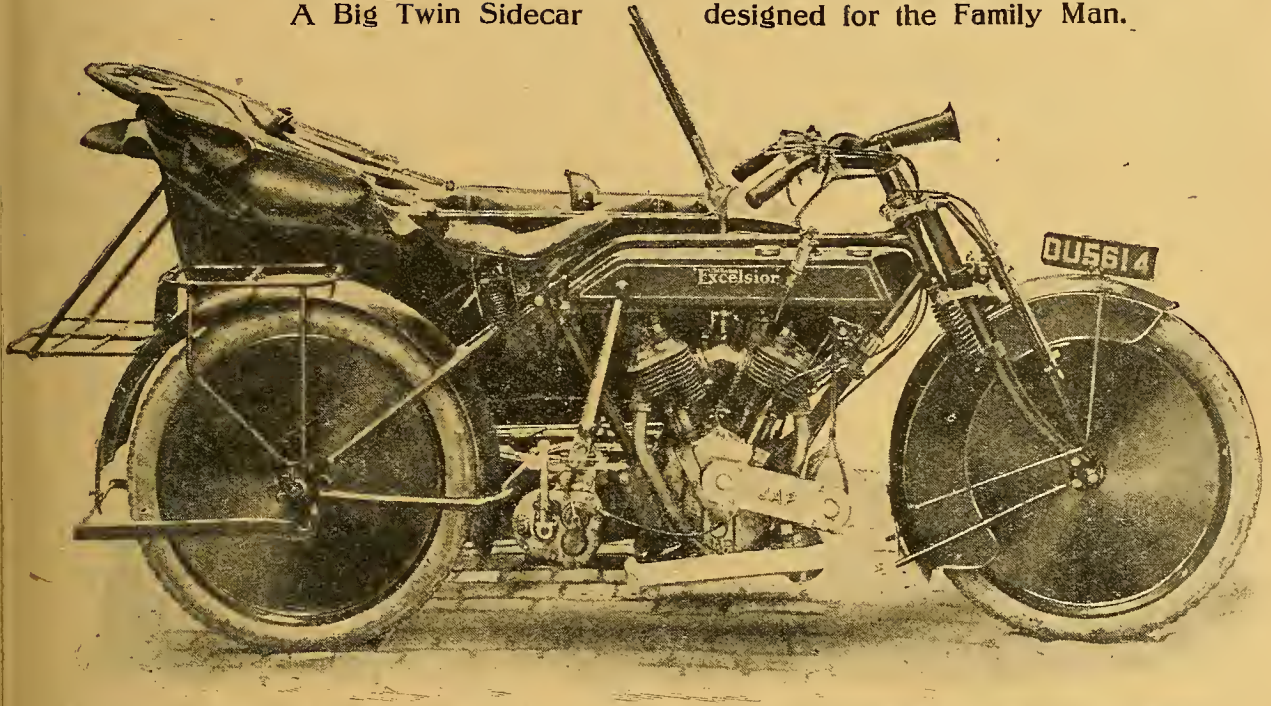
During the tour every observation will be made to enable a minute report to be given on the performance and consistency of running, average consumption, and deterioration of lubricating oil. Afterwards, the engine will be again taken down, and comparative measurements and observations made, also any adverse effects on carburetter, tank, or connections will be noted.

If at all possible, it is intended to include bench tests, and in every way to compile complete data with the idea of disposing of all debatable points attending the use of benzole. We regret that the experiment does not deal also with the motor cycle; still, the final observations will be of interest to all motor users.

Certainly the result of this trial will be looked for with keen anticipation by all who are interested in furthering the use of benzole, either from the standpoint of those connected with the industry or purely from the natural desire for the complete development of our national assets.

THE 1920 8 H.P. BRITISH EXCELSIOR.

A Big Twin Sidecar designed for the Family Man.

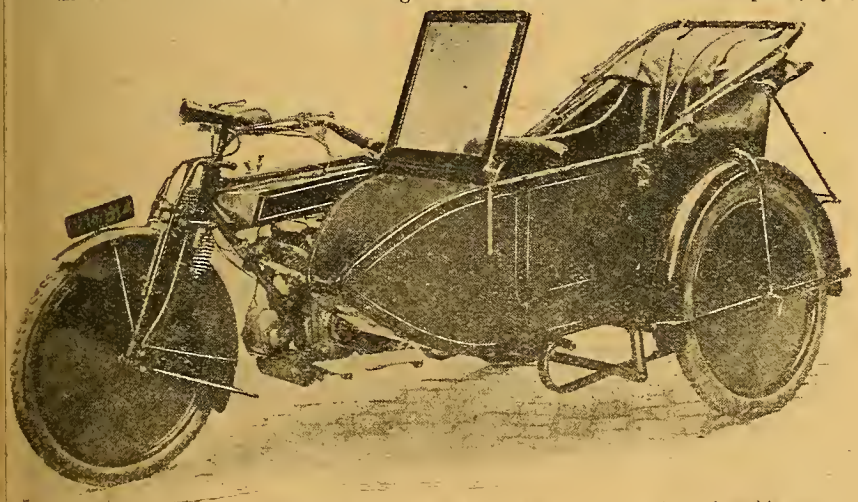


The new twin British Excelsior is fitted with an 8 h.p. J.A.P. 85·5 × 85 mm. engine, Sturmey-Archer gear box, and all-chain transmission

DESIGNED as a family sidecar, the new 8 h.p. British Excelsior is one which will appeal to many motor cyclists who have found the average medium-powered machine too small for their requirements. While there is nothing in the machine which departs from the conventional, the new model strikes one as being a "clean" design, in which accessibility has been well considered. Provision is made for fitting a dynamo between the "seat" tube and the rear mudguard, and the gear box bracket is upswept in order that the ground clearance shall be suitable for Overseas requirements. This is no less than 6in. at the lowest point, yet, with the 28 × 3in. tyres, the power and gear units do not appear to be unduly high.

The engine is the 8 h.p. J.A.P. provided with B. and B. pilot jet carburetter and M-L magneto, and driving through a Sturmey-Archer gear box by chains throughout. The cylinders are readily detachable without disturbing the rest of the engine, and well-made and easily removable cases enclose the chains.

Included in the general equipment of the cycle portion of the outfit are Druid Mark II. forks, aluminium footboards, front and rear stands, American type rims, and detachable wheels. Although not shown in the illustrations, it is intended that the sidecar lugs shall be integral with the frame.



The Excelsior sidecar is designed to accommodate a juvenile on a sliding adjustable seat

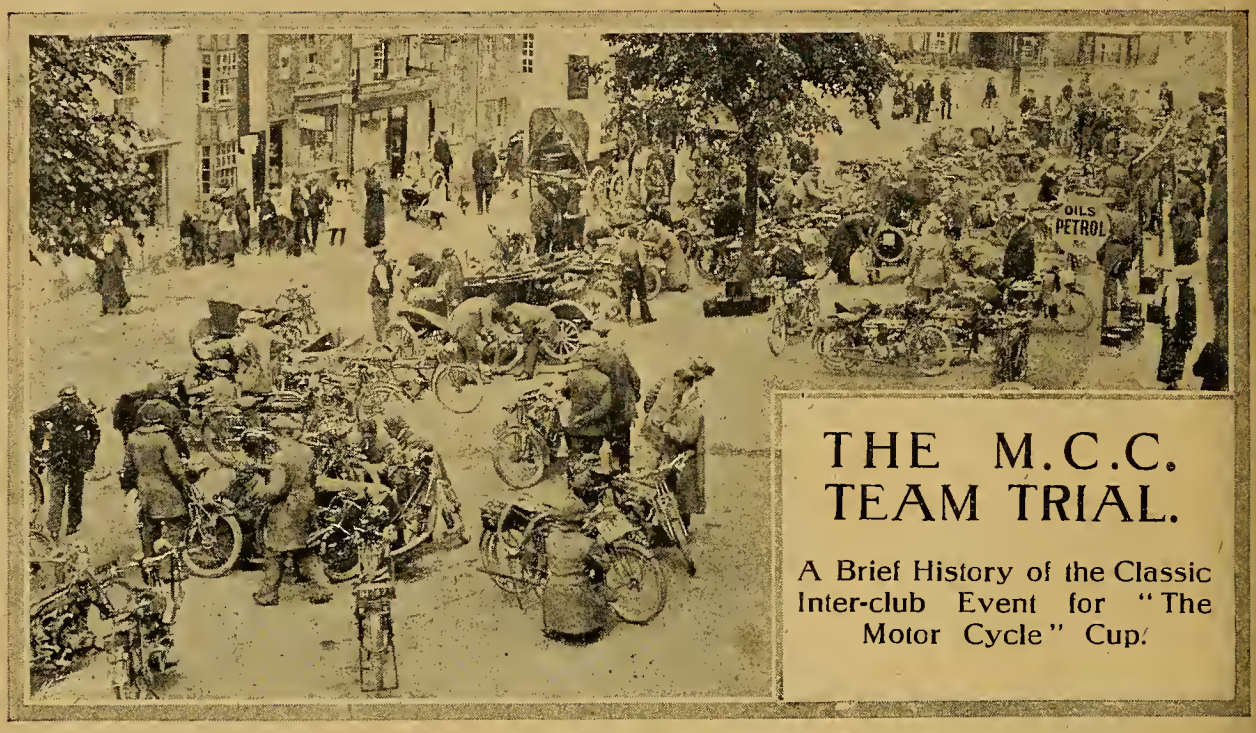
The Sidecar.

Appreciating the requirements of the average user of big twin sidecars, the makers of the British Excelsior are standardising an extra large sidecar body which, when desired, will be supplied with an adjustable seat for a juvenile. This seat slides on two-slotted metal guides fixed to the side and the door of the body.

The price of the machine with sidecar is £150, or, with hood screen and additional seat, £162. A dynamo lighting set with electric horn costs a further £25, while a spare wheel with tyre is catalogued at £8.

DAYLIGHT SAVING.

IN the House of Commons recently Mr. Shortt, the Home Secretary, replying to a question by Capt. R. Terrell about "summer time," said that latterly very few criticisms had reached the Home Office and it is believed that the general feeling is strongly in favour of the continuance of the system. If any further representations on the subject are submitted, they will, of course, receive careful consideration by the Government, but as at present advised there seems no occasion for a further enquiry. This is good news, and it is sincerely to be hoped that summer time will be continued from year to year, as the long summer evenings are greatly appreciated by those who take their pleasures awheel.



THE M.C.C. TEAM TRIAL.

A Brief History of the Classic Inter-club Event for "The Motor Cycle" Cup.

Some of the competitors in the 1913 team trials at Chipping Norton, where no less than forty-one teams assembled.

IN 1904 *The Motor Cycle*, then, and for over six years, the only journal devoted to the development of the machines now so popular, presented a fifty-guinea cup to the Motor Cycling Club for competition among teams representing clubs of Great Britain. From the start the competition was a great success, as was to be expected, since the winning of the trophy is regarded as an honour for the club securing it by the prowess of its chosen members against the picked riders of contemporary clubs.

The first team trial for the cup was held in August, 1904, and the conditions called for teams riding four solo and two passenger machines, the course being 100 miles of main roads between Bicester, Aynho, and Deddington, Oxon.

In referring to the course, the Rev. B. H. Davies, in *The Motor Cycle* for August 1st, 1904, says:

> "A twenty-five miles out and home course was originally fixed upon, to be covered twice. However, as in the team trials a checker to each mile will be necessary, since each rider is to score one mark for every mile covered without a stoppage, it became clear that a twelve and a half miles out and home course would be ample; even for this short stretch about a score of reliable marshals will be requisitioned."

The above will be read with amusement by present-day motor cyclists; but it illustrates the rapid progress made by motor cycle designers since these early days of only fifteen years ago.

The profile of this course, too, is interesting, and reveals that it included "hills" of 1 in 23, 1 in 12, 1 in 14, and 1 in 18.

Five teams competed, *i.e.*, the M.C.C., the Coventry M.C.C., the Guildford C. and M.C., the Peterborough and District M.C., and the Southern M.C. The first-mentioned team included such well-known riders as F. Hulbert (3½ Hulbert-Bramley with Minerva engine), now works manager of the Triumph Co., and W. H. Wells (2¾ Vindec), manager of the Hendee Co. in England. The Coventry club's team included R. W. Ayton, the original patentee of aluminium cylinders with liners, who rode a 2¾ Triumph, S. Wright (3½ Excelsior and trailer), and Bert Yates (3½ Humber tricar). The two last named have been connected with the Humber concern for many years. A. W. Wall, the inventor of the Roc gear and the Auto-wheel, drove a 3½ Roc and trailer in the Guildford team.

Most of the passenger machines were either trailers or tricars—only one sidecar being entered, while at least one of the trailers, S. Wright's Excelsior, had only a single-gear ratio, but to assist the engine as much as possible on the gradients an exhaust cut-out was fitted, and operated by a lanyard from the trailer seat.

The following were the results of the first event:

1.	Coventry M.C.C.	485 marks
2.	M.C.C.	381½ "
3.	Peterborough and District M.C. ..	245½ "
4.	Guildford C. and M.C.	187 "
5.	Southern M.C.	101½ "

In 1905 the competition was not held, the only team turning out being the M.C.C., who thus had a walk-over. In 1906, however, the M.C.C. won the trophy in competition against representative teams.

The Coventry club regained the cup in 1907 in the main road trial against the M.C.C., the Birmingham M.C.C., the Southern M.C., and the Great Yarmouth Club.

In 1908 the Coventry club won the event outright, and a new trophy was presented to the M.C.C. by *The Motor Cycle*.

In this event the majority of passenger machines (of which two were included in each team of six) were tricars or trailers, but three sidecars were entered, and showed up very favourably.

No fewer than seventeen clubs were represented in the 1909 event, and the majority of passenger machines were sidecars. The M.C.C. won this year with full marks (600), the second and third teams being respectively the Coventry and Warwickshire M.C. (578) and the Oxford M.C.C. (535).

Eighteen teams competed in the 1910 trial, and by this time the tricar had fallen out of favour, as each team included one sidecar. Again the Coventry club won, with 100% marks, but the Northampton club also secured full marks, and the award was made on time errors. The Bristol team, too, did well.

The eighth annual trial attracted twenty teams, of which the Derby and District M.C.C. had the least time error; but the following year (1912) there were twenty-five clubs competing, each team being made up of five solo riders and one sidecar. The event was won by the Nottingham and District M.C., the second and third teams being those representing the Bedford and South Birmingham clubs. Several of the clubs lost their chance of the premier award by the failure of their sidecar representatives to make a non-stop run; but, taken on the whole, the passenger machine did well compared with previous team trials.

The 1913 team trials attracted forty-one teams—the record entry, representing 246 competitors, 82 passengers, and over

The M.C.C. Team Trial.

100 reserve riders. The honour of winning this great event fell to the Sheffield and Hallamshire M.C.C. So representative of the whole of Great Britain was the trial that eleven teams travelled no fewer than two hundred miles to reach the start, which amply demonstrates the great interest in the event.

Only thirty-one clubs entered for the 1914 event. The teams were made up of four solo riders and two sidecar drivers. The course for this trial included two stiff hills, Tysoe and Sunrising, which were responsible for many stoppages. The event was won by the M.C.C. team.

For this year the composition of the teams has again been altered, and each competing club will be represented by three solo and three passenger machines, which shows that sidecars are now regarded as reliable as solo mounts.

The 1919 team trial will be held on September 6th, and clubs wishing to nominate a team should communicate at once with Mr. Southcomb May, 34, Gower Place, London, W.C.1.

THE UNIT SYSTEM.

A Designer's Suggestions for Single and Two-cylinder Engines with Gear Boxes Integral. A Simple Four-speed Gear Box Described.

THE unit system of construction—*i.e.*, the building of engine and gear box integral—has been almost an obsession with many designers for several years. In the drawing offices of most motor cycle manufacturers there are filed away the drawings of "engine gear" units which, for some unknown reason, have been "turned

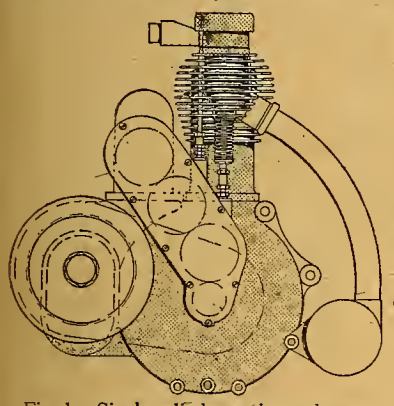


Fig. 1.—Single-cylinder engine and gear box designed as a single unit.

down" by the powers that be. True, a few machines embodying this feature have appeared on the market, notably the Diamond, Singer, Precision lightweight, and the Villiers four-stroke, but, excepting the first-named, the models now offered to the public do not include such machines.

Advantages are so apparent from both the riders' and the manufacturers' points of views that one is constrained to wonder why, in these days of advanced design, the unit system has not been more seriously adopted.

The Villiers unit was most successful, although the engine was only 74 × 80 mm. bore and stroke respectively. The first one made covered the distance between Wolverhampton and London at an average speed of 27 m.p.h., and was capable of 53 m.p.h., at which speed the revolutions of the engine were 3,400 r.p.m.

The weight of the engine and gear combined was practically the same as that of another engine and separate gear box; but as the flywheels were larger in the former, everything being equal, there would be a saving in weight by utilising the unit system.

Various Useful Types.

Fig. 1 shows a more or less conventional 3½ h.p. engine combined with a two or three-speed gear box. The latter is of the sliding gear type, driven by a silent chain from the mainshaft of the engine. Silent chains when working under ideal conditions do not need adjustments, and inside a gear box such conditions are obtained.

A twin engine of about 800 c.c. built integral with a four-speed gear box and intended for sidecar work is depicted in

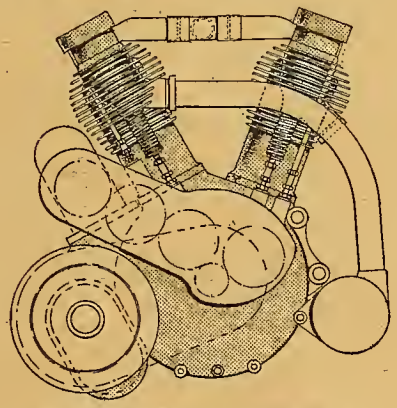


Fig. 2.—A compact unit consisting of a twin engine and gear box.

the second illustration. The gear box, which is shown in fig. 3, has sliding gears which are always in mesh. The plate clutch is outside the gear box proper, a desirable point, in view of the fact that such a clutch requires thin oil, which is not suitable for gears.

The mainshaft has the gear wheels A and D sliding on a splined portion. The wheels F and H are free to rotate upon

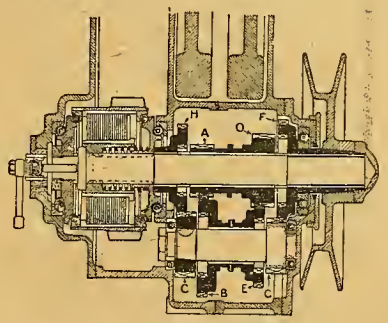


Fig. 3.—A simple four-speed gear box designed by the author.

the shaft, and the gear wheel F is fixed to the driving pulley member. On the secondary shaft, gears C and G are as part of the shaft, while B and E are idler wheels, both free to rotate separately on the shaft, but held laterally together by a forked operating lever.

To obtain the four speeds the following combinations are used, and operated by means of an ordinary gate change such as follows best car practice:

First speed.—B to left, A drives B, G drives F.

Second speed.—E to right, D drives E, G drives F.

Third speed.—A to left, H drives C, G drives F.

Fourth speed.—D to right, direct drive

STANMAR.

READERS' ROAD REPORTS.

WE have received the following road reports from one of our readers:

Kingston to Guildford.—Very good.

Farnham to Basingstoke.—Loose, rather rough.

Salisbury, Shaftesbury, Yeovil, Chard, Exeter, Okehampton, and Launceston.—Excellent.

St. Ives, Newquay, Padstow, Tintagel, Boscastle, Bude. Clovelly, Bideford, Westward Ho! Barnstaple, and Ilfracombe.—Excellent.

Bodmin, Redruth, Camborne, Penzance, and Land's End.—Good, but rough in parts.

The coast road from Ilfracombe to Combe Martin is closed owing to a landslip.

Porlock.—The private road is in a disgraceful condition, and positively dangerous. The notice at the top, stating that the road is "under repair," is wholly misleading: it appears to have had nothing whatever done to it in the way of repair.

Ilfracombe, Lynton, and Lynmouth.—Excellent.

Countisbury Hill is very loose and rough for the first three or four hundred yards; afterwards it is much better, but very rough.

Minehead, Taunton, Langport, Wincanton, and Mere.—Very good.

Mere to Amesbury.—Very loose and flinty.

Amesbury to Andover.—Rough.

The Andover-Salisbury route is much superior to the Andover-Amesbury road.

B3

THE KINGSBURY SCOOTER.

A Design Planned to Promote Cleanliness and Obviate Oil-slinging.

A seatless scooter, with two-stroke engine. Note the large silencer and manner in which the power unit is enclosed.

MESSRS. the Kingsbury Aviation Co., Kingsbury, London, N.W., propose, at no distant date, to place on the market a motor scooter of the original "stand up" type. A 2¼ h.p. two-stroke engine, carrying a detachable combustion head, is employed, while the cylinder and crank case form one casting. The crankshaft, carrying an external steel flywheel on the near side, runs in phosphor-bronze bearings, and a cast iron piston is at present employed, but may at a later date be replaced by an aluminium one fitted with cast iron rings. The weight of the power unit, less the C.A.V. magneto and standard Amac carburetter, is under 15 lb. The transmission gear employed is of a substantial nature, the drive being taken by a chain from the engine sprocket to a ball bearing countershaft situated directly in front of the rear wheel, and thence by another chain to the gear reducing sprocket enclosed in a case on the rear wheel. The gear ratio is 7 to 1.

A Chassis of Flat Steel.

The chassis is of flat steel throughout, the flexible qualities of which provide sufficient springing to absorb the smaller road shocks. On the top of the chassis a wide footboard is bolted, and is laterally held by means of long bolts, two of which hold the engine, which is situated directly behind the front wheel. Solid disc wheels are fitted, the front one being sprung by two vertically opposed compensating coil springs, the outer ends of which are attached to a steel frame, the lower half being bolted to the front forks, whilst the inner ends of the springs are attached, through a central slide, to the front hub spindle. Two brakes are provided—one hand and the other foot controlled—independently actuating the two external contracting brake bands on the rear wheel. A shield placed in the rear of the magneto, which is housed directly behind the engine, and extending from the wide footboard to the lower end of the petrol tank, adequately protects the rider, an especially important point to a lady. In addition to the gauze covering the off side of the engine, the petrol tank, conforming to the shape of the frame, practically encloses the complete engine unit. A substantial silencer is fitted and housed beneath the chassis.

The manufacturers of this scooter, who have previously been employed in the construction of aircraft engines, will be able to begin deliveries in large quantities within a short time.

R.A.C. SERVICE SCHEME.

Additional Benefits for A.C.U. Members.

EVER anxious to move with the times, the Royal Automobile Club recently inaugurated a new peace-time service scheme, which will directly benefit motor cyclists who are members of the Auto Cycle Union.

This venture will generally co-ordinate and enhance the working of the existing R.A.C. organisations. Its benefits will particularly apply to A.C.U. members, in virtue of the fact that they are associate members of the R.A.C. A.C.U. members will thus be offered additional practical advantages in the way of assistance on the road, insurance facilities, and in other directions.

Extending the Scheme.

It has been arranged to administer the new service scheme by means of R.A.C. repairer agents, who are now being specially appointed throughout the country, and the Club anticipates that within a very short time motor cyclists will be able to receive the additional advantages of the new scheme, should they desire these, in any city or town in England and Wales.

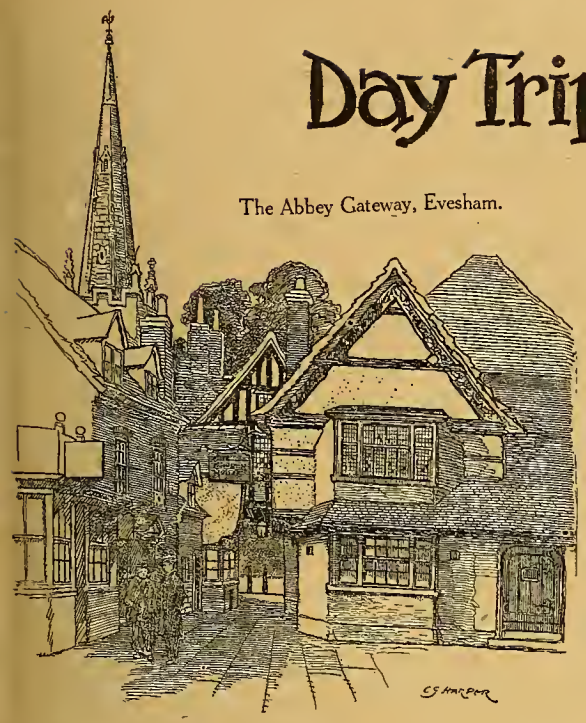
Already several thousands of new R.A.C. repairer agents have been arranged for, and the Club is endeavouring to appoint suitable garages and other businesses to maintain the new scheme in every locality. The R.A.C. agent will be readily distinguished by the new agent's sign, which we illustrate below, displayed outside his premises

The R.A.C. "Official Agent" sign. "Get-you-home" service is available wherever it is exhibited.

The R.A.C. repairer agent, with garage facilities approved by the committee, will prove a very useful person to A.C.U. members. One of the principal objects of his appointment is to render motor cyclists service in connection with the well-known "Get-you-home" scheme. Once the scheme is in full working order, wherever an A.C.U. member may meet with a breakdown or accident on the road he ought to be sure of obtaining practical assistance from an R.A.C. repairer agent. On receipt of the A.C.U. official "Assistance required" voucher the R.A.C. repairer agent will send a relief car to convey him and his passenger home, or to a railway station, within the limits of distance prescribed by the scheme. The "Get-you-home" scheme is one of the most widely appreciated of the many advantages of A.C.U. membership, and, augmented by the new facilities of the repairer agent service, it will prove of still more practical service to motor cyclists than hitherto. Wherever the A.C.U. member sees the R.A.C. repairer agent's official sign there he may be sure of ready and adequate assistance to cope with every kind of accident or breakdown on the road.

Day Trips and Week-Ends

By Chas. G. Harper



The Abbey Gateway, Evesham.

Instalment No. I.—Birmingham to Builth,—appeared in "The Motor Cycle" of July 17th.

II.—Oxford to Evesham, Tewkesbury, and Stow-on-the-Wold.

THIS is a round of 91½ miles from the University City and back, visiting some interesting country, and including a few byways not often explored. Making a start from Carfax in the centre of Oxford, the way out lies along Cornmarket and St. Giles's ("the Giler," according to University slang), and so along the well-worn route to Woodstock. The explorer probably will not want at the opening of his run, in eight miles, to turn aside in Woodstock town to visit Blenheim Park and Palace, which, together with the parish church, are found along a more or less obscure byway on the left of the main street. For the rest, Woodstock is a decayed old market town, which by no means realises the promise of its pretty name. We leave it without regret, and so through Over Kiddington and Road Enstone. It is a road characteristic of most Oxfordshire main roads: forthright and a little bare and grim. A left-hand fork in a further three miles leads direct to Chipping Norton. Let us, however, ignore this, and proceed into that town by the cross roads in another mile: this for the sake of seeing all that remains of "Chapel House," marked on the half-inch maps. Truth to tell, the actual sight is not inspiring: just a long range of farm-like buildings and a private house; but the place has an interesting history, for here was the "Chapel House" Inn, one of the best country hostelries in coaching times. Everyone knew it by that name, and so it is rather difficult to come by its real sign, which was the "Shakespeare's Head." The name "Chapel House," which sounds a good deal more devotional than we might reasonably expect of a house of entertainment for travellers, arose from the site having once been that of a wayside oratory and guest-house on what was then a lonely road. So it was not altogether a wrench from that ancient association when an inn was built here. Not a wrench, only a development. It was at "Chapel House Inn" that Doctor Johnson in 1776 held forth to the admiring Boswell upon the excellence of inns in general, concluding with an emphatic "No, sir, there is nothing which has yet been contrived by man by which so much happiness is provided as by a good tavern or inn."

The old-timbered buildings of Tewkesbury, which go to make the town one of the most picturesque in the Midlands.

A Puzzling Route.

Chipping Norton is a curiously half-decayed and half-revived kind of a place on an awkward site and a still more awkward branch railway. I do not think it can possibly interest anyone very much. But to get out of it, that is something of a puzzle for the motorist in a hurry, who has come in by the route detailed above, and who wants to get away on the road for Moreton-in-the-Marsh. The way out is, in fact, opposite the Town Hall, into New Street, which has every appearance of being an obscure alley leading nowhere in particular. But it is the main road, which presently broadens out and goes pleasantly enough past "Cross Hands" Inn. At one mile beyond that landmark, Little Compton is on the right, and on the left, one mile, is Chastleton House, the great mansion built about 1610 by one Walter Jones. There the Royalist, Capt. Arthur Jones, was successfully hidden, although the Parliamentary soldiers sought the place diligently for him. His hiding hole, and another, are there to this day, and so are many ancient relics.

We come into Moreton-in-the-Marsh past a tall stone pillar on the right. It bears no inscription nor any indication of its purpose, but it is the "Four Shire Stone," and marks where Oxfordshire, Warwickshire, Gloucestershire, and Worcestershire meet. Moreton is not in a marsh, nor ever was. The name means "Moreton-on-the-border," or in

the march: a very different thing from "marsh." The term survives in the "Marches of Wales," the borders between England and that Principality, and is hidden in the title of "Marquis," a marquis having been originally a Lord Marcher. The small town is remarkable for little else than its long broad street, for the imposing modern Town Hall, and for a small curfew turret surmounting an old lock-up for petty offenders. But if you care for the trouble of seeking the Cottage Hospital, there will be found in it a relic scarcely to be expected in such a place. It is the chair in which Charles I. sat during his trial. One further item about Moreton. It is situated on the ancient Fosse Way: a road crossing at right angles to our route.

In the Cotswold village of Stow-on-the-Wold.

Two miles out, on the way to Broadway, begins the long, heavy rise past Bourton-on-the-Hill, to 940ft., which marks the summit of the road over Broadway Hill. Away to the left, Broadway Tower, a modern building, marks a height of some 80ft. more. Just where a road goes off on the right to Chipping Campden, note the ancient signpost with seventeenth century iron arms, giving the mileages to various places, all wrong. Correct enough in its day, road alterations have now rendered it hopelessly at fault. Incidentally, it is the oldest signpost in England. The pretty little "Fish" Inn stands beside the road just before it goes down, steeply and lengthily, into Broadway. Beneath the picture of a trout (if it *is* a trout) are the quaint lines:

"The Fish, at the top of the Hill,
But how it came there is more wonderful still."

Broadway is *the* show village of Worcestershire: a little too much so now to be quite natural. The beauties of it began to be appreciated some twenty-five years ago, when Mary Anderson married and became Madame de Navarro, thus making it something of a pilgrimage for Americans. A little earlier the American artists, Millet and Edwin Abbey, had settled there, and about that time the fine old "Lygon Arms" Inn, built about 1620, and long known as the "White Hart," began to be restored and brought back to the beauty and the stateliness from which it had fallen when railways caused the traffic of the roads to decay. To-day it is one of the finest country hostelries in England. Broadway is a combination of beautiful antiquity and of exceeding modern neatness. The long broad street has here and there little selvedges of grass in front of the cottages: little strips all kept in the perfection of well-mown tidiness. Much could be said of Broadway if space permitted, which it does not. A church built in 1840 serves to save the inhabitants the walk of one mile to the old parish church; but it is a beautiful walk, and the modern church, as may readily be supposed, has neither the beauty nor the interest of the old one, which, by the way, contains a memorial brass to the innkeeper of the "White Hart," John Trevis, who largely remodelled the house in 1620.

A group of old-world buildings in the village of Eynsham.

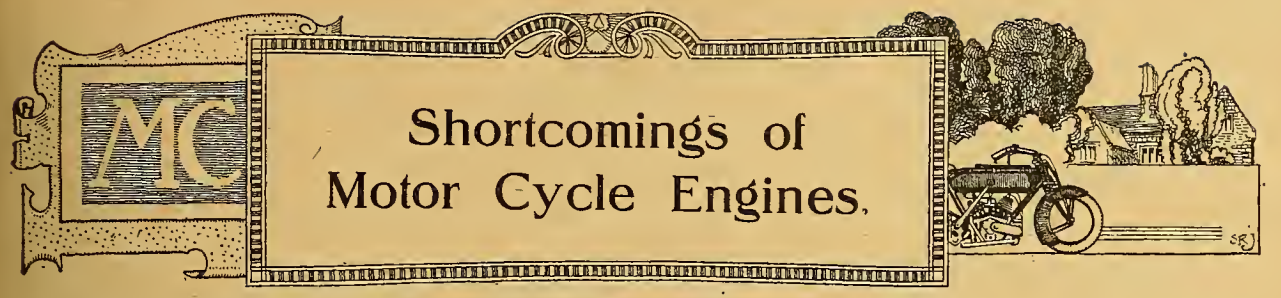
In less than five miles we reach Bengeworth, a suburb of Evesham, on this side of the Avon. To explore the town, cross the fine bridge and up the High Street. To-day Evesham lives for and on fruit. It is the great centre of Worcestershire fruit-growing, particularly of plums. But in the old days it was a great religious community. Here was one of the stateliest abbeys in the kingdom, but of it there is almost nothing left, except the fine Bell Tower, the quaint little entry called "Abbey Gateway," and the old building known as the Almonry.

Retracing the High Street, and crossing the bridge, we turn south along a level road through Sedgeberrow to Teddington Cross Hands.

Our return journey begins here. It is 15¾ miles to Stow-on-the-Wold, and a hilly road, climbing to the Cotswolds up Stanway Hill, and past the little inn, the "Plough," at Ford; every way you come up into hilltop Stow, and it is a meeting place of many roads. We leave it by the Burford Road, branching off in 3½ miles, to the left, for the pleasant byways through Westcote, Idbury, Fifield, and Shipton-under-Wychwood, an old-world village with an equally old-world inn, the "Crown." Thence to Leafield, where are situated the nine lofty masts of the Marconi wireless station, which have been visible for miles. Those tourists who take these winding byways will find themselves repaid in interest for doing so, and they bring you out by preference from Leafield, in three miles to Minster Lovel, where the great ruins of the ancient manor house of the Lovels stand by the river Windrush and the old church of St. Kenelm. Here the by-road comes up to the great Oxford and Gloucester road. Reaching it, we turn left and come in less than three miles to Witney, famous for blankets, with its quaint old butter cross, and stately church situated at the further extremity of an unexpected *cul-de-sac*.

And so home to Oxford, in another 11½ miles, past the village and toll-bridge of Eynsham. From Eynsham, most of the way into Oxford, the road has lately fallen into an abominable condition.

Instalment No. III will deal with Oxford to Cirencester and Cheltenham.



Shortcomings of Motor Cycle Engines.

Some Impressions and Deductions derived from a Study of Aero Engines. Part II.

(Continued from page 138, August 7th.)

JUST at first there will probably be but little change from the standard side-by-side valve position, but I am convinced that, as soon as the great British public can be convinced that overhead valves can be made practically unbreakable, there will be a great change, and the overhead type will become as universal as the present arrangement of side-by-side valves.

The reasons in favour of overhead valves are so overwhelming that they cannot be denied. Increased efficiency, which means, among other things, improved fuel consumption and better cooling for the head, are the first items to be considered.

It has been conclusively proved that a good design of cylinder head with overhead valves is indispensable for real efficiency. Aero engine research has proved that it is possible to obtain with well-designed air-cooled cylinders better m.e.p.'s than those obtained before the war on even water-cooled racing car engines. This has been brought about almost entirely by improved designs of cylinder head and valve ports, in conjunction with improved cooling due to the use of special materials for cylinder head construction. The cooling is important, but for such small cylinders as those used in normal motor cycle construction, the cooling of a cast iron head, *if properly designed*, will probably be sufficient for all normal purposes.

Cooling Problems.

A great deal of thought may well be expended advantageously on the subject of cooling. Why is it, for instance, that many (probably most) motor cycle designers turn out engines with less cooling surface on the head and valve ports than round the cylinder, *i.e.*, reduced cooling surface just where it is most needed? Possibly this is due partly to the look of the thing and partly to the fact that deep fins round the exhaust port of the average side by side valve 500 c.c. cylinder would be apt to burn the rider's trousers. Well, these two objections no longer hold good in the case of o.h.v. engines, and it is possible to arrange deep fins round the head and exhaust valve ports without any detrimental effects. Even the shape of the cooling ribs is important, and there is a tendency to err in the direction of super-thin rib roots when cast iron cylinders and deep ribs are involved. The use of aluminium cylinder heads is obviously desirable, owing to the improved cooling which this material provides, but its adoption becomes a question of construction and production rather than desirability, and though the ultimate inclusion of aluminium heads in all first class specifications is almost a certainty, there are one or two manufacturing difficulties yet to be cleared up.

To return to the question of valve gear, which is intimately connected with cylinder head design, two difficulties arise in connection with overhead valves—great overall height (in the case of a vertical single-cylinder) and noise. These are real troubles, but neither is insuperable. In the first case, provided the engine can be got into a reasonable frame (a matter which presents little difficulty unless a very long stroke is used), a detachable head will solve any difficulty with regard to accessibility. The second case requires more consideration, especially if high efficiency cams are to be used. At the same time, it will be found that if ample bearing surfaces are employed for the rocker arms and special arrangements are made for their lubrication, there will not be any undue clatter. Added to this, it is a comparatively easy matter to enclose even overhead valve gear in such a way as to ensure adequate protection.

Lubrication.

Lubrication has been a vexed question for a long time in this country. Most designers have avoided the question as far as possible by introducing ball or roller bearings whenever there is room for them and leaving the cylinder and gudgeon pin to be lubricated by "hope," or whenever the rider feels inclined. This system, for some mysterious reason, has worked fairly well (probably because motor cyclists as a whole are enthusiasts who take the trouble to learn enough about their mounts to know when oil is required). At the best, however, this is a hit and miss system, even the drip feed oil supply requiring considerable skill in regulation if it is to be really satisfactory under varied conditions. The latest innovations in the way of throttle controlled oil pumps are a step in the right direction, and when properly carried out are as near perfection as possible with any system which relies merely on the amount of oil fed in, but if an oil pump is to be used, why not have a proper lubrication system? A small gear pump of sufficient capacity for the average motor cycle engine is an absolutely fool-proof device, and its cost would easily be saved by the absence of ball bearings. By the use of a forced lubrication system a proper supply of oil could be ensured for all bearings, and if it were considered desirable, the relief valve spring tension could be controlled in conjunction with the throttle, so that when the engine is under load oil would be delivered at higher pressure than is normally the case. A simple system of forced lubrication is a blessing beyond words, and, provided that the filtering arrangements are properly carried out, there need be absolutely no fear on the score of unreliability.

The Shortcomings of Motor Cycle Engines.—

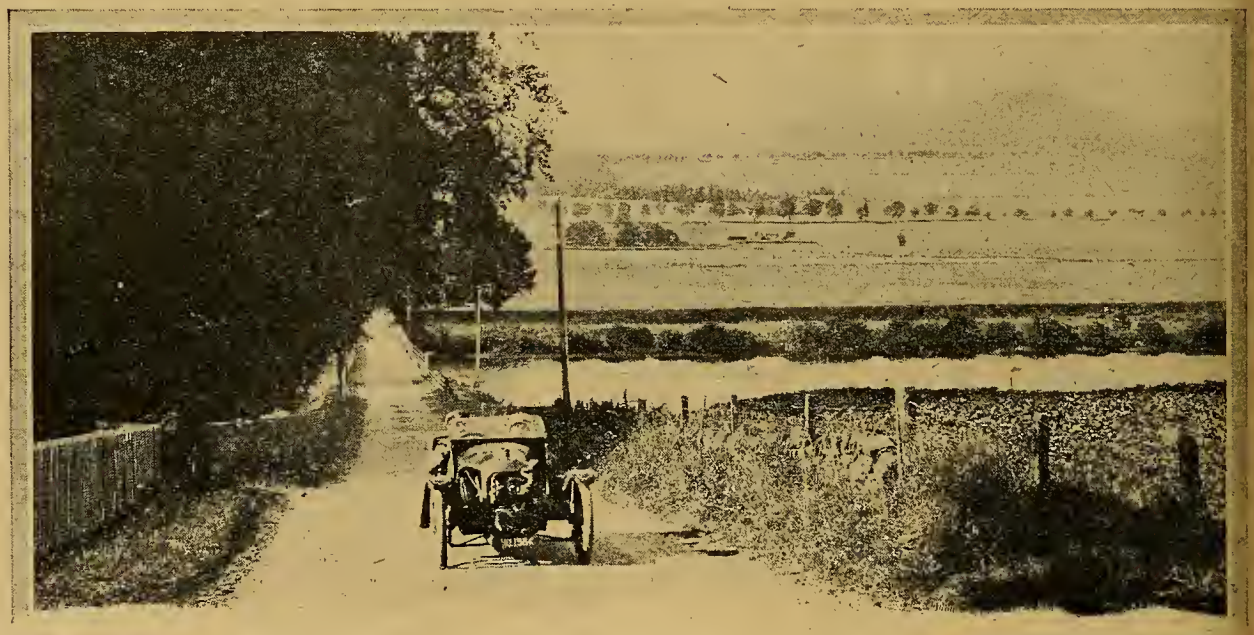
So long as inside flywheels are used on motor cycles, so long will there be trouble in the lubrication of plain big end bearings, unless forced lubrication is employed. Several ingenious devices have been produced to alleviate this trouble (J.A.P., Abingdon, etc.), but even these depend to a degree on the regularity with which the engine is supplied with oil.

Conclusion.

The merits of the single, V twin, flat twin, four-cylinder, and two-stroke have already been much discussed, and each will undoubtedly have its own admirers. All, however, can be improved, and it is with the idea of destroying the rut into which motor cycle design has been running for some years that this article has been written.

Engineering is a specialised profession, and the science of the internal combustion engine is becoming more and more specialised day by day. Wonderful things have been accomplished by motor cycles in the past. Let us hope that our hobby (and business) may rise above the rather crude stage which it has now attained. A few far-seeing manufacturers have given us a lead, and a few have disappeared (sad to relate) on account of the "lack of conventionality" of their mounts. It is not an easy matter to educate the public, but now, if ever, is the great opportunity, when the world is full of new ideas. Possibly these notes will draw forth a cloud of abuse from some of the more conservative amongst both manufacturers and public. However, the suggestions may be taken in the spirit in which they are meant, for it is high time that "hit and miss" methods should be discarded, and that specialisation should take place, not only in materials, but in all other departments of this modern industry.

A.M.I.A.E.



A Scottish panorama. A Morgan on a hill near Contin between Beauly and Braemore, north of the Caledonian Canal, in the Inverness district.

IRISH TWO-DAY RELIABILITY TRIAL.

THE Dublin and District M.C.C. held its annual two-day reliability trial to Glengarriff and back on the 2nd and 4th August, the total distance covered during the run being 446 miles. The first day's route was through Kildare, Cashel, Lismore, Cork, and Macroom, the mileage being 225. The next day was given over to sight-seeing, and on Monday the return journey *via* Killarney, Limerick, Roscrea, and Maryborough was commenced, the distance being 221 miles.

Twenty-two competitors were started by the timekeeper, Mr. S. L. Hutchinson, on the Saturday morning, these being:

W. H. Freeman (7-9 Indian sc.)
P. H. Hurse (4¼ B.S.A.)
T. Woods (4¼ B.S.A.)
Maj. Waters (2¼ Baby Triumph)
J. Browne (2¾ Douglas)
H. McAllister (4 Triumph sc.)
Maj. V. Farrell (6 A.J.S. sc.)
Dene Allen (3½ Norton)
A. Carton (7-9 Indian sc.)
O. Grimes (2¾ Douglas)
W. J. Burney (8 Enfield sc.)
J. P. O'Brien (7-9 Indian sc.)
Randall Walsh (8 Matchless sc.)
G. Kilroy (3½ Sunbeam sc.)
W. J. Chambers (6 A.J.S. sc.)
J. Adair (2¼ New Hudson)
C. W. Johnstone (3½ Sunbeam)
C. S. Kettle (4¼ B.S.A.)
S. Redmond (5 Indian)
F. McDonagh (4¼ B.S.A.)
S. Smith (4 Triumph)
J. Skehan (4 Campion)

Rory Smith (7-9 Indian sc.) did not start.

During the earlier part of the trial the weather conditions were ideal, but later there were heavy showers which became prevalent.

Allen (Norton) suffered a leaking tank, and the following stopped on Crowlane Hill: Grimes (Douglas), Freeman (Indian sc.), Chambers (A.J.S. sc.), Walsh (Matchless sc.), and O'Brien (Indian sc.)

Major Waters (Baby Triumph) climbed all hills, including Crowlane.

At the final check at Inchicore, the following arrived to time on Monday evening:

P. H. Hurse (4¼ B.S.A.)
T. Woods (4¼ B.S.A.)
Maj. Waters (2¼ Baby Triumph)
J. Browne (2¾ Douglas)
H. McAllister (4 Triumph sc.)
Maj. V. Farrell (6 A.J.S. sc.)
A. Carton (7-9 Indian sc.)
W. J. Burney (8 Enfield sc.)
Randall Walsh (8 Matchless sc.)
W. J. Chambers (6 A.J.S. sc.)
C. W. Johnstone (3½ Sunbeam)
C. S. Kettle (4¼ B.S.A.)
S. Redmond (5 Indian)
F. McDonagh (4¼ B.S.A.)
S. Smith (4 Triumph)

The probable team prize winners are Smith, McAllister, and Waters, who were mounted on Triumphs.

1914 v. 1919.

The Experiences of a Middle-aged Novice.

RECORDED BY VETERAN.

A SHREWD and judgmatical man of forty figures as my most recent convert to motor cycling (all good motor cyclists are missionaries). With his conversion I combined an experiment in taste. He possessed a sturdy prejudice against motor cycling, based on what he had seen and heard; and I thought his unprejudiced opinion on our old 1914 ideals and their modern successors might be interesting. By way of a decisive test he was to cover thirty miles of carefully selected road twice, using a 1914 machine on the first occasion, and a 1919 specification on the second trip. The value of a fresh judgment is shown by the fact that his verdict surprised such an old stager as myself in several quite important respects.

The two machines were carefully selected. The 1914 model was a single-cylinder of excellent quality, with one of the very best spring forks and smoothest transmissions. The up-to-date mount had a flat twin engine, automatic carburetter, and a fully sprung frame. I should add that a middle-aged rider was utilised as the arbitrator because the future of the industry does not depend upon youthful opinion, as is often fallaciously supposed: the older men have more money at their command, they "embrace" women psychologically if not physically, and they are often too fat and lazy to cycle. These three factors lend weight to their judgment as to the saleability of a given model.

1914.

The rider, who shall henceforward be designated as "Jones," made his first thirty mile trip on the 1914 model without incident. At the end of it he waxed extremely talkative. I gathered that he would only purchase a sister machine on the grounds that his dimensions precluded push-cycling, whilst his means did not run to a car. On the other hand, he had enjoyed the speed and the fresh air. Asked to specify the disagreeables in his novel experience, he identified the following defects with much fluency and little hesitation:

1. *Weight.*—His discarded push-bicycle weighed 22 lb. It was absurd to ask him to lug about a monster scaling 2½ cwt. He made picturesque references to hauling it through the small pedestrian gate at a level crossing

2. *Vibration.*—He objected to feeling the engine in every nerve of his body, and said that when he wanted electric massage he knew where to get it good. But his language on this point paled its ineffectual fires when he started on road vibration. (In actual fact, the road was excellent as roads go, and the spring fork quite admirable; he can have sustained no road vibration except that emanating from the back wheel; anyhow, he said that "the road kept hammering his backbone.")

3. *Carburetter.*—This was of the two-lever "sensitive" type. It is not abnormally sensitive, but the air must be shut off for picking up from a crawl, and it requires frequent adjustment if the speed is varied over a wide range.

1919.

When Jones had blown off steam on the subject of the 1914 model, he was despatched over the same road on a 1919 machine. I innocently expected him to be enthusiastic at the end of this jaunt, and did not suppose he would have any criticisms at all to offer. Quite obviously, he had enjoyed the second trip more than the first, and his conversion was complete when he dismounted. To edit his praises first, the items in order of mention were:

1. *Carburetter.*—The 1919 vaporiser was of the single-lever type, and the simplicity of this control appealed to him enormously. He did not allude specifically to several restarts, a tricky little hill, and several awkward corners along the route; but spoke rather of the general comfort engendered by a simple control which "always did what you wanted."

2. *Comfort.*—He enlarged on the complete absence of vibration, and marvelled that anybody still troubled to make or ride such liver-joggling mounts as the rigid frame single-cylinder. (I doubt if he could distinguish between road and engine vibration: both were present on the 1914 model, neither on that of 1919.)

3. *Conking.*—He enquired quite angrily why the older machine sounded as if it were breaking in half round a bad corner whilst the new one slid round right angles like a pushcycle. (I blamed his driving; but only a clever rider can coax this particular 1914 engine round a really sharp corner on top gear without getting an anvil exhibition.)

Gear Changing.

Now come my surprises. He denounced two points in the up-to-date specification with unmeasured ferocity. The first was the gear box. Against this he had two plaints. The more violent was that you had to do so many things at the same time (*i.e.*, set the throttle, declutch, and move the gear lever); whereas, on the older machine, gear changing was as simple as "giving the new fellow more gas" (the 1914 mount had a foolproof gear change, independent of clutch or throttle work). "Jones" would evidently applaud Henry Ford's judgment in giving the general public a gear change which can neither be missed nor scrunched. It would appear that Jones's tribula-

1914 v. 1919.—

tions mostly occurred on the only real hill along his route, where he forgot his steering in the effort to change down, and succeeded in missing gears, all but ramming a bank, and finally commenced to slide backwards and toppled over. But he also described, with some bitterness, how he had dropped from top to bottom when he wanted second, and how the machine had nearly stopped, and he had nearly gone on without it. I draw the attention of designers to Jones's opinion about complex gear changes. Hardly less pronounced were his views on the frequency of gear changes. I do not think these are quite to the point, seeing that a flat twin of 3½ h.p. need not demand more gear changes than a single of the same power; but the 1919 type employed does not climb trees on its top gear, and, as explained above, Jones had a great distaste for its gears at the best of times.

Secondly, he denounced its weight very violently, and made hopeful enquiries about a scooter. Possibly this criticism should be classed with others in respect of which any novice's opinion is unsound. For example, Jones is not qualified to pronounce upon accessibility, cleanliness, lubrication, sideslip, and various other vital topics, on two of which the single-cylinder probably scores quite heavily. The contrast between a 22 lb. pushcycle and even a scooter at perhaps 75 lb. actual is sure to be felt at first; it is quite possible that the change from 22 lb. to, say, 175 lb. would not be noticed more materially. In neither case did Jones have the luck to enjoy an automatic lubrication system. He did not complain about the hand pump: when challenged, he merely said, "Oh, that did not bother me; it was easy to remember a pumpful at X (the halfway house, going and coming) and at Y (the turning point)"; but I should argue from his strong dislike of two-lever carburetters that a hand pump would annoy him on a long journey.

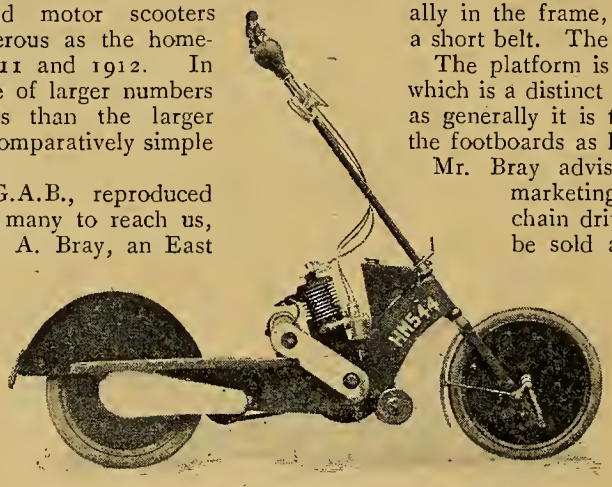
To sum up, this particular novice set a high value on comfort and on foolproof controls of his engine and gears. I fancy most novices would continue to endorse these points as their experience ripened. He further regarded our standard weights as ridiculous: on this question experience might modify his judgment.

A Scooter with Pressed Steel Frame.

PRIVATELY constructed motor scooters are becoming as numerous as the home-made cycle cars of 1911 and 1912. In fact, there is greater promise of larger numbers of miniature single trackers than the larger machines, because they are comparatively simple and cheap to make.

The illustration of the G.A.B., reproduced on this page, is one of the many to reach us, and is the design of Mr. G. A. Bray, an East Ham enthusiast, at present in the R.A.F.

As will be seen a pressed steel frame is employed, the transmission is enclosed, and disc wheels are fitted. The last mentioned are 16in. in diameter. The engine fitted is a 2¼ h.p. two-stroke, placed diagonally in the frame, and drives a countershaft by a short belt. The final transmission is by chain.



The G.A.B. scooter fitted with 2¼ h.p. two-stroke engine.

The platform is well above the wheel centre, which is a distinct departure from usual practice, as generally it is the aim of designers to place the footboards as low as possible.

Mr. Bray advises us that he contemplates marketing a similar machine with all chain drive, which, it is expected, will be sold at a figure in the neighbourhood of £25. Several new features may be embodied, including a mechanical hand starter, a band brake on the rear wheel, an improved spring fork, and 16 × 2⅜in. tyres. Twist grip controls are also under consideration, as they are better suited to short bars.

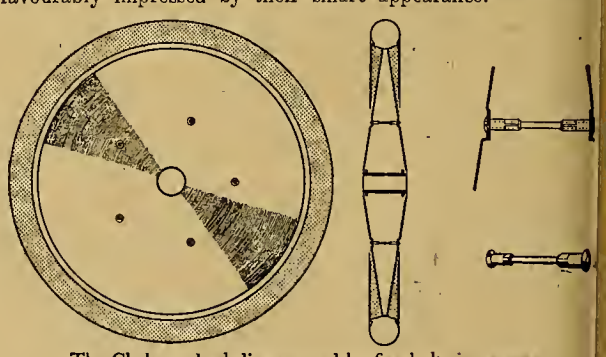
REFINEMENTS IN WHEEL DISCS.

A MACHINE equipped with wheel discs is regarded in some quarters as being ultra-fashionable, but there is another reason, however, why their present popularity may increase instead of diminish. This is the point of convenience in cleaning. To clean a wire wheel is a long and irksome task, and for this reason one or two firms have experimented with artillery wheels, which, we understand, were found too rigid. It would appear, therefore, that wheel discs will retain their popularity for some time to come, and it is not surprising to find several firms seriously entertaining the production of them on proper engineering lines. It is not sufficient to cut out discs with a pair of hand shears, and fix them by ugly nuts and bolts. Nothing looks so unfinished as some of the wheel discs at present on the road, which are generally "home" produced.

One of the firms entering this field with a neatly and correctly constructed disc is the Chelsea Aviation Co., Ltd., 30, Whiteheads Grove, Chelsea, S.W.3.

The discs may be had in either black enamelled steel or polished aluminium. They are held together by five bolts midway between the hub and the rim, and have the merit that they will neither rattle nor work loose. The bolts are completely encased, and access to the valve is obtained by means of a slide.

We noticed a Douglas outfit in the London-Edinburgh run which was equipped with these discs, and we were very favourably impressed by their smart appearance.



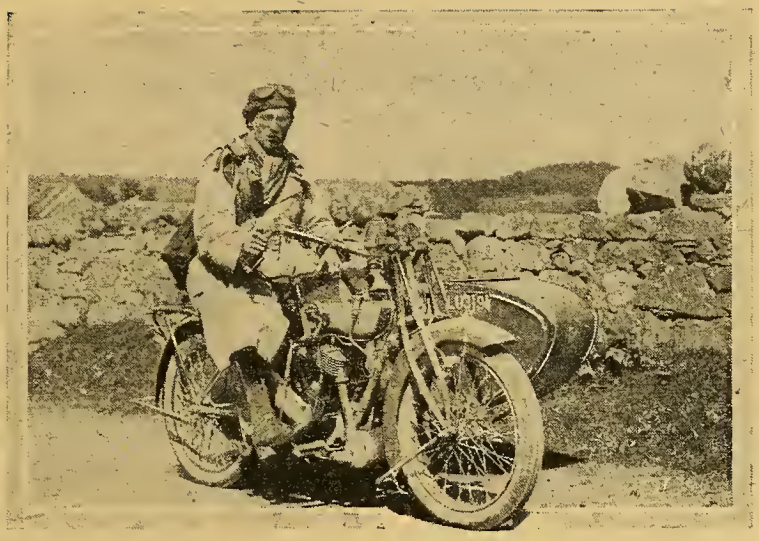
The Chelsea wheel disc secured by five bolts in recesses.

1,768 Miles in Twelve Days.

Photographing the Scottish Six Days Trial on a Victory Model Matchless.

BY "THE MOTOR CYCLE" STAFF PHOTOGRAPHER.

PHOTOGRAPHING the Scottish Six Days always means ten or twelve days of hard riding, and, after following the 1913 and 1914 events on a solo machine, I decided that a sidecar is better to accommodate the heavy paraphernalia which it is necessary to carry in order to obtain a good selection of photographs representative of the riders, the machines, and the course.



The Motor Cycle photographer aboard his 8 h.p. Matchless outfit.

This year the event, for me, was a very rushed affair. I was away on holidays at the time the Editor decided that my fingers should press the button. I was recalled from the coast by wire, and had thirty-six hours in which thoroughly to overhaul the machine and fit new tyres. My mount is an 8 h.p. Victory Matchless with many thousands of miles to its credit, so I made my way straight to Messrs. Colliers at Woolwich, arriving at noon on the Wednesday prior to the trial. A few words with C. R. Collier to explain matters were sufficient for this sporting manufacturer. He helped to dismantle the machine himself, and very soon the engine, gear box, and wheels were out for overhaul. In the afternoon he turned his men on to the job, and by 6 p.m. I left the works with the machine in trim for the strenuous week's work.

With the same good-hearted sportsmanship as displayed by the Collier firm, the Palmer Tyre, Ltd., fitted a new set of tyres, and by midday on Thursday I was ready for the Northern trip. With the exception of a stop to rectify the timing, which had slipped, the run to the Scottish capital was without incident other than running into a very bad thunderstorm a few miles from my destination. The actual running time was sixteen hours—25 m.p.h. average.

During the trial, with one exception, the machine gave no trouble, and climbed every hill but Aultnaharie, which I did not trouble to descend, since the competitors were returning up the hill almost immediately. The little trouble experienced was concerned with the magneto. The fibre brush on the contact breaker arm is evidently soft, and twice wore down, the result being that the points failed to break. It would be interesting to know if any readers have had similar trouble.

I left Edinburgh on the day following the conclusion of the trial and cruised back to London at an easy speed, arriving on Tuesday morning. The Victory Matchless is fitted with an 8 h.p. J.A.P. engine and an Amac carburetter, and my petrol consumption works out at over 60 m.p.g., but under less strenuous conditions I frequently obtain 70 m.p.g. despite the heavy loads I usually carry.

My total mileage to provide readers of *The Motor Cycle* with a photographic record of the 1919 Scottish trials is 1,768—covered in twelve days.

Home Produced Petroleum.

English Petrol in Abundance. Norfolk Deposits said to be the Richest in the World.

NOT the least important phase of the war is the manner in which our home resources have been developed. A country such as ours, which made no pretence of being self-supporting in many of its most vital requirements, might have found itself in even graver difficulties than we experienced, but our natural possibilities were explored in every way, and we emerged from the crisis in a position of much greater potential strength than ever before.

It has long been taken as a matter of course that our petrol supplies should come from the recognised oil-well districts of the world, but to-day we know that geologists consider the oil-bearing shales of Norfolk, hitherto of hazy existence to the man in the street, to be the richest in the world.

The credit for the discovery of the value of these deposits is due to Dr. Forbes Leslie, F.G.S., who estimates that two-thousand million tons of shale lie ready for mining, and that a yield of 200,000,000 tons of petroleum products may be expected; the value of this is apparent when our yearly consumption is only 1,500,000 tons.

The workings are already in hand, and one distillery is now in operation, so that in the near future we may hope to have abundant supplies of petrol produced within our own boundaries.

NO AGE LIMIT.

A Further Selection of Letters from Riders of Mature Years.

IN our issues for June 26th and July 3rd and 10th we published several letters from motor cyclists of advancing years, all of whom testified that there is practically no age limit where the motor cycle is concerned.

The following is a list of some of these riders, their ages, and the machines they use:

	Age.
Mr. Robins (3½ Rex)	81
Rev. J. Parnell (sidecar)	79
Mr. R. Wolstenholme (4½ Excelsior)	77
Mr. Jas. Scott (2½ Calcott)	75
Capt. H. C. Hollenbeck (Cleveland lightweight)	73
Mr. J. E. Jones (Cleveland lightweight)	72
Rev. E. W. Wilmott (3½ Sunbeam sc.)	72
"An Irish Canon" (4 Triumph sc.)	72
Mr. J. R. Marsh (4¼ B.S.A. sc.)	70
Mr. R. Cumming (Baby Levis and Triumph Junior)	69
Mr. F. G. Hillyer (6 Enfield sc.)	68
Rev. A. G. Stembridge (3½ Triumph sc.) ..	67
Mr. W. Crooke (3½ Rover sc.)	67
Mr. Sibley (2¾ Allon)	65
Mr. S. Walker (Triumph Junior)	65
Mr. A. J. Hicks (Triumph Junior)	63
Mr. John Watson (4 Lincoln Elk sc.)	61
Mr. Geo. J. Bragg (4¼ B.S.A. sc.)	55

This week we are able to give another selection of letters, and, incidentally, one is from an eighty-three-year-old reader, who so far heads the list, and until a rider is found who exceeds him in age, may be regarded as Britain's oldest motor cyclist. This rider is Mr. Elias Blackburn, of Redcar, who has been a reader of *The Motor Cycle* since No. 1. He writes as follows:

"Seeing that you have been publishing particulars of aged people who ride motor cycles, I send you my picture, as I can take the lead of any published up to date. My age is eighty-three, and I have ridden almost every make of bicycle from the dandy-horse seventy years ago. My motor cycles include L.M.C., Premier, and several others, which I have always ridden solo, and nothing would give me greater pleasure than to meet other motor cyclists who, like myself, are getting on in years.

"I must add that, from a health point of view, the effects of motor cycling have been decidedly beneficial."

Another young-old rider of seventy-seven summers is Mr. W. H. Marshall, of York, who uses a 2¾ h.p. New Imperial-Jap with a light sidecar, in which he carries a camping outfit. Mr. Marshall took up the motor cycle after a lapse of fifteen years, so he was one of the pioneers. He obtained his machine last Easter, and advises us that, after three or four attempts to start it, he rode fourteen miles without any trouble. After a few short runs, he ventured upon a hundred-mile trip. Although he has ridden the machine solo, Mr. Marshall prefers the sidecar, and is now planning a camping tour. Last year this young-old reader rode from York to London and back on a pedal cycle with tent and kit, camping on the way.

Mr. Elias Blackburn, age 83 years.

J. L. Norton, the designer of the record-breaking Norton motor cycle, is a rider of long experience, having few compeers as a driver. It may be said that the Norton has been developed on the road experience of its designer and those associated with him.

Mr. W. H. Marshall, age 77 years.

Here is another example, proving, without question, that motor cycling is a pastime for all ages.

Mr. R. Parnell.

Another rider, sixty-seven years of age, who hails from Launceston, is Mr. Richard Parnell. For several years he used a lightweight fixed gear machine, and derived much enjoyment from it. Of late he has used a two-speed geared model, and naturally finds it mu easier to manipulate.

A sixty-seven year old rider, who u his machine regularly, is Mr. Cornwa Knapp, St. Helen's Cottage, Byfle whose remarks we quote:

"I was born on 5th June, 1852, a am just on sixty-seven.

Mr. C. Knapp.

"I still use my motor cycle daily, and up to 1914 made long tours lasting up to three weeks, occasionally riding over three hundred miles in the day, and propose to make some long tours this summer.

"As an engineer by profession, I naturally took motoring as soon as I saw its possibili (about 1900). Have toured over pra cally the whole of this country, parts of France. In recent years I h used a Zenith with 4¼ h.p. Preci engine for heavy touring, and a twin 2½ h.p. for light work."

If any other readers of mature y care to place their experiences on rec we shall be pleased to hear from them

In the meantime, we conclude that Elias Blackburn, of Redcar, is the ol motor cyclist, and until we hear fro older rider claiming this distinction, readers, like ourselves, will look upon Yorkshire veteran as heading the lis young-old motor cyclists who prove so far as the pastime is concerned, t is no age limit.

TWENTY-FOUR HOURS TRIAL.

On the 22nd and 23rd inst. the Motor Club will hold its twenty-four h ride from Woodford to York and starting from "The Eagle Hotel," Sn brook at 7 p.m.

In addition to the cup presented by Triumph Cycle Co., and gold, silver, bronze medals, several special aw have also been offered, namely, a s challenge cup, and a special prize wi presented by the Hendee Manufactu Co. for the best performance by a pr owner.

Entries (15s.) should be sent to Douglas Kapadia, Holme Villa, A Road, Loughton, Essex. The compe is confined to club members only.

N.M.C.F.U. (Sheffield).

The above branch of the N.M.C.F.U. will hold a sports meeting on the 16th, at Cordwell Valley.

Kidderminster M.C.C.

The results of the recent petrol consumption test are as follow:

	m.p.g.	Fig. of Merit.
1. J. S. Nickson (3½ Rudge) ..	130	14.4
2. L. Naylor (6 A.J.S. sc.) ..	53	14.5
3. A. W. Lucas (4 Triumph sc.)	72	12.8

N.M.C.F.U. (Derby).

A national inter-meet will be held in the centre of Newtown Linford, near Bradgate Park, Leicester, on the 24th inst. at 2.30 p.m. It is anticipated that the record of Stratford (700) will be easily passed.

Oxford M.C.

The membership of the club is fast increasing, and local motor cyclists interested in competitions and other club events should first communicate with the hon. sec., Mr. A. Morton Bailey, 43, Cornmarket Street, Oxford.

North Derbyshire M.C.C.

The above club will hold a hill-climb on the 20th inst., for members only. Five classes are arranged: 350 c.c. and 600 c.c. solo on formula, 600 c.c. and unlimited on time, and 600 c.c. and unlimited passenger machines on formula. Entries close on Monday, the 18th inst.

Birmingham M.C.C.

The results of the Midland Cup trial are as follow: T. Stevens (4¼ James sc.) and H. Denley (8 Morgan), equal holders of the Midland Cup; team prize, New Imperial team (Messrs. Taylor, Arch, and Sellis). No other competitors qualified for awards.

Southport A.C.

This newly formed club has made a good start with a successful opening run, which, despite the inclement weather, attracted a good muster of members. The headquarters of the club are the Queen's Hotel, Southport. Any interested local motor cyclist should communicate with the secretary, Mr. H. Dobson, 5, York Avenue, Birkdale, Southport.

N.M.C.F.U. (Leeds).

A rally of motor cyclists is being organised by the Leeds branch of the National Motor Cyclists' Fuel Union on the 31st. Members will assemble at 1 p.m. at the City Square, and will entertain the limbless soldiers with an outing and tea at Knaresborough. All offers of motor cycles should be forwarded to the hon. sec., Mr. T. W. Lancaster, 7, Evelyn Street, Chapeltown Road, Leeds.

Future Events.

Aug. 16.—N.M.C.F.U., Portsmouth. Run to Selbourne.
Aug. 16.—N.M.C.F.U., Sheffield. Victory Sports, Cordwell.
Aug. 16.—Woolwich, Plumstead, and District M.C.C. Inter-team Trial.
Aug. 16.—Glasgow M.C.C. Run to Lake of Monteith.
Aug. 16.—Public Schools M.C.C. Speed Trial.
Aug. 16.—Rochester, Chatham, and District M.C. Competition for Woolwich Cup.
AUG. 16.—S.E. COUNTIES INTER-CLUB TEAM TRIAL.
AUG. 16.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR THE PALMER CUP.
Aug. 16-17.—Cumberland County M.C.C. Reliability Run into Scotland.
Aug. 16-17.—Oldham and District M.C. Reliability Trial for Bradbury Cup.
Aug. 16-17.—Wolverhampton M.C.C. Reliability Trial to Barmouth for the Eric Williams Shield.
Aug. 17.—Western M.C.C. (Glasgow). Picnic in the Trossachs.
Aug. 17.—Nottingham and District M.C.C. Run to Matlock.
Aug. 17.—N.M.C.F.U., Coventry. Run to Matlock.
Aug. 17.—Ilkeston and District M.C.C. Run to Castleton.
Aug. 17.—N.M.C.F.U., Portsmouth. Run to Arundel.
Aug. 17.—S. Birmingham M.C.C. Run to Haselor.
Aug. 17.—N.M.C.F.U., Leeds. Sports, Birstall.
Aug. 17.—N.M.C.F.U., Sheffield. Run to Woodhead.
Aug. 17.—Rochester, Chatham, and District M.C. Run to Herne Bay.
Aug. 20.—N.M.C.F.U., Portsmouth. Run to Westbourne.
Aug. 20.—N. Derbyshire M.C.C. Hill-climb.
Aug. 22-23.—Essex M.C. 24 Hours' Ride to York and Back.
Aug. 23.—S. Birmingham M.C.C. Run to Stratford-on-Avon.
Aug. 23.—N.M.C.F.U., Portsmouth. Run to S. Hayling.
AUG. 23.—BIRMINGHAM M.C.C. OPEN HILL-CLIMB.
Aug. 23.—Glasgow M.C.C. Reliability Trial.
Aug. 24.—N.M.C.F.U. Inter-meet at Newtown Linford.
Aug. 24.—Manchester M.C. Gymkhana.
Aug. 24.—N.M.C.F.U., Sheffield. Run to Lincoln.
Aug. 24.—N.M.C.F.U., Portsmouth. Run to Epsom Downs.
Aug. 24.—N.M.C.F.U., Leeds. Run to Grassington and Buckden.
Aug. 24.—Rochester, Chatham, and District M.C. Run to Wateringbury.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
Aug. 30.—S. Birmingham M.C.C. Hill-climb.
Aug. 30.—N.M.C.F.U., Sheffield. Week-end Run to Boston.
Aug. 30.—N.M.C.F.U., Portsmouth. Run to Halnaker.
AUG. 30.—BRISTOL M.C. SPEED TRIALS AT WESTON-SUPER-MARE.
Aug. 31.—N.M.C.F.U., Leeds. Soldiers' Outing.
Aug. 31.—Ilkeston and District M.C.C. Run to Matlock.
Aug. 31.—N.M.C.F.U., Portsmouth. Run to Hayling Island.
Aug. 31.—Birmingham M.C.C. Social Run.
Aug. 31.—Rochester, Chatham, and District M.C. Run to Hawkhurst.
Aug. 31.—Woolwich, Plumstead, and District M.C. Picnic and Gymkhana at Brasted Hill.
SEPT. 5.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
Sept. 6.—Birmingham M.C.C. Reliability Trial for Sangster Cup.
SEPT. 6.—YORK AND DISTRICT M.C. OPEN HILL-CLIMB AT SUTTON BANK.
SEPT. 15-20.—A.C.U. SIX DAYS' RELIABILITY TRIALS.
Sept. 19.—Essex M.C. Gymkhana.

South Birmingham M.C.C.

The entries for the above club's open trial on the 16th inst. close to-day, Thursday, the 14th.

Middlesex M.C.C.

The Middlesex M.C.C. is being reformed, and a special meeting is to be held at the Great Eastern Hotel, room 136, Liverpool Street, on Friday, August 15th, at 7.30 p.m. All members are urgently requested to attend, as well as all motor cyclists who are interested. The secretary is S. A. McCarthy, Essex Lodge, 2, Nightingale Road, Lower Clapton, London, N.E.

Cumberland County M.C.C.

During the past few months strong and successful efforts have been made to re-establish this well-known sporting club, which lost many of its leading members during the war.

A reliability run will be held on the 16th and 17th inst., leaving Carlisle at 1.30 on Saturday, the 16th, riding to Crieff *via* Lanark, Stirling, Bridge-of-Allan, Dunblane, Greenloaming, and reaching Crieff at 8.36. On the following day the competitors will proceed *via* the Sma' Glen, Amulree, Kenmore, Loch Tay, and Rumbling Bridge. The ties resulting from Whit-Monday run will be decided in this run. Over twenty-five members have already entered. The organising sec. is Mr. T. Rutherford, 15, Blackfriars Street, Carlisle.

York and District M.C.

Thirty-eight competitors started in this club's open two-day trial to Edinburgh and back on August Bank Holiday, which was a very successful event. Twenty-five competitors qualified for awards. The following are the results:

G. Jefferson (4 Triumph), cup.
G. A. Reed (2¾ Coulson B.), cup.
E. Wasling (2¾ Coulson B.), retired. Controls gave way.
W. Atkinson (4 A.J.S.), retired. Broken saddle.
G. Walker (4 Triumph), cup.
G. H. Eastwood (4-5 Zenith), retired.
W. N. Tetley (3½ Sunbeam), cup.
R. F. D. Baker (4 Triumph), cup.
A. Kirk (4 Triumph), cup.
R. A. Bonner (2¾ Douglas), cup.
W. A. Porter (Omega-Jap), retired. Lamp troubles.
H. Barton (6 Sunbeam), cup.
B. Hogson (4¼ B.S.A.), retired.
J. Oliver (7-9 Harley-Davidson), cup.
W. R. Eadington (3½ Sunbeam), cup
A. Roberts (8 Zenith), cup.
J. Williamson (4 Triumph), cup.
Jas. J. A. Dias (3½ P. and M.), cup.
P. H. Ingham (3½ Rover), retired.
N. B. Shulders (4 Blackburne), retired.
J. Procter (2¼ Triumph Junior), cup.
A. Procter (2¼ Triumph Junior), cup.
H. Pattinson (4 Triumph), retired.
G. Hill (2¼ Triumph Junior), cup.
F. U. Mundy (2¾ Ruffells), retired. Belt rim adrift.
R. L. Richardson (4¼ B.S.A. sc.), retired.
Rex Muody (8 Matchless sc.), cup.
H. G. Uzzell (4¼ B.S.A. sc.), cup.
W. G. Harrison (6-7 Ariel sc.), cup.
J. S. Wilson (7-9 Yale sc.), cup.
D. Mill (6 A.J.S. sc.), retired.
D. Bradbury (4 Norton sc.), cup.
W. Hoyland (4 Norton sc.), retired.
S. S. Fisher (3½ Norton sc.), retired.
A. Dover (6 Enfield sc.), cup.
T. G. Ellis (10 G.N.), cup.
C. Finch (10 G.N.), cup.

Current Chat

Times to Light Lamps.

SUMMER TIME.

Aug.	14th	... ...	8.55 p.m.
,,	16th	... ...	8.50 ,,
,,	18th	... ...	8.47 ,,
,,	20th	... ...	8.43 ,,

Relics of a Former Life.

Many of the competitors in the recent Scottish Trials wore their tunics with pips and shoulder straps removed, while field boots, British warms, or trench coats were the common order.

Scooters in the North.

The North-Eastern Automobile Association contemplates the inclusion of a scooter event in the programme of its gymkhana, to be held near Newcastle in September, but to date the motor scooter epidemic has not reached the North. The present expectation that scooters will swarm like bees by September seems to be based on slender foundations.

A "Consolation" Prize.

Three prizes were offered by the Newcastle and District Motor Club for its August Bank Holiday run to Keswick. It is whispered that there was the keenest scrapping for the third prize, although the first and second were substantial accessories. The mystery is explained by the fact that the third prize was a bottle of "Black and White" whisky!

A Swiss Reliability Trial.

A reliability trial took place on the 3rd and 4th inst., passing through such well-known Swiss towns as Lausanne, Neuchatel, Basle, Zurich, Berne, Freiburg, etc., the total distance being 330 miles.

A Scott on Scottish Hills.

During a holiday in the Highlands Mr. W. H. Dovener, secretary of the Scott Motor Cycle Company, Limited, amused himself by trying his Scott and sidecar up most of the hills included in the recent Scottish Six Days. It speaks well for the climbing abilities of the Scott that his efforts resulted in clean ascents of most of the hills without shedding his 12 stone passenger. Mr. Dovener proposes making a sporting attempt with his sidecar outfit at the next Scottish Six Days.

French Road Race.

The Moto Club of France is organising the Circuit de l'Eure on the 16th and 17th inst. On the 16th a race will take place over a course measuring about fifteen miles, and will be confined to sidecars and cycle cars. On the 17th the motor bicyclists will race over the same course, but instead of covering twelve laps they will do fifteen. Two or three new two-stroke machines are entered. Among them are the Moto-Solo and the Bi-Temps. An Indian will represent America in the sidecar class, and a Morgan will uphold England in the cycle car class.

A motor cycle club has just been formed at Basingstoke, the first run being to Lee-on-the-Solent, when, as shown by the photograph, a very enjoyable day was spent picnicking by the sea.

Special Features.

HOW TO BUILD A MOTOR SCOOTER.
THE M.C.C. TEAM TRIAL.
NEW MODELS DESCRIBED.

Aeroplane v. Train.

Mr. Trevor T. Laker, the ex-competitio rider, who is giving aeroplane passeng flights in the Midlands, recently demo strated the advantages of the aeropla over train service by carrying a busine man from Coventry to Nottingham a back in less time than the single journe could have been made by train.

Helpers Wanted for A.C.U. Trials.

The Auto Cycle Union requires t services of expert observers for offici duties in connection with the Six Da Trials on September 15th to 20t Substantial expenses will be paid to ea of ten experienced motor cyclists. large number of voluntary helpers are al required. Those interested should co municate with the secretary, A.C.U., 8 Pall Mall, London, S.W.1, stating ful their qualifications and experience.

W D. Machines at Newcastle.

Recently thirty-five battle-scarred mot cycles were sold by Mr. James Coope auctioneer, at the Gosforth Aerodrom near Newcastle. The gross total realised w 1,177 guineas—an average of 33½ guine each. The top price was 71 guineas f a 4 h.p. A.J.S. and sidecar. Oth machines included Douglas, Triump Royal Ruby, and Invicta.

The Story of a Badge.

How an Auto Cycle Union handle-b badge saved a valuable sidecar out forms an interesting story. An A.J. combination was discovered at Rednal the Worcestershire police, and, their su picions being aroused, they got th detective instincts to work. An A.C. badge on the handle-bars had apparent been overlooked by the person wh they suspected had appropriated t machine, or had been left on so that might enjoy the facilities available motor cyclists displaying it. According the police took the number of the bad and communicated with the Auto Cy Union, asking for the name and addr of the member to whom the badge w issued. The information was immediat forthcoming, the member was approach by the police, and the machine was fou to be stolen, and at once returned to owner. Since all identification marks h been obliterated or destroyed, the ba alone offered a clue as to the right owner.

cottish Open Trial.

The Glasgow M.C.C. is holding a 100-mile open trial on the 23rd inst., for which entries should be sent to Mr. Frank Miller, 282, Woodlands Road, Glasgow, before Tuesday next.

The A.C.U. Six Days Trial.

The first three entries for the A.C.U. Six Days Trial, September 15th to 20th, have been received. These are from Cather Cooke (4 Triumph), private owner, and two trade entrants, J. Dosher and D. Guise (8 Enfield scs.)

Petrol Imports.

Petrol in big quantities reached this country in July last, the number of gallons imported being 14,419,829. The figures for the corresponding month in 1917 and 1918 were 12,346,846 gallons and 20,584,831 gallons respectively.

Stolen Motor Cycles.

On Wednesday, July 30th, a motor cycle was stolen from outside the Engineering Laboratories, Cambridge. It is a 1916 Harley-Davidson, engine No. M1286, enamelled grey, with discs and sidecar to match; blue upholstery with green cushion. Information that might lead to its recovery would be gratefully received by Mr. W. A. Fell-Smith, Magdalene College, Cambridge.

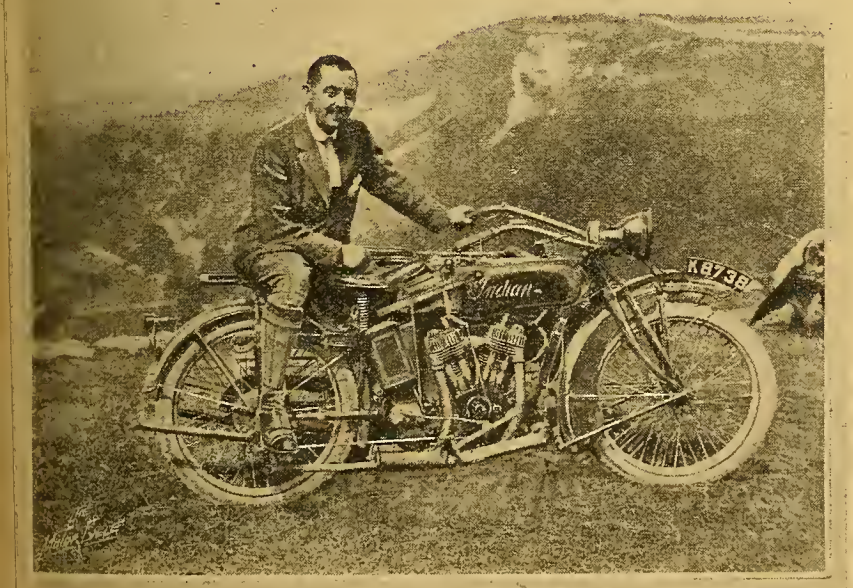
A 1915 B.S.A. chain-driven machine, with sidecar, was stolen from the premises of Mr. W. Pascal, of 51, Cambridge Road, Hammersmith, London, W.6, on August 1st, and £20 reward is offered for information leading to its recovery. Engine No. 10448, frame No. 10438, registration LH 298. The sidecar is a Douglas pattern, green body, coach-built, and underslung.

The Raleigh challenge trophy, East Midland Centre challenge trophy, and other awards in the tests organised by the Nottingham M.C.C. at Monsal Dale. The sidecar outfit is an 8 h.p. Campion originally designed as an ambulance.

Open Trial by Redditch Club.

The Redditch and District M.C.C. is holding an open trial on the 23rd inst., which is one of the events to be officially supported by the trade, and will include flexibility, brake, restarting, and "condition" tests.

Entries close to-morrow, the 15th inst., and should be sent to F. W. Viles, Headless Cross, Redditch.



A 1919 Indian, one of the first to arrive in England, ridden to the club meet at Monsa Dale by Noel H. Brown (hon. sec. Liverpool M.C.C.)

Speed Trials at Weston-super-Mare.

As foretold in last week's issue, the recent decision of the manufacturers to support certain open competitions has brought alterations in the programmes of several clubs. In addition to the Birmingham M.C.C. hill-climb, mentioned on page 182, there are other events which will be open, instead of confined to members, and certain abandoned competitions have been revived. Among the latter is the Bristol M.C.C., who will hold their open speed trials at Weston-super-Mare on the 30th inst. Trials entries close on the 23rd inst., and should be sent to Capt. Philip Grout, Keynsham, Somerset. The solo events include classes for 275 c.c., 350 c.c., 500 c.c., 600 c.c., and unlimited machines, and the sidecars 350 c.c., 500 c.c., and 600 c.c.

Imports and Exports.

The Board of Trade returns for July show that twenty-seven motor cycles were imported during that month, valued at £1,443. The importations of accessories, however, were of greater value than of motor cycles, being £3,008. During July last year the total value of both machines and parts was £171.

EXPORTS.

The value of machines as apart from accessories exported in July this year was £33,521. This is actually £1,000 less value than was exported in July, 1917. The number of completed machines sent out of the country, as will be seen by the table below, is actually 160 less than in the corresponding month of 1917. It must be admitted that these export returns are poor, and although there are many justifiable causes for such a poor showing, they will not hearten Overseas readers who are anxiously awaiting new British models.

	1917.	1918.	1919.
No. of machines ..	661	245	501
Value of machines ..	£34,786	£14,224	£33,521
Total value of machines, tyres, and accessories	£73,437	£66,984	£62,663

Club Rally at Monsal Dale.

A Well-attended Meet of East Midland Riders in the Peak District of Derbyshire.

FAVOURED by one of the brightest and warmest days we have had this year, the social run to Monsal Dale on the 10th inst., organised by the Nottingham and District Motor Cycle Club, associated with other clubs in the East-Midland centre, was attended by motor cyclists from all parts of the Midlands and surrounding districts.

Many had arrived by ten o'clock in the morning, and were soon at work with luncheon baskets and Primus stoves; at mid-day the riders from more distant places were coming in thick and fast, and either parked their machines at the Dale Head, or in the large field reserved for the various clubs.

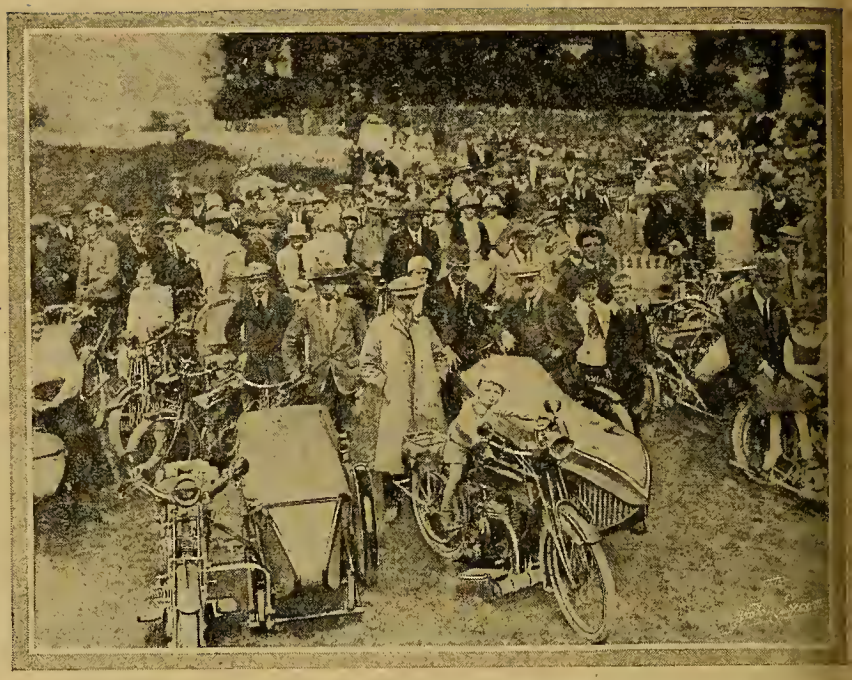
The Nottingham and Liverpool bodies were undoubtedly the best represented, but the Sheffield, North Derbyshire, Birmingham, Manchester, and Lincolnshire Clubs all turned up in force.

A Goodly Show.

Independent riders from Leeds and other places in West Yorkshire were also noticed, while from the South many had travelled from the Coventry district, all of which goes to show that these social meets, where a great variety of new machines may be seen and experiences exchanged, are very attractive to the unattached rider, as well as to the clubman.

The machines, as well as the splendid view from Monsal Dale Head, received much attention; indeed, one is led to believe that the average motor cyclist is keener to observe his neighbour's mount than the beauties of the landscape, and every model, whether new or old, came in for a critical examination.

Almost every class of machine was present, sidecars being in the majority,



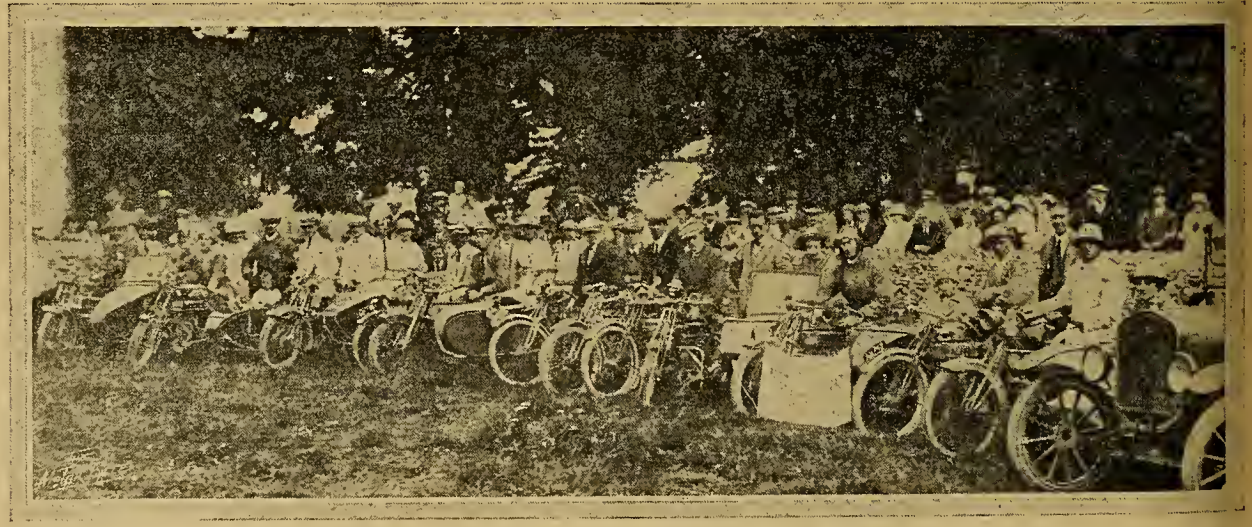
At Monsal Dale: a part of the assembly of machines and riders on the social run of the associated East Midland clubs. Over 300 machines were present.

and, while new models were fairly prevalent, only a few new designs were seen. The Skootamota, however, driven down by Dan Bradbury, of Sheffield, erstwhile exponent of big single-cylinder outfits, was a centre of much interest.

After the various clubs had all assembled a move was made for River Bridge, Ashford, were a competition for the Raleigh challenge trophy (held by the Nottingham Club) was held. The tests consisted of easy starting, slow running (free engine), silent running (free engine), and acceleration test (up-hill). Six classes were arranged, so that every machine entered could compete with an equal chance of securing the premier award, the Raleigh trophy, valued at 100 guineas, going to the rider gaining the largest aggregate of marks in the various tests. Other prizes were also offered for lady members and cycle car drivers.

Homewards.

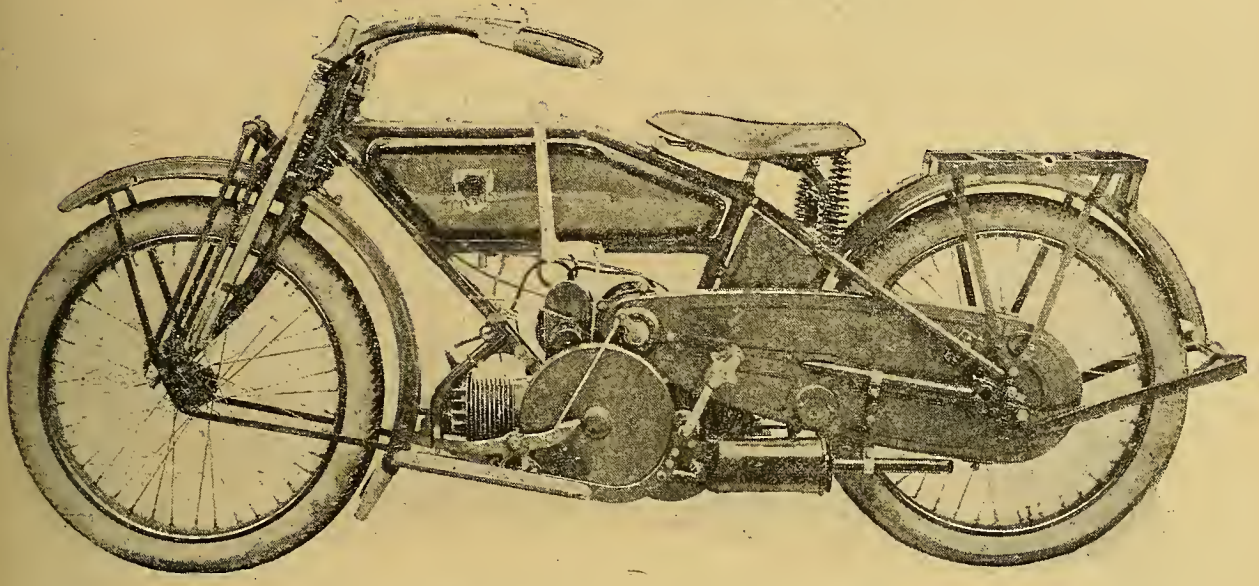
Various hill-climbing stunts were afterwards attempted on the rough and grassy Monsal Bank, and so the affair came to a conclusion and the riders dispersed in groups, and, one by one, in a dust cloud, the like of which could only be raised on the roads of Derbyshire with their finely powdered coating of white limestone.



Members of the Nottingham M.C.C. at Monsal Dale last week end.

THE HARLEY-DAVIDSON FLAT TWIN.

A 6 h.p. Engine, 70 mm. × 76 mm., 584 c.c.



The Harley-Davidson flat twin, from the transmission side, showing the enclosed single low speed chain, and the protected flywheel.

IN the new Harley-Davidson flat twin—the sport model, as its makers call it—we have a distinctly original motor bicycle, the popularity of which seems certain. It is not a lightweight, as it turns the scales at 257 lb., but is a handy two-purpose mount, which has sidecar lugs built in the frame, so it is evident that the manufacturers intend it to take two people if desired, while, being well balanced and not too heavy, it should make a comfortable and tractable solo mount.

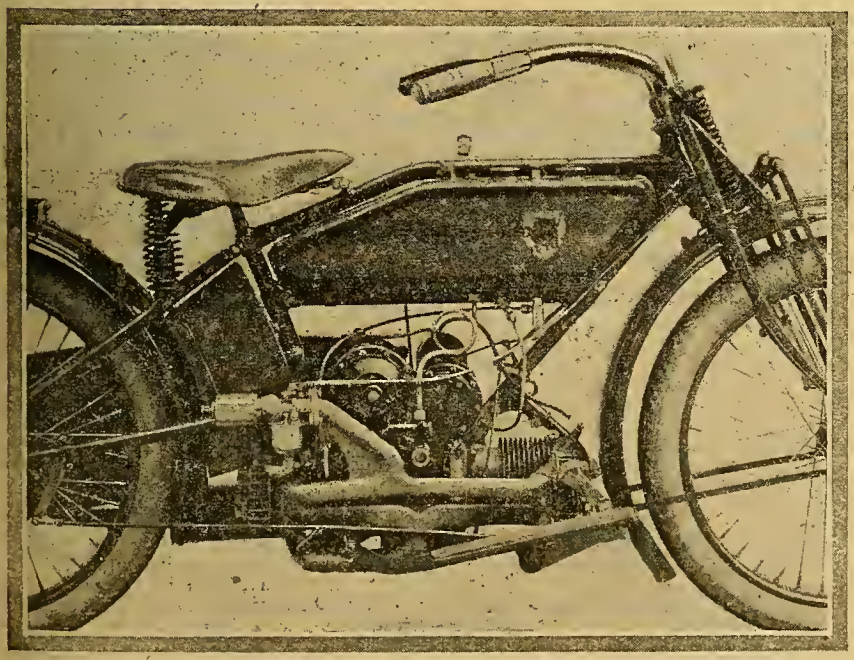
A Warmed Induction Pipe.

There are several attractive features about the engine. In the first place, both engine and gear box form a single unit, the latter being above the crank case, while another interesting point is the heated "twin-cast" manifold, which means that inlet and exhaust pipes form a single casting, a startling departure from standard motor cycle practice. The casting is held on to the engine by two nuts, and so may be easily removed, while the branch from the main inlet pipe to the carburetter is exhaust jacketed. It is this branch which is most liable to condensation, and as the jacket is of ample size and has a wide outlet pipe it should perform its intended function in a highly satisfactory manner.

The carburetter is a Schebler, improved by the addition of a cylindrical air filtering device, and gives excellent acceleration and slow running.

Roller bearings are employed throughout in the engine, those in the big ends being of large dimensions, and the crankshaft is counterweighted.

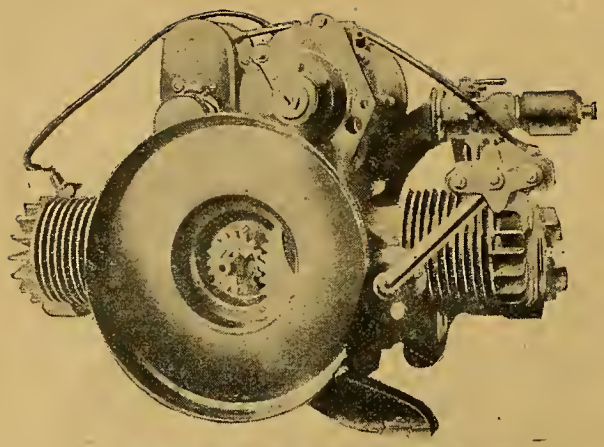
Side-by-side valves are employed, and these are staggered so that each set may be actuated by a common camshaft. The valve caps are provided with large cooling fins. At first sight the engine appears to be somewhat inaccessible, but really this is not the case, as the valves may be ground in without removing the power unit from the frame, and it is possible to remove the cylinders when decarbonising is necessary, though there is a stay to support the footboards in front of the engine, which would, at first glance, seem to prevent the removal of the front cylinder.



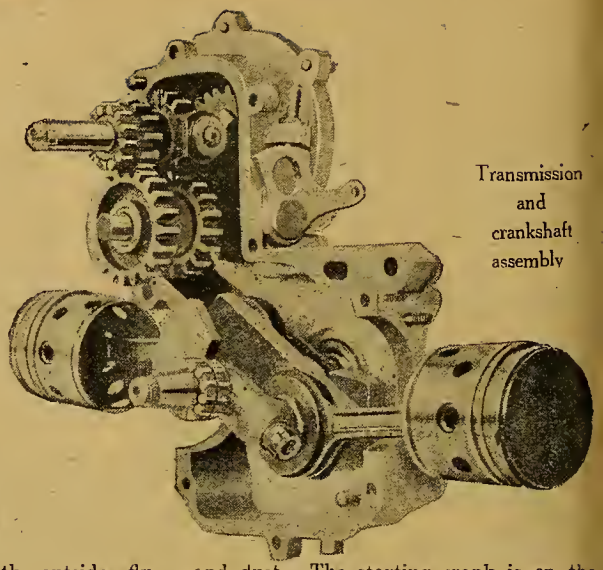
The Harley-Davidson flat twin, carburetter side, showing the "twin cast" intake and exhaust manifold.

Lubrication Details.

The lubrication of engine and transmission is effected by means of a plunger pump, which may be adjusted to feed more or less oil by lengthening or shortening its stroke by means of an adjusting screw, while a hand pump is also provided. This mechanical pump delivers oil directly to the transmission gearing, the clutch, and the crank case. Since the gear box has an open base leading into the crank case, the rotating crankshaft



The kick-starter and pinion with its protecting shield.



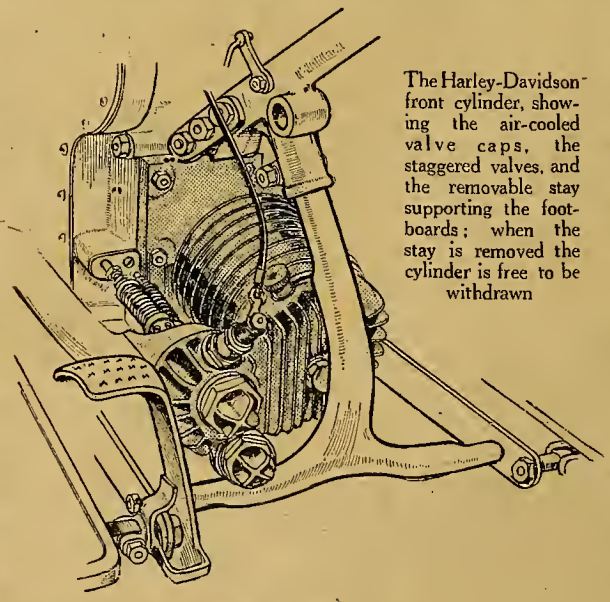
Transmission and crankshaft assembly

keeps the gears within bearings well supplied with lubricant. Oil reaches the timing gear case in the form of a mist through a rotary breather valve, formed by drilling ports in the secondary gear journal and the bearing in which it rotates. The breather pipe leads from the top of the spiral gear case direct to the chain case.

We now come to the transmission. A multiple-disc clutch, consisting of thirteen plates, is employed, which is designed to run in oil, and of these every other plate possesses composition inserts. Its adjustment is effected by removing a screw in the gear cover, which renders each adjustment screw for tightening a spring accessible in turn.

The gear box gives three speeds, which have the following ratios: top 5 to 1, second speed 8.33 to 1, and bottom gear 13.87 to 1. On one side of the power unit are the usual timing gear wheels, which work the valve gear, the Berling magneto, and clutch, while on the other side are spiral gears through which the transmission is conveyed. The whole idea is most ingenious and carefully thought out, as it allows the power to be transmitted to the rear wheel by means of a single low-speed chain entirely enclosed. Another excellent feature is the total enclosure of the flywheel, which is built up of steel plates, and it is consequently impossible for the Harley-Davidson flywheel to sling mud, an objection often levelled against motor cycle engines fitted with outside flywheels.

The kick starter quadrant engages a pinion on the mainshaft behind the flywheel, and when at rest reposes in a special protecting shield secure from mud and dust. The starting crank is on the left side of the machine.



The Harley-Davidson front cylinder, showing the air-cooled valve caps, the staggered valves, and the removable stay supporting the footboards; when the stay is removed the cylinder is free to be withdrawn

Frame and Forks.

The frame is of the usual diamond pattern; we say usual, as this is the most common type of motor cycle frame, but it is unusual when a flat twin engine is employed. A shield or shelf is placed between the bottom of the down tube and the saddle tube, on which the power unit may be rested when assembled by one man. There is a road clearance of 5½in.

A single brake is fitted on the rear wheel and is of the contracting type, 7in. in diameter.

The front fork is strongly constructed of round seamless steel tubing, and is of the castor type. Points of convenience have been carefully studied. The tank holds three American gallons of petrol, and two quarts of oil; the mudguards are 5in. wide, and the rear one has a removable section to facilitate tyre repair, and a special tool box is located behind the saddle tube.

Unfortunately, the Harley-Davidson Motor Co., Harleyson House, Newman Street, Oxford Street, London, W., is at present unable to make any statement as regards prices or deliveries.

The Birmingham M.C. Open Hill-climb.

THE Birmingham M.C.C. hill-climb on the 23rd inst. will be an open event after all. The decision of the trade to support twelve events, of which this is one, has resulted in this change of programme. The following classes are included:

CLASS 1. Singles and Twins (Solo), up to 230 c.c.—Expert and general.
CLASS 2. Singles and Twins (Solo) up to 230 c.c.—Expert barred.
CLASS 3. Singles and Twins (Solo) from 231 c.c. to 300 c.c.—Expert and general.
CLASS 4. Singles and Twins (Solo) from 231 c.c. to 300 c.c.—Expert barred.
CLASS 5. Singles and Twins (Solo) from 301 c.c. to 350 c.c.—Expert and general.
CLASS 6. Singles and Twins (Solo) from 301 c.c. to 350 c.c.—Expert barred.
CLASS 7. Singles and Twins (Solo) from 351 c.c. to 500 c.c.—Expert and general.
CLASS 8. Singles and Twins (Solo) from 351 c.c. to 500 c.c.—Expert barred.
CLASS 9. Singles and Twins (Solo) from 501 c.c. to 650 c.c.—Expert and general.
CLASS 10. Singles and Twins (Solo) from 501 c.c. to 650 c.c.—Expert barred.
CLASS 11. Singles and Twins (Solo), open.—Expert and general.
CLASS 12. Scooters.
CLASS 13. Sidecar Machines up to 400 c.c.—Expert and general.
CLASS 14. Sidecar Machines from 401 c.c. to 650 c.c.—Expert and general.
CLASS 15. Sidecar Machines over 650 c.c.—Expert and general.
CLASS 16. Three-wheelers.—Expert and general.

Awards include a special prize for the fastest time of the day, and for the best performance on formula, irrespective of class. In each class there will also be prizes for the fastest and the second fastest times, and for the best and second best performances on formula. An acceleration climb on formula only will be a feature of the programme, and will be open to all entrants without extra entry fee.

The entry fee in each class is 5s., and entries, which should be sent to Mr. T. Silver, Frederick Road, Stechford, Birmingham, close on Monday next, the 18th.

The formula will be: $\frac{W}{C \times t^2}$

A ROOMY SPORTING SIDECAR.

New Type of Sidecar by a Competition Rider.

A COMPETITION rider who has always been keen regarding the smart appearance of his machines is Mr. E. Kickham, the Bristol agent for Sunbeams and other well-known machines, who has for several years been developing a sporting sidecar on attractive lines, and giving a greater degree of comfort than the average small passenger attachment. This he has now introduced as the Dinky sidecar, and during the past few months quite a number have been seen attached to Douglas and Sunbeam machines in reliability trials.

A Practical Design.

As will be seen from the illustrations, the Dinky is very distinctive. The body is made of the best three-ply wood on an ash frame; the only metal panel used is that of the hinged dash. Streamline shapes have been carefully studied, and the result is proving remarkably effective. By placing the seat low in the body and providing good upholstery in the back and sides, really cosy and yet spacious accommodation is obtained. The tail contains a capacious locker, with ample room for two tins of petrol and other necessaries. No door is needed, as the passenger gets in from behind by a step placed between the motor cycle and the body. The curving dash is hinged so as to turn forward over the forepart of the body until the passenger is seated, when it can be turned back and locked in position; the resulting protection for the occupant is undoubted. Side pockets, footrest, and a thick foot mat are included in the specification.

The springing, by standard type of leaf springs, is very good. In the outfit illustrated the chassis is a Watsonian, with rear springing only. The body may be fitted easily to several different makes of sidecar chassis.

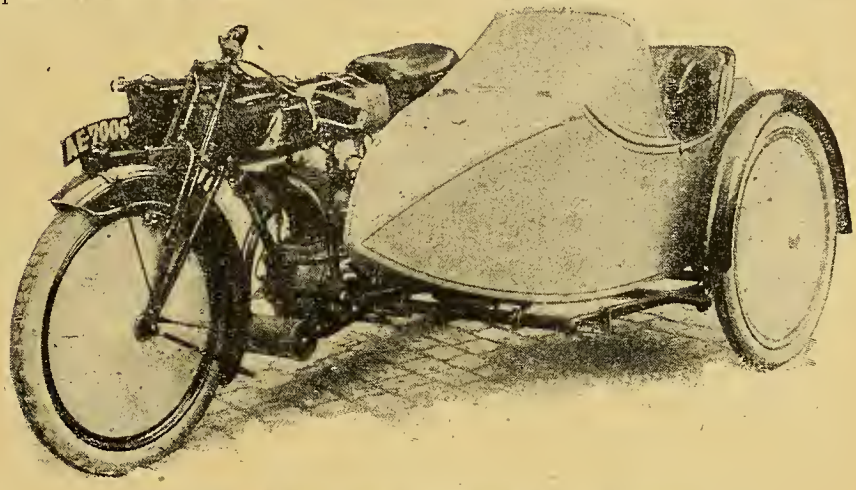
Four-point suspension will be standard. A removable hood can be fitted as an extra; with this addition the passenger is completely protected, and yet his vision is not obstructed to any great degree. To prevent the hood from damaging the coachwork when folded back a neat rest and strap are provided in the lid of the back locker.

A good range of colours is available: black or royal blue, with gold lining in either case, Indian red, and primrose yellow, as the one illustrated; the coach-painter's work is excellent.

This sidecar presents so many attractive aspects that one finds no particular point to criticise. Mr. Kickham, as may be expected, is experiencing a big demand. The price is not definitely fixed, and is likely to increase, but at present it is in the neighbourhood of £30.

The de luxe outfit illustrated, which aroused great interest at the recent Bristol Club Rally, is a specially finished 1920 Sunbeam and Dinky sidecar. The disc wheel covers match the sidecar, and the whole makes a very fine piece of work.

The new Sunbeam front fork, with laminated springing, is incorporated in this machine. This feature is being tested for the 1920 models.

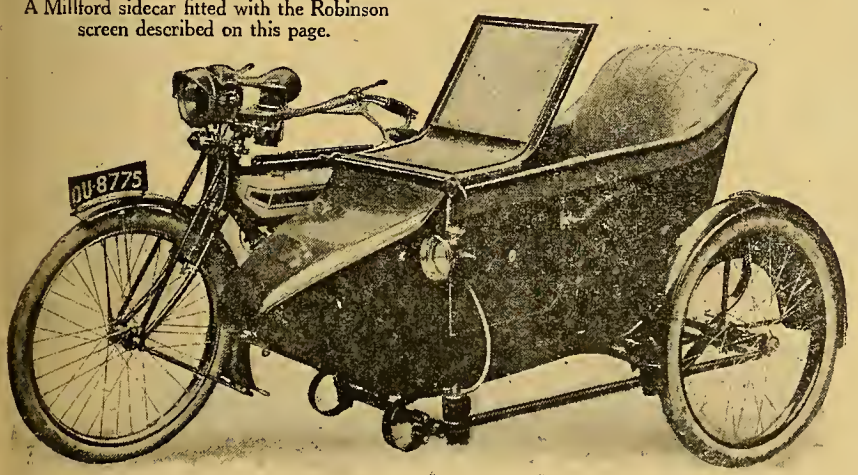


The Dinky sidecar, fitted to E. Kickham's 3½ h.p. Sunbeam.

A New Sidecar Screen.

THE Robinson sidecar screen consists of a wooden frame hinged in front of the sidecar door and curved upwards in any manner desired. In the back portion is a celluloid or glass window. The whole can be tilted forwards in a moment to allow the passenger to enter the sidecar, and, when fixed in position by the usual locking screw, it in no way impedes the movements of the driver. A patent (No. 14,133, 1919) has been taken out for this screen by Mr. F. T. Robinson, 29, Bramble Street, Coventry. Our illustration shows it fitted to a Millford sidecar attached to a 4 h.p. 1919 Triumph, and it will be seen that it harmonises very well with the conventioual coachbuilt type of body, while if fitted in conjunction with a hood, complete protection from the weather should be achieved.

A Millford sidecar fitted with the Robinson screen described on this page.



TAXI SIDECARS IN PARIS.

OUR contemporary *L'Auto* states that the much-talked-of Paris taxi sidecars have actually come into being. There is at the present moment one of these on the road—a 4 h.p. Triumph. As this is classed as a luxury vehicle it has no taximeter. It is fitted with a hood and screen, and the body is yellow with red lining. The owner-driver is, we are informed, amiable and courteous, and our contemporary says that "this novelty alone will assure him the best of success"

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

A MOTOR CYCLE CLUB FOR THE ROYAL NAVY.

Sir,—I have been asked to undertake the organisation of a motor cycle and cycle car club for the Royal Navy, and should be pleased to hear from any naval officer or rating interested. I shall welcome suggestions and offers from officers or men who are willing to give their services as club officials. It has been suggested that, in order to cater for all classes, the subscription to the club should be in proportion to the pay of the member.

E. S. K. EVANS-GREAVES, Lt. R.N.

DESIRABLE TESTS.

Sir,—I take it from an announcement of the Scott in your issue of May 1st, that the makers of this machine emphasise, more than anything else, the cool running and accelerating powers of their engine by ascending and descending Sutton Bank 100 times in 7½ hours.

Why do the other makers, such as Triumph, Norton, Rudge, Rex, Brough, A.B.C., etc., not follow their example and try to do it in a shorter time? An engine which could keep cool throughout this test is most suitable for the tropics. This test should be done by sidecar combinations as well as by solo machines.

Another interesting test would be a road race (as was done in November, 1917, between the Triumph and British Excelsior combinations) between the following makes: Norton and Triumph, Harley and Blackburne, Indian and Clyno, American Excelsior and British Excelsior, and so on.

Selangor, F.M.S. LOO YEW HOI.

THE ARBUTHNOT TROPHY.

Sir,—May I make use of your columns to express my gratitude to all concerned with the origin, development, and organisation of the Arbuthnot Trophy Trial? The committee of the A.C.U. are to be complimented on the way the trial was run, and on the lightning rapidity with which the results were made known. The whole trial was conducted on sporting lines, and, although many competitors had very bad luck, I never heard a grumble from anyone, even when the clerk of the weather was inconsiderate enough to drench us all on the first day.

May I also thank the manufacturers and motor cycling public who so generously subscribed for the trophy, and the magnanimity of the Motor Cycling Club in presenting a special prize?

I see the question has been raised as to whether the trial should be confined to officers only. This is a point which certainly deserves notice. I rather hesitate to express my own opinion without longer consideration, but I am sure the A.C.U. would be pleased to hear views on the matter.

In conclusion, may I urge *all* naval officer motor cyclists to support the trial next year? They will not find a more enjoyable way of spending two days.

E. S. K. EVANS-GREAVES, Lt., R.N.

Sir,—In view of the great success of the Arbuthnot Trophy competition, may I suggest that the A.C.U. organise a somewhat similar event for ex-D.R.'s? It might be made open to all N.C.O.'s and men who have been D.R.'s in any theatre of war. I think a one or two-day trial, held, preferably, at one of the holiday seasons, would attract a very good entry, and would be some recognition of the services of the motor cyclists in the war. From a social point of view, too, it should be a success, and many friendships formed in the mud of Flanders or on the sands of the desert might be renewed. If it is too late to organise such an event this year, it might be fixed for next spring.

I might add that I was one of the motor cyclists recruited by *The Motor Cycle* for the M.M.G.S., and hope soon to be demobbed, get a new 'bus, and send in my entry for the trial I have suggested. C. MANSFIELD (Pte.),

Calais. R.A.S.C., M.T.

BAKING THE SPARKING PLUG.

Sir,—In reply to "Ixion's" comment on the tip of heating the sparking plug to get an easy start in cold weather—issue of June 12th. I cannot claim to have reinvented the idea, but I owe it to the kindness of Mr. J. L. Norton, who is never dumb to an appeal for help. The reason for its efficacy, surely, is that when the blobs of unvaporised spirit are drawn past the inlet valve, they hit the hot plug and give gas just at the place where it is wanted.

(REV.) J. M. PHILPOTT.

"A KNIGHT ON WHEELS."

Sir,—I was a witness recently of a remarkable instance of how a motor cycle and sidecar were of invaluable assistance to a heavily loaded car in distress.

A brand new 6 h.p. A.J.S. combination was descending Kirkstone Pass towards Patterdale when it was overtaken by a Ford car—seven up—out of control, as its brakes were ineffective.

The car driver vainly endeavoured to avoid a crash with the A.J.S., but ran into the back of the bicycle, the near side front wheel of the Ford being between the sidecar and the cycle.

With great presence of mind the cyclist maintained his position on the road, and by gradually and forcibly applying his brakes succeeded in checking the runaway, finally reducing its speed sufficiently to permit of it being run into the bank.

Too much praise cannot be given to the cyclist—and his machine—for his courage and skill in such an emergency. Nothing would have been easier than for him to put on speed and have left the car to a certain fatal smash, as only by some miracle could such a result have been avoided.

The A.J.S. subsequently continued its journey, and when I left the scene the Ford was being made serviceable by its owner. J. D. N. FOREMAN.

SPARE PARTS.

Sir,—It is with deep regret that I feel it my duty to make it known that, although we have returned to times of peace, certain firms are shockingly careless about their supply of spare parts, and well-known makers at that.

I have a 4 h.p. motor cycle. On May 26th, one of the connecting rods came adrift, and punched a hole in the top of the crank case. My agent at once sent away to the makers for new parts; they were invoiced and paid for by June 2nd. On June 20th, the parts arrived, but the wrong part of crank case was sent (the magneto base). There was really no excuse for this error, as the makers had the damaged part itself to go by. The wrong part was at once returned, and the error explained. Since then neither my agent nor myself has been able to get a word from the makers, although we have both made repeated enquiries by letter and telegram.

My machine has now been "in dock" for ten weeks, owing, as far as I can make out, to the carelessness of the firm concerned. I am now stranded here, waiting to go south on the machine, and still not a word from the makers. I have appealed to the A.A., and I am sure it will do its best for me.

Newport, Salop. EX-SERVICE MAN.

ELECTRIC LIGHTING.

Sir,—When I say I was extremely interested in Lt. R. B. Whittick's suggestion of a complete set suitable for electrically lighting a motor cycle, I am sure I am voicing the opinion of hundreds. I hope "Ixion" or some of his useful sort will not let it rest till it is an accomplished fact.

If some arrangement could be incorporated whereby the drive could be temporarily thrown out of gear when not required, I think it would be an advantage.

Stoke-on-Trent. W.H.M.

SPRUNG LUGGAGE GRIDS.

Sir,—On reading your Overseas Section of July 31st, page 110, we note the desirability of a well sprung luggage grid. May we point out to you how this is obtained on the Rudge sidecar? An angle-steel sub-chassis is bolted to the main body supports, and carries a luggage grid at its rear end, which therefore enjoys the same amount of springing as the body itself, and the luggage rises and falls with the body. Eggs have been carried on this carrier without damage. Going to the other extreme, three full tins of petrol and several suit cases have also been carried without overtaxing the springs, or detracting from the comfort of the passenger. The mudguard is also attached to this sprung sub-chassis, and in consequence the absence of mudguard rattle and luggage grid vibration is very noticeable, and much appreciated by those who use the Rudge sidecar.

RUDGE-WHITWORTH, LTD.

ENGINE DESIGN.

Sir,—I read with interest "Entente's" remarks on inside and outside flywheels in your issue for July 31st. I also refuse to accept the blind assertion of the superiority of the outside flywheel.

A large diameter outside flywheel with its weight concentrated in the rim would score, in point of weight, for the same flywheel effect. But the diameter is limited by the allowable over all height of the engine and the necessary ground clearance. The latter should be greater owing to the off centre position of the flywheel. The rim must also be kept narrow owing to its position. Add to this the disadvantage of the rapidly rotating disc in the vicinity of one's trousers, with its oil and mud-throwing properties, and the overhung weight on the engine main bearing, and the outside flywheel has little to recommend it.

The real reason for its adoption on two-strokes is obvious. It is the only means of keeping the crank case volume small enough to get the necessary compression pressure. Simple calculation, or inspection of the interior of, say, a Scott crank case, will verify this.

In the case of the flat twin similar reasoning applies. The necessity of keeping down the over all length of, in any case, a long engine, and the accommodation of a two-throw crank, makes an inside flywheel impossible.

Erdington. TWO-STROKE.

Sir,—Again we have some discussion on flywheels! "Entente's" idea is excellent, and if the makers of a well-known 8 h.p. outside flywheel engine could be induced to explain why they key a flywheel to the crankshaft and then drive from the flywheel, thus throwing the whole strain of the drive on the small key, it would no doubt be of great interest to owners of these machines.

Personally, I have had endless trouble with keys on outside flywheels and none with inside flywheels.

JAMES MAXWELL.

THE FOUR-SPEED MORGAN.

Sir,—Some doubts have been expressed as to whether the four-speed Morgan, which, driven by a private owner, won all the premier awards in the M.C. and A.C. trial ("the greatest trial of the year"), was a standard type.

There is no question about it. The four-speed model has been included in our catalogues, and, although through stress of work at the present time we are compelled to confine ourselves as far as possible to the manufacture of the simpler models, it will certainly appear again in our catalogues and advertisements. There are a considerable number of these machines on the road—probably more than the number of standard machines of some other makers. For ordinary purposes we consider two speeds amply sufficient, but some of our riders require more, and we have endeavoured to meet their requirements by a simple device which duplicates the gears.

MORGAN MOTOR CO., LTD.

VARIABLE GEARS AND BELT WEAR.

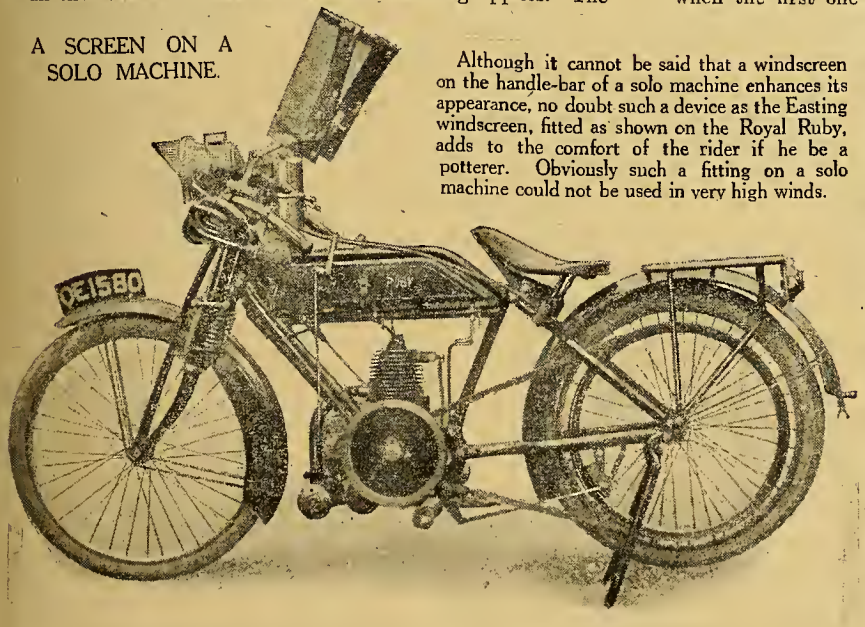
Sir,—At the present time, people who have never given motoring a thought, and others I know who have gone so far as to condemn it, are rushing into the motor cycle agents and also buying privately every class of machine on the market, and asking all kinds of strange questions, especially regarding the Gradua and multi gears on Zenith and Rudge machines. I was told by many old riders when buying my latest mount—a 1919 Rudge—to think of the belt wear, and many other things. But why the belt wear? I have in the past covered many thousands of miles on a 6 h.p. Zenith with sidecar, 4-5 h.p. solo, and 5-6 h.p. Rudge, and have never found this trouble of 500 miles on a belt. A 6 h.p. Zenith and sidecar with Pedley belt will last a good 4,000 miles if the gear is used in the way the makers advise. Solo on 4-5 h.p., I used two belts only in 11,000 miles, and when the first one was put aside it still had life in it for a spare, and the machine was sold with the second one still going strong. So if anyone is considering buying a variable gear machine, do not let belt wear trouble him, and also remember it is only the belt which has any serious wear which can be replaced at small cost. I have a friend who did a much greater mileage than the above, and he is a man that moves "some" on the road, and has climbed many hills in Wales and Devon with a sidecar.

I was at "Wisley Hut" some Sundays ago, and noted a Zenith rider doing his best to wear out a new belt, by getting into the saddle and top gear at the same time. Evidently he had not studied the makers' handbooks.

This year looks like being the greatest motoring year we have yet seen, and I hope something will be done quickly with the bad roads, for which the motoring public pay so much to keep in repair; also that the police will not try to pay for this war out of fines by unnecessary trapping; they are starting their old tricks in many fresh places already, and the year is still young. It is up to all motor cyclists to join the A.C.U. or A.A. for the protection which only combined action can ensure.

London. RUDGE-MULTI.

A SCREEN ON A SOLO MACHINE.



Although it cannot be said that a windscreen on the handle-bar of a solo machine enhances its appearance, no doubt such a device as the Easting windscreen, fitted as shown on the Royal Ruby, adds to the comfort of the rider if he be a potterer. Obviously such a fitting on a solo machine could not be used in very high winds.

PILLION RIDING.

Sir,—Mr. A. C. Robbins's spasm in your issue of 24th ult. is instructive to the last degree, but possibly he would be interested to hear the opinion of an expert "flapper bracket" merchant of many years' standing.

A friend of mine was unfortunate enough to smash his machine up the other day, and for three weeks I have had to take him to business on my carrier in all weathers, as he lives some miles out of Birmingham. As far as tramlines are concerned, I find that a pillion passenger considerably stabilises the machine. I can take the lines at the finest angle and even ride in them. As far as steering goes I can ride "hands off." My brakes act far better, and there is not nearly so much liability to skidding when suddenly applied on a greasy road. "A.C.R.'s" sweeping remarks about pillion pilots acknowledging the danger of such a practice are unfounded as far as my acquaintance of the motor cycling pillion pilots goes.

If your esteemed correspondent will meet me on the Bristol road one day I will undertake to drive him along as many tramlines as he likes, just to show him how it's done!

In conclusion, I should like to mention a little episode on the Ashford-Canterbury road in July, 1914, when I came across the Bishop of Croydon, whose two-stroke had given up the ghost miles from anywhere, and I had the honour of taking him some eight miles to his destination, where he had an important engagement—on my deadly "flapper bracket."

Birmingham. NEPHELOS.

Sir,—I have read two paragraphs in the *Daily Mail* of July 29th with reference to the above, giving particulars of the violent deaths of two human beings. May I ask when this senseless and criminally dangerous practice will be prohibited? HAROLD KARSLAKE.

Sir,—I have read with much interest the articles and letters in *The Motor Cycle re* pillion riding. My husband and I have covered some hundreds of miles in this manner without the slightest mishap, and the whole secret of "safe" pillion riding lies in the fact that the passenger sits astride. Side saddle seating is not safe—it upsets the steering and distracts the driver. By sitting astride a perfect balance is maintained, and there is no need to clutch the driver by the waist.

Many people cannot afford a sidecar outfit, or the garage for one, and should pillion riding be stopped, because a few "would-be speed merchants" and absurdly dressed "flappers" have met with mishap, it will constitute a real hardship for those who understand the art of pillion riding.

IVY BRODIE.

Sir,—Your correspondent A. C. Robbins, in his letter *re* pillion riding, is talking through his hat. I do not wish to be rude, but opinions like these make me sick.

By his own letter, he does no passenger-carrying himself, as he goes by the words of a lot of old insurance fogies, who have probably never ridden (I nearly said "seen"!) a motor cycle. Wherefore then does he use such sweeping expressions as "most dangerous" on a subject he knows nothing about? Let us take his points.

(1.) "The balance of the machine is totally upset." This is utter bunkum. The balance is not upset to anything like the extent that it is in the average sidecar. We hear no outcries to-day against the sidecar, though we did umpteen years ago, and, umpteen years hence, A.C.R. and Co. will have come to their senses regarding pillion riding and be exerting their restrictive efforts on some other branch of the sport, probably aeroplanes!

(2.) "The steering is slower." I do not understand what he means.

(3.) "Tramlines at acuter angles." What has the pillion passenger to do with tramlines? The angle at which one can cross tramlines depends only and entirely on the amount of traffic about.

(4.) "It is unresponsive to brakes." Just the reverse. One can put the brake on a *great* deal harder with a passenger on, without skidding the back wheel, and more than compensate for the extra weight.

(5.) *Re* the "flapper." I will suppress the obvious retort.

I have never yet seen a sound theoretical or practical reason why pillion riding should be "extremely dangerous." I have seen and heard of any number of sidecar accidents, but have never seen and rarely heard of an accident directly due to a pillion passenger.

If A.C.R. objects to pillion riding he ought to come to Cambridge and see 8 h.p. solo machines burbling around the town with a fellow on the tank, another on the saddle, and two on the carrier. (How they all stick on puzzles me!)

I do not think anyone minds sensible discussion, however extreme, but letters like A.C.R.'s are "calculated to be prejudicial to the allied cause"—in English, to encourage a narrow-minded Government to heap still further restrictive legislation on the finest but most oppressed pastime going. There is no law compelling A.C.R. to carry a passenger on his pillion if he does not want to, and for him to encourage a prospective law—which would spoil the sport for thousands of others—for purely theoretical reasons, is pure and criminal selfishness.

I may say I do not often carry a pillion passenger myself, but, when I do, I do not find it upsets the control of the machine to any appreciable extent.

I hope A.C.R. has read the letter printed after his, signed with an extremely true and appropriate motto, "Live and let Live." DUGGIE.

Cambridge.

SIGHT FEED LUBRICATORS.

Sir,—Referring to the article by "Ixion" on the fouling of sight feeds, I would point out that the detachable dome lubricator made by Messrs. Benton and Stone, which you see fitted to various well-known machines, is a perfectly satisfactory article. When the glass dome gets discoloured or dirty it can be taken out in a moment and wiped perfectly clean inside, when it is equal to new again, and the dripping from this dome can be seen practically in any position. The merits of this device seem so obvious that it is difficult to see why it does not become universal. C. BINKS.

THE SCOOTER DEFINITION.

Sir,—I have read the A.C.U. definition of a scooter, and cannot for the life of me understand what is meant. It says "the centre portion of which platform shall, for not less than twelve inches in length, be the uppermost portion of the frame." If by "centre portion" is meant the footboard on which one stands, or rests one's feet; if fitted with a seat, surely this cannot possibly be the uppermost portion of the frame? What about the supports of the motor, tank, and is not the steering post part of the frame? Is the saddle post (if a saddle is fitted) to be under the "centre portion"?

I think everyone interested agrees with you that a limiting definition becomes desirable, but for goodness sake let us have no mere conglomeration of words which "no fellah can understand."

I have failed to come across a single man who has not failed to explain to me what is intended to be the meaning of the words I have referred to. Perhaps the A.C.U. will oblige by explaining.

The other portions of the A.C.U. definition seem very reasonable, but I certainly think it should be more concise as to the frame. PUZZLED.

London, N.

[We understand the definition to mean that for a length of twelve inches no part of the frame may be above the footboard; in front and behind this there is no height limit.—ED.]

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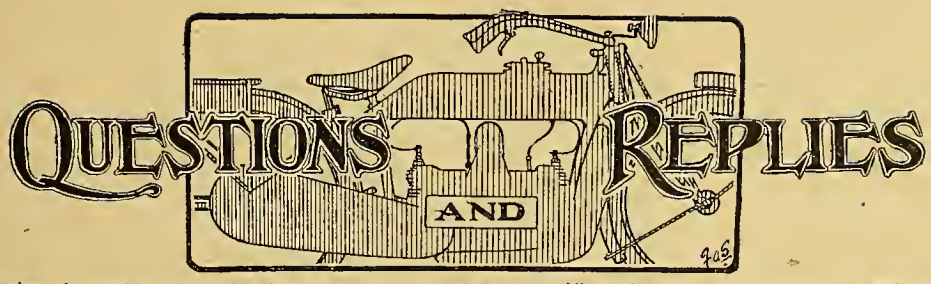

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Peugeot Engine.

I have an old machine with automatic inlet and am requiring a new piston for replacement. Unfortunately, there is no name on it as to make or place of origin, except that it has P.F. cast on the crank case. Do these letters convey anything to you?—E.F.D.

The engine in your machine is a Peugeot. We doubt whether you would be able to obtain spares, but it is likely that a piston can be turned to suit your cylinder. Any good local garage should be able to do this for you.

A Road Race.

I intend to organise a motor cycle race on a local holiday, but I scarcely know how or where to start. (1.) There are plenty of machines in the district, but of all makes and horse-power, and some rather ancient. Can you give me some idea as to handicap? (2.) Can you tell me what steps to take to satisfy the authorities?—W.B.

We fear it will be impossible for you to organise a motor cycle road race, as, under no circumstances do the police authorities permit this kind of event in England.

The Scott Two-stroke.

I have just purchased a new Scott motor cycle and find it rather a novelty after fourteen years of single and twin four-stroke machines. An article appeared in your valuable publication by a Scott owner some considerable time ago, and I would be indebted to you if you could give me the date and number of issue in which this article appeared. You might possibly refer me also to other information which has appeared in *The Motor Cycle* which would be useful to me. I have back numbers since 1905.—W.J.S.

As you say, the Scott is certainly a novelty after long experience of more ordinary types of machines. We do not know exactly to which article you refer, but various notes on the running of recent Scott machines appeared in the following issues of *The Motor Cycle*: September 14th, 1916, page 223; February 22nd, 1917, page 173; March 1st, 1917, page 200; May 10th, 1917, page 430. Earlier references to the Scott machine would probably be of very little use to you, as the carburation and lubricating arrangements of the latest type of Scott are quite different from previous models.

Lack of Power.

I have a $2\frac{3}{4}$ h.p. Sun-Villiers two-stroke which seems to have lost all its power; as I start up the engine runs *fairly* well, but directly I put my weight on the machine it pulls up. The sparking seems to be quite all right. I have just had the magneto overhauled. I might mention that I have lately had the engine down and cleaned it, also that blue smoke is puffed out through the carburetter.—F.W.

Since you appear to have decarbonised and generally overhauled your engine, it is rather difficult to diagnose your trouble. Possibly the engine is suffering from lack of oil, spark insufficiently advanced, or maybe the piston rings are tight in their grooves. Very often, after dismantling and reassembling an engine, for the first few miles the power is noticeably less than normal, but it generally returns after a little running. Of course, we assume that the piston has been replaced correctly, *i.e.*, with the deflector nearest the transfer port.

Automatic Inlet Valves.

I have recently purchased a 6 h.p. twin Rex, automatic inlet valves, and it is very difficult to start. It goes about a couple of miles, then, after a series of misfires, it conks out. It has a B. and B. carburetter, Bosch magneto, the jet in the former being No. 26. I should like your advice as to what might be the trouble; there is also a continuous spraying of petrol from the air intake of the carburetter.—J.H.C.

It is very probable that your machine falls off in power after a certain distance through the petrol level being too low or to a partial stoppage in the petrol supply. We suggest that you verify these points. For easier starting, try fitting a larger jet, also eliminate all air leaks between carburetter and induction pipe. The blow-back through the carburetter is common to old type automatic inlet valve engines. You might effect a partial cure by fitting stronger inlet valve springs.

AT THE OLD SMITHY, COCKINGTON VILLAGE.

Paignton was the venue of the opening social run of the Plymouth and District M.C. Club. In spite of showery weather a number of members made the run, returning through some of the old world Devonshire villages.

Tubing for Exhaust Pipe.

I should be much obliged if you could tell me where I can obtain exhaust piping for motor cycle.—G.A.S.

Any good cycle agent or local garage should be able to supply you with light gauge weldless steel tubing, suitable for an exhaust pipe.

Broken Connecting Rod.

Having had the misfortune to break the connecting rod of my 1914 3½ h.p. Sunbeam, I have ordered a new connecting rod and crank pin, with rollers, from the makers, but find they cannot supply for some time. Is it safe to trust a repairer to make new parts?—E.S.K.

You might have the broken connecting rod welded if it is a clean break not affecting the bearing parts. We should advise you to submit it to one of the first-class welding firms who advertise in *The Motor Cycle*.

Piston Ring Trouble.

The compression of my engine varies—sometimes it is very good, and sometimes very bad. The valve tappets are adjusted correctly. (1.) Do you think that the piston rings work round till the slots are opposite? Then compression is bad until they have worked further round again. (2.) If the rings were too loose in the grooves, would this cause them to work round easily? I might mention that after running about six miles I cannot bear my hand on the crank case for heat.—A.J.R.

(1) It is most probable that the piston rings are working round so that the slots come opposite each other. (2) The above seems more than likely, since you state that the crank case becomes abnormally hot. We should advise you to obtain oversize rings from the makers.

Fitting a Magneto.

(1.) I recently bought a 2¾ h.p. Kerry, which, I fancy, was originally a battery machine, but fitted by its late owner with a Thomson-Bennett twin magneto. One of the segments was ground off to suit a single cylinder. Could you kindly inform me if there is any advantage in connecting one of the high-tension cables to the frame? Could not this cable and brush be removed? (2.) I recently fitted a cut-out from the magneto to the handle-bar switch, with the desired result. Is there any injury to the magneto from this, say, if the machine be wheeled backwards, as I have heard such is the case?—A.S.

(1.) If one of the segments is completely removed from the contact breaker, there is no necessity to connect the corresponding high-tension cable to the frame of the machine, and consequently the carbon brush could well be removed. (2.) If the magneto switch is properly fitted, *i.e.*, to the special terminal provided on the contact breaker cover, no damage whatever can result to the magneto itself, although indiscriminate use of the switch as a means of control when running is apt to throw sudden and severe strains upon the engine and transmission.

Valve Cams.

(1.) What is the valve setting for 4¼ h.p. Calcott engine, 1913 model? (2.) The valve cams are not alike in this engine. One cam is sharper than the other. Which is the inlet?—A.J.L.

(1.) The valve setting for your engine is as follows: With the piston on top dead centre, set the exhaust cam so that the valve is just closing, and the inlet valve just about to open. (2.) Of the two cams you describe, the one with the sharper profile is the inlet cam; the one with the flat top is the exhaust.

Two-stroke Rattle.

I have a two-stroke which makes an annoying rattle at fairly high speeds; but when I open it "all out" the rattle gradually stops, and only the deep hum of the exhaust remains. I have recently cleaned the engine. I may say that the rattle is not regular, but comes and goes, now louder, now more silent. I am sure that the sound comes from the engine, yet the engine always has a good healthy note, apart from the rattle. Could you tell me the cause and cure of this?—D.J.

The rattling noise of which you complain in your two-stroke engine is common to the type. No satisfactory explanation has yet been discovered, and if the engine runs well we do not think there is any cause to worry about it. If the noise becomes excessive, however, and is accompanied by unpleasant vibration, especially when running fast down hill, we should advise you to examine the bearings, more especially the big end of the connecting rod, and have this taken up if at all slack.

A Damaged Fork End.

I was rather unfortunate the other day in losing a nut off the back spindle of my 4 h.p. Bradbury; the consequence was the cones seized, and the whole spindle revolved inside the back lugs, wearing the spindle nearly through, and also one of the lugs of the frame was worn upwards about a quarter of an inch. I have had a new spindle fitted. I have been to two different motor firms; one said it was unsafe to ride, and the other said I had nothing to fear, as the lug simply held the wheel in position and there was practically no weight on it, also that it had not worn so very much. (1.) Will you please tell me whether it is dangerous to ride it in this condition, as I nearly always take a child passenger on the back? (2.) If it is fairly rideable, but weak there? (3.) Could you give me any suggestion in regard to strengthening it or the repair of it?—A.F.

(1.) We do not think that the machine is actually dangerous to ride in the condition you describe, but, of course, we cannot speak very definitely on this point, not having the machine before us. (2.) It is certainly much weaker than it was before. (3.) There is apparently no way of strengthening the worn part, and the only satisfactory repair would be a renewal of the lug, but large washers on the spindle might be temporarily effective.

Balance.

My motor cycle, a 1914 6 h.p. model, has always vibrated badly, so much so that I always feel upset after a run of any length. I have dismantled the engine, and tried the balance as per "Motor Cycles and How to Manage Them." I followed the instructions most carefully, and I find that, in addition to weight equal to half of the reciprocating masses (which is 1 lb. 14 oz.), I require to add another 2 lb., which practically means that the balance is just suitable for rotating masses only, and nothing seems to have been allowed for the pistons, gudgeon pin, and small end of connecting rod. Please advise me what to do? I took off the connecting rods, and tried the flywheels and crank pin alone. This took ½ lb. hung on to the crank pin to balance, which equals the large ends of the connecting rods. I hesitate to alter the flywheels to the extent of 2 lb. without advice, so I hope you will oblige. I am quite satisfied with the machine in every way, except for this vibration.—E.R.

For a 50° V twin engine the balance weights on the flywheels may be arrived at by taking one and two-thirds the weight of one piston and rod, and adding this to the combined weight of both the big ends and the crank pin. It therefore appears from your figures that at least 1½ lb. extra weight is needed. We should advise you to take up this matter with the makers.

READER'S REPLY.

Faulty Three-speed Hub.

If your correspondent "A.D.H." can once get his gear in order, and, better still, learn to take it apart himself (as the planet pinions want renewing occasionally), he should have no trouble if he uses a low top gear. I found 5¼ best for my 1913 Triumph; also check control lever rod occasionally, and, most important of all, lubricate with sperm oil every time you use the machine.—H.L.C.

RECOMMENDED ROUTES.

OSWESTRY TO SOUTHWOLD.—E.A.J.

Oswestry, Shrewsbury, Atcham, Watling Street (skirting Wellington) to Fazeley (near Tamworth), Atherstone, Claybrook, Allesthorpe, Lutterworth, Market Harborough, Kettering, Thrapston, Huntingdon, St. Ives, Earith Bridge, Ely, Soham, Mildenhall, Thetford, Rushford, Garboldisham, Diss, Harleston, Metfield, Halesworth, Southwold.

WESTON TO COLWYN AND OLDHAM.—L.E.O.

Weston, Congresbury, Clifton, over Clifton Down to Filton, Alveston, right-hand fork to Stone, Cambridge, Gloucester, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Much Wenlock, Shrewsbury, Ellesmere, Wrexham, Caergwrle, Mold, St. Asaph, Abergele, Colwyn.

For Oldham, turn off at Kidderminster for Stourbridge, Wolverhampton, Gailey Stafford, Stone, Newcastle, Kidsgrove Congleton, Alderley Edge, Cheadle Hulme, Manchester, Oldham.

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A.J.S.

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.J.S. Combination, 1917, as new, 2 new 700×85 covers, wind screen, speedometer, Tan Sad, lamps, spare wheel, valves, tubes, and chain; £185.—Lee, 1, Sketch Rd., Southport. [X8906

.J.S. 1916 4-5h.p. Combination, coachbuilt sidecar, screen, lamps, good running order, new chain fitted, new spare cover, tools; £120, no offers.—Chadwick, Tool Dealer, Wrexham. [9137

1915 A.J.S. 6h.p., 3-speed combination, fully equipped with lamps, speedometer, screen, hood, pillion and child's seat, recently overhauled; £130, no offers, first cash secures bargain.—Below. [9978

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.J.S. 1915 6h.p. Combination, fitted with wind screen, hood, curtain, apron, lamps, horn, tools, spare wheel (interchangeable), 3 speeds, hand clutch, kick starter, excellent condition; Liverpool district; £140.—Box L3,340, c/o *The Motor Cycle.* [9540

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ALLDAYS Matchless 4h.p., good order; £50.—D. Alexander, Hill View, Hungerford, Berks. [X9097

ALLON.—All models, exceptionally good deliveries, inquire approximate dates.—Parker's, Deansgate, Manchester. [X9026

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ALLDAYS-VILLIERS 2½h.p., 2-stroke, no lamps, excellent running order; £25.—E.A., 65, Norfolk Rd., East Ham. [9210

ALLON, 2-speed, hand-controlled clutch; delivered Aug. 3rd; near £65.—59, Broad Rd., Acock's Green, Birmingham. [X8922

1915 Alldays 2-stroke, 2-speed, clutch, kick start, splendid condition; £42.—St. Briar, Broad Lane, Bloxherley, Coventry. [X9053

ALLON 1918 2¾h.p. 2-stroke, 2-speed, hand clutch, all accessories, privately owned; £55.—580, Lindsworth Rd., S.W.8 [9612

JONES' Garage, special agents for Alldays Allon. Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2931

ALLDAYS Matchless 1915 3½h.p. Wicker Combination, 3-speed, clutch, good condition; £66.—Strike, Inchwarton, King's Lynn. [X9018

3h.p. Allon, 2-stroke, 1917, C.S., new condition, 4 mechanically perfect, accessories; any trial; 52 —Lurcock, 44, Boston Rd., Hanwell, W.7. [9952

1h.p. Alldays Matchless, 1914, coachbuilt sidecar, 2 all accessories, good tyres, absolute bargain; cheque £60.—Skinner, 6, North Parade, Bath. [9827

ALLON 1915, 2-speed, lamps, accessories, spare belt, tyres nearly new, oversize on back, not used for 3 yrs; £45.—Morgan, 50, Kenwood Rd., Stretford, Manchester. [X9045

ALLON 2-stroke, 2¾h.p., 3-speed Armstrong gear, very little ridden; reason for sale, owner purchased large combination; price £45.—Box 108, c/o *Motor Cycle.* [X8936

1919 Alldays Allon, 2¾h.p., 2-speed, clutch model, fully equipped, lamps never been lit, new horn, tyres, only run 30 miles; owner bought higher power; £55.—Harvey, New Rd., Eythorne, Dover. [9376

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1918 Alldays Allon 2¾h.p. 2-stroke, 2-speed, P. and H. lamps, mechanical horn, new condition, mileage about 800, perfect running order; £50; owner buying combination.—Harrison, 48, Liverpool Rd., London, N.1. [X8533

ALLDAYS Combination, twin, 2-stroke, 6h.p., 1919, 3 speeds, kick starter, dynamo lighting, 2 horns, low canoelet sidecar, disc wheels, detachable and spare, luggage grid, painted dark red, top-hole condition; price 140 gns.—Red Deer Garage, S. Croydon. [1044

ALLDAYS Combination, twin, 2-stroke, 6h.p., 1918, 3 speeds, kick starter, dynamo lighting, 2 horns, low Canoelet sidecar, disc wheels, detachable and spare, luggage grid, painted dark red, top-hole condition; price 140 gns.—Red Deer Garage, S. Croydon. [9351

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ANTOINE, 6h.p., single gear, a.i.v., running order; £29, or nearest offer; no dealers.—Bennett, 58b, Crawford St., W.1. [9144

ANTOINE 1914 4½h.p., dropped frame, stored 3 years, excellent appearance, ride away; £39/10. 5, Addison Av., Holland Park. [9706

Ariel

CROW Bros., High St., Guildford.—Ariel agents since 1913 1919 deliveries have begun. [5299

ARIEL 3½h.p., excellent condition; no accommodation; 30 gns., offers.—Haskell, Kingston Rd., Southampton. [X8862

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey Manchester. [5269

3½h.p. Ariel Coachbuilt Combination, 3-speed, clutch, fully equipped, lamps, horn, etc.; £70.—24, Palmerston Rd., Walthamstow. [9254

ARIEL, 3½h.p., multi-gear, lamps, horn, new Dunlops, excellent running condition; £42.—Willcox, 12, Nottingham Rd., Melton Mowbray. [9818

ARIEL No. 2, coil ignition, engine overhauled, in good running order; a bargain for beginner; £12. —Parker, 93, Tapton Hill Rd., Sheffield. [X8940

ARIEL 1914 3½h.p., 3-speed clutch, splendid running order, good tyres; first offer £55 secures.—Bailey, 3, Whitehorse St., Brandon, Suffolk. [9641

3½h.p. Ariel Combination, almost new condition, 3 speeds, clutch, decompressor, lamps, tools, spares; £70.—Dunkley, Postman, Brackley, Northants. [1009

ARIEL 6-7h.p., with Dunhill sidecar, new April, 1919, run about 3,000 miles; for immediate sale; price with lamps, horn, tools, £145.—Reply, Beechfield, Haywards Heath. [9364

ARIEL, 1916, 3½h.p., Ariel sidecar, little used, enamel and plating unscratched, perfect turnout, new Dunlop tyres; £100; Midlands.—Box L3,369, c/o *The Motor Cycle.* [1027

1919 5-6h.p. Ariel Combination, Milford sidecar, special body, Easting screen, speedometer, mechanical horn, mirror, 3 lamps and batteries, done 600 miles; £170.—Marlow, 3, Crouch Hall Rd., Crouch End, N.8. [X8539

1918 6h.p. Ariel Combination, perfect condition, electrically equipped, aluminium discs, luggage carrier, new tyres, belt, trip speedometer, 2 spare tyres, over £30 of accessories; best offer over £160.—Avoca, Orpington, Kent. [9621

3½h.p. Ariel Combination, 1915, C.B. Milford car, excellent condition, stored 2½ years, B. and B., Dunlops, Lucas lamps, countershaft gear, 3-speed, and speedometer; sacrifice, £82.—Edgell Cottage, High Rd., East Finchley (opposite St. Pancras Cemetery). [9695

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ARNO, 1914-15, 3½h.p., Amac and Berling (both new), engine new throughout, nearly new tyres, new belt; £50, no offers.—Humphrey, 107, Gravelly Hill, Birmingham. [X8786

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AUTO-WHEEL, as new, perfect order; £15, or offer. —Hornminster, Hornchurch, Essex. [9454

AUTO-WHEEL, good running order, good tyre; £12. —Coleby, Fairlie Cottage, Leatherhead. [9317

AUTO-WHEEL, just overhauled, and B.S.A. cycle; £26.—Nicoll, 31, Alfred Place West, S.W.7. [9712

WALL Auto-Wheel, good condition and running order; £10.—Shield, Tattenhall, Chester. [X8827

AUTO-WHEEL, little used, just overhauled, perfect going order; best offer.—H. Wilkinson, Ways Green, Winsford, Cheshire. [X8932

AUTO-WHEEL, B.S.A. de Luxe, just overhauled, 10 gns., with bicycle 16 gns.—Greetham, Salthouse Rd., Millom, Cumberland. [X9048

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AUTO-WHEEL (Wall), complete with all fixtures, excellent running condition, recently overhauled, new heavy Dunlop tyre fitted; £12.—Thompson, Asylum, Arlesey. [9546

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Bat.

8h.p. Bat-Jap Combination, Bosch mag., B. and B., kick starter, clutch, trial; £90.—Hurst, Newbury St., Wantage. [9980

BAT-J.A.P. 6h.p., 2-speed, coachbuilt sidecar, good condition, new tyres; £68.—W. Wood, 16, St. Paul's Av., Cricklewood, N.W.2. [9824

B.A.T.-J.A.P. 8h.p., countershaft gear box, all chain drive, K.S., lamps, etc., any trial; £65, or offer; seen any time.—C.S., 14, Swaton Rd., Bow, E.3. Tel.: 3155. [9653

5-6h.p. Bat-Jap, 2 speeds, countershaft, clutch, chain drive, kick starter, good tyres, Bosch waterproof, splendid running order, £60; sidecar chassis for same, £4.—19, Wood Lane, Shepherd's Bush, W. [9927

6h.p. T.T. Bat-Jap, 3 speeds, starter, enamelled red, high-backed spring upholstered projectile sidecar, fast, sporting, lovely turnout, enamel plating as new; any trial; £95; consider good 3½h.p. part exchange.—7, Cowdray Rd., Wimbledon, S.W. [9524

BAT 8h.p., good condition, tools, lamp, tyres, etc., recently overhauled by makers, exceedingly fast, second to Indian in world's mile championship, 1914, 93.4 m.p.h.; really good value; £105, or near offer.—Write R. Weaver-Adams, Slough, Bucks. [9225

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STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [6104

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JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

BLACKBURN 1919 4h.p., single-cyl., 3-speed, counter-shaft, clutch, and kick starter, used for a few miles only.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0552

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BRADBURY, 4h.p., 2-speed, kick start, good condition; £45.—26, Ossian Rd., Stroud Green. [X8561

BRADBURY 1919 6h.p. Model, brand new, solo or combination.—Parker's, Bradshawgate, Bolton. [X9039

BRADBURY 4h.p., Armstrong 3-speed gear, lamps, horn, tyres nearly new; £42/10.—Tucker, Highbridge. [X8674

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5606

BRADBURY, 4½h.p., Bosch waterproof, B. and B., excellent sidecar machine, running order; £36.—85, Powerscroft Rd., Clapton, E.5. [9442

BRADBURY 4h.p., Philipson pulley, splendid condition, including tyres, fast and reliable; £42.—Keable, Upper Bowden, Panghourne. [X9067

4h.p. Bradbury, single speed, Sensspray, Brooks, speedometer, good condition; ride away; £25.—Chalkley, 54, Fonthill Rd., Finsbury Park. [9165

BRADBURY 1915 6h.p. Combination, 3-speed, h.b. clutch, speedometer, lamps, spares, and tools; £85, no offers.—27, Nile Rd., Gillingham, Kent. [X9086

BRADBURY, 4h.p., 1913, Bosch mag., in excellent condition, new tyres and belt, pedal start, free engine, and spares; £40.—23, Essex Rd., Barking. [9311

4¼h.p. Bradbury, Bosch, B. and B., footboards, perfect running order, Philipson pulley; £28; exchange for lightweight.—Jarvis, Coates, Cirencester. [X9094

BRADBURY, 4½h.p., B. and B., Bosch, lighting set, good condition, ride away; nearest £35; after 6 p.m.—E. G. Wilkin, 6, Summerhill Rd., West Green Rd., Tottenham, N.15. [9452

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FOR Sale, 1916 Bradbury motor cycle and coachbuilt sidecar, in good running order, just been overhauled; £80, or nearest offer.—J. C. Austin, Hillview House, Kidderminster. [X7600

BRADBURY 4¼h.p. Coachbuilt Combination, 2 gears (Armstrong and N.S.U.), speedometer, and accessories, perfect, as new; £60.—14, Dongola St., Harford St., Stepney, E.1. [9397

BRADBURY 1913 4h.p. Combination, N.S.U. 2-speed, free engine hub with kick start, perfect condition; £60, or exchange 2-stroke and cash.—Long, 134, Cherry Orchard Rd., Croydon. [9823

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BRADBURY 4½h.p., 1914, cork clutch, 2-s chain drive, Bosch, 2-seater sidecar, Lucas and horn, new tyres and tubes, Dunlops, excellent dition; £65; trial.—Birchall, Hosier, Tyldesley, chester. [X

BRADBURY 4h.p. Coachbuilt Combination, lamps, Jones speedometer, Klaxon horn and N.S.U. gears, tyres, including spare, as new, whole class condition; £65; seen London.—204, Thorold Ilford. [

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SOUTH Lancashire, North Cheshire, and I Man Only.—Brough enquiries.—J. Blake and Official Dealers, Liverpool-Manchester. [

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BROWN, 3h.p., 3 speeds, most reliable, perfect gns.; appointment only.—Miss D. Mimns, Mayall Rd., S.E.24. [

BROWN 3h.p., good condition; £18; ride aws exchange lightweight; cash adjustment.— ford, Clarendon Rd., Borehamwood. [X

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B.S.A.

B.S.A. Motor Cycle, 3½h.p., in running ord wants magneto; £28.—61, High St., Dove

B.S.A. Sole District Agents; book now.—The Garage, Wolverhampton St., Walsall. Tel.

B.S.A.—Secure your order now; second-hand ma in stock.—Parker's, Deansgate, Manchest [

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B.S.A. 1916 4½h.p., all-chain drive, 3-speed shaft, kick start, fine condition; 85 gns.— Beaconsfield.

JONES' Garage, special agents for B.S.A., way, Muswell Hill, N.10, and Woodside North Finchley.

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DOUGLAS.—We are doing our best for deliveries.—Moffat, Douglas Agent, Yeovil. 'Phone: 50. [1103

DOUGLAS 2¾h.p., W.D. model, brand new, splendid condition; £72.—Pehrson, Kincraig, Chislehurst. [X8871

DOUGLAS 2¾h.p., 1915, smart machine, running order; £47/10, bargain.—21, Newton Av., Acton. [1049

1916 4h.p. Douglas, £80; also 1917 ditto; both new condition.—18, Wix's Lane, Lavender Hill, S.W. [9943

DOUGLAS, real gem, perfect, 2¾h.p.; any trial: 6 gns.—Jones, Crossway House, Coleford, Bath. [X9295

¾h.p. Douglas, 2 speeds, buffer head springs, brand new; £75.—1, Melrose Rd., Merton Park, S.W. [9619

¾h.p. Douglas, just overhauled, perfect condition, ride away; £50.—Snelling, Hare Hall, Romford. [X9022

DOUGLAS.—All models. Book now for future 1919 20 deliveries.—Parker's, Bradshawgate, Bolton. [X9027

DOUGLAS, 2¾h.p., 1919, W.D., 1,000 miles, overhauled, perfect.—Trendell, Boughton, Faversham [X9021

DOUGLAS 2¾h.p., 2-speed, late model, smart, fast; £52.—60, Wallingford Av., N. Kensington. [9610

DOUGLAS 2¾h.p., all complete, ready to ride away; £35; no offers.—Box 109, c/o *The Motor Cycle.* [X8936

1919 4h.p. Douglas Combination, little used; £120, or offer.—Macdonald, 86, St. Vincent St., Glasgow. [9562

DOUGLAS 1914 2¾h.p. T.T., 2-speed, splendid running order; £49.—Ford, Watchmaker, Redhill [9798

¾h.p. Douglas, 2-speed, handle start; best offer over £32.—Knight, 10, Three Crown Sq., Borough Market. [8682

1914 Douglas, 2¾h.p., 2-speed, lamps, speedometer, etc.; £42.—Cooke, Eversleigh, Belsize Rd., Worthing. [9136

DOUGLAS 1911, 2-speed, overhauled and rebushed, splendid condition; £25.—C. Fisher, Bush Hotel, Farnham. [9174

DOUGLAS 1911, good condition, new tyres; after 7; bargain, £28.—6, Cavendish Rd., Merton, S.W.19. [X8988

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THREE Douglas, 2¾h.p., 1915 models, nearly new condition; £60 each.—Stevens, 184, Pentonville Rd., King's Cross. [9287

DOUGLAS, 2¾h.p., T.T., new tyres, belt, guaranteed good running order; £28.—29, St. Leonards St. Bromley-by-Bow. [9629

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1918 (not W.D.) Douglas 2¾h.p., just overhauled, little used, splendid condition, any trial.—Skinner, 6, North Parade, Bath. [9829

DOUGLAS 2¾h.p., 1914, countershaft single gear, good condition; £40, best offer.—Lines, Union House, Foleshill, Coventry. [X8876

DOUGLAS 2¾h.p. W.D. Model, 1916, 2-speed, new horn, as from crate, tested; £78.—672, Commercial Rd., Limehouse, E.14. [9848

DOUGLAS, 2¾h.p., 1915, 2-speed, clutch, kick start, excellent condition; £58; owner needs cash.—Box 471, c/o *The Motor Cycle.* [X8610

DOUGLAS, 1916, 2¾h.p., 2-speed, good running order, very fast, £50; 1914 ditto, £45, bargains.—Box 4,478, c/o *The Motor Cycle.* [9269a

DOUGLAS, 2¾h.p., W.D., 2-speed, unissued, in crate; £70, or close offer; Saturdays by appointment.—5, Sydney Rd., Richmond, S.W. [9903

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DOUGLAS, 1916, 2-speed, with 2 spare covers and tubes, belt, valves, etc.; bargain, £67, no offers.—89, Upper Tooting Rd., S.W.17. [9194

DOUGLAS, 2¾h.p., 1911, just been overhauled, new tyres, etc., in splendid running order; £30.—Lacey, 37, Victoria Rd., Addlestone, Surrey. [9918

2¾h.p. Douglas, mechanically perfect, requires flywheel nut; best offer over £24.—Cartwright, Highwood Hill, Mill Hill, N.W.7. [9594

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DOUGLAS 4h.p. Combination, W.D. model, perfect condition, accessories: £115, or nearest.—K., 14, Cromwell Rd., Stretford, Manchester. [X8869

BRAND New Douglas, 2¾h.p., crated, a few more available from stock; 74 gns.—Quetten, 3, New Oxford St. (entrance High Holborn), W.C. [9131

DOUGLAS 1914 2¾h.p., 2-speed, in very good running order; £50.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [9025

DOUGLAS, 2¾h.p., single speed, Bosch, Klaxon, P. and H. lamps, fine condition; 35 gns.—129, Thornbury Rd., Osterley Park, near District Rly. [9815

1916 4h.p. Douglas Combination, overhauled and in perfect order; £110.—Smith's, 10-16 Haverstock Hill (opposite Chalk Farm Tube Station). [9027

1918 4h.p. Douglas Combination, W.D. model, perfect condition, lampe, horn, etc., good tyres; any trial; £120.—Haines, 12, High East St., Dorchester. [X8645

LATE 1913 Douglas, 2-speed, footboards, semi-T.T. bars, tools, horn, etc., enamelled grey, and in grand order; nearest £60.—James Pollard, Wragby, Lincs. [9839

2¾h.p. Douglas's, W.D. Models, brand new, in crates, only four left; apply early for this famous little bike.—453, Bearwood Rd., Smethwick, Birmingham. [9658

4h.p. Combination, Douglas, W.D., Binks, spare tyres, M.C. insurance, perfect condition, ridden 600 miles; £145.—S., 24, Coleherne Rd., Earl's Court, S.W. [X8868

DOUGLAS, 1915, 2-speed, T.T. bars, fitted with lamps, etc., in perfect running order; £53, first cheque secures.—L. Bull, 44, Hill's Rd., Cambridge. [9833

DOUGLAS 1915 4h.p., 2 speeds, Bosch mag., splendid compression, power, speed, built for sidecar; £85.—Lieut. Evans, Moore Park Camp, Kilworth, Co. Cork. [X8352

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DOUGLAS, 1914, 2¾h.p., 2-speed, recently overhauled, lamps, horn, tyres good, fast, powerful, sporty; £55.—Fergusson, 15, Ulundi Rd., Blackheath, S.E.3. [9283

DOUGLAS 1919 4h.p. Combination, as new; also 2¾h.p. W.D. model Douglas, 1916, 2-speed, good condition; £55.—697, Seven Sisters Rd., Tottenham, N.15. [X8947

LATEST W.D. Model Douglas, quite new, fitted with lamp, generator, tail lamp, registered, can be ridden away; 75 gns.—18, South Bruton Mews, Bond St., W. [9525

2¾h.p. Douglas, Bosch, footboards, Hutchinsons back, mechanical horn, Dunlop belt, all new, lamps, tools, good condition; £35, no offers.—43, Clifton Rd., South Norwood. [9959

DOUGLAS 2¾h.p., clutch model, electric lights, just overhauled, T.T. bars, fast machine, new tyres, etc.; first offer £54; seen any time.—Dolphin Hotel, Faversham. [9482

DOUGLAS Combination, 1915, 4h.p., 3-speed, clutch, K.S., accessories, very good condition; owner going abroad; £105.—Whyte, 145, Jerningham Rd., New Cross, S.E. [1014

2¾h.p. Douglas's.—Write for pamphlets, with specification and price. It is just possible we may be able to deliver, and we solicit your enquiries.—Robinson's, below.

4h.p. Douglas's.—Write for pamphlets with specification and price. It is just possible we may be able to deliver, and we solicit your enquiries.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [9999

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1914 2¾h.p. Douglas, 2-speed, new tyres, £45; also 3½h.p. 3-speed Rover, excellent condition, £50; will ride 50 miles to purchaser; no offers.—69, Kingston Rd., New Malden. [9363

1917 4h.p. 3-speed Douglas, in perfect mechanical condition; £75; garaged at St. John's Wood; appointment to view (by letter only).—47, Barrington Rd., Crouch End, N.8. [9945

2¾h.p. Douglas, 1915, 3-speed; just overhauled, Amac carburetter, good tyres, privately owned; 58 gns.—Apply, Brooks' Motor Garage, Kingston Rd., Raynes Park, S.W.19 (near Station). [9189

1916 4h.p. Douglas and Sidecar, mileage 2,000, lamps, speedometer, spares, stored 2 years; £112/10, or exchange 7h.p. F.N.—B. Taylor, Lodge Farm, Grimston, Lynn, Norfolk. [X8784

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4h.p. Douglas Combination, as new, with all accessories, a smart sporty turnout; £110; exchange with cash for higher power or Morgan.—175, Camberwell Grove. 'Phone: Brixton 286. [9141

DOUGLAS 1919 4h.p. Combination, brand new, guaranteed ready for delivery to-day; best offer received by noon, the 16th inst., accepted; South Midlands.—Box 116, c/o *The Motor Cycle.* [X9079

4h.p. Douglas Combination, 1919, bought June, 3 lamps, numerous spares, small mileage, condition as new; trial by appointment; £155, or near offer.—Long, 10, Park Rd., Staple Hill, Bristol. [X8832

1919 Douglas Combination, delivered makers June, carefully driven about 150 miles, complete 3 unused lamps, Klaxon horn, all tools; first offer over £140 secures.—J. Lloyd, c/o G.P.O., Winchester. [9747

DOUGLAS, 1913 or 1914, 2¾h.p., 2 speeds, lamps, speedometer, perfect order; bargain, £50; exchange with cash powerful combination.—25, Burlington Rd., Lansdowne Rd., Tottenham, N.18. [9398

4h.p. 1919 Douglas Combination, new spares, complete tool kits, perfect mechanical condition, unscratched; any trial; £150; offers over £140 considered; seen Perth.—Box L3,337, c/o *The Motor Cycle.* [9458

DOUGLAS 2¾h.p., 1914, 2-speed, recently overhauled, 2 lamp sets, speedometer, etc., new tyre and tube front wheel, long exhaust pipes; £55; after 7 p.m.—Parnell, 12, Porchester Rd., Bayswater. [9932

DOUGLAS, 2¾h.p., 1915 model, thoroughly overhauled, perfect condition; £65.—Vivian Hardie and Lane, Ltd., 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [9426

DOUGLAS 4h.p. Combination, 1919, apron, wind screen, full lamp sets for combination, perfect order, and exceptionally good hill-climber; £126.—H. J. Lynam, 80, Wombwell Mains, near Barnsley. [9378

DOUGLAS 1914-15, 2-speed, Bosch mag., speedometer, lamp set, long exhaust, very fast, guaranteed in perfect order; £60, or close offer.—Goss, 71, South Side, Clapham Common, S.W.4. 'Phone 322 Brixton. [9360

DOUGLAS, 1915, 2¾h.p., 3 speeds, Colonial model, cork clutch not used, tyres in good condition, T.T. bars, machine hardly used since 1915; £68, lowest.—30, Bellevue Rd., Wandsworth Common, S.W.17. [9899

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SILENT 2¾h.p. Douglas, makers' colours, and practically new, a particularly attractive mount; exchange with cash for late combination, or accept reasonable cash offer.—175, The Grove, Denmark Hill, S.E.5. 'Phone: Brixton 286. [9140

1919 Douglas Combination, with Easting screen, horn, Miller head and tail lamps, spare tube, spare parts and tools, tyres as new; £132 delivered, or highest offer.—Thompson, Sunnybrow, Woodlands Rd., Middlesbrough. [9591

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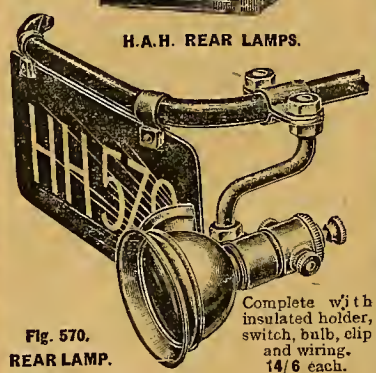

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1919 Lightweight Enfield, all chain; £77/10 Warrington Rd., Ashton-in-Makerfield, Lan [X

ENFIELD Coach Combination, late 1913, all sories; £85.—41, Invicta Rd., Blackheath, [

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H. G. HENLY and Co. are sole London Agents for the popular Ivy 2-stroke.—91, Gt. Portland St., W.1. 'Phone: Maylair 4084. [0023

IVY-PRECISION, late 1914 4¼h.p., T.T., Bosch water-tight mag., good tyres back, new, very fast, good condition; £50.—Wainwright, 95, Wardour St., W. [X8615

1915 3¼h.p. Ivy-Precision Twin, low sporting model, U.H. mag., overhead valves, tyres, belt, as new, splendid condition; £65.—R. Saltmarsh, Sunnyside, The Moor, Staines. [9475

James.

JAMES 1918 2¼h.p., 2 speeds; ride away; £50.—21, Hamilton Rd., Ilford. [9218

JAMES.—Sole agents for Hertfordshire. 1919 machines in stock.—Chandler, Reyre and Willimns, Sun St., Hitchin. [0997

4¼h.p. James Combination, all chain drive, new model, bought July, 1919; £135; done about 500 miles.—R. Shanks, Chatterie. [1055

JAMES, 3½h.p. twin, 1917, solo, in good running order, complete with lamps, etc.; £65.—Wild, 60, Holly Lane, Erdington, Birmingham. [X8967

JAMES 1919 4¼h.p. Big Single Combination, new May, Lucas lamps, horn, Cowey speedometer, splendid condition; £140.—'Phone Gerrard 4227. [X8956

JAMES 1916 Coachbuilt Combination, big single, 4¼ h.p., 3-speed, clutch, speedometer, chain, countershaft; £100, no offers.—48, Prince George Rd., Dalston, N. [1068

JAMES 4¼h.p. Big Single Countershaft Combination, Lucas lamps, horn, and wind screen, in excellent condition; £90.—151, Globe Rd., Mile End, London. [9778

JAMES, 3-speed, clutch and kick start, wicker sidecar, perfect order, enamel and plating good, tank unscratched, big single engine; 65 gns.—Ward, 13, Forfield Place, Leamington Spa. [X8998

JAMES 1916 4¼h.p. Combination, 3-speed, C.S. kick starter, 3 lamps, 2 generators, horn, speedometer, mirror, leg shields, new tyres, sound outfit; 92 gns.—48, Derwentwater Rd., Acton, W. [9749

JAMES, 1915-16 (uncertain), 2-stroke, 2-speed, enclosed flywheel, all-weather finish, lamps, horn, etc., easy starter, has been ridden by a one-legged rider; £57.—Watts, 65, High St., Hounslow. [X8805

JAMES 4¼h.p. (late 1915), stored 2½ years, 3-speed, all-chain drive (new chains), clutch, kick start, with Millford coachbuilt sidecar, screen, hood; 85 gns.—S., Flat 6, 38, Chester St., Kennington Rd., S.E.11. [9953

JAMES, 1916, 3½h.p., T.T. twin, perfect condition, laid up 2½ years, 3-speed countershaft, chain drive, lamps, horn, and all accessories; a bargain, £105, or nearest offer.—Briggs, Carisbrook, Hessle Common, Hull. [X8846

MOTOR CYCLES FOR SALE.

James.

JAMES 4¼h.p. Combination, 1914, all chain, countershaft 3 speeds, clutch, kick starter, new rear chain and sprockets, new gears, unpunctured Dunlops, spare cover, enamel and plating excellent, unused 3 years and good as new, tools, lamps, etc.; lowest £80.—29, St. Alhane Rd., Harlesden, N.W.10. [X8912

J.A.P.

J.A.P., 4h.p., Canoelet C.B., 3-speed, clutch, Bosch; £65.—89, Westcombe Hill, Blackheath. (After 7 p.m.) [9444

4h.p. T.T. J.A.P., clutch, new tyres and belt, fast and smart, in perfect condition; nearest £45.—Bannister, West St., Midhurst. [9733

1914 J.A.P. Racer, 4h.p., overhead valves, 60 m.p.h., good tyres, nice condition, perfect; £55.—Payne, 109, St. Leonard's Rd., Mortlake. [X8776

1917 5h.p. J.A.P., new frame and 3-speed Armstrong, kick start, Bosch, B. and B., practically new; £70, or exchange combination.—Turner, Halton, Spilsby. [9847

J.A.P. 4h.p., T.T., adjustable pulley, Bosch, B. and B., Hutchinson and Dunlop tyres, Lucas accessories, good running order, fast and reliable; £35; call after 6 p.m.—9, Hamilton Gardens, St. John's Wood, N.W.8. [9937

J.E.S.

LANCASHIRE and Cheshire Only.—J.E.S. motor cyclette and attachment sets; enquiries invited.—J. Blake and Co., Liverpool-Manchester. [7042

J.H.

J.H. 2¾h.p. 3-speed 2-stroke, light canoelet sidecar fitted, excellent condition, any trial; £50.—Parker's, Bolton [X9041

Kelecom.

KELECOM, 3½h.p., 2 speeds, free, Bosch mag., Amac carburetter, lamps, horn, good running order; £25; stamp, photo.—Bramlea, Charlton Rd., Shepperton-on-Thames. [9805

Kerry

KERRY-ABINGDON, 3½h.p. King Dick, 1911, fixed engine, little used, wicker torpedo sidecar; £40; could separate.—MacKenzie, A.I.D., 4, Stores Depot, Ruislip. 'Phone: Uxbridge 240, Extension 108. [8832

Lea-Francis.

1919 Lea-Francis, new July, exquisite machine, Phœnix coachbuilt sidecar; 130 gns.; deposit.—Davies, Girtford Manor, Sandy, Beds. [9523

LEA-FRANCIS, 1919, 6 weeks old, unscratched, electric lights and horn; offers over £125, not worth more than £500.—47, Hamilton Rd., Reading. [9904

LEA-FRANCIS, 1919. Place your name on our waiting list for delivery of these aristocratic mounts.—A. J. Sproston, 198, Gt. Portland St., W.1. [6612

LEA-FRANCIS 1916 4h.p. Twin J.A.P. Coach Combination, 3-speed countershaft, K.S., chain drive, speedometer, lamps, perfect condition; £127.—R., 5, Victoria Av., Surbiton. [9178

LEA-FRANCIS 1914 4h.p. twin J.A.P., 2-speed countershaft, clutch, long exhaust, accessories, splendid throughout; £85. After 6.—Grindey, 46, Mornington Crescent (Hampstead Tube), N.W.1. [9742

LEA-FRANCIS, 1914, 3½h.p. twin J.A.P., 2-speed countershaft, clutch, kick start, chain drive, easily detachable disc wheels, lamps, etc., very sporty machine; £78.—3, Oakland Terrace, Ross, Herefordshire. [X8781

Levis.

LEVIS, 1919, new, fully equipped.—40, Upper Wimpole Mews, Devonshire St., W.1. [9761

LEVIS Popular, good condition, fast, accessories; £35—38, Payne St., Deptford, S.E.8. [9271

LEVIS 2¾h.p., powerful, fast, excellent condition; £36; lamps.—8, Netheravon Rd., Chiswick. [9227

HOVE Engineering Works, Davigdor Rd., are executing Levis orders in strict rotation; all accessories and repairs. [7962

2¼h.p. Levis, 1914 model, lamps, good tyres, running order; £33.—Northern Motor Exchange, Marion St., Sunderland. [X8970a

LEVIS, smart, powerful, late model, fully equipped; £37.—Cronch, 10, Sydney Villas, Blyth Rd., Hayes, Middlesex. [9600

LEVIS, late 1915, just overhauled, disc wheels, lamps, horn; £36; evenings.—Denning, 40, Marmora Rd., Honor Oak, S.E. [9669

LEVIS 2½h.p. Model E, countershaft drive, all accessories, as new; £45.—41, Southview Rd., Nightingale Lane, Hornsey. [9692

LEVIS Popular, the finest 2-stroke in the world: book now for early delivery and super-service.—The Walsall Garage, Walsall. Tel.: 444. [5604

1918 Popular Levis, 2¼h.p., perfect condition, lamps, Stewart horn; expert examination; nearest £50 secures.—Nene Farm, Wollaston, Wellinghoro'. [X8911

LEVIS 2¼h.p., 1916, lamps, horn, very little used, perfect condition; price £37, near offer; seen after 6.—Simpson, Union Brewery, Wandsworth, S.W. [X9004

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LEVIS, 2¼h.p. Popular model, splendid cond painted grey; £35, first cash secures.—V Hardie and Lane, Ltd., 24, Woodstock St. (off O St.), Bond St., London, W.1. 'Phone: Mayfair 6

1916 Levis Popular, just overhauled by ma Lucas lamps and hooter, tools, pump; any mechanical inspection; all in perfect condition; away; £38, or near offer.—68, Kerry Rd., New S.E.14.

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LINCOLN ELK, 1916, 2-speed, free engine, B. B., little used, new condition; £50.—G.R. Atlantic Rd., Brixton, S.W.

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4h.p. L.M.C., 3-speed, Bosch, Senspray, excellent ning order; £39.—Atkins, Crowborough.

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M.A.G. Combination, 5-6h.p. twin, 3 speeds, start, clutch, automatic carburetter, internal b lamps, horn, coach sidecar, Easting wind screen, 1918, perfect condition; £100.—Thompson, 58, mont Rd., Smethwick, Birmingham.

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MATCHLESS. To insure delivery new 19 models order now.—Parker's, Bradsha Bolton.

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CROW Bros., High St., Guildford, West S agents for the new Matchless.—Order no early delivery.

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MATCHLESS, 1915, 8h.p., 3-speed hub gear, lent condition; £76.—72, Woodside Park R Finchley, N.12.

MATCHLESS 7-9h.p. M.A.G. Combination, 19 speed countershaft, perfect condition; £ Robertson, North, 55, Broad St., Peterborough.

MATCHLESS Combination, J.A.P. 6h.p., St Archer 3-speed gear, and new Middleton S £100, or near offer.—Brewer, 1, Inman Rd., Ea

7h.p. Matchless Combination, M.A.G. engi speed countershaft gear and kick-starter condition, very reliable; gift, 115 gns.—30, Talb Burnley.

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U.T.—Sole agents for Staffordshire. For particulars of prices and deliveries, watch future announcements.—The Walsall Garage, Wolverhampton St., all. Tel.: 444. [5605

U.T. 1914-15 2¾h.p. Twin, overhead valve, J.A.P., perfect order, fast, original enamel good, front rear lamp sets, T.T. bars, horn; fixed gear; £65; ffers.—Cameron, Old Ship House, Bursledon, Hants. [9504

U.T.-J.A.P. 1914 3½h.p. Twin, 3 speeds, clutch, kick start, semi T.T. bars; all accessories, tyres ew, fast and powerful, sound order throughout; ; £60.—Wharton, High St., Kirkby Stephen. [X9024

U.T.—We have been appointed district London agents for N.U.T. motor cycles. We hope shortly e in a position to give full particulars of the new ls and approximate dates of delivery.—Vivian lie and Lane, Ltd., 24, Woodstock St. (off Oxford Bond St., London, W.1. 'Phone: Mayfair 6559. [0026

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K. 4h.p., just overhauled, enamelled, and plated; £40.—234, Brixton Rd., S.W.9. [9909

h.p. O.K., 4-stroke, 1915, 2-speed, T.T., perfect, new Dunlops; 42 gns.—Langley House, Langley Surbiton. [9966

K. Junior, June, 1916, countershaft, Biflex cord, de luxe, extra tank, tools, spares; £45.—Knight, West St., Dorking. [X8457

K. T.T. 2¾h.p., 1917, good as new, accessories, sporty; £40.—Phillipps, 37, Sarre Rd., Mill , Cricklewood, N.W. [9694

NES' Garage, special agents for O.K. machines, Broadway, Muswell Hill, N.10, and Woodside le, North Finchley. [2922

16 O.K. 2¾h.p., 2-speed, tyres as new, lamps and horn, splendid condition, £45; also 3½h.p. comion, £35.—Apply, 20, Derby Rd., Croydon. [9280

15 O.K., 4-stroke, absolutely perfect condition, overhauled, 2-speed countershaft, lamp, spare etc.; £40.—G., 2, Fredrick Place, Clifton, Bristol. [X9013

15 O.K. Lightweight, 2-speed countershaft, chaineum-belt, easy starting, good condition throughout £42.—Clamp, Watchmaker, Bitterne Park, Southon. [9256

K. Lightweight, 1914, 4-stroke, T.T., Senspray, Druids, new Dunlops, 2-speed, F.E.; any trial; after 6 evenings, 2 till 4 Saturday; £38.—60, Rd., Richmond, Surrey. [9852

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ANLEY RUSSELL, Newport, sole Isle of Wight agent for Omega-Jap motor cycles; early delivery. [6106

19 2¾h.p. Omega-Jap, 2-speed, clutch, kick starter, Bramptons, Dunlops, absolutely perfect order, at a week ago; £85.—Thorncot, Hove, Plymouth. [X8823

IEGA, 2¾h.p. J.A.P. engine, Albion 2-speed C.S. gear, only run a few miles, delivered from works month; best offer over £55.—Roberts, 60, Mostyn Llandudno. [X8617

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and M., 1915, 2-speed, 3½h.p., K.S.; £64.—Ross, 86, High Rd., Lee. [9277

h.p. P. and M., 2-speed; £45.—Hart, 27, Walpole Rd., New Cross, S.E. [9575

14-1915 P. and M., 3½h.p., with Millford sidecar; £80.—51, King Richard St., Coventry. [X8834

19 3½h.p. P. and M. Combination, Lucas lamps and horn; £135.—H. Rock, Cradley, Staffs. [X8817

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and M., 3½h.p., 1919, lamps, horn, tools, several spare parts; £95.—K. Thornton, Burleigh, Stoney- Av., Leicester. [X8960

and M.—Assured early delivery, inquire our approximate dates.—Agents: Parker's, Bradgate, Bolton. [X9030

and M. 3½h.p. 2-speed Combination, complete, latest model; best offer over £95.—46a, Greenleaf Walthamstow, E.17. [9361

h.p. P. and M. believed 1914 F.E., 2-speed, splendid condition £50; after 7.—1, Mobwell Ter. Gt. Missenden, Bucks. [9395

and M. 4h.p., 2-speed gear, enclosed chain drive throughout; first cheque £60 secures; a bargain. 106, c/o *The Motor Cycle*. [X8933

and M. 3½h.p., 2-speed, just overhauled, re-enamelled and plated, as new; £65.—W.H., 104,—Leig- Court Rd., Streatham, S.W.16. [1011

and M. Coachbuilt Combination, 2-speed, clutch, good tyres, climb anything; gift, £55; first cheque s.—F. North, 41, Montpelier St., Brighton. [9185

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TRIUMPH, 1916, 4 h.p., 3-speed c/s, very good order £85 0

ENFIELD, 1915, 3 h.p., 2-speed, late property of an engineer, beautiful condition £63 0

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P. and M.

1919 P. and M. 3½h.p. De Luxe Combination, purchased last June, 3 lamps, Klaxon, etc.; £130, or near offer.—Matthews, 3, Old Tiverton Rd., Exeter. [9516

1919 P. and M., brand new, thoroughly equipped, lots of new accessories; cost over £100, best quickest offer secures; owner buying car.—15, Foster St., Wallington. [X8782

1919 P. and M. 3½h.p. and Milford Coachbuilt Sidecar, new June, fully insured, unscratched, Lucas lamps, unused, horn, tools; offers near £130.— B.N., 56, Gordon Rd., West Bridgford, Nottingham. [9657

1913 P. and M., 3½h.p., 2-speed, kick starter, all chains, new mudguards and chain case, cantilever sidecar chassis, with coachbuilt commercial body and wicker interchangeable for pleasure; nearest 70 gns., all in.—Bullock, Mill Lane, Blackburn. [X8509

Pope.

POPE 7-9h.p. Twin, clutch model, enamelling good, nickeling indifferent, engine perfect, covers good; offers over £55.—139, Gt. Dover St., S.E.1. [9831

POPE 7-9h.p. American Big Twin, clutch, pedal starter, overhead valves, spring frame; best offer over £65.—24, Micheldever Rd., Lee, S.E.12. [9631

3h.p. Pope, new in 1914, stored 2 years, free engine, automatic carburetter, excellent condition, and ready to ride away; £40; after 6 p.m.—Lingfield, Westbury Rd., New Malden. [9529

Precision.

PRECISION, 4½h.p., 3-speed, complete with coachbuilt sidecar.—A. Peckover, Royd Garage, Hebden Bridge, Yorks. [X8512a

Premier.

PREMIER 3½h.p., 3-speed, 1915, countershaft model; £56.—Ross, 86, High Rd., Lee. [9274

PREMIER, 1914, 2½h.p., a smart little machine; £32.—517, Wandsworth Rd., S.W.8. [9159

PREMIUM Lightweight, as new; £40.—4, Upper Wimpole Mews, Devonshire St., W.1. [9760

PREMIER 3½h.p., Philipson pulley; £35, or exchange.—141, Broadway, Cricklewood, N.W. [9373

3½h.p. Premier and Wicker Sidecar, good condition; £37/10.—20, Forrest St., Latchford, Warrington. [9390

PREMIER 3½h.p., 3-speed, clutch, sidecar, good running order; £52.—48, Prince George Rd., Dalston, N. [1071

1914 Premier 3½h.p. Combination, Bosch, B. and B., kick-start, fast, 3-speed; £55.—Gower, Beaconsfield. [9849

PREMIER, 4h.p., 2-speed countershaft, kick start, as new, unscratched, perfect; nearest £85.—27, Notting Hill Gate. [9722

PREMIER, 2½h.p., Bosch, B.B., exceptionally good condition; £28/10.—Warwick, Ringwood, Stanhope Rd., St. Albans. [9915

PREMIER, 1914, 4h.p., 3-speed, clutch, Bosch, Binks, unpunctured Dunlops, perfect order; £55.—Badderley, The Cottage, Southwold. [9812

PREMIER 3½h.p., with sidecar chassis and delivery body, good working order, Bosch mag., new cylinder; £45.—30, High St., Margate. [9489

1914 4h.p. Premier coach-built Combination, 3-speed countershaft, kick-start, stored 3 years; £85.—Banks, 7, Westgate St., Ipswich. [9866

PREMIER 7-9h.p. Twin, countershaft 3-speed, electric lamps, Gloria coachbuilt sidecar; £97; after 6 o'clock.—4, Pinfold Rd., Streatham. [9933

PREMIER, 2½h.p., watertight Bosch, B. and B. carburetter, nearly new tyres, not much used; any trial; £35, offer.—207, Well Hall Rd., Eltham. [1062

PREMIER 4h.p., clutch, kick start, powerful, fast, smart, no fault; ride away; 1913, hardly used; £55.—Jones, Crossway House, Coleford, Bath. [X9100

PREMIER 3½h.p., perfect condition, new tyres, new Mabon clutch, gas and electric lights; £40.—83, Wellington Rd., Wanstead, E.11. After 7 p.m. [9596

3½h.p. Premier, 1914, 3-speed, K.S., Montgomery sidecar, new Dunlops, lamps, generator, horn, spares, luggage and petrol carrier, excellent running condition; first £90 secures.—A. Longworth, Woodstock, Oxon. [9893

1914-15 Premier 4h.p., countershaft, fitted spring footboards, special metal discs, head lights, Pillion seat, mechanical horn, nearly new Dunlops, powerful band brake; any trial; £78, or offer; with sporting sidecar £88.—Trulocke, 7, Corn St., Witney, Oxon. [X8676

Quadrant.

QUADRANT 1914 Cancelet Combination, 3-speed, electric lights, as new; £85.—56, High St., Tooting. [9672

1914 4½h.p. Quadrant, 3 speeds, clutch, Cancelet coachbuilt sidecar, long horn, lamps and accessories; £70; also 1916 4h.p. Douglas.—W. E. Richardson, 6, Croydon Rd., Elmers End, Beckenham. [9792

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STANLEY RUSSELL, Newport, sole Isle of Wight agent for Radco motor cycles; delivery commenced. [6107

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2923

1915 Radco, perfect, recently overhauled by makers; seen week-ends; £30.—Taylor, Rose Villa, Wychbold, Droitwich, Worcs. [X8979

RADCO 2¾h.p. 2-stroke, perfect condition, just overhauled, guaranteed; £34/10.—Sibley, 106, Market Place, Romford. Closed 1 o'clock Thursday. [9719

Reading-Standard.

READING-STANDARD 7-9h.p. 1916 Combination, 3-speed; £120.—Ross, 86, High Rd., Lee. [9276

READING-STANDARD 1917 Combination, 9-11h.p., 3 speeds, kick starter, hand also foot operated clutch, lovely sidecar, sheet steel covered, Orto wind screen with side wings, Orto hood, side curtains, new spare Kempshalls tyre and holders, new spare driving chain, new Dunlop tyre and tube on car, original tyre on front wheel, splendid turnout; price £138.—Robbins, 9, Steep Hill, Lincoln. [X9066

Rex

REX, 3½h.p., Senspray carburetter, new, good running order; £15.—256, Division Rd., Hull. [9926

3½h.p. Rex, single, in perfect running order; quick sale £28.—Winsor, 40, Southern Terrace, Mutley, Plymouth [9416

REX Combination, 1913, 2-speed, handle start, coachbuilt sidecar, good running order.—18, Brook St., Lancaster. [X8840

REX 1912 6.p. Combination, handle start, splendid condition and goes well; £48.—29, St. Leonards St., Bromley-by-Bow. [9628

1913 Rex Combination, 6-8h.p., latest B. and B., Bosch, smart turnout; offers.—14, Egerton Mews, Brompton Rd., S.W. [9973

REX De Luxe 3½h.p. 2-speed Combination, splendid condition; £80; seen after 7 p.m.—114, Wanstead Park Rd., Ilford. [9697

5-6h.p. Rex, Senspray, Bosch, Whittle belt, very fast; first £38 secures; owner going away.—24, St. John's Grove, Croydon. [9552

REX 3½h.p., good running order, Bosch, lamps, decompressor, good tyres; £25.—Keene, Jordan's Farm, Crawley, Sussex. [9846

REX 6h.p. C.B. Combination, 2-speed, free engine, kick start, Bosch mag., speedometer; £55.—21, St. Peter's Rd., Lower Edmonton. [9861

REX 5-6h.p. Twin, Sturmey-Archer 3 speeds, B. and B. carburetter, Mabon clutch; £30.—54, Cambridge St., Moorthorpe, St. Elmsall. [9494

3½h.p. Rex and C.B. Sidecar, 2-speed, Senspray, new piston, rings, and gudgeon pin; £40, or near offer.—32, Second Av., Walthamstow. [9869

REX Combination, 5-6h.p., 2-speed gear, Bosch; bargain, £48; privately owned.—Apply, 20, Thornton Rd., Thornton Heath Pond, near Croydon. [9265

6h.p. Rex Twin, hand clutch, adjustable pulley, handle starter, lamps, tools, B.B., good running order; £27.—The Nook, Westover Rd., Fleet, Hants. [9171

REX 6h.p. Combination, late 1913, B.B., Bosch, 2-speed, spares, etc., good condition; what offers; after 6.30 p.m.—124, Emscote Rd., Warwick. [X8621

1913 6h.p. Twin Rex, overhead valves, powerful and fast machine, in splendid order; trial anywhere; £50.—142, Whippendell Rd., Watford, Herts. [X8972

6h.p. Twin Rex Combination, lamps, pillion, etc., takes four easily, Grado gear, plating and paint as new; £65.—Conforth, Fairfield, Stockton-on-Tees. [X9002

REX 3½h.p., 1912-13, Bosch, B.B., one new tyre, other decent, T.T., very fast, F.E.; £30.—Marshall, 10, Cornfield Terrace, Millwood, Todmorden. [X9001

MOTOR Cycle, Rex 1912 6-8h.p., twin, Bosch mag., free engine, B.B. carburetter, new tyres, sidecar, good condition; £35.—C. Fenner, Hurstwood, Buxted, Sussex. [9172

REX 1913 Combination, 8h.p. twin, handle start, 2 speeds, fine cane sidecar, upholstered red leather, excellent condition all round; £70, or exchange for lower power or piano.—Bunting, Masons Av., Wealdstone. [1043

1913 Rex Coachbuilt Combination, 6h.p., 2 speeds, hood, wind screen, lamps, horn, good condition; any trial; £70.—Jenkins, 4, Glamorgan Terrace, Swansea. [9313

REX, late 1915 6h.p., coachbuilt sidecar, 2-speed, mechanically sound, and in good condition, original tyres still on; what offers?—Thomson, Ironmonger, Wigtown, N.B. [X8649

REX 1912 6h.p., 2-speed, C.B. sidecar with steering connection, Bosch mag., good lamps, tyres, and belt, unused 1914-1919; £65.—Comer, West St., Bridgwater, Som. [9206

REX, 3h.p., overhauled, Bosch, Amac smart appearance; £25, or exchange higher power, any condition, F.N. preferred.—Monk, Hawes Hill Cottages, Holyport, nr. Maidenhead. [X8859

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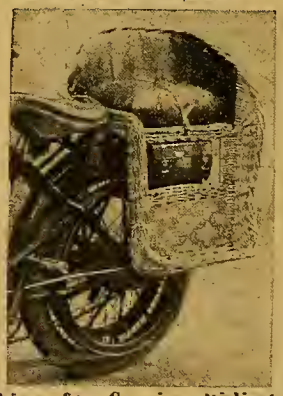

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REX T.T. 6h.p. De Luxe, o.m.i.v., B. and B. jet, Bosch, 2-speed, clutch, new tyres, compl overhauled, perfect; £45; very hot.—Wellington, Roxboro' Park, Harrow. [

REX 1914 8h.p., coachbuilt sidecar, clutch m 2 lamps, 2 generators, handle starter, ta up anywhere, in splendid condition; £79, no offe 8, Effra Parade, Brixton. [

REX Twin, 8h.p., sidecar, Bosch, B. and B., Wh belt, 3 lamps, horn, Mabon clutch, wants p now fixed, good puller; £40, near offer; trial.—T 11, Buxton Rd., East Sheen, S.W.14. [X

5-6h.p. Rex Coachbuilt Combination, 2-speed, h starter, drip feed, lamps, tools, spares, apron; away; £70; after 7.30 week-ends, 3 Saturday.—Vi Estate, 4, Oyster Lane, Byfleet, Surrey. [

BARGAIN.—Guaranteed sound Rex 1913 coachbuilt combination, 2 speeds, just been bored and rebushed, new tyres, lamps, and horn; cheque £45.—Reynolds, Waterbeach, Cambs. [

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REX, late 1913 6-8h.p. twin, coachbuilt combina just been thoroughly overhauled, B. and B. buretter, Roc 2-speed gear, lamps, horn, wind sc new tyre, spare tube, everything in first-class condit any trial and expert examination invited; £95.—A Bernwell, Peterborough. [

REX 3½h.p., new mag., B.B. carburetter, 2 brakes, horn, new cover on rear wheel, just hauled, ready to ride away; also 5-7h.p. twin Pens new Thomson-Bennett mag., horn, carrier, etc., requ tuning, both in good condition; Saturday, after 4 any evening by appointment.—25, Stanmore St., donian Rd., N. [

Rex-Jap.

REX-J.A.P. Combination, 6h.p., 3-speed, K.S.; £8 Ross, 86, High Rd., Lee. [9

1914 Rex-Jap. 6h.p., C.B., hood, screen, lam best over £85.—2a, Hornsey Rise, Upper H way, N. [9

1916 6h.p. Rex-Jap Coachbuilt Combination, speed, all enclosed chain drive, 3 Lucas lam and horn, Tan Sad. genuine, reliable, and any t given; £110; no offers.—Eardley, Marchwiel, W ham. [9

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RILEY, 2¼h.p., Bosch, nearly new tyres and tu good running order and appearance; trial; M.O. over 32 gns. secures.—40, Washington St., Kid minster. [8

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ROC 4h.p., 2 speeds, free engine, low fra running order; £30.—12, St. John's Rd., C don. [9

£33.—4h.p. Roc and sidecar, 2-speed, F.E., ha starting, spring forks and seat-pillar, Brooks, fl boards, Bosch, Amac, low, comfortable, stored 3 ye ride away.—Box 4,479, c/o *The Motor Cycle.* [X8

ROC 3½h.p., 2-speed, free engine, handle start, and B., Bosch, good tyres, 26×2½ rear, st throughout war, in good running order, trial, away bargain, £25.—Broadley, Henley's Down, C field, Sussex. [X9

Rover

3½h.p. T.T. Rover, 1916, Philipson pulley, per condition; £75; no dealers.—Holmes, Pybus Derby. [9

ROVER Lightweight, Dixie mag., N.S.U. 2-s gear, good tyres; accept £22.—E., 277, Cam well Rd., S.E.5. [9

JONES' Garage, special agents for Rovers, Br way, Muswell Hill, N.10, and Woodside Par North Finchley. [2

ROVER 1914, 3-speed, clutch, in fine condition, very reliable; £56; after 7 p.m., or appointm —4, Byron Av., Sutton, Surrey. [

ROVER 1914 3½h.p., 3-speed, clutch, Mills-Fal sidecar, speedometer, excellent condition; £ 48, Prince George Rd., Dalston, N. [

LATE 1913 3-speed Rover, Bosch, new belt, n new tyres, tools, lamp, speedometer, store years; £50.—Finch, Castle Lane, Hedingham, Ess [X

3½h.p. Rover, 1916, as new, 3-speed counters clutch, lamps, horn, etc., spare tube; £8 nearest offer.—125, De Beauvoir Rd., Kingsland [

ROVER 3½h.p., countershaft 3-speed, late 1915, fect condition, little used, complete with la horn, tools; £80.—Fastledge, Hyde Heath, Amers Bucks. [X

ROVER, 3½h.p., with Canoelet, clutch, and co shaft 3 speeds, 1918 combination, horn, l etc., ride away; £90, or best.—Palace, Erdington, miogham. [X

ROVER, 1913, 3½h.p., just overhauled, N speed gear fitted, stored 3 years, new belt, as new, coach sidecar; £70.—Box L3,373, c/o *Motor Cycle.* [

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1.p. Torpedo, 2-speed countershaft gear and kick-starter, nice condition; 40 gns.—30, Talbot St., ley. [X8500

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). Trent, Bosch mag., Amac handle-bar controlled carburetter, Brooks saddle, spring forks, 26×2¼ Dunlop non-skid, Dunlop belt, Triumph handle-low, powerful, nice condition, all accessories; in, £18.—45, Charles St., Stepney, N. [9770

Triumph.

UMPH 3½h.p., splendid condition; £38.—619, Garratt Lane, Earlsfield, S.W. [9195

UMPH 3½h.p., 2-speed, free engine; bargain, £40.—16, Gascoign Rd., Barking. [9417

UMPH Junior, 2-speed, 1917, as new; £45, bargain.—36, David Lane, Shadwell, E. [9412

UMPH Junior, perfect, new tyres; £43.—Hounor, Fairholme, Holland Rd., Maidstone. [9971

UMPH 1912 3½h.p., perfect; £42, or offer.—Hadfield, Dentist, East Grinstead . [9841

UMPH, 1911, in good condition; £40.—4, Upper Wimpole Mews, Devonshire St., W.1. [9758

UMPH 3½h.p., 2-speed, F.E., perfect running order; £45.—9a, The Mall, Ealing, W. [9884

3X Triumph, 1914, Lucas, horn, lamps, Dunlops; £45.—Eversley, Castle Rd., Salisbury. [9170

. Triumph, countershaft 3-speed, condition as new; £75.—53, Pelham St., S. Kensington. [9163

2 3½h.p. Triumph, T.T., drop frame, splendid condition; £38.—H. Wright, Arlesey, Beds. [9345

UMPH 3½h.p., splendid condition, as new; £48 7, Kenbury St., Coldharbour Lane, S.E. [X9129

3 Triumph, clutch, and basket sidecar; go anywhere; £52.—King, Egrove Farm, Oxford. [X8455

UMPH 3½h.p., engine recently overhauled; £38. -2, Greta Rd., Headstone Drive, Wealdstone. [9169

9 Triumph, better than new, accessories, Klaxon, insurance; £100.—16, Bride St., Barnsbury, N. [9763

UMPH, 1914, 3-speed, 4h.p., clutch, in splendid condition; bargain, £65.—33, Sun St., Hitchin. [9582

UMPH 1919 2¼h.p. Lightweight Model, run few miles only.—Parker's, Deansgate, Manchester. X9035

UMPH 3½h.p., 1913, clutch model, in excellent condition; £45.—Barryhurst, Queen's Rd., Thame. [X8883

UMPH, 1914, 3-speed, clutch, lamps, etc., good order; £64.—72, Bonham Rd., Brixton Hill, S.W. [9534

UMPH 1913 Combination, 3-speed, clutch, new Dunlops; offers.—Stone House, Wixford, Alcester [X8963

UMPH 1914 4h.p., 3-speed, clutch, nice appearance; £60.—48, Prince George Rd., Dalston, N [1065

p. Triumph, Bosch, B. and B. carburetter, tyre good; ride away; £30.—152a, Swaby Rd., Earls [9340

1 Triumph, clutch model, Philipson pulley, lamps, horn, good condition; £35/10.—Oswell, Hadley [X8926

UMPH.—Order now. Secures your 1919-20 model —Inquire deliveries, Parker's, Bradshawgate. [X9034

UMPH, 1913, 3-speed, clutch, large P. and H lamp set; ride away; £55.—King, Egrove Farm [X9065

UMPHS.—Several 1914 4h.p. 3-speed models, all guaranteed; trial given; £58.—Ross, 86, High Rd. S.E. [9273

p. Triumph, Bosch, T.T., new tyre, other perfect; bargain, £40.—152, Camberwell Grove, Cam- [9199

UMPH, 3½h.p., 1912, just tuned, perfect condition; £40; after 6 p.m.—106, Sydney Rd., Rayner [9925

UMPH, T.T., not done 5,000 miles; bargain price £43.—Grimes, 18, Bruton Place, Berkeley Sq. [9878

UMPH Combination, 3½h.p., 2-speed, 1912, new tyres; £55, bargain.—Tye, Barnby Moor d. [X9083

2 3½h.p. Triumph, clutch model, in splendid condition; £42.—T. Sandry, Rumford, St. Issey ill. [9961

) 4h.p. Triumph T.T. Roadster, new from work July 30th; offers wanted.—Robson, Helmdor ey. [9931

) 4h.p. T.T. Triumph, as new, with all accessories, very fast; £95.—Rossiter, Hagley, near idge. [X8873

UMPH, Grade, Bosch, B. and B., new tyre and elt; £27, a bargain.—Gregory, 10, Lorna Rd. rough. [X9056

) Triumph, 4h.p., 3 speeds, countershaft, kick starter, in excellent order; £75.—200, High St., , S.W. [9208

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1919 Triumph, 4h.p., 3-speed, Gloria sidecar, hood, screen, electric light outfit, horn, speedometer, leg guards, ridden 500 miles.—Jones, Westdean, Peaks Hill, Purley. [9581

TRIUMPH 3½h.p., 3 speeds, clutch, running order: £40; after 6 p.m.—Goodger, 113, Rodney Rd., Walworth, S.E. [9246

3½h.p. Triumph, Bosch, good heavy Dunlops, running order; ride away; bargain, 28 gns.—Rippon, The Gorse, Sleaford. [X8835

TRIUMPH 3½h.p., N.S.U. 2-speed, lamps, etc., excellent condition; £45.—24, Green End Rd., Bedford Park, W. [8763

JONES' Garage, special agents for Triumphs, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2927

TRIUMPH, 4h.p., 3-speed, late 1914, perfect order; 65 gns.—After 6 p.m., Davidson, Acacia, Centre Av., Acton Vale. [9164

TRIUMPH Junior, new 16th June, not done 500 miles, unscratched; what offers.—Box L3,344, c/o *The Motor Cycle.* [9638

TRIUMPH 3½h.p., Philipson, very fast, as new, stored 3 years, speedometer, lamps, Klaxon; £70.—4, High St., Ealing. [X8826

TRIUMPH Motor Cycle, 3½h.p., in good running order; seen any time; what offers?—Hinton, Southrop, Lechlade. [9505

TRIUMPH, 1912, clutch model, N.S.U. gear, enamel, nickel, etc., as new, sound throughout; £50.—66, Victoria Rd., Barking. [9132

1915 4h.p. Triumph, £75; 1916 and 1917 ditto, £80; all in new condition.—18, Wix's Lane, Lavender Hill, S.W. [9942

TRIUMPH, 3½h.p., clutch model, adjustable pulley, very powerful, excellent condition; £45.—10, Queen St., Gloucester. [X8487

1913 Triumph 3½h.p., clutch, fast, excellent condition, accessories, stored last 3 years; £49.—26, The Brent, Dartford. [9862

TRIUMPH Junior, new condition, lamps, generators, speedometer, horn, accessories; £50; after 3.—18, Cloncurry St., Fulham. [9356

LATE 1914 Triumph, Gloria coachbuilt sidecar, lamp, horn, speedometer; £85; ready to ride away.—Pentlow, Repton, Derby. [X9007

3½h.p. Triumph, Bosch, lamps, horn, tools, excellent running order; any trial; 38 gns.—Howell, Bragbury End, near Stevenage. [9353

TRIUMPH 3½h.p., 3-speed, 1913 model, lamps, horn, ready ride away; best offer over £40.—21, Hopton Rd., Streatham. [9611

1919 4h.p. Countershaft Triumph, in crate, unused; offers over £110; London district.—Box L3,361, c/o *The Motor Cycle.* [1019

1914 Triumph Combination, 3-speed, clutch, lamps, horn, splendid condition; £75.—15, Blundell St., Caledonian Rd., Barnsbury. [9679

£60.—Triumph combination, splendid condition, mechanically perfect, all on; must sell; seen any time.—42, Perran Rd., Tulse Hill. [1072

1919 4h.p. Triumph and Sidecar, lamps and Klaxon, not ridden 1,000 miles; £130, or near offer.—8, Musgrove Rd., New Cross, S.E. [9614

1914 4h.p. Triumph, in beautiful condition, Philipson pulley, lamps, horn, clutch model; £60.—56, Whitton Rd., Twickenham. [9839

TRIUMPH, 1911, Bosch, B.B., good condition, new Dunlop belt, lamps, accessories; £35.—Whatley, 4, Grovely Rd., Wilton, Salisbury. [X9092

TRIUMPH 1916 Countershaft Combination, excellent condition and running order; £100, or nearest.—18, Saffron Rd., Biggleswade. [9133

TRIUMPH, 4h.p., 1916, 3-speed countershaft, £70; also 1914 3-speed hub gear model, £52/10.—Hutton, Red Lion Hill, East Finchley. [X8920

BRAND New 1919 Countershaft 4h.p. Triumph, delivered August, accessories; best over £110.—D. Burn, Pembroke College, Cambridge. [9469

TRIUMPH 4h.p., 3-speed countershaft, W.D. model, mechanically perfect and appearance as new; 80 gns.—20, Church Walk, Hampstead, N.W. [9887

TRIUMPH T.T., delivered 1914, 4h.p., new tyres, lamps, horn, tools, very fast; approval, cash; £48.—Box 105, c/o *The Motor Cycle.* [X8932

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TRIUMPH 3½h.p., 1913, clutch model, just overhauled, good tyres, complete with accessories; £50. —Clarke, Gallipoli, King's Ride, Camberley. [9754

TRIUMPH, 3½h.p., T.T., 1914, Bosch, lamps, tyres, appearance and condition fine; offers over £40.—22, Oppidans Rd., Chalk Farm, N.W.3. [1057

TRIUMPH 3½h.p., new piston and belt, lamps, horn, completely overhauled; £38/10; ride away.—169, Bathurst Gardens, Harlesden, N.W.10. [9851

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Triumph.

TRIUMPH 3½h.p., fixed engine, B. and B., Bosch mag., new Hutchinsons; ride away; £25; after 6.30.—Parkyn, 644, Fulham Rd., Fulham. [9220

TRIUMPH, 1914, C.B. canoelet sidecar, 3-speed, accessories, spares, in perfect condition; £80.—45, South Park Parade, Seven Kings, Ilford. [X8833

1919 Triumph 2¼h.p., 2-stroke, 2-speed, as new, only ridden 100 miles; call any evening 7 p.m.—Murison, 15, Church Crescent, Muswell Hill, N. [9530

TRIUMPH Combination, 1914, 4h.p., 3-speed, clutch, new Mills-Fulford C.B. sidecar, complete; £80.—20, Sandringham Rd., Tue Brook, Liverpool. [X8547

1919 Baby Triumph, perfect, and as new, lamp set, horn, spare new tube, 2 special plugs, tools, extra belt; £75.—West, Popeswood, Binfield, Berks. [1085

TRIUMPH Junior, under 4,000, speedometer, lamps, horn, spares; £50, or £44 without accessories.—4, Vincent Av., Chorlton-cum-Hardy, Manchester. [9806

1919 (May) 4h.p. Countershaft Triumph and Cooper Sidecar, Lucas lamps, horn, mirror, in new condition; £125.—Barnsley, Iverley, Stourbridge. [X8678

TRIUMPH, late 1913, coachbuilt combination, 3-speed, clutch, engine rebushed, tyres and belt perfect; bargain, £65.—Mattock Motor Co., Ealing. [9666

TRIUMPHS, choice of two, 1919, delivery this month, offers; 1918, countershaft, indistinguishable from new. £86.—37, Arlington Rd., Surbiton. [9913

TRIUMPH 1914 4h.p., T.T. model, mechanically perfect, lamps and tools, Bosch mag., adjustable pulley, drip feed.—Heather, London Rd., Bromley, Kent. [9188

TRIUMPH 3½h.p., new Amac carburetter, speedometer, mirror, lamps, good mechanical order; first £25 secures.—Goddard, East St., Farnham, Surrey. [9430

TRIUMPH 4h.p. W.D. Model, 3 speeds, Bosch, decompressor, good running order, very powerful; bargain, £62; after 4 p.m.—30, Arsenar Rd., Well Hall. [9268

TRIUMPH Combination, 3½h.p., 2 speeds, free engine, Bosch mag., new tyres, belt, lamps, etc., overhauled; £48.—Layzell, 10, Byrne Rd., Balham. [9147

1913 Triumph 3½h.p., clutch model, Bosch mag., new Dunlop tyre and belt, adjustable pulley, lamps, horn, and accessories; £40.—105, Macoma Rd., Plumstead. [9196

TRIUMPH, 1913, clutch, variable pulley, tyres, belt nearly new, lamps, speedometer, tools, etc., well kept machine; £49.—Dr. Warren, 175, Enfield Highway. [X8628

TRIUMPH 3½h.p., clutch model, free eogine, engine new, carburetter new, pulley wheel new, tyres good, new belt, and lamps; £50.—Day, Brereton Rd., Rugeley, Staffs. [X8991

1915 Triumph 4h.p., countershaft, new C.A.V. mag., new B. and B. carburetter, complete, ride away; £65; no offers.—Smith, 34, Waltham Rd., Southall, Middlesex. [9526

TRIUMPH 1913, Sturmey-Archer 3-speed, lamp, horn, etc., splendid machine; £55; would take good lightweight and cash.—Moseley, 129, King Richard's Rd., Leicester. [X9046

TRIUMPH Combination, variable gear, pedal start, in thorough good order, take 3 up easily; trial given; £55, or nearest.—46, Cromwell Rd., Walthamstow, E.17. [9753

1914 Triumph, 3-speed, clutch, fast and powerful machine, in excellent running order, accessories, no lamps; £60, first cheque secures.—Box 4,472, c/o *The Motor Cycle*. [X8560

TRIUMPH 1914 4h.p., 3-speed, Bosch mag., new belt and saddle, in very good condition; £60.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [9026

4h.p. T.T. Trump-Jap, good condition, re-enamelled, new Dunlops and belt, large tank, long exhaust; any trial; £35.—Ford, jun., North Moreton, near Wallingford, Berks. [X9072

1913 Triumph Motor Cycle and coachbuilt sporting sidecar, S.A. 3 speeds, clutch, good running order; £65.—"Pevensey," Bury Farm Estate, Bury St., Edmonton. N.9. [9446

1914 3½h.p. Triumph, 2 speeds, countershaft, coachbuilt combination, fully equipped, speedometer; £75; will sell bike, £62.—3, Wellington Rd., East Ham, Essex, E.C. [9989

1914 Triumph, 3-speed, and Watsonian C.B. sidecar, fine condition, lamps, horn, wind screen, and set of tools, ready to ride away; 80 gns.—Seen at 178, High St., Egham, Surrey. [9931

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TRIUMPH, 1914, and Canoelet, 3-speed, clutch, lamps, spares, recently overhauled with new parts, perfect order, tyres good; £75.—Squire, Carpenters' Arms, Sunninghill, Ascot. [9191

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TRIUMPH, practically new condition, very model, 3-speed countershaft, hand oper clutch, kick starter, new covers and tubes; 77 gi 56, Gibbon Rd., Kingston-on-Thames. [9

3½h.p. Triumph, 1912, T.T. bars, tyres and tube new, in perfect running order, £32; side wicker, for above, complete, not used since new, £5 —Lacey, 37, Victoria Rd., Addleston, Surrey. [9

TRIUMPH, 3½h.p., clutch, lamp, horn, speedom Philipson pulley new, recently overhauled ma at cost of £20, tyres nearly new, perfect; 50 gr Colclough, Fir Cottage, Bignall End, Staffs. [X8

4h.p. Triumph, 3-speed, clutch, Bosch, new li ing set, horn, all tools and accessories, sple condition, only defect enamelling on tank trifle w 65 gns., no offers.—Sawtell, Long St., Sherborne. [X8

LATE 1913 Triumph, Sturmey-Archer 3-sp clutch, Bosch, tyres good, everything beau condition, all accessories, spares; sacrifice, 53½ gr Skinner, 75, Cheltenham St., Barrow-in-Furness. [X8

TRIUMPH 1919 4h.p., 3-speed countershaft, and gn. coach sidecar, complete with all lamps, better than new; 100 miles trial given; best o week-end only.—Hall, 54, Maygrove Rd., Brondesb [9

1916-17 4h.p. Triumph, 3-speed countershaft, start, handle-bar clutch, Klaxon, Bosch m long copper exhaust, just overhauled and enamel 75 gns.—Knight, Hut 15; R.A.F., Pinehurst Barr Farnboro', Hants. [X9

TRIUMPH 4h.p., 1919, countershaft 3-speed mo with Triumph Gloria sidecar, combination chased new, July, little used, perfect order, no ac sories; highest offer accepted; Midland district.— 117, c/o *The Motor Cycle*. [X9

TRIUMPH, 1914 (July), 4h.p., 3 speeds, clu stored all war, mileage 1,000, and 1919 Cana Minor sidecar, 3 lamps, all tools, mechanical h perfect combination; 90 gns.; after 6.—20, Sy Mews, Fulham Rd., S. Kensington. [9

1914 Triumph Combination, Montgomery sidecar h.p., 3-speed, clutch, wind screen, Bosch m decompressor, speedometer, P.H. lamps, Binks carburetter, in excellent condition; bargain, £90, offers.—H.B., 157, Thomes Lane, Wakefield, York [9

TRIUMPH, late 1913, 3-speed, and sidecar, Bo decompressor, hand and foot controlled clu speedometer, lamps, horn, spares, ready for imm ate tour, absolutely sound throughout; including surance policy, 60 gns.—85, Selborne Rd., Pal Green, N [9

4h.p. Triumph Combination, late 1913, spor wicker sidecar, 3-speed hub, engine, gears ent renewed, new front spring, pulley, and belt, etc. ceipts £25 shown), all accessories, perfect condit £60, or near offer.—Scott, 22, Templesheen Rd., Sheen, S.W.14. [

TRIUMPH 1913 3½h.p., clutch model, engine 24108, recently overhauled, Bosch, just overh at works, Dunlops, extra heavy, John Bull belt, l lamp and horn, re-enamelled, complete, top-hole c tion, ready to ride any distance; £50.—Francis, Church St., Broseley, Salop. [X

1913 Triumph 3½h.p., handle start, 3-speed cl Miller lamps, nearly new tyres (Dunlop Hutchinson), Bosch mag., 10 months' insurance, s during war, excellent condition, take sidecar anyw privately owned; seen and tried Chelmsford; £ Box L3,343, c/o *The Motor Cycle*. [

3½h.p. Motor Cycle, Triumph throughout, new c and belt, little used, Bosch mag., good s machine, inspection, £40, near offers; also 3½h.p Dion, good strong machine, engine as new, good co new belt, less mag., £12. offers.—Percy Grice, pools, Netherseal, Ashby-de-la-Zouch. [X

TRIUMPHS. Triumphs. Triumphs.—4h.p. co shaft models, kick starters, complete and pe Come and book your machine; several ready shortly; cheapest on market by far. All repairs any make of motor cycle; no waiting; your ma started on same day as brought; minor repairs while you wait. All accessories. Triumph speci All car repairs. All work first-class.—Beaumont Gaulin, 6, Williams Mews, Devonshire St. (off Gt. land St.). W. [

Villiers.

2¾h.p. Villiere 2-stroke; ride away; first cheque —90, Burton Rd., Lincoln. [X

VILLIERS, brand new 2-stroke 2-speed, D studded tyres; £60.—154, Blackhorse Rd., thamstow.

1916 Villiers 2-stroke, 2½h.p., single, with lamp horn etc.; £35, bargain.—B. Roberts, 22, V land St., Smethwick.

Vindec.

VINDEC Special Combination, 5-6h.p., in p running order; a bargain, £50.—Crompton Central Motor Garage, Ashton-in-Makerfield, I

1919 Vindec, 2¼h.p. 2-stroke, 2-speed, The Bennett mag., Amac carburetter, Dunlops, fa Miller lighting set, horn, pump, and accessories, m under 150; having bought combination, will accep for quick sale.—Apply, 12, Granville Rd., Sevenoa

MOTOR CYCLES FOR SALE.

V.S.

Coachbuilt Combination, 2-speed, F.E., B. and ., Splitdorf, for sale, in running order; cheap.—an, 15a, Pavilion Terrace, Wood Lane, Shep-Bush. [9167

Wells.

LLS-J.A.P., 2¾h.p., excellent appearance and ondition, decompressor, silent, powerful; 40 gns. . Crossway House, Coleford, Bath. [X9101

White and Poppe.

p., White and Poppe, Bosch mag., Binks carbu-retter, footboards, etc.; 27 gns.—30, Talbot St., y. [X8501

Williamson

LIAMSON Combination, 8h.p., 1914, coach-built sidecar; £110.—202a, Hammersmith Rd. [1034

LIAMSON 8h.p. Water-cooled Combination, pleadid condition.—34, Raleigh Rd., Hornsey. [9433

LIAMSON 1915 Coach Combination, electric light, speedometer, scarcely used; £120, offer.—osvenor Rd., Southport. [9788

LIAMSON, 8-10h.p. Douglas water-cooled engine, Bosch, excellent C.B. sidecar, tyres good; offer to 90 gns.—Scothern, Grantham, Seven-Tel. 300. [9490

LIAMSON 8h.p. w.c. Combination, 700×80 Dunlops, 2-seater sidecar, hood, screen, lamps s illustrated in "M.C." as family sidecar on st.—48, Rectory Lane, Tooting. [X8987

.p. Williamson Douglas Water-cooled, 2-speed itch, new tyres, excellent roomy sidecar, screen, uggage carrier, perfect, expert examination or what offers; part exchange considered; stamps. engate, Peterhorough. [9647

LIAMSON 8-10h.p. Water-cooled Combination, ck start, clutch, 2-speed gear box, special acety-hting set, large Williamson sidecar, wind screen od, very comfortable, and machine is silent, and e four anywhere; best offer over £140 secures. 04, c/o *The Motor Cycle.* [X8931

LIAMSON 1914 8h.p., water-cooled, 2-speed, utch, kick starter, hood, screen, and side cur-amps and tools, oversize tyres, spare petrol can ge luggage grid, take 4 anywhere, running daily month; owner bought Morgan; after 5 p.m.; Cpt. Britten, Broomfields, Hale Crescent, Hale, ldershot. [9743

Wolf.

LF 1915 2-stroke, 2-speed, clutch, kick start, good condition; £40.—31, Powell Rd., Clapton. [1074

LF, 2½h.p., 2-speed, speedometer, just purchased, ardly soiled; £45.—36, David Lane, Shadwell, [9411

LF-VILLIERS 2-stroke, 2-speed countershaft, st delivered; list price:—Raynham, Saffron [8360

GAIN.—Wolf 2¾h.p., brand new, 1919, 2-speed, ountershaft, free engine, speedometer; 47 gns.—apel House St., Millwall, E.14. [9886

LF 1917 2¾h.p. 2-stroke, 2-speed and free, amps and horn, tyres and belt as new, and is in condition throughout; £39.—Watson, 132, High deburgh, Suffolk. [9154

Wooler.

SS' Garage, special agents for Woolers, Broad-ay, Muswell Hill, N.10, and Woodside Parade, Finchley. [2928

Zedel.

EL, 2¾h.p., minus accumulator; £12, or offer. -'Phone: North 3892. [X8910

p. Zedel, B. and B. carbnretter, mag., lamps, etc., good condition; £25.—20, Melrose Av., wood, N.W. [9727

Zenith.

ITH-GRADUA, 1914, 6h.p., 1919 coachbuilt decar, new tyres, accessories; 69 gns.—183, St., Luton. [9383

Zenith, 90×77½, all in perfect condition; any rial; £90.—Canham, 8, Bradbourne St., Parson's W.6. After 6.30. [9896

ITH-GRADUA-J.A.P. Combination, 4h.p., lamp, orn, B. and B., good condition; £58.—113, May rd., Sanderstead, Surrey. [9967

ITH-GRADUA Combination, 1917, 8h.p., sport-g model, electric horn, lighting, ready to ride £115.—23, Albert Rd., Luton. [1004

9 Zenith 6h.p., electric lighting, Jones speed-ometer, Klaxon; £115, or best offer over.—iser, 26, Malcolm St., Camberwell. [9592

5 Zenith Combination, 6h.p., countershaft, kick starter, Lucas lamps, speedometer, etc.; separate, £105.—Nevols, Longdon, Wellington, Salop. [X8518

ITH Combination, 1917, 4-5h.p., 1919 coach-uilt sidecar, fully equipped, in excellent condi-£100.—Dolley, Buck Green, Hersham, Surrey. [9219

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Zenith

ZENITH-GRADUA 8h.p. Coach-Combination, counter-shaft, kick starter, lamps, splendid condition, very fast; nearest £120.—156, Browning Rd., East Ham. [9663

1917 4h.p. Zenith-Gradua, as new, not ridden 500 miles, lamps, kit spares, etc.; expert examination invited; after 7; £75.—43, Umfriville Rd., Harringay, N. [1007

1913 Zenith-Gradua Combination, white cane side-car, perfect running order, 2 new tyres, belt, spare belt, lamps; £70.—Leysdown, Hughenden Rd., High Wycombe. [9916

ZENITH 6-8h.p. Combination, all complete, very fast and powerful, must be sold by 16th, owner going abroad; first cheque £85 secures; bargain.—Box 107, c/o *The Motor Cycle.* [X8934

ZENITH Combination, 6-8h.p. J.A.P., late 1914, Middleton racing sidecar, Triplex wind screen, speedometer, lamps, etc.; £90, lowest.—Spicer, 20, Bower Place, Maidstone. [9670

ZENITH-GRADUA 6h.p., sporting sidecar, 1914, per-fect mechanical condition and appearance, lamps, horn, etc., stored during war; 85 gns.—Sandford House, The Green, Southgate, N.14. [X9084

1919 Zenith 8h.p., twin-cyl., Gradua gear, ridden 500 miles only, too fast for present owner; what offers.—Apply, Fogden and Butler, 18, London Rd., Southend-on-Sea. 'Phone: 106. [9501

ZENITH-GRADUA 6-8h.p., just overhauled, very fast and powerful, smart, sporting mount, large head lamp; 83 gns.; seen after 6.30 Friday.—22, Baskerville Rd., Wandsworth Common. [1084

ZENITH-GRADUA and Sidecar, 6h.p., 1914, stored during war, disc wheels, very fast and sporty, 3 practically new tyres, spares, lamps, etc.; £85, or nearest. —J.M., 122, Bromyard Rd., Worcester. [X9069

ZENITH-GRADUA, 6h.p., 1914, perfect running order throughout, enamelling and plating excellent, new tyres and belt recently fitted, little used, stored 2 years, lamp, horn, etc.; 70 gns.—1, Angles Rd., Streatham. [9667

ZENITH, 1915, W.D., 3½h.p. single, appearance very fair, tyres and mechanical condition excellent, £55; nearly new Canoelet sidecar to fit, £18 extra.—Garage, 52a, Burghley Rd., near Kentish Town Tube. (Also Enfield.) [1066

ZENITH 8h.p. 1915 Coachbuilt Combination, clutch, countershaft, speedometer, lamps, etc., very good order; will exchange for Morgan or other good make runabout or cycle car (or sell £100); no dealers.—Rogers, 123, Bishop's Rd., Chelmsford. [9800

6h.p. Zenith-Gradua, Gloria C.B. combination, very fine condition, tyres, belt as new, all accessories; sole reason selling owner buying car; first cheque secures; £125, or close offer.—V., 103, Balham Park Rd., Wandsworth Common, S.W.12. [9671

Ladies' Motor Cycles

CONNAUGHT, Sturmey-Archer 3-speed, perfect, all accessories; £45.—Thwaites, Fornham Rd., Bury St. Edmund's. [9507

ROYAL RUBY 1916 2¾h.p. Model, J.A.P. engine, 2-speed, kick start, hand clutch, excellent con-dition; £60.—Parker's, Bolton. [X9042

1917-18 Lady's Douglas Motor Cycle, 3-speed, with kick starter, Watford speedometer, etc., mileage 1,200, excellent condition; price £80, or nearest offer; no dealers.—Vicar, Monkleigh, Devon. [X9050

ZENITH-GRADUA Combination, 4h.p. J.A.P., Bosch, B.B., wicker sidecar, lamps; £55, or very near offer; after 6 p.m. only, Saturday after 2 p.m.—69, Leopold Buildings, Columbia Rd., Hackney, E.2. [9817

Miscellaneous

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2¾h.p. Motor Cycle, less mag., needs several repairs; £10.—30, Talbot St., Burnley. [X8502

2¾h.p. Motor Cycle, minus magneto, going cheap; £12, or nearest offer; after 6 p.m.—163, Albert Rd., Peckham. [1013

MOTOR Cycle for sale, Minerva engine, 2-speed, B. and B., Bosch, Druids, just overhauled; £25.—Ivy Cottage, Warminster Rd., Beckington, Somerset. [X8562

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Miscellaneous.

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1919 Calthorpe-Jap 2½h.p., 2 speeds.

1919 Calthorpe 2-stroke, 2½h.p., 2 speeds.

1919 Campion-Jap, 2 speeds.

1919 Sparkbrook, 2 speeds.

1919 Douglas 4h.p. Combination.

1919 Douglas 2¾h.p., 2 speeds.

1919 James 4¼h.p., 3 speeds.

1919 Omega 2½h.p.

1919 Vindec 2½h.p., 2 speeds.

1919 Levis 2½h.p.

1919 Sparkbrook, single speed.

1919 Diamond, 2 speeds.

1919 Diamond, single speed.

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A.J.S. 1914 6h.p. Twin Combination.

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A.J.S. 1914 2¾h.p., 3 speeds.

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MOTOR Cycle, 2½h.p., 2-speed and free, N.S.U. engine, good tyres, new belt, E.I.C. mag., running order; first M.O. £18 secures.—94, East St., Bridport. [9451

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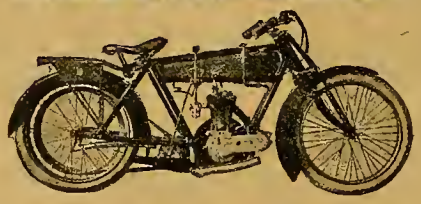

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Miscellaneous.

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MOTOR SCOOTER.

AMERICAN Motor Scooter for sale, in good electric lights, 2½h.p., speed 25 miles, all m accessories, second-hand; £70.—R., Woodville, G Scotland. [

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HUMBER Tricar, 5-6h.p. twin engine, nearly chain drive, Amac clutch; £30.—82, Hig St., Sydenham.

TRICAR; £20; w.c., magneto, B.B., folding fo after 6 p.m., 1 Saturdays; no letters answ 'bus from Bromley.—Mulliner, Tatsfield, Surrey.

TRICAR 4h.p., Trent engine, 2 speeds, accum ignition, coachbuilt forecarriage, in splendi dition; first cheque over £42 secures; bargain.—H Glenthorpe, Bromsgrove.

MOTOR TRICYCLES.

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TRICYCLES FOR SALE.

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ASTONE'S for Sidecar Bodies, coachbuilt, latest designs; about 200 in stock; prices right.—228, ouville Rd., King's Cross, London, N.1. Tel. 2481 h. [6203

ERFECTION Coach Bodies, underslung and light-weight step pattern, prices from £7/3; prompt de-ies.—Halifax Motor Exchange, Union St. South, fax. [8095

AMCO Bodies.—See under "Sidecar Attachments" for your own information and profit. Watch our windows.—The Birch Aircraft Manufacturing Co., Grosvenor Works, High Rd., Willesden Green, .10. [9305

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NDUM Sidecar Bodies.—We are the largest sidecar body builders in the country. We have manu-red to date over 8,000 bodies; 200 bodies always and, completed or in the course of completion—ters, 2-seaters, single-seaters, welded metal pro-es, and feather-weight. You can get what you and rely on a superfine finish at the Sandham neering Co., 336, Gray's Inn Rd., London, W.C. ne: Holborn 933. [0022

NNOC Sidecar Bodies.—Don't be misled by garret and cellar body building manufacturers, who ex-their wares at tempting prices, which are built rom egg and bacon boxes and the commonest rial throughout. We are actual manufacturers of lete bodies and component parts. We have in for actual delivery hundreds of every type body ed, and can give immediate delivery. If possible, and interview our works manager, Mr. George , or send for list.—Rennoc Sidecars, Body Build-Dept., 155, Marlborough Rd., Hornsey Rd., N. ne: Hornsey 850. [8603

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STING Wind Screen, brand new; £3/10. — 21, Moring Rd., Tooting, S.W.17. [9858

MBER Hoods, 55/-; screens, 27/6.—Bright and Hayles, 78, Church St., Camberwell. [9962

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ROPLANE Wind Screens, aluminium and Triplex glass, ideal for sidecars and sporting cars, brand ready for fitting; 2 gns. each.—Hardmond, 41b, heim Crescent, Notting Hill, W.11. [9488

NNOC Sidecar Co. are actual manufacturers of hoods, wind screens, etc.; hoods fitted whilst you from £2/16/3; screens from £1/9/6; immediat eries to fit any make sidecar guaranteed. We also ly hood sticks, motor twill, and all hood and n sundries.—Rennoc Sidecar Works, 86, Victoria Stroud Green, N., and Progress Works, 155, borough Rd., Hornsey Rd., N. Our list with 200 rations upon application. [8604

SIDECAR ATTACHMENTS.

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DDLETON'S Sidecars; all winners and starting prices.

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DDLETON'S Bulbous Coach Minor, termed by softs with monocle and spats an awfully dinky ; price to softs, £25; men, £19.

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DDLETON'S Sidecars; special models for scooters.

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DDLETON'S, the makers of the famous sidecars that are sold only to good-looking people.—27 d Green Rd., Finsbury Park, N.4. 'Phone: Horn 584. [8646

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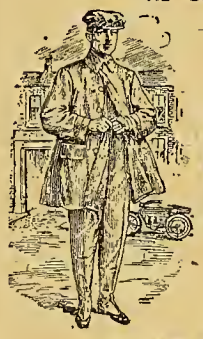
As Usual.



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Light Weight Suits, 39/6

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Best Value Obtainable.

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In Cream and other light shades of Holland and other Fabrics as illustrated above,

18/6 21/- 25/- 27/6 30/-

Caps and Helmets; Cream and various shades, **5/6.** Leather, **9/6.**

White Canvas and Leather Gauntlet Gloves, **3/6**

Cream and Tan Gauntlet Gloves, **9/6, 10/6, 15/6**

Black & Tan Brooks' Spring Leggings, **17/6**, to **29/6**

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289 - 293, HIGH HOLBORN, LONDON, W.C.I.

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Delivery September:

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LEVIS
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Now in stock for immediate delivery—new model "Canoelet," "Montgomery," "Gloria," and "Mills-Fulford" Sidecars—Prices from **£15** to **£35.**

THE PREMIER MOTOR COMPANY,

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SIDECAR ATTACHMENTS.

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BASTONE'S for Sidecar Bodies, coachbuilt, underslung, torpedos, step pattern, lightweights, etc., in stock at clearance prices; inspection invited.—228, Pentonville Rd., King's Cross, London, N.1. Tel.: 2481 North. [6202

1917 A.J.S. Chassis, less wheel, new, uncrated; £10. —Pring, Midleton, Cork. [X8810

CANE Sidecar, reupholstered, etc., equal to new; £8.—Fairweather, Clitheroe. [X8657

SIDECAR, wicker upholstered body, suit 3½h.p.; £9. —Graves, Chesterton, Leamington. [X8652

TWO-SEATER Sidecar Body, Willowbrook, nearly new; £10.—30, Talbot St., Burnley. [X8604

GLORIA Sidecar, model No. 5, new delivery from stock; £42.—Robbins, Garage, Rugby. [X8758

LARGE Modern Wicker Body; photo; £3/10.—Lieut. L.G.B., 9 Mess, Prees Heath, Salop. [X8660

SIDECAR, new shape in wicker, upholstered, re-leathered, chassis re-enamelled; £10/10; also

SIDECAR, C.B., nice condition; £12/10.—Payne, 109, St. Leonard's Rd., Mortlake. [X8775

CORONET Sidecars. Send for illustrated catalogue. —Booth's Motories, Portland Place, Halifax.

CORONET Sidecars for B.S.A., Triumph, Harley Davidson, Phelon-Moore.—Booth's Motories, Halifax. [7394

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WATSONIAN Sidecar (2¾h.p. Douglas featherweight), as new; £10.—93, East St., Epsom. [9677

SIDECAR, Montgomery, wicker, spring wheel; seen any time; £7, offers.—England, Dixon St., Featherstone, Yorks. [X8768

CATALOGUE of Sandum Sidecars is at last ready. If you are interested in smart sidecars, be sure to write for one.

SANDUM Featherweight Streamline Body, smart and racy, weight 18 lbs., locker in back and under seat; when without passenger, seat back hinges forward, and neat coverall encloses the whole; price complete £4/17/6.

SANDUM Sidecars.—Write for our new list.

SANDUM Sidecars.—Bodies in welded metal and coach-built; always 100 in stock; prices to suit everybody.

SANDUM Sidecars.—2-seaters to suit Harleys and Indians. Ask to see our super-seater, which carries two 6-foot passengers.

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SANDUM Sidecars.—Most noted body builders in the country. Every workman an expert.

SANDHAM Engineering Co., 336, Gray's Inn Rd., W.C.1. 'Phone: Holborn 933. [X1012

CLYNO Coachbuilt Sidecar, £14; 2¾h.p. Royal Enfield, £35.—Job, 186, Putney Bridge Rd., Putney. [9511

COACHBUILT Sidecar, 10 gns.; motor cycle, incomplete, £8; appointment.—77, Acre Lane, S.W.2. [9907

DOUGLAS Chassis, new coachbuilt sidecar, good tyre and tube; 17 gns.—35, The Crescent, Croydon. [9808

SIDECAR, Phœnix coachbuilt torpedo, 4-point, practically as new; £19.—27, Notting Hill Gate. [9724

SUNBEAM Sidecar, luxurious 30-gn. model, brand new, in crate; best over £30.—Took, Adrian St., Dover. [9577

SIDECAR Body, 2-seater, upholstered red pegamoid, brand new; £9.—142, Whippendell Rd., Watford, Herts. [X8973

BAMCO.—The Birch Aircraft Manufacturing Co., Ltd., Grosvenor Works, High Rd., Willesden Green, N.W.10.

BAMCO.—Our new design sidecar chassis now in course of manufacture. Get on our waiting list for a complete

BAMCO Outfit. Watch our show windows

BAMCO Sidecar Outfits, the finest ever produced Watch our show windows.

BAMCO Outfits.—Bodies all ash-framed, sprung backs, fibre stuffed, upholstered in Pegamoid, rigid, roomy, comfortable, light, exceptional finish. Watch our show windows.

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SIDECAR ATTACHMENTS.

SIDECAR, wicker body, and upholstery good condition, all couplings; £2/10.—Clegg, 49, Dale St., Milnrow. [9560

PERFECTION Coach Sidecars; £16/16; prompt deliveries.—Halifax Motor Exchange, Union St., South, Halifax. [8096

FOLDING Sidecar, complete, coachbuilt body, unused, suit adult and child; bargain at £20.—74, Malpas Rd., S.E. [9414

B.S.A. Coachbuilt Sidecar; complete with apron, wheel, tyre, connections, new condition; 16 gns.—35, The Crescent, Croydon. [9807

RENNOC Sidecars are manufactured at the Rennoc Motor Sidecar and Engineering Works, 86, Victoria Rd., Stroud Green, London, N.4.

RENNOC Sidecars.—We supply lugs, rims, spokes, upholstering material, tubing, springs, and all fitments for any make sidecar.

RENNOC Sidecar Bodies, hoods, screens, wheel discs, etc., actual manufacturers, wholesale, retail, and export.

RENNOC Sidecars.—We specialise in frame repairs to motor cycles and sidecars.

RENNOC Sidecars.—Special department for sidecar body repairs, repainting, upholstering, lining, etc.

PHŒNIX Sidecars.—The Rennoc Co. can supply all spares and undertake repairs for this make.

RENNOC Sidecars.—14 models to fit all motors; tandems a speciality

RENNOC Sidecars.—We can give immediate delivery of most models.

RENNOC Sidecars to suit Harley, Yale, Indian, Excelsior, Pope, and all American models.

RENNOC Sidecars have always in stock second-hand and clearance sidecars; special list.

RENNOC Sidecars have in stock 17 different design bodies to suit old and new pattern chassis.

RENNOC Sidecars advise you to place your present sidecar with us to be overhauled, we have a special department.

RENNOC Sidecar Works, 86, Victoria Rd., Tolling ton Park, Stroud Green, London, N.4. (George C. Conner, Managing Director), and Progress Body Works, Marlborough Rd. N 'Phone: Hornsey 850. [8605

PHŒNIX Sidecar, torpedo, coachbuilt, recently repainted; £20.—Wells, Carlton Villa, Anson Rd., Victoria Park, Manchester. [9424

WATSONIAN Lightweight Wicker Sidecar, good condition, fair cover and tube; £6, or best offer.—Box L3,229, c/o *The Motor Cycle*. [9070

LIGHTWEIGHT Sidecar, Henderson Model A., coachbuilt, used once, perfect condition; 15 gns.—Clark, 1, Chatsworth Gardens, Acton, W. [9782

COACH Sidecar, complete, new body; bargain, £14. Also new bodies fitted in place of wickers.—21, Champion Hill, Denmark Hill, Camberwell. [9209

SIDECAR, 1919 Canoelet, brand new, just arrived from works; £28/10: first one secures.—Wilkins, Simpson and Co., 11, Hammersmith Rd., London. [9635

HOPLEY Coachbuilt Underslung Sidecar, with door, well sprung, roomy, comfortable, new condition; price 16 gns.—136, Harrington Rd., Norwood Junction. [9752

BURBERRY Model de Luxe Sidecar, fitted with dickey seat, hood, and wind screen, step, etc., upholstered Bedford cord; 28 gns.—3, Parker Lane, Burnley. [X8503

SIDECAR Body, Willowbrooke make, brand new, green, apron complete; can't get delivery of cycle for it; cost £15, accept £10.—No. 1, Walsingham St., Walsall. [X8989

SIDECAR, large cane, upholstered red, large locker at back and apron, new condition, smart appearance; £9; after 6.—20, Sydney Mews, Fulham Rd., South Kensington. [9544

SIDECARS.—Immediate delivery of brand new sidecars, Montgomery chassis, Aero coach bodies; price £26/10 each.—H. L. Stevens and Co., 184, Pentonville Rd., King's Cross. [9284

JUNK for Sale.—Wicker sidecar, less springs and tyre, 35/-; another, coachbuilt, needs assembling, £3; carburettere, Triumph 15/-, B. and B 12/6, Binks 35/-; few Douglas 1912 parts.—30, Canning Crescent, Wood Green. [9330

CLAPHAM (Motors), Greenwich.—August holidays. Complete stock of new sidecars sold out; further consignments now due; Comfy, Hendersons, Grindlays, Willowbrooks; call early to secure.—119, King George St., Greenwich. [1060

SIDECARS, second-hand, in stock, with new coachbuilt bodies, prices from £16/10 each; coach bodies, £7/10 each; chassis from £6 each; second-hand cane sidecar bodies, £1 each.—Stevens, 184, Pentonville Rd., King's Cross. [9285

PHŒNIX Double Seater C.B. Sidecar, only done 100 miles, as new, 20 gns., or best offer; Phœnix cigar-shaped sporting sidecar, new condition, 15 gns.; Harley-Davidson sidecar, 28in. wheel, new tyre, fit right-hand side, £10, or offer.—13, Seymour Mews, Wigmore St., Oxford St., W. [8318

HALIFAX MOTOR EXCHANGE,

UNION STREET SOUTH, **HALIFAX.**

MOTOR CYCLES IN STOCK.

1915 2¾ h.p. 2-speed **DOUGLAS** £52 10
1919 4¼ h.p. 3-speed **B.S.A.** and sidecar, head and tail lamps, almost as new £120 0

SIDECAR COMBINATIONS.

CLYNO, 6 h.p., 3-speed ..... 85 gns.
DOUGLAS, 4 h.p., 3-speed, almost as new 105 gns.
DOUGLAS, 4 h.p., 3-speed, fine condition.. 110 gns.
DOUGLAS, 4 h.p., 3-speed, good order... 95 gns.

SURPLUS W.D. MACHINES

Requiring repairs. Come and inspect.

DOUGLAS, 4 h.p., 3-speed, countershaft .. £35 0
TRIUMPH, 4 h.p., 3-speed hub..... £27 10
DOUGLAS, 4 h.p., 3-speed £39 10
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TRIUMPH, 4 h.p., 3-speed hub..... £22 10
TRIUMPH, 4 h.p., countershaft..... £27 10
TRIUMPH, 4 h.p., 3-speed hub..... £21 0
TRIUMPH, 4 h.p., countershaft £37 10
TRIUMPH, less engine and gear £12 10
TRIUMPH, 4 h.p., 3-speed countershaft .. £29 10
TRIUMPH, 4 h.p., 3-speed countershaft.... £27 10
TRIUMPH, 4 h.p., 3-speed countershaft . £35 0

SIDECAR LAMPS, black ..... Post free 9/-
REAR LAMPS, black..... „ „ 7/9
REAR LAMPS, aluminium ..... „ „ 9/6

Triumph Parts for 4 h.p. models: Wheels, Frames Forks, Tanks, and Engines from Stock.

Cameo Screens, £3; Easting Screens, £4 10; "Perfection" Coach Sidecars, £16 16; "Perfection" Coach Bodies. £7 3.

COVENTRY MOTOR MART, Ltd.,

London Road, COVENTRY.

Telegrams: Selection, Coventry.

Don't place your name on a hopeless waiting list for

THIS SEASON'S MOTOR CYCLES.

Make some selections from our extensive range, and we will candidly tell you the prospects. Let the following encourage you.

"I wish to thank you for your promptitude. You have been mostbusiness like throughout, and your courteous letters are refreshing in these days of commercial s.....ss!
Signed (W.H.P.)
Edinburgh, 1st July, 1919.

IN STOCK: ALLDAYS ALLON, CALTHORPE, IVY, METRO-TYLER.

Quickest deliveries of

BRADBURY, CALTHORPE, CLYNO, CONNAUGHT, HUMBER, IVY, JAMES, L.M.C., NEW IMPERIAL, P. & M., METRO-TYLER, NUT, SCOTT, SUN-VITESSE, WOOLER, ZENITH.

SECOND-HAND MACHINES, solo and combination, e.g.,

James, Triumph, Rex, Hobart-Jap

SIDECARS: GRINDLAY, RALLY, AND "THREE SPIRES."

STOCKISTS of DUNLOP, PALMER, and CLINCHER TYRES.

SIDECAR ATTACHMENTS.

CANOELET Sidecar, roomy coachbuilt body, finished red and black, heavy Dunlop tyre, disc wheel, apron, mat, fittings for any machine, whole as new; £28; Lucas King of Road head light, Cameo wind screen, luggage carrier, extra, if required; seen any time.—S., 26, Lime Hill Rd., Tunbridge Wells. [9241

SIDECARS. Sidecars. Sidecars.—Here you are Immediate delivery from stock of brand new sidecars, £26/10 each, real push cots; second-hand sidecars, with brand new bodies, £16/10 each; bodies, £7/10; chassis, new and second-hand, in stock —H. L. Stevens and Co., 184, Pentonville Rd., King's Cross, London. [9851

SIDE-CARRIERS AND PARCEL-CARS.

A.C. Box Carrier, wants fitting up; £25.—Johnson, 172, Avenue Rd., Acton. [9944

BABY Peugeot, single-cyl., mag., small van body, perfect order; £35.—B., 367, New North Rd., N. [9394

FORD, semi van body, £30 just spent on overhaul, receipt shown; £140.—55, Bonnerhill Rd., Kingston, Surrey. [9606

8h.p. De Dion Van, T.B., mag., wire wheels, 3-speed, reverse, engine just been rebushed; bargain, £40. —152, Camberwell Grove, Camberwell. [9217

TRADESMAN'S Carrier for sale, an excellent side car chassis with carrier box mounted, specially constructed for bakers' and confectioners' use, but suitable for other goods; price £15.—The Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7. [8853

RUNABOUTS AND CYCLE CARS.

MORGAN Sporting, 1916; £145; ready to drive away.—Cordon, Cleobury, Mortimer, Salop. [X8677

A.C. Sociable, hood, screen, engine overhauled, smart; £75, exchange.—24, Beauval Rd., East Dulwich. [9375

SPORTING Cycle Car, 9h.p., late De Dion engine; £100.—26, Bramhleberry Rd., Plumstead, S.E.18. [9380

GENUINE 1914 Morgan, beautiful condition, lamps, complete; first 130 gns. secures.—Belletti, Deputy Mayor, Falmouth. [9820

MORGAN, 1915, M.A.G. engine, perfect condition, with hood, wind screen, lamps, etc.; £160.—Grose, 255, Holloway Rd., N. [9548

LANCASHIRE (except Fylde) and Cheshire Only.—A.V. monocar; enquiries invited.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7037

KENDAL 2-seater Cycle Car, 4 wheels, smart, 8h.p. 2-cyl. J.A.P., Stepney, hood, screen, perfect; seen any time; £105.—18, Malvern Rd., Dalston, E.8. [9224

MERRAL-BROWN.—For assured early delivery of the best three-wheeler.—Sole agents: Parker's, Bradshawgate, Bolton; Deansgate, Manchester. X9043

CARDEN Monocar, 1919, just delivered from makers, as new, fully insured, not been 100 miles; £125; any trial.—Mackaskie, The Folly, Laleham, Middlesex. [X8656

MORGAN de Luxe, 1914, a.c. J.A.P., electric lamps, repainted, perfect condition; £150.—Write or call after 6, Morrison, Sutherland House, London St., Paddington. [9192

A.C. Sociable, fully equipped, hood, screen, acetylene lighting set, 700×80 tyres (unpunctured), splendid running order; £100.—Toyer, 76, Cromwell Rd., Luton. [9537

1919 Carden Monocar, disc wheels; delivery expected every day; best offer over £130; owner got delivery bigger car.—Loyd, Cranbourne Lodge, Winkfield, Windsor. [9485

CYCLE Car Chassis, chain drive, 4 wheels, tyres tubes, 3 speeds, reverse, chains, radiator, etc. wants engine and body; £27.—Stoneleigh Hard Lane St. Helens. [9236

6h.p. Premier Motorette, a.c. type, water-cooled engine, hood, screen, electric light, new tyres perfect, fast and reliable; £85.—Ashburnham, Litchfield Rd., Sutton, Surrey. [9375

MORGAN, December, 1916, foot accelerator, hood screen, side curtains, electric and acetylene lighting, clock, speedometer, Klaxon, tools, jack, spare tube, coach painted recently; £200.—Davies, 73, Parish Lane, Penge. [9200

CARDEN Monocar, 1919, recently delivered not practically new, Miller head lamps and many extras; any trial; must sell immediately; nearest cheque to £129 secures.—Hunt, The Wellings, Claverley, near Wolverhampton. [X866

MORGAN, 1917, M.A.G. (a.c.) 8-10h.p., disc wheels hood, complete with lamps and all accessories spare chain and tyre, splendid condition throughout, and mechanically perfect; £180.—Ireland, 19, Bowness Rd Barrow-in-Furness. [X868

G.P. Morgan, overhead valved, water-cooled 10h.p. J.A.P., rebushed and perfect, hood, screen lamps, good tyres, new chains, dogs, and sprocket streamline tail, extremely fast racing model, good appearance; £175, or offer.—Culeridge, Matlock House Torquay. [976

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ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Oil from Unsealed Cans.

GOOD lubricating oil is almost as essential to the well-being of a motor cycle engine as good workmanship and good material. If every motor cyclist fully realised this, we should hear less of engines being damaged by the use of inferior and unsuitable oil. At the present time the price of the best oils is high, and there is, therefore, more than the usual temptation to the unscrupulous dealer to palm off an inferior and cheaper grade upon the unwary. This is false economy, both from the point of view of the dealer, who should be zealous to retain the custom of his clients—even the occasional ones—and from the point of view of the rider whose repair bill will probably amount to shillings for every penny saved.

While upon the subject of lubrication, it may be desirable to mention another aspect, *i.e.*, the wisdom of following the maker's advice in the matter of engine oil. He has probably experimented with all the best oils on the market, and should, therefore, know what oil and what particular brand of that oil suits his engine best. The kind of oil employed has a greater importance than many imagine. We can recall a case where a change of oil from one type to another, namely, the substitution of a compound for a mineral oil, caused a very great improvement in the running of an engine. Both these oils were first-rate examples of their own classes, but one suited the engine, a little twin, much better than the other. If, then, a very real improvement can result in the substitution of one good oil for another, it will be readily understood that an inferior brand can be very harmful to the best of engines, and there is every danger of seriously damaging one's engine by the incautious purchase of even a single tankful of unnamed lubricant.

Our advice is: Decide on a first-class oil, preferably that recommended by the maker of the engine, who has no axe to grind in this matter, and, when purchasing it, insist on receiving it in a sealed tin or drum.

Benzole.

THE test of benzole shortly to be carried out by the Automobile Association should be of the utmost value to motorists, but, inasmuch as the test is to be made in a water-cooled car engine, we should very much like to see a second test in the air-cooled engine of a motor cycle. This test should be one of considerable duration extending into the winter, and the report should take note of ease of starting at various temperatures and liability to freeze in the tank or carburetter, as well as the more obvious points. Perhaps the Auto Cycle Union will undertake such a test, and also make an exact comparison of the m.p.g. obtained in the same engine and under the same conditions from petrol, benzole, and a mixture of the two in varying proportions.

It is known that benzole will give better consumption figures than petrol, but some misapprehension exists as to the extent of this improvement. In a trial recently carried out in Ireland one rider found that benzole gave him an improved mileage of 50% as compared with petrol. This is, of course, absurd, and only shows that his carburetter must have been very badly adjusted when petrol was employed, and that proper adjustment would have increased his m.p.g. very largely without any change of fuel. Similarly, when we hear of any extraordinary improvement resulting from the fitting of an extra air valve (or economiser, as it is sometimes called), we know that the fuel must previously have been used in a very wasteful manner, and that a considerable improvement might have been effected from a simple adjustment alone. A gallon of fuel contains a certain number of heat units, and no device on earth can obtain more from it.

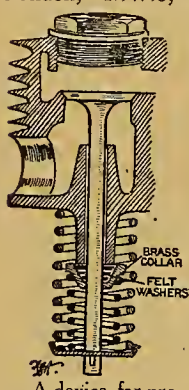
Benzole requires more air than petrol to give the best explosion. It is, however, better to decrease the size of the jet than to increase the air supply if the best all-round results in economy and satisfactory running are to be obtained.

An Index to the advertisements in this issue will be found on the page facing the back cover.

THE S.U. AIR-LEAK PREVENTER.

As we often tell our readers in the "Answers to Correspondents," the most frequent cause of difficult starting is due to air leaks at the carburetter or induction pipe unions. There is yet another source from which air can enter the combustion chamber and so far attenuate the mixture as to render starting difficult and slow running impossible, and that is through a worn inlet valve guide.

The S.U. Co., Ltd., Shipton Works, Prince of Wales Road, Kentish Town, London, N.W.5, have brought out a simple device which goes far towards improving the running of second-hand machines which have had a certain amount of wear. It consists of a small tapered brass collar containing a number of compressed felt washers specially treated, which abut against the end of the valve guide and through which the valve stem passes. The whole is kept in place by means of a light spring inside the main inlet valve spring. If a drop of oil is placed on the washers this renders the valve stem self-lubricating, as the oil-soaked washers retain their lubricating properties for some considerable time.

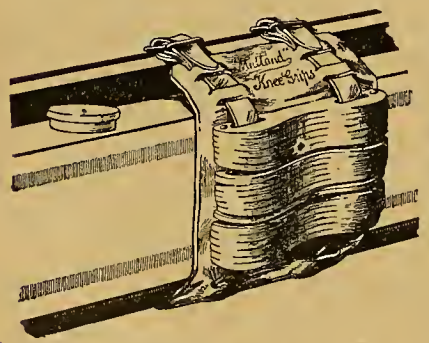


A device for preventing air leak through the inlet valve guide.

The device is, of course, only useful for preventing air leaks *via* the inlet valve guide; but in the case of an engine in which both valve guides are worn it is beneficial in stopping rattle in the case of a worn exhaust valve guide.

LEATHER KNEE GRIPS.

A NEW type of knee grip has been introduced recently by the Midland Gear Case Co., of Birmingham, and is illustrated below. As will be seen, the grips consist of flat strips of leather, shaped to receive the knee, through which two straps are threaded on to leather bases which bear upon the tank. The grips are very neat and smart looking.



A new type of knee grip marketed by the Midland Gear Case Co., Birmingham.

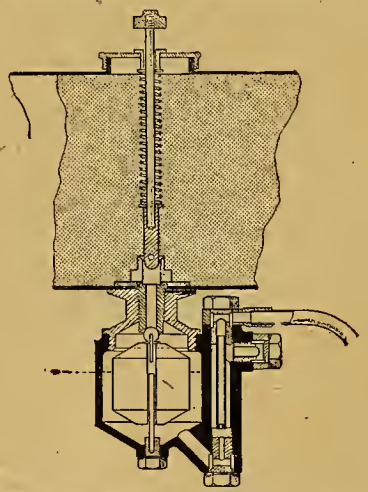
THROTTLE-CONTROLLED OIL SUPPLY.

IN our issue for March 13th, we described the Nash throttle-controlled lubricating device, in which the suction at the intake of the carburetter was made to supply oil to the engine in proportion to the opening of the throttle. Since the date mentioned, the Nash lubricator has undergone considerable experiment, and, in consequence, has been altered somewhat to render its manufacture more simple.

The original lubricator had an adjustable oil jet and a glass sight-feed was fitted. These are not embodied in the latest type. The former, it has been found, lends itself to undesirable alterations on the part of the novice, and the second is not necessary.

In place of the adjustable orifice, jets of various sizes, as in the case of the majority of carburetters, are supplied, and, when it has been decided which is the most desirable size, the range of supply over the varying throttle openings remains unaltered.

The new device is illustrated in section, and from the drawing it will be seen that the lubricator consists of a float actuating a ball valve, which keeps the oil at a constant level in the jet extension tube from which the suction at the intake pipe draws the oil to a level at which it overflows to the delivery pipe.


The Nash lubricator in its improved form.

Recently, we were afforded a demonstration of this device fitted to a single-cylinder James. A glass tube was fitted as part of the delivery piping, which was convenient to watch from the sidecar seat. At the smallest throttle openings the flow of oil was constant, and immediately more gas was given to the engine, the flow of oil was accelerated, and it was plain that at all times the supply of oil was proportionate to the load.

The device is the invention of Mr. Robert J. Nash, Herald Chambers, Martineau Street, Birmingham, and we understand from him that several manufacturers are interested in it, and are experimenting with a view to including it in the specification of their 1920 machines.

SPARE TUBE CARRIER.

MANY tourists wrap a reserve inne tube round their handle-bars, and to ensure the safety of a spar carried in this way, the Midland Gea Case Co. supply a suitable protector.

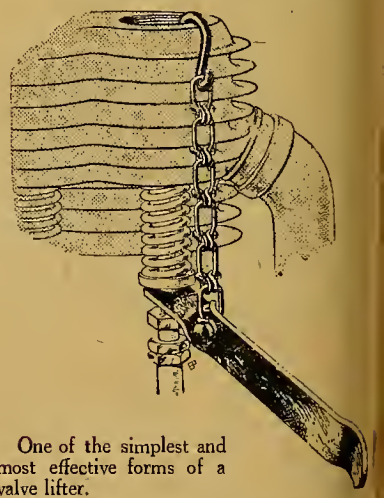
A handy spare tube carrier.

The case is approximately round, havin a small hole to take the valve. It i fitted over the tube, previously coile round the bar, and then locked in positio

A HANDY VALVE LIFTER

TO change a valve without adequat tools is an undertaking fraught wit many difficulties, and many moto cyclists do not appreciate this sufficientl to induce them to buy a valve lifte until experience has taught them th full value of such an accessory.

A small and very handy tool, suitabl for carrying in the toolbag, is markete by D. H. Jenks, 352, Shaftmoor Lane Hall Green, Birmingham, and has th advantage that it will suit any type engine. It consists of a lever, a hoo and a chain, by means of which the to is made adjustable to suit differe lengths of cylinders. The hook part the tool holds down the valve when th lever is operated, while the chain follo the radius of the cylinder fins shou these be extra wide.


One of the simplest and most effective forms of a valve lifter.

Occasional Comments by "Ixion"

Three Types of Steering.

DURING a certain week in July I rode four separate machines. One of them—a 1919-1920 model—steered beautifully at all speeds from five to sixty miles an hour. A 1914 machine handled perfectly at low and moderate speeds, but took a lot of holding when fully accelerated. Another mount, which was a resurrected 1914 type bearing current date, was prone to jump about until legal limit was left far behind, but was as steady as a rock at racing speeds. A fourth machine, which shall be nameless, behaved indifferently over the whole of its speed gamut. As I reflected on these contrasts, I began to wonder whether the unsatisfactory patches in the steering of the second and third machines were deliberately located by the designers concerned, since No. 2 was a stolid type of 'bus selling chiefly to frankly utilitarian owners, and No. 3 was something of a speed-iron by reputation. Anyhow, No. 1 convinced me that it is possible to design frame and fork so that steering shall be good at any speed. I commend the contrast to the attention of designers.

Riding Position.

SIMILAR contrasts became evident in the other aspects of riding comfort, and I spent some hours experimenting with various adjustments in order to discover whether the riding position could be suited to men of varying arm and leg reaches. Two of the machines had T.T. bars of the semi-dropped type. One of these happened to fit me like a glove at the first essay. I got the extra leverage afforded by the wide bar, and the extra weight on the front wheel by which the drop bar aids steering in a tight corner: yet the saddle was comfortable, and the wrists did not ache through carrying too much of my weight. The other T.T. machine was not pleasant, as delivered. There was far too much weight on the wrists, which ached after quite a short spin; moreover, any bump which joggled up my body was apt to upset the steering momentarily, since I could not make a lightning transfer of the weight from the bar to the saddle. I raised the bar a trifle, which improved matters muchly: but this made the footrests feel too far back, and set my boot sole at an awkward angle for the foot brake; neither of these parts could be adjusted, so that an ideal position was not obtainable. The touring machines intended to be sat with a straight back and fitted with raised bars brought well back at a comparatively narrow gap presented no real difficulties. Wangling the saddle about and raising or lowering the bar gave a good position for riders of very different reaches. If I were a maker, I should be inclined to muster selected members of my staff, ranging from 5ft. 6in. up to 6ft. 3in. in height, and see whether my standard range of adjustments provided them all with a good riding position. Modern handle-bars and saddle-pillars have little range of adjustment: footrests and pedals often have none.

A Rolls-Royce Motor Bicycle.

I SEE the motor cycling correspondent of *The Times*, as well as "Chinook" in *The Motor Cycle*, is laying stress on a notion to which I devoted much space some years ago: the demand for an ideally luxurious motor bicycle, irrespective of cost. That such a machine would sell freely does not admit of doubt, and his outline specification is excellent, including the maximum of comfort, cleanliness, and convenience. Nevertheless, it is surely far more desirable at present that the trade as a whole should regard the cheap, serviceable machine for the million as its ideal. The designer who evolves a supremely perfect machine to sell at, say, £200 will minister to the vanity and self-indulgence of a handful of plutocratic youngsters, and fill his own pockets. Neither result interests me appreciably. At the other end of the scale I see thousands of existing owners yearning for fractionally better machines at appreciably lower prices. Behind them is a waiting army of people who want to motor cycle, but cannot afford the outlay which the sport at present demands. If modern methods of production, modern elements of design, and the policy of generous output by both capital and labour are united in an attempt to furnish this bigger want, there is no reason why 1921 should not bring us far better machines at far lower prices. This event would have far-reaching effects alike on national prosperity and national health. Wherefore, I set it well in advance of the unquestionable opening for a super machine de luxe.

Question?

IT would be interesting to hear readers' opinions on another judgment of *The Times* correspondent. He states that 75% of us remain faithful to the two-wheeler, or desire to do so, when our incomes have risen far enough to lift us into the car-owning class. Oddly enough, one of our contributors submitted an article this week in which he took a precisely opposite view, holding that 75% of motor cyclists bade farewell to the two-wheeler without regret as soon as they became possessed of their first car. Personally, I am a living witness to *The Times* theory. I have owned and driven cars for years; but I am first, foremost, and by emphasis a motor cyclist. Even in winter, when roads are treacherous and the air is filled with spume or snow or carries a razor edge, I never take out a car for a solo jaunt. Most of my acquaintance, motor cycling or otherwise, esteem me crazy on the point. I offer no defence—*de gustibus non disputandum*. I have never analysed my invincible preference for the motor cycle. It may be that I am mean, and hate to burn four gallons of petrol when one gallon will do. It may be that I am a coward, and realise that the narrow two-wheeler can squeeze past when the broad four-wheeler will concertina itself upon the snout of the steam roller. It may be that I am a sportsman, and love the bellowing streak up steep hills which only a motor cycle can attain. Anyhow,

Occasional Comments.—

there it is: wherever choice is practicable, out comes the motor cycle for preference, though I grow elderly and a rowing heart does not love exposure to low temperatures for hours at a time. But for all my obstinacy I have always regarded myself as a freak, a *rara avis*, an eccentric, in this respect. And now I have it on the authority of the Thunderer itself that I am that dullest of all created things, an insignificant sheep-like follower of the great majority. Is it so?

Nut-locks Still Wanted.

MOTOR cyclists have always yearned for a good nut-lock. We felt the need less in the old days, for, after all, you can generally pinch a nut from the gear box to secure a horn which is jazzing along the handle-bar, and obtain a spare at the next garage along the road. But to-day we are charged 2½d. for a ¼in. Whitworth nut; and a careless speedster may easily shed a pound's worth of oddments along the road in one season at this price. In the early days, when the finish of a machine was so bad that we did not feel bound to treat it reverently, such crude expedients as bashing the tip of a bolt with a hammer, or painting the thread with some ropy sediment from an old paint pot, were good enough; nowadays one shrinks from unnecessary disfigurement of a machine which has cost a round £100 or more. Yet the roads are so bumpy that I have already shed quite a host of twiddly bits this season, and am gradually learning to safeguard the chief culprits. There are quite a number of expedients. I apply my own patent, wherever practicable. We all hate split pins, because they are usually tiresome when removal is necessary, particularly if they dwell under the tummy of a gear box. I found some nice, soft, bendable wire on the "Acme" labels of my fruit trees; much to the wrath of my land girl, I scrounged her spare hank from the potting shed, and found it a magnificent substitute for split pins: it locks the nut just as firmly, and you can always twitch it out in an instant, when required.

The Care of Laminated Springs.

NOW that spring frames are coming in, motor cyclists will begin to learn what car drivers have realised of late years—that laminated springs soon lose their efficiency if they are not regularly lubricated. The best car manufacturers are commencing to fit leather grease-retaining covers to their springs with an incredible increase in the prolongation of comfort. We can hardly expect that motor cycle makers will yet follow suit, for they work to tight cost limits; nor can accessory dealers come to the rescue until there are thousands of each type of spring frame on the road. The simplest method of lubricating the springs of a cycle frame is to squirt a little thickish oil round the tip of each leaf at the start of every run: but the effects will only last for a couple of hundred miles, and the machine becomes very unsightly, since the oil collects dust, and motor cycle springs are so prominently mounted. Home-made coverings are easily devised when both ends of a spring are anchored; but if one end of the spring is a sliding fit between rollers or the like, complete covering is impracticable, so that external oiling with its accompanying mess must be relied upon.

1,714 MILES IN 59 HOURS 47 MINUTES.

From Vancouver (Canada) across the U.S.A. to Tia Juana (Mexico).

JUST as the End-to-end record in Great Britain was at one time recognised as the Blue Riband of road records, American motor cyclists regard their endurance runs across the American continent as their classic event. This Transcontinental record is at present held by Alan T. Bedell, who in 1917 rode a four-cylinder Henderson the 3,296 miles in seven days sixteen hours sixteen minutes, which beat the record set up in 1914 by E. G. Baker by over three days.

This year Baker made a plucky attempt to recapture the record, but failed owing to the mud encountered. This Indian rider, however, has now secured the "Three Flag" record from Canada to Mexico, which in June this year was secured by H. C. Scherer on a Harley-Davidson flat twin. The following shows the progress of the record since 1915:

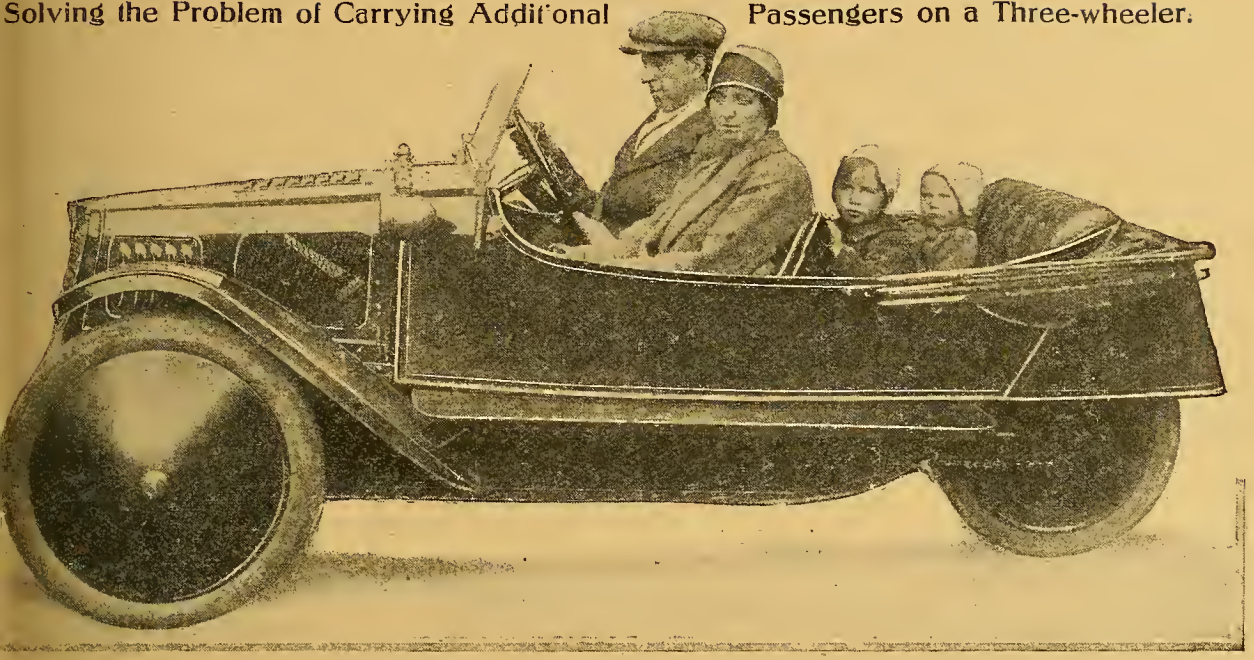
August 27th, 1915.—E. G. Baker (Indian)	...	81h. 15m.
July 20th, 1917.—Roy Artley (4-cyl. Henderson)	...	72h. 25m.
August 26th, 1918.—Wells Bennett (Excelsior)	...	70h. 0m.
June 21st, 1919.—H. C. Scherer (Harley-Davidson)		64h. 58m.
July 11th, 1919.—E. G. Baker (Indian)	... ...	59h. 47m.

"Cannonball" Baker, who, on an Indian, secured the "Three Flag" record from Canada to Mexico, a distance of 1,714 miles.

The first section of 137 miles between Blaine (Canada) and Seattle (U.S.A.) was covered by Baker in two hours fifty-five minutes — nearly T.T. average speed —and over the whole distance the speed works out at a fraction under 30 m.p.h. It was reported that the record breaker had engine trouble which delayed him for five and a half hours; this occurred, by a strange coincidence, at a town called Bakersfield.

A FOUR-SEATER MORGAN.

Solving the Problem of Carrying Additional Passengers on a Three-wheeler.



An 8 h.p. Morgan constructed with a special body to carry four passengers. The owner, Mr. E. B. Ware, who is head of the J.A.P. experimental department, is shown aboard with Mrs. Ware and family.

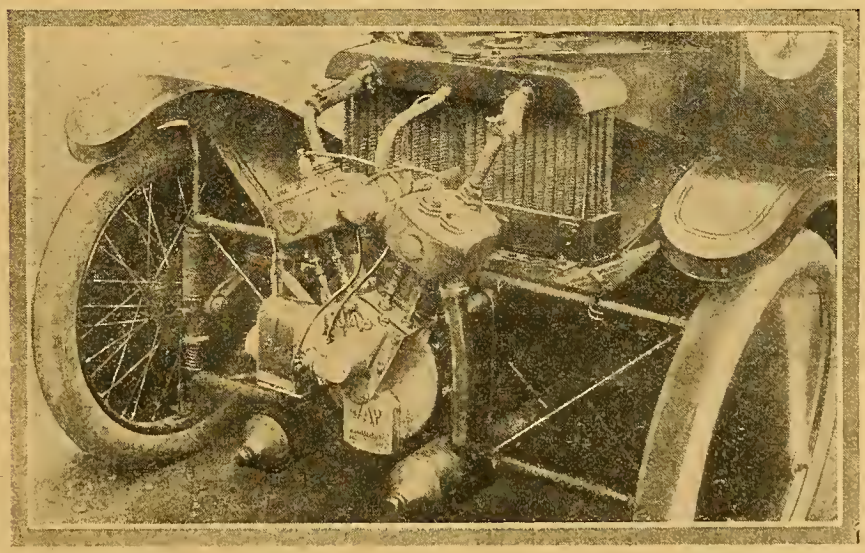
is a common sight to observe side-cars carrying three or four passengers. This year especially sidecar owners m to have schemed their utmost to ommodate all the family on their asure outings, and they have succeeded

Overhead view of the four-seater Morgan.

er than the majority of owners of abouts could hope to do. The owner the Special Morgan which is illus-ed on this page has, however, solved extra passenger accommodation problem in a most satisfactory manner. Ample room is provided for two adult passengers in the extra rear seat, the addition of which has not detracted from the appearance to any great degree. Messrs. Morgan do not list this type of body, but, as it has created a deal of interest wherever it has been seen, possibly such an additional model would be welcomed.

Mr. E. B. Ware, the owner of the Morgan—incidentally he is an old Morgan enthusiast—says that the additional two seats make less difference than might be imagined; neither is the steering affected by the additional weight on the rear wheel.

Mr. Ware is associated with the J.A.P. engine firm, which accounts for the particular type of J.A.P. engine employed. This is an experimental model, of which more may be heard anon. It will be noted that the oil sump has been enlarged, and a cleaner crank case obtained by die instead of sand casting. Another innovation is the jacket on the induction pipe connected with the water-cooling system, thus securing better vaporisation.

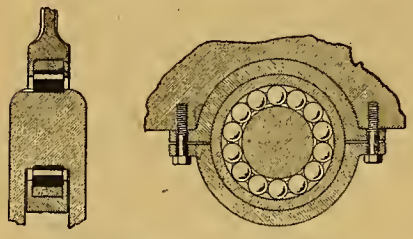


The new 8 h.p. J.A.P. water-cooled engine. An alteration immediately noticeable is the fitting of a large oil sump.

RECENT PATENTS.

REVIEWED BY B. H DAVIES.

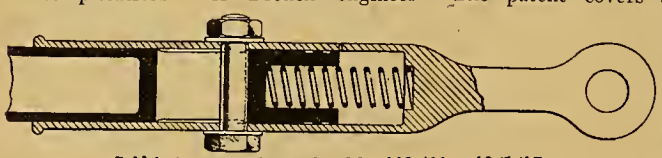
A RAY of humour sometimes illumines the path of a student of patents, as he wades through arid wastes of uninteresting specifications. Of recent years the desire of designers to apply roller bearings to the cranks of motor cycle engines has provided much comic relief. The chief problem, of course, is to accommodate the bearings neatly within narrow overall dimensions, and this difficulty is enhanced when two bearings have to be applied to the throws of a flat twin crankshaft. Makers have been scurrying to the Patent Office. The firstcomers probably hoped to obtain a master patent, but it says volumes for human ingenuity that there are now numerous patents on this point, all of them different and most of them excellent. Messrs. Brough and Poppe have devised the system shown herewith. The inner race is formed by a path turned on the crankshaft, and the outer race consists of a hardened steel ring, threaded into place. The rollers are inserted, one at a time, through a recess machined at one side of the cheek, and the split big end is then bolted into place. As shown, the inner periphery of the big end is flanged on each side. The drawings indicate how the same construction may be applied to the centre journal of a multi-cylinder crankshaft.



Brough and Poppe's roller bearing. No. 126,927. 15/2/19.

A Spring Connecting Rod.

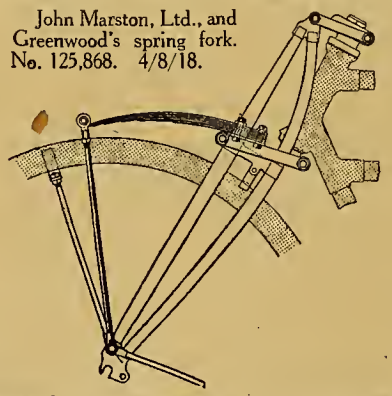
Strange as the notion may sound to the average motor cyclist, "elastic" connecting rods have attracted the brain waves of several inventors, though the weight, noisiness, and rapid wear have so far assisted to protect our engines from such a complication. A French engineer named Schultz has now, however, produced such a rod specifically designed for high speed engines. That part of the rod which carries the small end terminates in a sleeve which is a sliding fit over the stump of the part which carries the big end: a coiled spring is housed between the two parts of the rod, and a bolt, working in slots, limits the range of "elasticity." M. Schultz makes two principal claims on behalf of this rod. The first is that towards the end of the exhaust stroke the coiled spring overcomes the pressure of the burnt gases, the stroke is lengthened, and the cylinder is almost perfectly scavenged. Similarly, the connecting rod will, he considers, be fully extended at the commencement of the induction stroke, and the suction on the carburetter will be correspondingly enhanced. But the peculiarity of his invention rests in the air cushion between the two parts of the telescopic rod. During the explosion stroke the air is compressed, and prevents too violent a telescoping action. To avoid air leakages, a spiral groove is machined round the lower part of the rod, and an inlet port admits more air if required when the rod extends again. M. Schultz specially recommends his rod for use on rotary engines, as the lubricant flung outwards by centrifugal force will help to seal the air chamber.



Schultz's connecting rod. No. 118,411. 10/5/17.

Laminated Fork Spring.

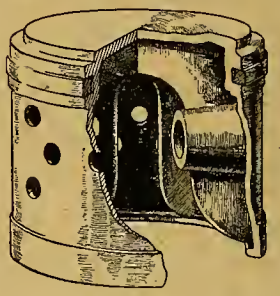
The new Sunbeam fork is sufficiently explained in the accompanying sketch. It embodies points of resemblance with several existing designs, but is original in two main respects. In the first place, it combines the not uncommon double side links with a leaf spring. Secondly, this leaf spring is horizontally arranged, and its thick end is anchored to a web uniting the two lower links of the fork. The patent covers an alternative construction, in which the thin end of the spring slides between rollers fixed to the mudguard. Excellent insulation should be furnished by this device.



John Marston, Ltd., and Greenwood's spring fork. No. 125,868. 4/8/18.

A Non-distorting Piston.

Messrs. Kickham and Frankham are keeping an earnest watch on our old bugbear, distortion, which is a more insidious enemy than many people yet understand, and is tackled in a host of forthcoming patents. Briefly, three essentials are concerned. In the first place, an even temperature of the cylinder head is not desirable, seeing that if the inlet pocket were as hot as the exhaust the charge would be unduly expanded before entry. Secondly, distortion of the cylinder barrel is fatal. Thirdly, distortion of the piston is undesirable. The sketch of the patentee's piston represents the most thoroughgoing attempt I have yet seen to conduct heat away from the crown (*i.e.*, the hottest part of the piston) to the fringe of the skirt (*i.e.*, the cooler part), and so to equalise temperature throughout the piston as far as possible. The crypt-like fins extend as deeply into the interior of the piston as is compatible with the necessary clearance for the connecting rod. It is claimed that the cooling is sufficiently improved for aluminium pistons to be given reduced clearance in the cylinder, and that the objectionable "slap" often experienced with cold pistons of this metal is thereby avoided.



Kickham and Frankham's piston. No. 125,728. 16/9/18.

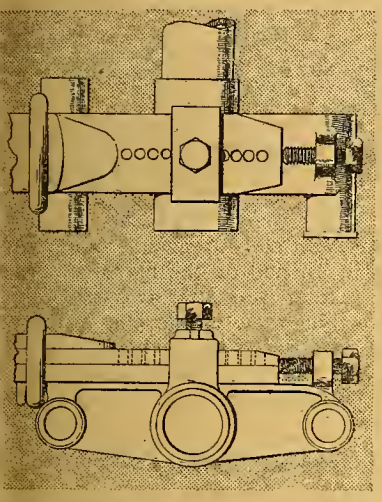
Simple Plug Construction.

Mr. Barrows is anxious to provide a cheap mica plug of good quality. Mica is extremely expensive, and in cheap plugs the quantity of mica is sometimes reduced by fitting a metal collar or spigot at about the centre of the insulator. This device is often clumsily employed in three respects—the collar is so wide and shallow that the central electrode is not necessarily true; the collar is machined from the solid, and costs too much; and, finally, it is so designed that the inside of the plug body is of several different diameters, and entails a number of manufacturing processes. Study of the sketch will indicate that Mr. Barrows has dodged all these pitfalls. Dark hatching indicates the mica portions.

Barrows's sparking plug. No. 125,803 29/5/18.

Belt Tension Device.

Lt. Haggard and Lt.-Cmdr. Walker ıve apparently designed a hush-hush ·cle car, as one or two of their notions that connection have recently been ıtented. Their present specification ›vers a particular method of tensioning

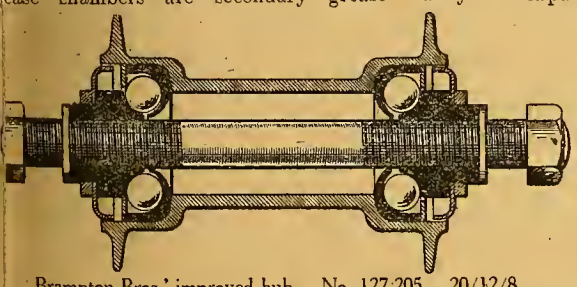


Haggard and Walker's method of tensioning belts No. 125,700. 23/3/18.

iving belts, and the sketch is practically lf-explanatory. The rear ends of a pair quarter-elliptic springs are secured as dicated to long narrow spring pads or ackets on the rear axle. When the lts require adjustment, the pinching rew, shown on the top of the sketch, slackened, the tension is corrected by eans of the horizontal screw shown on e right, and the pinching screw is then ;htened down again till its tip enters a cess in the top leaf. The two eyes at e lower extremities of the bracket form arings for the camshaft and pivot pin the brakes.

Dirt Excluding Hub.

The new Brampton hub embodies a uble safeguard against the entry of it and water into its ball bearings. udy of either end of the section will ow that an annular grease chamber is ovided between the inner cups and the ıshers outside them; these washers tate with the hub shell. Outside these ease chambers are secondary grease

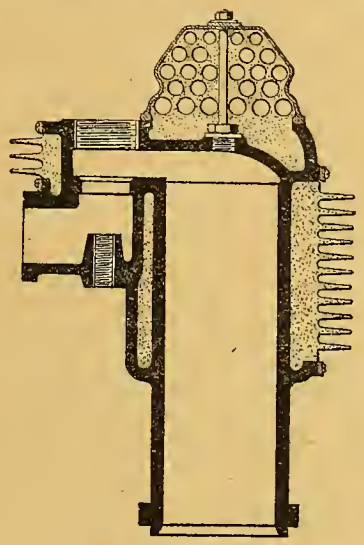


Brampton Bros.' improved hub. No. 127,205. 20/12/8.

aces, closed by inturned washers ured to the inner (or non-rotating) es. When all the grease chambers are l it is impossible for foreign matter to ter. Should the grease in the outer ambers be exhausted, centrifugal action will fling grit or water outwards, whilst the washers which close the ball chambers will stop the dirt from creeping inwards. This construction undoubtedly provides a good seal.

An Unusual Method of Cooling.

An Irish wit once said that there were four methods of cooling a petrol engine: air-cooling, water-cooling, oil-cooling, and not cooling it at all. M. Henri Debauge propounds a fifth method. Taking his stand on the fact that some 75% of the total heat loss is radiated from the cylinder head and 25% from the barrel, he provides separate jackets for each part. He fills these jackets with fusible alloys. For example, the barrel jacket may be filled with an alloy containing 45 parts of bismuth to 55 parts of tin, which melts at, say, 150° C., while the head jacket is packed with 9 parts of tin to 1 part of lead, melting at 220° C. The jackets



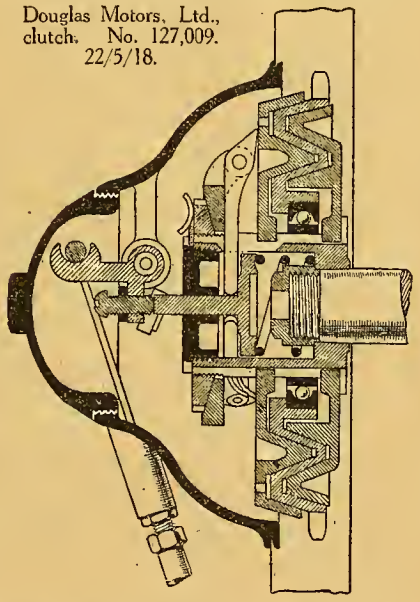
Debauge's method of cooling. No. 126,984. 30/5/16.

may be of varying construction: *e.g.*, the barrel jacket may be formed with hollow fins, and the head jacket may be freely penetrated by air tubes. To prevent bursting of either compartment when the alloy fuses, an expansion air tube, closed at the outer end, may be mounted in each half of the jacket: the alloy will expand into this tube, and the compressed air will drive the alloy back into the jacket as the alloy begins to cool. A fan may be employed to furnish increased draught. I should have thought that air-cooling would serve our turn in its improved modern editions. M. Debauge's system could not be cheap to manufacture.

Ingenious Clutch Design.

I think we may congratulate the Douglas firm and Mr. S. L. Bailey on the clutch shown in the accompanying drawing. In the past, many motor cycle clutches suffered from three main defects, viz.—(1) they were harsh in action, due to the difficulty of getting a reliable drive from small contact surfaces without using a ferocious spring; (2) handle-bar control was too stiff for nice finger action, because of the aforesaid spring; (3) slip developed rather rapidly, owing to insufficient contact area. The new Douglas clutch is full of promise in all three directions. Maximum contact area is attained within compact dimensions by excelling Dr. Hele-Shaw; his famous clutch has corrugated discs, and the Douglas has a kind of dazzle disc pinned between a pair of forked lightning plates. The need for a three ton spring is dodged by utilising leverage. The modest coiled spring in the interior of the gadget presses against a plunger, which operates the long arms of three levers which effect the pinching action on the clutch discs, a multiplication of about 9 to 1 being suggested, which converts a weak spring into great potency. The hand or foot control employs a two-to-one lever, which acts on the plunger; so we get a minor miracle in the form of a spring which is docile under control, but a Hercules in action. A suitable kick-starter is suggested for

Douglas Motors, Ltd., clutch. No. 127,009. 22/5/18.

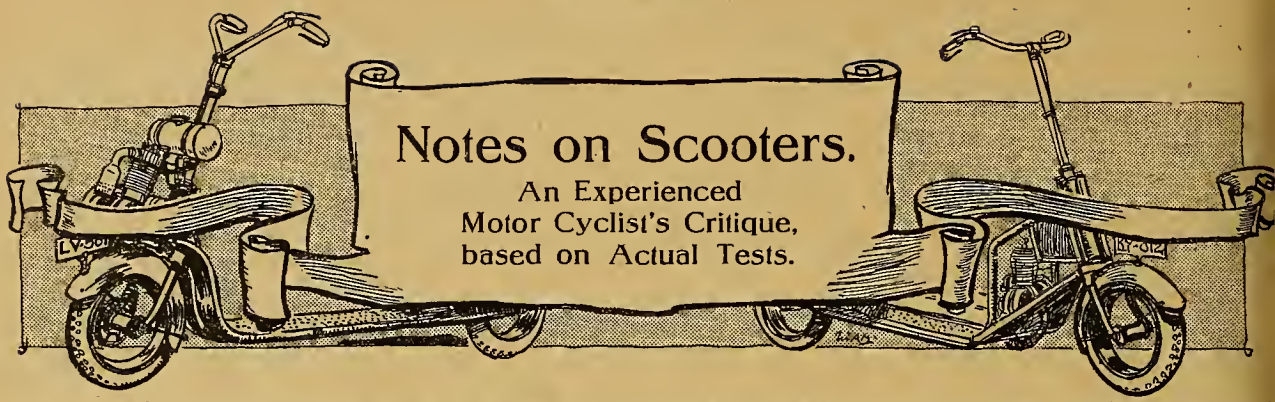


use when the clutch is mounted on the engine and not on the gear box; the former appears to be the intention.

[The date given is that of application and not date of acceptance, which in some cases is years after the former.—ED.]

MOTOR CYCLES FOR THE MILLION.

"The Motor Cycle Ford" is laughed at now, but "every ordinary cyclist is a potential motor cyclist," says the *Daily Mail* in a leader on the popularity of the motor cycle. "A fortune awaits the maker who considers this well and builds a motor cycle at once cheap and reliable." We have been saying this for the past ten years, but are nevertheless gratified to notice the ever growing interest of the lay press in the motor cycle.



Notes on Scooters.

An Experienced Motor Cyclist's Critique, based on Actual Tests.

DURING the last month or two I have been able to sample three scooters of different makes on the road, and the impressions gained in regard to their scope and practical value may interest those who have an eye to the establishment of these little machines in the future.

At the moment, the scooter is subjected to a great deal of criticism by various people. This invention is a toy, they say, and as such cannot last very long. On the other hand, a marked interest is being taken in this type of machine by many others; interest shown, as I can testify in my own case, by the extraordinary number of enquiries made while I had the scooter out and about on the road.

The hostile attitude first mentioned is probably due to the supposition that the scooter has been brought out as a cheap substitute for the ordinary lightweight motor cycle. Such a premise is somewhat of a mistake when one considers the low average speed and very small dimensions of the scooter.

As far as I can see the machine in question will, automatically, find a class for itself between the ordinary push-bicycle and the lightweight motor cycle. It has all the advantages of the former in regard to light weight and ease of handling, without the weight of the latter.

Shall we Stand?

The question whether a rider should stand up or sit down when using a scooter is undecided, but it is almost certain that if the rider adopts the seated attitude the scooter will be no longer somewhat of a freak, but will develop into the smallest and lightest type of motor cycle on the road. If things happen as in the latter case, then the term "scooter" will die a natural death.

My own experiences with these ultra-lightweights, particularly that type fitted with a saddle, incline me to the opinion that they will provide an almost ideal machine for three purposes: (*a*) As a utility vehicle for providing an inexpensive and extremely handy means for getting about in short excursions of necessity, as in shopping expeditions or visiting by inspectors, surveys of land and property by farmers, and in many other instances where short distance rounds and more or less compulsory visits have to be made from one spot to another. (*b*) Where people who do not feel physically fit to ride an ordinary push-bicycle or motor cycle, but wish at various odd moments of leisure to take short runs for pleasure purposes, either into the town or out into the country. (*c*) As a handy means for reaching golf courses or tennis grounds, when, at the same time, golf clubs, tennis racquets, and such like, can be easily carried on the machine. For these purposes the scooter provides a considerable advantage over the ordinary motor bicycle, owing to the facility and ease with which it can be handled in restricted spaces, while the minimum of labour and time is required in getting the machine on the road ready for use.

Advantages of the Seat.

During actual tests with various types of "scooters," several points became manifest in the behaviour of these machines on the road. In the first place, riding a "scooter" provided with a saddle is infinitely more enjoyable than undertaking a run, however short, on a machine of the "stand-up" pattern. The promoters of the latter type maintain that the standing up attitude on these miniature machines is an advantage where handling and manœuvring are concerned. My experience is the reverse, for, in the actual riding and handling of a scooter fitted with a saddle, I found that it was a good deal easier to control the machine when seated than when in the "stand-up" posture, whereas, in negotiating a "scooter" minus a saddle, I found that if, by mischance, you shifted your position an inch on the footboard, an uncomfortable wobble became manifest in the steering and behaviour of the machine, but when seated any tendency for one's body to be moved or jolted out of the normal riding position is resisted by one's own weight on the saddle.

I have no wish to be prejudiced on the question of riding position, as it may be possible for a person to become accustomed to the vertical attitude after practice, but it is almost certain that the rider will become tired after a journey of, say, ten miles owing to the road vibration and weight on the legs. The question of riding attitude brings one to the point that the greatest number of enquiries in regard to "scooters" and their possibilities came from the ladyfolk, who, in almost every case, voted for the saddle.

Possibility of Road Vibration.

It has been suggested that the rather diminutive wheels fitted to these machines would make the travelling rather more bumpy than in the case of the ordinary motor bicycle. But since one usually travels at only ten miles an hour, it is a very easy matter to avoid the larger inequalities in the road surface, and the travelling can be far more comfortable than would be generally expected. It is possible to travel along at twenty miles an hour, but unless one is in something of a hurry it is not wise to speed up a "scooter" to this

tes on Scooters.—

ıce, since it is after all only designed for compara-ely moderate speeds.

With regard to running costs, I found that it was ı easy matter to accomplish fifty miles on three pints petrol, or, in other words, a very good afternoon's ork in pottering about can be done at the cost of ıe shilling. The consumption of oil is practically gligible, as the diminutive motor only requires a ıall pumpful at occasional intervals. In comparing the "scooter" with the ordinary motor bicycle, this little machine is so light and small that it seems absurd to have to expend £1 in a licence; and, in the event of the "scooter" becoming at all popular in the future, it will not be just to tax it as a motor cycle. The charges for carriage of scooters in trains will also require to be overhauled, for it is manifest that some reduction from the charges usually made for motor cycles will have to be arranged in view of the small space occupied. H.R.M.

Comparative Tests of Petrol and Benzole.

Fuel Selection, viewed in the Light of Open Road Experiences.

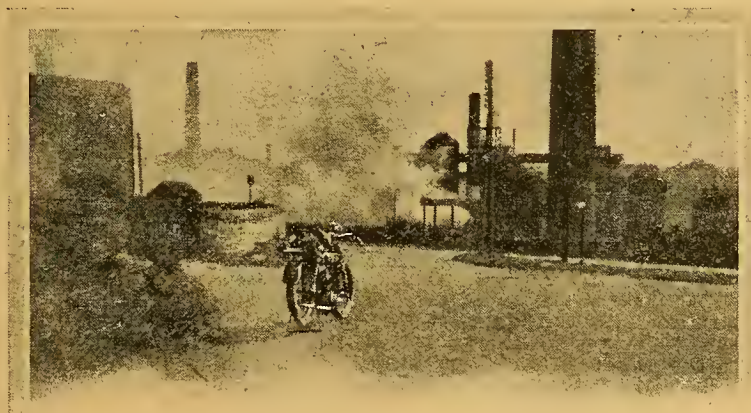
THE following notes are not intended as an exact enquiry into the theoretical values of two fuels, but merely to collate various practical experiences and comparisons; the tests have not even been liberately planned, the observations being thrust me, perforce, owing to the different supplies available in various parts of the country.

Of late a highly efficient T.T. single has been the iter's mount, and while ridden on short out and me runs, with benzole always available, it was never spected to possess a "knock" until disillusionment me one day on a long run into the Lake District. aving run out of benzole a fill of No. 1 petrol was tained, and, after ew miles running, remarkable differ-ce in the engine te was observed— e cleanliness and arpness of the ne being very ticeable, as it was so in a companion achine of similar pe.

The presence of ignition control so became appar-t, and the engine, hich had previous-been insensitive timing variations, w betrayed the most distress on the corners of "single-figure" hills. he carburetter used was a special instrument faked such a way as to be entirely automatic and no differ-e in its action was noticed.

Running on benzole the engine never showed signs tiring after a long day's running, but the use petrol almost invariably resulted in a hot engine d a tendency to knock at the end of a 150 les fast run.

Consumption worked out at about 20 m.p.g. increase favour of benzole, and, generally, the running is so ch more flexible and less trying to the rider that it almost painful to be compelled to use petrol—the fortunate part being that in the more out of way ces, such as Wales and the Lake country, where, an irony of fate the hills and corners abound, ben-e is very seldom obtainable.



The "spirit of progress." A benzole distillery near Wellington, one of the many which may hold the future key to the open roads of Britain.

If the use of home-produced fuel is to be encouraged, as it deserves to be on its merits, the distribution should be very much more general and efficient than it is at present, and steps should also be taken to encourage its popularity amongst country garage proprietors, who often betray most surprising ignorance of its properties, and utterly out-of-date views on the resultant ill-effects caused by its use.

An interesting practical demonstration of the increased mileages obtained from benzole as compared with petrol was recently arranged in the form of a competition amongst members of an Irish motor cycle club. A twenty-three mile course was chosen and the competitors had to make two circuits—the awards being to those running nearest a given speed, thus ensuring uniformity of driving conditions.

The first circuit was made on petrol and the second on benzole, the quantities used in each case being accurately measured. The results, tabulated below are rather surprising, especially in view of the fact that no alterations were made to the carburetters; moreover, all the competitors agreed on the easier driving and smooth running obtained with the native fuel.

Comparative tests of petrol and benzole in speed-judging contest of the Ballymena M.C.C.:

	Mileage per gal. Petrol.	Benzole.	Increase per cent.
Dr. Armstrong (Norton) ...	96.3	110.9	15.1
W. Cameron (Triumph) ...	91.5	124.0	35.5
J. Davis (Rex) ...	104.5	149.3	42.8
W. Dornan (Triumph) ...	124.0	149.3	20.4
D. King (James)	63.6	96.3	51.4
R. H. Wright (Triumph) ...	93.8	116.1	23.6

Average increase, using benzole, 30 per cent.

In no case did a competitor fail to have an increase of at least fifteen per cent.

WHARFEDALE.

A TELESCOPIC TWO-SEATER SIDECAR.

An Adaptable Body quickly converted from Single to Double-seater at will.

The Torpedo, similar in shape to the telescopic two-seater model.

The Sandum super two-seater sidecar.

WE recently had the opportunity of visiting the premises of an old-established firm of sidecar manufacturers, the Sandham Engineering Co., 336, Gray's Inn Road, London, who are introducing a large number of new models suitable for both the sporting lightweight and the family touring machine. The production of the latter, capable of carrying two adult persons, will undoubtedly satisfy the great existing demand for this type of sidecar.

The new Sandum de Luxe No. 1 sidecar is a single-seated model, although of medium weight, finely upholstered, and fitted with a heavily sprung backrest, which substitutes the old hinged pattern for a sliding one, is built as low as possible, and offers but little wind resistance—a model that will appeal to the speedy motor cyclist.

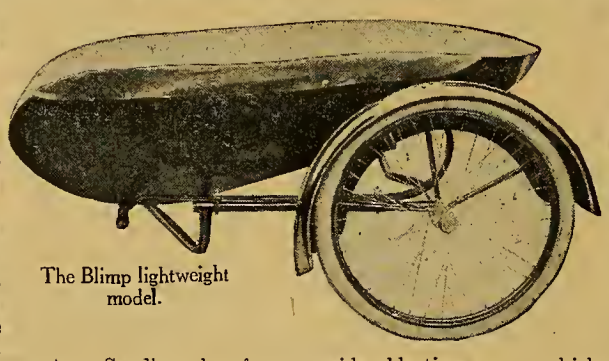
Ample space is provided for carrying wraps and spares in the locker located under the seat and in the space concealed by the backrest.

The new super-two-seater, although only a few inches longer than the single-seater, is capable of carrying two adults. The hinged front seat, when thrown forward, enables the rear passenger to enter through the rear door with ease. The front seat, however, is cut away at the forward door entrance, allowing of easy access to the front compartment, while the rear passenger's feet are accommodated beneath the front seat, and, consequently, the maximum amount of comfort is attained.

The chassis, provided with three heavy leaf springs, has been specially designed for this model, and has a substantial four-point attachment.

Another smartly finished body is the Sandum Bulbous Back, Model A, the notable feature of which is the symmetrical design of the upholstery. A test of the comfort of the backrest proved the makers' claim to be correct.

A super-lightweight, suitable for a low-powered motor cycle, upon which Mr. Sandham has for a considerable time concentrated his attention, may also be seen at the factory.



The Blimp lightweight model.

The existing model, the Sandum flyweight, constructed of three-ply wood and lightly upholstered, is fitted with a special underslung chassis, consequently having a low riding position. Lock accommodation is provided behind t adjustable backrest. The two mod at present under construction are t Blimp lightweight, so-called because its similarity to the small Blimp airshi used during the war as submari chasers, and the fully patented te scopic projectile type sidecar.

The former, which, owing to its son what unconventional design, offers mi mum resistance to the wind, and wh upholstered weighs under 20 lb. T model will, when fitted with a specia designed chassis, be placed the market within a short tin The telescopic model, construct of oxy-acetylene welded steel n and rear, will be capable of car ing two adults when expand and when contracted will form small single-seater, suitable both racing and touring purpos The front portion slides with the rear cylindrical portion, b being carried on supporting ra to which are attached locki bolts which pass through lon tudinal slots cut in the two hal of the sidecar.

These bolts are fitted, on inside of the body, with wing nu which, when slackened, enable the fr half to be pulled out, and, when tighten to hold the two halves to the chassis.

A false seat and backrest are loca beneath the seat proper and rear ba rest respectively, and can be adjusted the forward position when required.

READERS' ROAD REPORTS.

TO readers who propose touring Wales, the Midlands, or Scotland, the following reports from riders who have covered the districts will prove useful:

Shrewsbury, Oswestry, and Llangollen.—Excellent except for a few stretches near Llangollen.

Llangollen, Bala, and Dolgelly.—Very fair, dusty near Corwen and Dolgelly.

Dolgelly, Machynlleth, and Aberystwyth.—Poor; three miles each side of Machynlleth dangerous on account of timber-hauling.

Aberystwyth to Rhayader.—Fair, very loose surface.

Rhayader to Builth.—Excellent.

Builth to Talgarth.—Fair, many pot-holes.

Monmouth, Ross, and Leominster.—Good generally, but careful driving is necessary on account of deep pot-holes.

Raglan to Monmouth.—Perfect surface throughout.

Talgarth, Abergavenny, and Monmouth.—Good generally, but some very bad stretches, notably one just west of Abergavenny.

Leominster, Worcester, Stratford-on-Avon, and Warwick.—Fair, with two or three excellent stretches. Near Stratford and Warwick, very bad.

Warwick to Banbury.—Mostly in fair condition.

Banbury to Oxford.—Three miles each end bad, middle section excellent.

Oxford to Reading *via* Pangbourne.—Very good.

Birmingham to the East Coast.—The route *via* Coventry, Market Harborough, Kettering, Thrapstone, Cambridge, Newmarket, Bury St. Edmund's, Ixworth, Scole, and Beccles is throughout fairly good; in comparison with some m roads, it might be described as excelle The bad patches are in and arou Coventry, between Desborough and Ro well and Kettering ('bus routes), G manchester and Fenstanton, and parts the road between Cambridge and N market.

Care should be exercised in follow the route above mentioned at such poi as Kettering (signposts very confusi between Botesdale and Harleston on Beccles road, and between Harleston Beccles to avoid Bungay.

Through passengers for the East C should avoid the narrow streets of C bridge by turning left on entering town and following the Victoria R and Victoria Avenue to Maids Causew which is a continuation of the N market Road.

THROUGH FEMININE GOGGLES.

A 4 h.p. Douglas outfit at the main entrance to Woburn Abbey, near Hockliffe.

IT is often a difficult matter for the experienced rider to decide which type of machine to buy for the season's riding: lightweight or heavyweight, solo or sidecar combination. To the beginner this is an even greater problem. Gears and clutches are a name only in the early history of the motor cyclist, but later they grow in importance to such an extent that a machine without them is an unentertainable proposition except to the most sportively inclined. The lightweight solo mount is designed for so entirely different a purpose from the sidecar outfit that, where a lot of riding has to be done, both types are necessary if one's pocket can run to the initial outlay. The 2½ h.p. to 3 h.p. is ample for light solo work, and will average a greater speed than one can safely manage under all road conditions; but when a passenger or a great quantity of luggage has to be taken, it is far better to buy a sidecar outfit than to make any serious attempt at pillion carrying.

The tendency of manufacturers of late has been to increase the horse-power of the engine for sidecar work. The 3½ h.p. Triumph and the Douglas sidecar machine have both merged into "fours." The sidecar is a big drag, and doubtless the makers realise that to have the little extra power is very much more pleasant than to be continually feeling that one's outfit is under-powered and must be well driven to be equal to every emergency.

The 4 h.p. Douglas in Civilian Hands.

I have recently had an opportunity of putting a 1919 Douglas combination under a number of fairly stringent tests. Most folk are familiar with the smart appearance of these turnouts. This, together with the lightness and simplicity of control, will make a special appeal to the feminine element.

It is always a simple matter to start the engine, and the turn of speed would satisfy anyone with a weakness for "blinding," but the point which appealed to me most strongly was the gentle ticking over that allowed a positive crawl when required, while the climbing power of the engine is past reproach. Of course, we expect all this in a 1919 model, and in the Douglas we are far from disappointed. If I might make one suggestion, when fitting a new belt, or buying a spare, one of an inch width would give better

WHAT SHALL WE RIDE?

A Motor Cyclist's Views on Various Practical Topics.

results than the ⅞in. fitted by the manufacturers, and I observe that the pulley will take the extra size. Speaking of sidecars, the Douglas, for a medium size, has a wonderful amount of storage room. The bulbous back is one huge receptacle, and sidecar designers probably are aware by this time that a neat method of hiding away packages has a special appeal to the feminine passenger. On a long run it is tiring to have one's position cramped by luggage hampering the feet.

Overloading.

If cruelty to engines were punishable, as is cruelty to animals, I am afraid a fair proportion of riders would have the R.S.P.C.E. on their tracks. Whether it is due to the fact that "would-be" motor cyclists cannot obtain delivery of machines, and are determined to ride regardless of where or how, I do not know, but never do I remember seeing so much abuse of sidecars as during the recent fine weather. A most flagrant case was the cargo of a Clyno combination. The turnout was obviously some six or seven years old, and, besides the driver and, presumably, his wife, three children were strapped on in various parts, together with three petrol cans tied under the sidecar, while sundry suitcases were roped to the back. When I first espied them, the driver was struggling with a puncture in the sidecar tyre, which was worn down to the canvas, and, as he eventually restarted opposite my garden gate, I could hear the engine labouring and knocking up an incline of about 1 in 20.

Crocks on the Road.

Perhaps there have never been so many rediscovered ancients on the road as at the present time, and in this case, as in many others, I felt much grief for the poor engine; but the driver went cheerfully on, and I wondered whether such as he possessed great pluck or merely unsurpassed ignorance. Personally, I dare not have gone out of sight of home with such a heavy load, yet who can say that the whole party were not thoroughly enjoying themselves? In the world everything is a matter of comparison, and no doubt it is fine fun taking one's chances with an ancient mount if one has not been previously spoilt by up-to-date models and refinements.

MAY WALKER.

A 2½ CWT. RUNABOUT.

A Light Two-speed Four-wheeler, incorporating Gibbons Components.

THE Gibbons "cycle car" is not altogether a new proposition, so far as our readers are concerned. In June and August, 1918, we gave particulars of the original model, which promised great scope for development. Further, the Gibbons Co. has been advertising in *The Motor Cycle* for some time working drawings of an improved model to enable amateur constructors to build runabouts for themselves. It has been decided now, however, to market the complete vehicle, in addition to sets of materials for building privately.

Chief among the points of interest in this little vehicle is its extremely low weight, which makes it a sidecar alternative rather than a competitor of the more conventional designs which form a step between sidecar and light car.

Sidecar Alternative

Once before we described the Gibbons vehicle as a passenger body with just enough mechanical element to propel it, instead of a more or less elaborate piece of mechanism fitted with accommodation for its passengers. There is a distinction between the two, and this will be appreciated by anyone examining the accompanying drawings, in conjunction with those of a motor cycle and sidecar or a three-wheeler.

In this machine, the usual frame is dispensed with, the body being built strong enough to support the weight of the propelling machinery. The body allows ample leg room and has a side door, while behind the seat is arranged a locker sufficiently large to accommodate two medium-sized suit cases. The tanks are arranged in front of the dashboard.

The body is supported on the axles by a pair of coil springs at the rear and a single spring at the front, the latter being carried on a form of universal joint at which the axle pivots. The steering is controlled by a wheel with a horizonal column and twin cables running over pulleys.

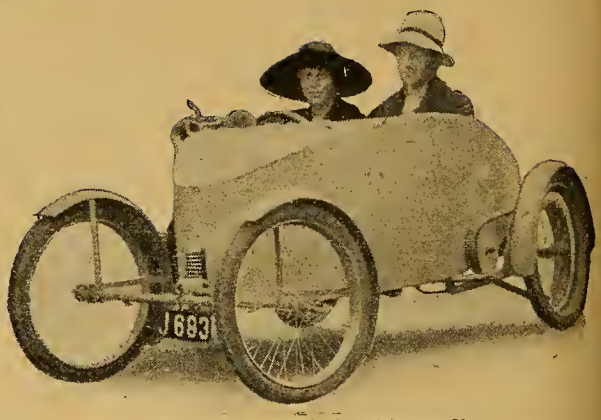
As will be seen from one of the illustrations, the mechanical elements have been reduced to a minimum, and consist (a) of an engine, which in the machine depicted is a 4 h.p. single-cylinder J.A.P., and (b) of a countershaft driven by chain from the engine and fitted with a simple form of gear, which gives a high gear drive on one wheel and a low gear on the other, the ratios being 5 to 1 and 11 to 1. Each gear is provided with an independent disc clutch operated by a hand-lever. The final drive is by belt.

The engine is supported on the ends of two transverse members, which extend right across the body, and the rear axle is provided with radius rods which carry substantial brake shoes working upon the belt rims.

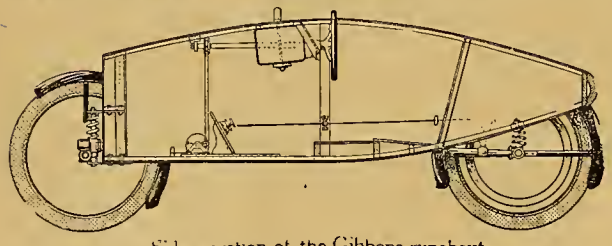
Moderate Price.

Ready for the road the machine, with 26in. × 2½in. tyres, weighs but 2½ cwt. and measures 8ft. 6in. by 4ft. 6in. overall.

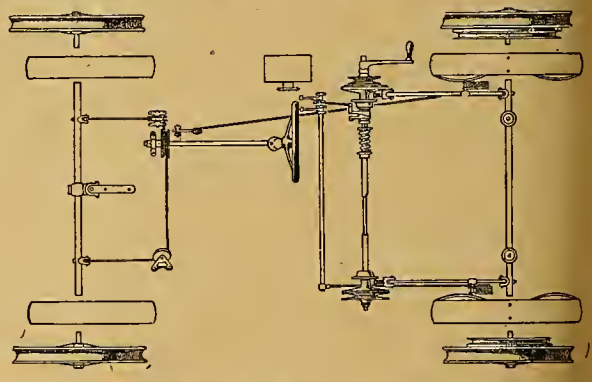
We understand that it is the intention of the Gibbons Co. (who are located at Station Road, Chadwell Heath, Essex) to market the complete vehicle at £98, while a set of fittings, including hood, Triplex screen, gas lamps, disc wheels, tools and horn, will be listed at £28, the total figure comparing most favourably with the prices of a sidecar outfit.



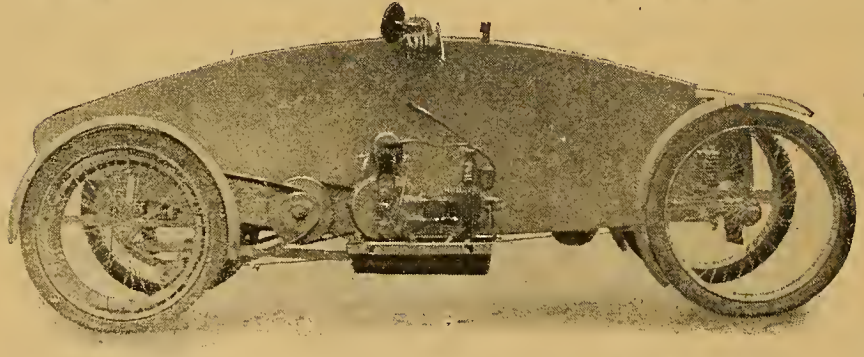
The Gibbons runabout which weighs but 2½ cwt



Side elevation of the Gibbons runabout.



The mechanical elements of the Gibbons vehicle



Side view, showing the single-cylinder engine and countershaft drive

GOVERNMENT SALES.

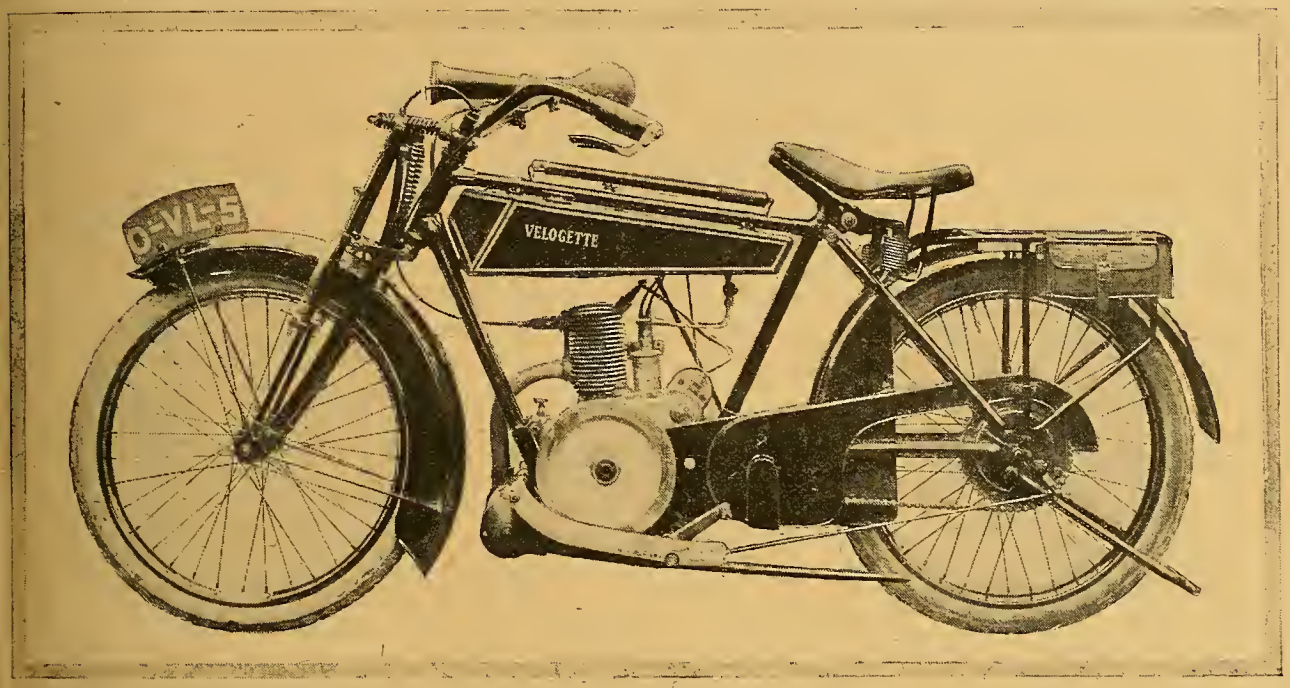
The August issue of *Surplus* announces that sales will be held in various provincial centres, but no dates are given. These must be obtained from the auctioneers, and will no doubt be well advertised locally in most cases.

Mechanical transport vehicles (motor cycles are not specifically mentioned, but are mostly included) will be sold at Manchester, Sheffield, Leeds, Halifax, Edinbugh, Glasgow, Dublin, Birmingham, Colchester, Newcastle-on-Tyne, Liverpool, Cardiff, Southampton, Coventry, Bristol, Spalding, Winchester, Portsmouth, Aldershot, and Middlesbrough.

Some of our readers may be glad to know that there are some excellent motor cycle accessories in one of the galleries at the Agricultural Hall, which are sold at fairly reasonable prices. These include mechanical horns, lamps, and tool kits for various well-known makes, and nearly all are in first-class condition. The articles are sold for cash at fixed prices, and those who find a difficulty in obtaining such items would do well to call.

THE 1920 VELOCETTE.

67 mm. Bore, 78 mm. Stroke, 275 c.c. Capacity. Mechanical Lubrication.



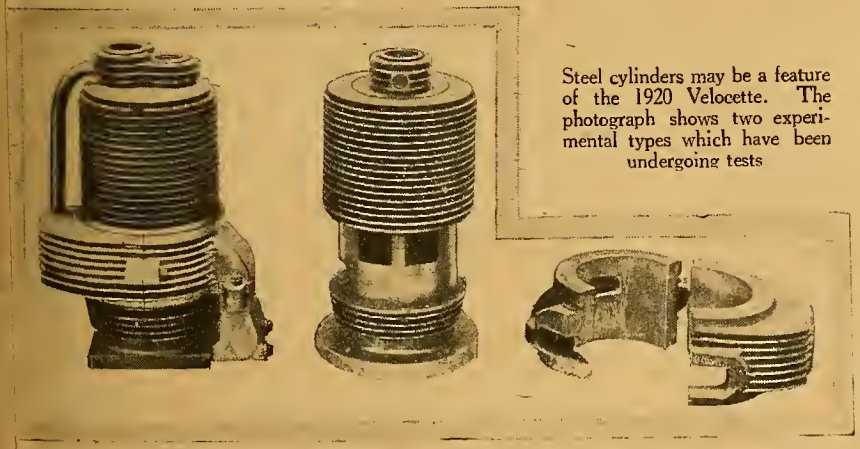
Transmission side of the Velocette two-stroke, which has been entirely redesigned for 1920.

PROBABLY of all two-strokes the Velocette is regarded as the most economical, and, while there are others with which over 100 m.p.g. are regularly obtained, we do not recall readers' reports of any one make with which extraordinarily low petrol consumption has been so consistent. Some months ago we ran one of these miniatures and regularly obtained 145 to 150 m.p.g. on short journeys, under which conditions one naturally expects higher consumption than on longer runs. This point alone—accounted for by its mechanical lubrication—places the Velocette in a class almost by itself, and particulars of the 1920 models—which embody some of the war experience of their designers—cannot fail to interest the followers of two-stroke evolution.

The three-port two-stroke is the most simple type of engine it is possible to make, and there has been a reluctance on the part of designers to depart from its extreme simplicity by introducing mechanism which naturally increases its cost. They have contended that its extreme simplicity is the keynote of its existence—that, by making it more complicated and more costly to produce, it becomes a direct competitor to the four-stroke without the four-stroke's advantages and economy. There are others, however, who maintain that the undoubted advantages of the two-stroke make it worth while to develop it even at the expense of added mechanism and increased cost, and that, though it embodies as many parts as the four-stroke, such additions are justified, provided all-round efficiency is equal or in excess of a four-stroke engine of the same size and costing the same to produce.

No one will disagree with this, as, if a twin-cylinder impulse effect can be obtained by a single-cylinder engine, and if such an engine is so designed that its consumption figure is as good as a four-stroke, then additional mechanism is justified; even if it does slightly exceed the four-stroke single on this point, yet it is less than a four-stroke twin.

In this latter school of engine designers is Mr. Percy Goodman, of the Velocette firm, and his faith in the two-stroke system is in no way governed by its simplicity. Although his latest design, which is illustrated, and will be tried out in the A.C.U. Six Days Trial, is extremely simple yet nothing has been sacrificed to gain this end.

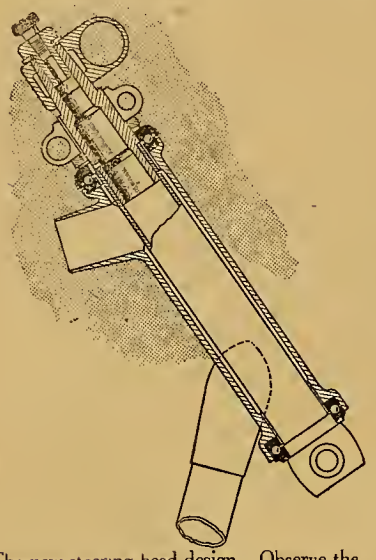


Steel cylinders may be a feature of the 1920 Velocette. The photograph shows two experimental types which have been undergoing tests

A Large Crank Case, Outwardly.

Probably the most interesting departure from usual practice is the crank case of the new Velocette. This appears to be extremely large as compared with the average two-stroke engine crank case; in fact, it somewhat resembles the case which would embody a gear unit. Of course, the oil sump is responsible for some of the bulk of this casting, the compartment containing the crank being extremely small. This takes the form of a circular recess with a long plain bearing on one side, the single-sided crankshaft being threaded through from the crank case. When this is done the "big end" of the connecting rod can be placed on the crank and held in position simply by a spring ring in a groove on the end

of the crank. Even this does not appear to be necessary, as Mr. Goodman's own machine has done several thousand miles without a retaining ring. The crank has



The new steering head design. Observe the lubricator at the top of the tube.

a balance wheel riveted to it on its outer side, so that the weight is more or less on the centre line of the cylinder.

Reducing the Compression Space.

In order to reduce the compression space as much as possible, a cone member is inserted in the annular chamber, and positioned by a spigot shown in one of the illustrations. An outer plate is then screwed in by means of a special key, which engages two of the series of holes around the plate. This locks the cone member securely in position.

The magneto drive is by means of gears, and both magneto driving pinion and main drive wheel are carried on the flywheel boss. Thus by removing the nut at this end of the shaft the crankshaft may be withdrawn. Three wheels are used in the magneto drive, the centre one being of bronze, and carrying on its shaft a slow worm engaging a worm wheel on the vertical shaft of the mechanical pump.

Variable Mechanical Pump.

At the lower end of the shaft is a plunger ¼in. in diameter working in a sleeve which acts as a valve. As the vertical shaft revolves it rotates this sleeve, and a port cut in its side registers alternately with the intake and outlet ports in an outer sleeve. A cross pin on the shaft works through the sleeve on an inclined plane on the stationary outer sleeve, thus causing it to reciprocate as well as rotate, the reciprocating motion being governed by the adjustment of the screw at the head of the shaft. Thus the stroke of the pump plunger is variable.

It will be observed from the illustration that the plunger of the pump has a truncated piston above it; this acts as a second pump, which is used to lubricate the vertical shaft and the worm gear.

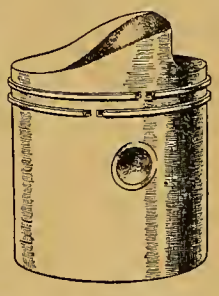
Drawing the oil through a strainer from the sump, the pump forces it through the main bearing into the big end. Centrifugal action then throws the oil on to the cylinder walls and small end. By slackening a nut at the base of the pump, the whole of the lubricating device may be withdrawn without emptying the oil in the sump.

This lubricating unit is an exceedingly nice piece of work, and has the virtue that when dismantled it cannot be reassembled except in the correct manner. The fact that no ball or spring-operated valves are used in its construction, and also that the pump is always immersed in oil, are points in its favour.

When the engine is running the head of the pump-shaft, which protrudes from the "crank case," can be seen rising and falling as well as rotating, and it is easily possible to ascertain the speed of the engine by timing this movement, since the pump-shaft speed is only 1 revolution to 75 of the flywheel.

Piston and Cylinder.

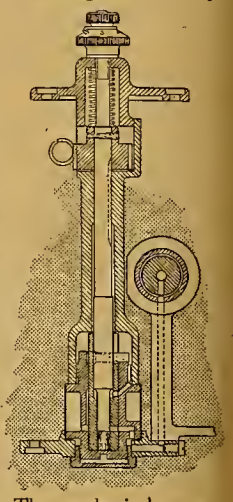
The piston of the new engine is of aluminium alloy, and inside the head are cast a number of radiating ribs. Two very thin rings are fitted. The cylinder on the model we examined was of cast iron, but many experiments have been and are being made with steel cylinders, the results of which give good promise for the future. In all probability steel cylinders will be fitted as standard on all 1920 models, but until this feature has been proved, and the results are to the entire satisfaction of the makers, nothing will be decided.



The aluminium piston. Note the extremely narrow rings.

We saw several steel cylinders, and learned many interesting details concerning the results obtained from them. One of the illustrations shows a cylinder which is the forerunner of the design which may make its *début* in the A.C.U. Six Days Trial.

This cylinder is turned from the steel bar, and has twenty-four very thin fins. The ports are machined in a finless portion of the cylinder, thus rendering it possible to obtain accurately proportioned and positioned ports. This part of the cylinder is encircled with an aluminium member which embodies the transfer passage and intake and exhaust ports, and has a number of deep radiating fins.

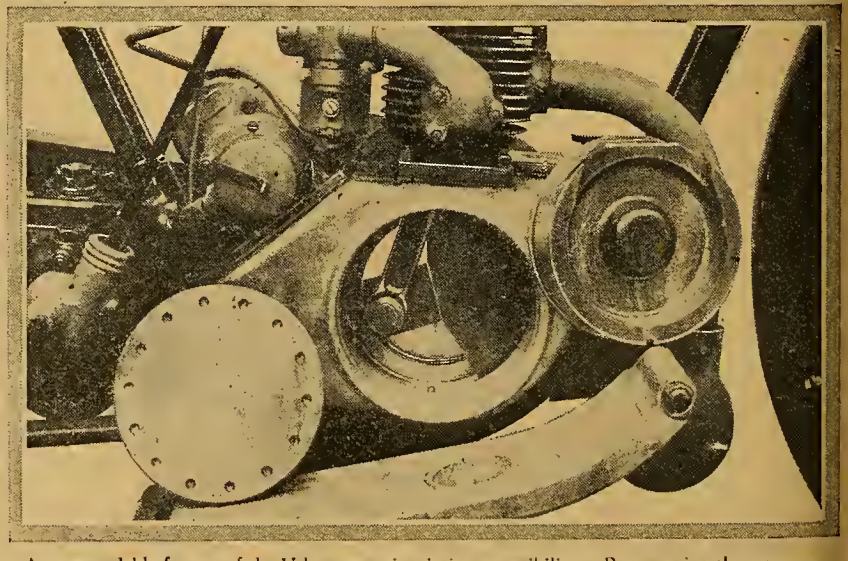


The mechanical pump, showing the oil channel to main bearing.

This jacket is made in two pieces fitted tightly against each other on one side and with a certain clearance, when cold, on the other to allow for expansion. At the top and bottom the jacket is fixed by the adjacent steel fins being spun over the aluminium member. In all probability the steel cylinder which will be used in the Six Days Trial will have fins increasing in diameter as they approach the head, while vertical fins may be used on the head itself.

The Compression Ratio.

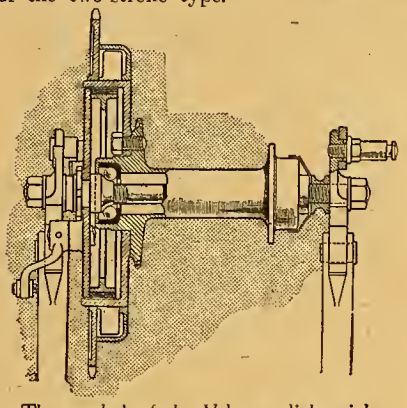
So far, we understand, experiments have proved that it is possible to carry the compression to a higher point with this type of cylinder than is usual. As an example of this, in the old Velocette



A commendable feature of the Velocette engine is its accessibility. By removing the retaining disc and withdrawing the compression plate the crank and big end are exposed, and, when necessary, the crankshaft withdrawn.

The 1920 Velocette.

engine, with a "capacity" of 220 c.c., the volume of the combustion space was 52 cc., and, after deducting the useless cylinder area (below the ports of a two-stroke cylinder), the actual capacity of the engine was 150 c.c. It will be seen this is a ratio of approximately 4 to 1. With a steel cylinder, an engine has been run with a combustion space as small as 6 to 1 ratio, but this, naturally, overheated, and may be taken as the other extreme. However, during these experiments, the cylinder head was red hot, and the moving piston could be seen through the glowing metal, but the aluminium fins at the base were sufficiently cool to allow one to rest the hand upon them. Mr. Goodman is now experimenting to find the compression ratio most suitable, and anticipates that he will obtain increased efficiency through being able to carry the compression to a point not hitherto attained in air-cooled engines of the two-stroke type.



The rear hub of the Velocette lightweight, showing the internal expanding brake.

The new machine is very neat in design. 24in. wheels are retained, but the section of the tyres is increased to 2¼in. The frame has a sloping top tube and duplex front tubes, but, on the whole, follows well-used practice. The details are good, especially the rear expanding brake, the spring-up stand, and the steering head. The last named is provided with a large lubricating orifice at the top of the steering tube.

As far as possible, black finish is used, and, with its gold-lined tank, the little Velocette looks very smart.

As hitherto, the Velocette for 1920 will be chain-driven and fitted with a countershaft gear box. These will be of both the two-speed and three-speed types, with kick-starter and clutch optional. Both gear boxes are exclusively of Velocette design.

The equipment includes C.A.V. magneto and Brampton forks.

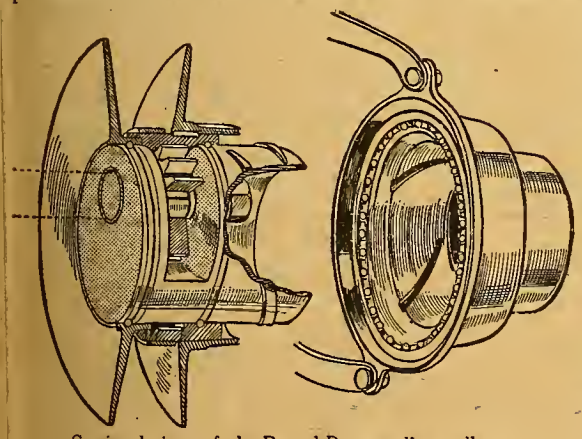
Another Expanding Pulley Gear.

Undergearing employed to obviate Small Pulley Diameter on Lower Ratios.

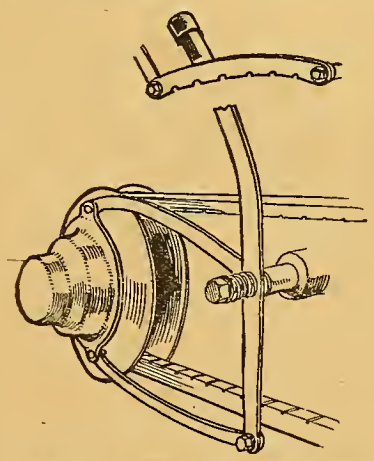
THERE are many motor cyclists who are owners of single-geared motor bicycles, and the fact of having only one gear sooner or later causes dissatisfaction, owing to the inconvenience involved. A description, therefore, of a simple form of expanding pulley gear which can be adapted to practically any model, no matter how old, is bound to interest a large proportion of our readers.

The gear under consideration is the production of the R. and P. Motor Accessories Co., 106, Shoe Lane, London, E.C.4. It is an adaptation of the undergeared pulley such as was fitted on certain models of the N.S.U. and Wanderer machines.

The pulley gear is mounted eccentrically on the engine-shaft, and in most cases a new shaft has to be fitted, so that sufficient length of shaft is obtained. On the shaft is mounted a small pinion which meshes with an internally-toothed ring inside the outer pulley flange. On part of the inner shell a quick pitch thread is cut, which engages with a similar thread cut upon the inner side of the outer shell, which, as will be seen from the illustration, is provided with a large ball bearing. Between the pulley flanges is a loose ring, on which the belt may run freely when the flanges are fully expanded. The outer shell is coupled by suitable links to the change speed lever, and so arranged that the expansion of the flanges corresponds to the swing of the pulley gear about the shaft, and the correct belt tension is maintained, no matter what gear happens to be in engagement. The device is simple, should work well, and there should be a ready demand for it among a considerable section of our readers. It was shown to us fitted to a 1906 model 3½ h.p. Triumph, and we were informed that the experimental control, which was somewhat crude, would be considerably refined.



Sectional views of the R. and P. expanding pulley.



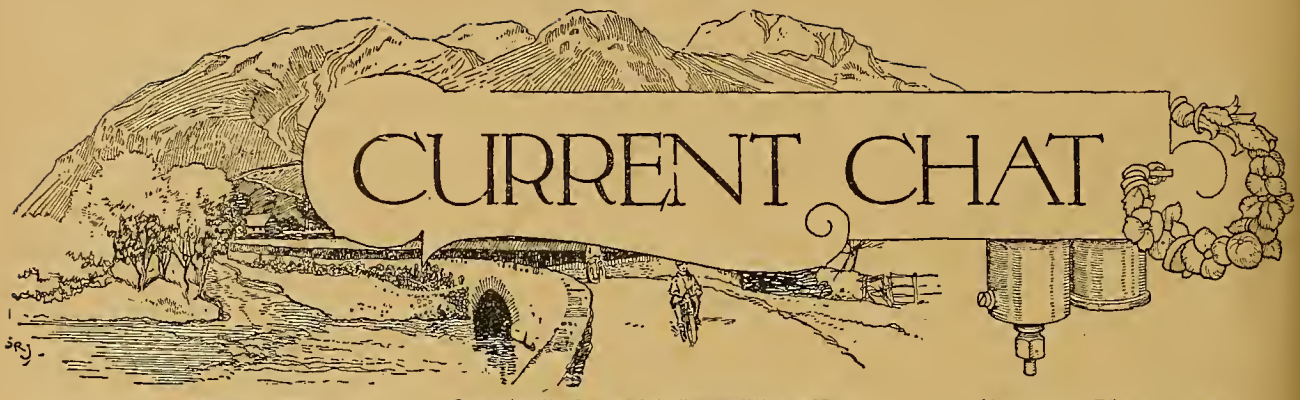
The R. and P. pulley is controlled by a long lever on the side of the tank.

AN EXTRAORDINARY CASE.

SOME unusual evidence was given at a recent case which was heard before the Southend justices, wherein a motor cyclist was charged on various counts, including that of riding to the common danger.

Apparently the defendant had been riding up and down the promenade, and when turning in the road was in some danger of colliding with the principal witness, who seemed to lose his nerve on the approach of the machine. The motor cyclist avoided the informant, who called upon him to stop, and, this being unheeded, witness made efforts to catch him with his walking stick. Being unable to do so, on another occasion he revisited the spot with the avowed intention of making a further attempt to seize the rider, and when the latter approached, witness, to use his own words, "made a grab at him." Again failing, he complained to the police, and, despite the fact that the other witnesses estimated the motor cyclist's speed at about 10 m.p.h., against his allegation of "40 to 45 m.p.h. and in his own mind faster" (whatever that may mean!), the defendant was convicted and fined £10 on the charge of driving to the common danger.

The seriousness of the case, as far as the motoring public is concerned, lies in the fact that throughout the proceedings there was no condemnation of the witness's attempt to catch a rider who had in no way injured him, nor reprimand for his second visit to the spot with the preconceived plan of waylaying and seizing the man. Furthermore, when cross-examined as to his knowledge that his actions might easily have resulted in throwing and causing the death of the motor cyclist, he cheerfully admitted that to have effected this would have given him great pleasure.



Times to Light Lamps.

SUMMER TIME.

Aug. 21st	...	...	9.11 p.m.
,, 23rd	...	...	9.7 ,,
,, 25th	...	...	9.2 ,,
,, 27th	...	...	8.58 ,,

Lighting-up Time.

Now that the special lighting regulations under D.O.R.A., which were in force during the war, are rescinded, the time to light up is one hour after sunset.

A Stolen Motor Cycle.

One of our readers, Mr. H. C. Lipper, Egremont, 64, Croxted Road, Dulwich, London, S.E.21, has had a Canadian War Office model Indian stolen, registered number T399. The sidecar is fitted with a hood and screen, but the door is missing.

A Famous Lady Motor Cyclist.

Miss Toupie Lowther—who is a keen motor cyclist—and her companions are now demobilised. This gallant lady formed a unit of Englishwomen who took part in the front line work of the French Army during two and a half years of hard fighting. She was given the rank of lieutenant in the French Army, and insisted upon working in the front lines. She and her companions had to go into a fighting unit with the French Army, as they have no French Red Cross at the extreme front. For four months Miss Lowther's unit justified their existence by carrying over 10,000 wounded.

Opportunity for Welsh Competition Riders.

A special prize of fifteen guineas is being offered by Tom Norton, Ltd., the well-known motor agents, of Llandrindod Wells (around which place the Six Days course will radiate), for the best performance in the trials by any competitor who was born in Wales of Welsh parentage.

A Motoring Dog Lost.

A wire-haired terrier, black and tan head, body mostly black, white spot in rear, is missing. She is accustomed to riding in a Harley-Davidson and Triumph sidecar, and may attach herself to one of these. She also comes to a police whistle or motor horn, and answers to the name of "Stodger." A reward of £10 will be paid for her recovery by her owner, Mr. G. H. Buley, The Link, Woodnesborough, Sandwich.

The Ricardo Slipper Piston.

We recently had an opportunity of testing a 3 h.p. Enfield fitted with Ricardo slipper pistons. These pistons were first described in the issue of March 15th, 1917, page 235. The pistons are extremely light. There is practically no skirt, except for the two slippers on the sides which are subjected to thrust owing to the angularity of the connecting rods, and the gudgeon pin is carried by ribs connected with the piston head instead of being carried by the piston walls. These slippers are drilled, and this not only still further lightens the piston, but, more important still, breaks up the film of oil between the piston and cylinder walls, thereby greatly reducing the shearing friction between the two. In the later Ricardo piston the top is of smaller diameter, and the slippers have less clearance at the grooves which take the rings. The machine ran extraordinarily smoothly, and was quite lively.

Special Features.

NOTES ON SCOOTERS.
NEW DESIGNS.
THROUGH FEMININE GOGGLES.

Warning to Six Days Trial Entrants.

The A.C.U. wishes to remind entrants in the forthcoming Six Days event that no motor cycles having any part of German, Austrian, Bulgarian, or Turkish origin or manufacture will be eligible to compete. This also applies to any open competition promoted by the Union, except those of international character.

Machines or parts made previous to August, 1914, are not included in this ruling.

Motor Cycling in Italy and Switzerland.

In Italy at the present time there are no special restrictions regarding the use of motor cycles by foreigners, and there is a general reversion to former conditions. Tourists must be provided with a *sauf-conduit* as well as their passport, which is issued by the Italian Military Gendarmerie.

In Switzerland the same regulations obtain, as regards customs, as before the war. In nearly all cantons cut-outs are forbidden. In villages and towns horns giving a deep note are the only warning signals permitted, and the speed must be moderate; in the open country twenty-five miles an hour. Drivers must be at least twenty years of age. Petrol is one franc a litre, and tyres are scarce. Full information can be obtained from the Touring Club of Switzerland, 9, Boulevard du Théatre, Geneva.

Shortage of Motor Spirit.

According to a report from the A.A., tourists have recently experienced trouble in obtaining fuel in various parts of the country.

Many were specially fortunate in Scotland, and the A.A. immediately got in touch with the National Benzole Association, who have taken urgent steps to forward supplies to the affected districts.

Several motorists are hung up in Scotland, and all travelling over the border should carry supplies to ensure their return to the North of England.

The start of one of the classes at the Bristol M.C. Club's Hill-climb at Blagdon. The classes were run off in pairs, and in both solo and sidecar events Douglases took premier awards.

New Index Letters for London.

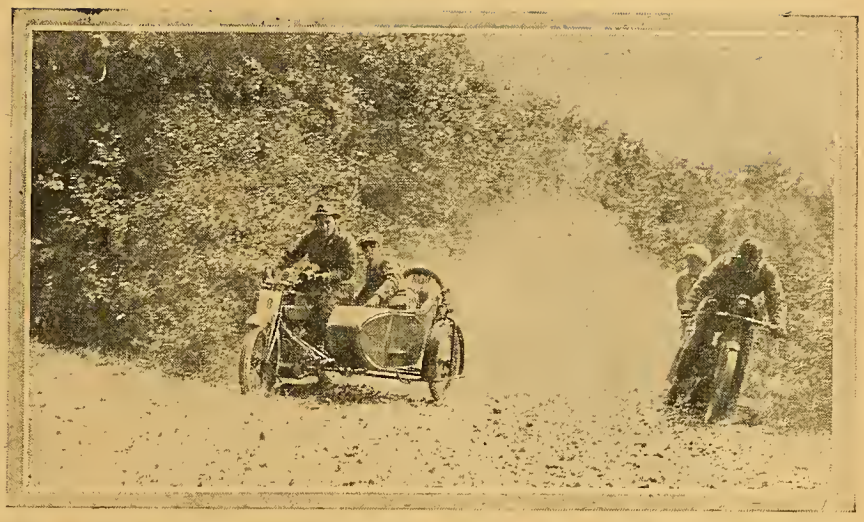
Despite the already long list of index letters for motor vehicles registered in the County of London, it has been found necessary to allot still another, the latest addition being LY.

The A.C.U. Six Days Trial.

Up to the time of going to press the following entries had been received for the A.C.U. Six Days Trial: Cather Cooke (4 Triumph), J. Dosher and D. Guise (8 Enfield sc.), Godfreys, Ltd. (Indian), Ernest Cross (Triumph), S. J. Watson (Ariel), T. Rutherford (Sunbeam), and Howard R. Lane (B.S.A.).

The National Roads Committee.

Thanks to the efforts of Sir William Joynson-Hicks, M.P., Lord Montagu, and the Motor Legislation Committee, a National Roads Committee has been formed within the Ministry of Transport for the purpose of giving advice to the Minister with respect to the roads and the traffic thereon. This Committee will consist of not less than eleven members, five of whom shall represent highway authorities, five the users of horse and mechanical road traffic, and one representative of labour. It is important to note that the appointment of the Roads Committee will be obligatory upon the Minister, and it will not be a Committee of Ministerial nominees; moreover, the Committee's activities will not be limited to matters referred to it by the Minister. It will make its own regulations, meet as often as it pleases, and elect its own Chairman. The Minister will be called upon to consult the Committee as well as the local authorities with regard to the classification of roads upon which grants for roads so largely depends.



Rex Mundy piloting his Matchless in the S.E. Counties Inter-club Team Trial (see page 206 and 207).

IMPORTANT DATES.

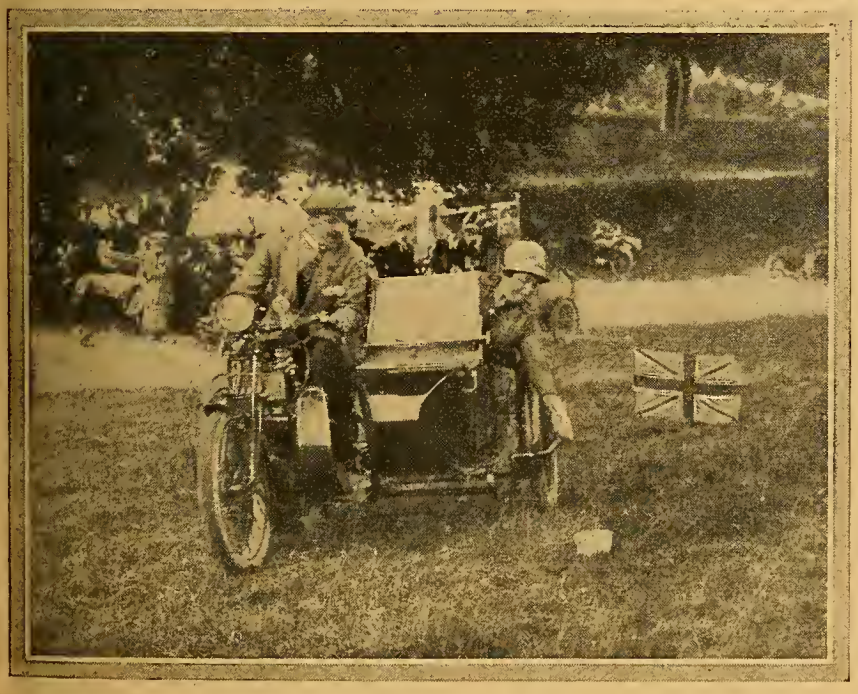
A.C.U. Six Days Trial, Sept. 15th to 20th.

Paris Salon, Oct. 9th to 19th.

Olympia Car Show, Nov. 7th to 15th.

Olympia Motor Cycle Show, Nov. 24th to 29th.

Brussels Show, Dec. 8th to 13th.



On Saturday last the Hull and East Riding Autocycle Club were entertained by Major A. J Atkinson at Elloyliton Dale, where sports, etc., were held. The photograph shows W. Jackson (8 h.p. Sunbeam) in the potato race. He was awarded the cup for the smartest turnout.

The Open Trial of the Redditch and District M.C.C.

We hear that the Redditch and District Motor Cycle Club's open reliability trial, to be held on Saturday, is to be over a course that will test to the utmost both riders and machines. There is talk of including a hairpin bend on a gradient of 1 in 3.

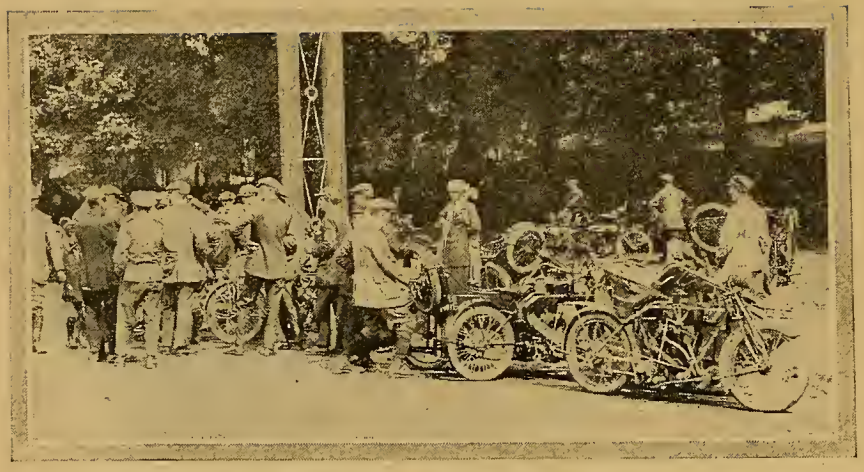
The Honours List.

In the honours list which appeared recently the names of Sir William Joynson-Hicks, Bart., M.P., and Sir Julian W. Orde appear. The public services of the former are familiar to the majority of readers, and his recent efforts on behalf of motorists in connection with the Transport Bill no doubt will be recollected. Sir Julian, secretary of the R.A.C., has been knighted chiefly for his services in connection with the war.

The Motor Cycling Club Team Trial.

Promise of excellent support by the clubs for the M.C.C. Team Trial for *The Motor Cycle* Cup is evident. Up to the present time, fifteen clubs have made application for entry forms. These are: The Sheffield and Hallamshire M.C.C., the Eastbourne and District M.C.C., the Birmingham M.C.C., the Camberley and District M.C.C., South Birmingham M.C.C., the Oldham and District M.C.C., the Woolwich, Plumstead and District M.C.C., the Nottingham and District M.C.C., the Public Schools M.C.C., the Essex M.C., the Middlesex M.C.C., the Ealing and District M.C.C., the Liverpool M.C., the Coventry and Warwickshire M.C., the Sutton Coldfield and Mid-Warwickshire M.C.C., and the Oxford M.C.C. An exceedingly sporting course has been found which, however, is somewhat complicated, and will need careful arrowing; consequently, any motor cyclists who will act as marshals should send in their names to the secretary, Mr. Southcomb May, 34, Gower Place, London, W.C.2. The headquarters of the trial will be at Tring, and the start will be close by that town.

The S.E. Counties Inter-club Team Trial.



The start of the South Eastern Counties Inter-club Team Trial on Saturday last.

FIVE teams assembled at the "Rose and Crown," Green Street Green, Orpington, Kent, on Saturday last, August 16th, in readiness to start on the sixty miles inter-club reliability trial organised by the Woolwich, Plumstead, and District M.C.C.

A few minutes after 2 p.m. instructions issued by Mr. F. J. Ellis, the officiating secretary, brought the competitors into line at the starting point. Many types of machines were represented, although the Woolwich team, with the exception of one member astride a 3½ Ariel, all rode Matchless machines.

At the start we noticed a 2¾ Douglas, ridden by J. Bateson (Streatham), which, although many years old, subsequently proved to be the only successful lightweight entered. It made a splendid performance throughout the trial, and the rider, as one of the winning team, gained one of the gold medals.

The teams were made up of six riders, one team each being entered by the Streatham, Woolwich, Brookdale, Rochester, and Cambridge Motor Cycle Clubs respectively, and twenty-eight starters got away well. The trial route lay within a comparatively small area, and the arrowed route to be followed was arranged to cover the necessary sixty miles, which, at a speed of 20 m.p.h., had to be completed in three hours.

Narrow Roads.

From the start, the course led up one of the narrow and closely-hedged roads, familiar in the district, through the village of Downe and Cudham, to Westerham. With the last-named village retiring into the distance, and whilst still ascending, the competitors set their teeth in preparedness for the beginning of the real test of both machine and rider, for ahead was the first of the difficult hills included in the run.

The only trouble reported on Chalk Pit (Salt Box Hill), however, was that the stony surface accounted for back wheel spin with the heavier machines.

Leaving the arrowed route, which next passed through Polsteeple, and, taking a short cut in order to intercept the riders at Cudham Hill, we soon found that the bad surface of this hill would probably cause no little difficulty.

The first rider round the awkward bend near the summit was G. Jenner (4 Triumph), who made a good fast climb. Not so successful as he, however, the rider of a 2½ h.p. Levis, "konked out" within a few yards of the top, but, by a plucky effort, managed, with the aid of his foot, to propel his machine to the top, this procedure, however, robbing him of an award.

H. A. Collier (8 Matchless sc.) made a slow but steady climb, as did Glendenny (A.J.S. sc.). A fast ascent was accomplished by S. A. Ive (4 Triumph), who skilfully passed A. Daw on a similar mount, the latter by no means climbing slowly.

The loose surface of the hill gave E. Atkins (3½ Ariel sc.) a little trouble, his lady passenger usefully applying her weight in an attempt to hold the rear wheel to the road. Ascending well, H. V. Colver (8 Matchless sc.) had his two boys as passengers, and their faces, whilst climbing the worst part of the gradient, did not portray a feeling of great pleasure; nevertheless, they appeared thoroughly to enjoy the run.

Loose Surface on Hills.

The next observed hill to be encountered was Crown Ash, and in spite of its steep gradient and appallingly bad surface, across which were many ruts formed by the rain from the neighbouring hills, many successful climbs were made.

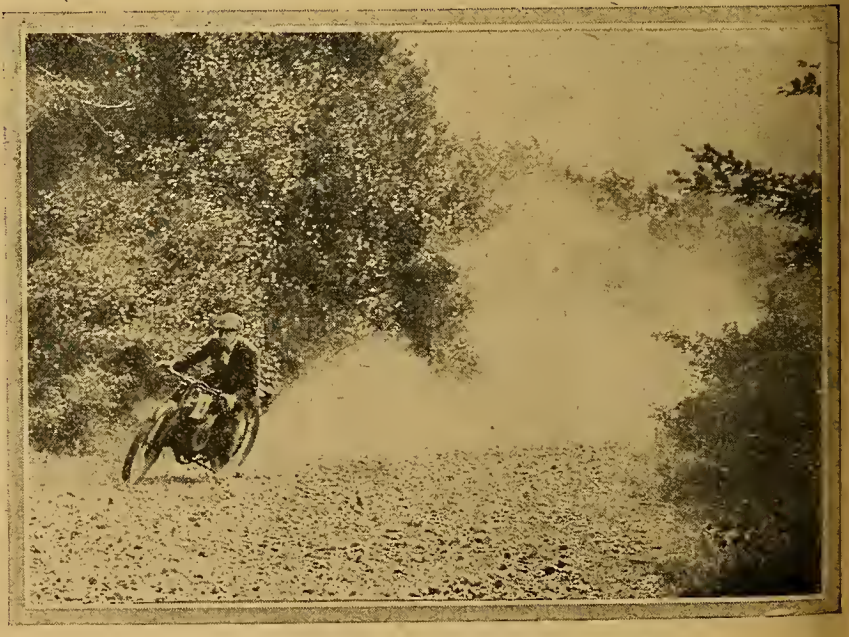
G. Jenner (4 Triumph) made a fast climb. His speed, however, was a little too great for the loose surface, but after wobbling dangerously for several yards and eventually colliding with the bank, he pluckily continued and reached the summit successfully.

The 2¾ Douglas, piloted by J. Bateson, also made a fast climb.

An uncomfortable method of ascending the hill was adopted by Rex Mundy (Matchless sc.), who, owing to severe wheel spin, was obliged to bump his saddle to retain a grip of the road.

One unfortunate victim of the hill was D. Jones (4 Triumph), who, after swerving across the track at a dangerous angle, was obliged to stop.

After the ascent of the hill the route lay along the Westerham Road, on the right of which a beautiful valley, dotted with a number of closely wooded areas, stretched as far as the eye could see, whilst on the left the summit of the ridge, along which the road wound its snakelike course, was silhouetted against



J. Bateson (Douglas) going well on one of the test hills

Many Well-known Kentish Hills included in a Sporting After-noon Trial

C. R. Collier on Brasted Hill. The machine he rode was a new spring frame Matchless.

ne clear, blue sky. Passing through the ncient valley of Hogtrough, the well-nown Brasted Hill was descended, the oad then straightening out into Sun-ridge, and then to Knockholt.

A duplicate route was next followed hrough Dunton Green and Sevenoaks, eturning up Toy's Hill, a long and teady climb, to Brasted Hill, descending gain to the finishing line at the "Three Horse Shoes" at Knockholt.

Lieut. E. S. K. Evans-Greaves, R.N. (Triumph), on Crown Ash Hill

Most of the competitors ascended Brasted successfully, wheel slip again being a general difficulty.

Success for the Streatham Team.

G. F. Hunter (8 Matchless sc.), however, fell a victim to plug trouble, but was the only member of the Streatham team to retire, resulting in an easy win for that club on the number of non-stop finishers only, the errors in time being totally ignored.

The runners-up, however, the Brookdale team, had a total error of 20m. 4½s., whilst the winners, Streatham, carried off both the Woolwich challenge cup and the gold medals, and had a total eror of 4m. 37⅘s. only, a decidedly good performance.

The Club Teams.

STREATHAM TEAM (Winners of Woolwich Challenge Cup).
J. Bateson (2¾ Douglas), gold medal.
Rex Mundy (6 Matchless sc.), gold medal.
W. S. Cooper (3½ Triumph), gold medal.
G. F. Hunter (8 Matchless sc.), retired with plug trouble.
A. Daw (4 Triumph), gold medal.
F. S. C. C. Paterson (4 B.S.A.), gold medal.

WOOLWICH TEAM.
G. D. Hardee (8 Matchless sc.).
E. Atkins (3½ Ariel sc.).
H. A. Collier (8 Matchless sc.).
C. R. Collier (8 Matchless sc.).
H. V. Colver (8 Matchless sc.).
A. R. C. Ilsley (8 Matchless sc.).

BROOKDALE TEAM.
Reg. Boxer (4 Triumph sc.).
T. J. Ross (4 Triumph).
J. A. Hoult (8 Matchless sc.).
B. J. Sims (4 Triumph).
A. M. Dobson (4 Triumph).
S. A. Ive (4 Triumph).

ROCHESTER TEAM.
G. Jenner (4 Triumph).
Gilmour Packman (8 Zenith).
Duncan Jones (4 Triumph).
L. C. Rumens (3½ P. and M.).
Leslie Skinner (4 Rover).
G. Skinner (4 Triumph).

CAMBRIDGE TEAM.
E. S. K. Evans-Greaves (3½ Triumph).
T. F. H. Marriott (3½ Norton).
—. Glendenny (A.J.S. twin sc.).
W. A. Fell Smith (8 Blackburne sc.).
R. Hovenden (3½ Norton), non-starter.
F. A. Knight (8 Zenith), non-starter.

A competitor passing a less fortunate rider on Crown Ash.

WELCOME HOME TO BIRMINGHAM RIDERS.

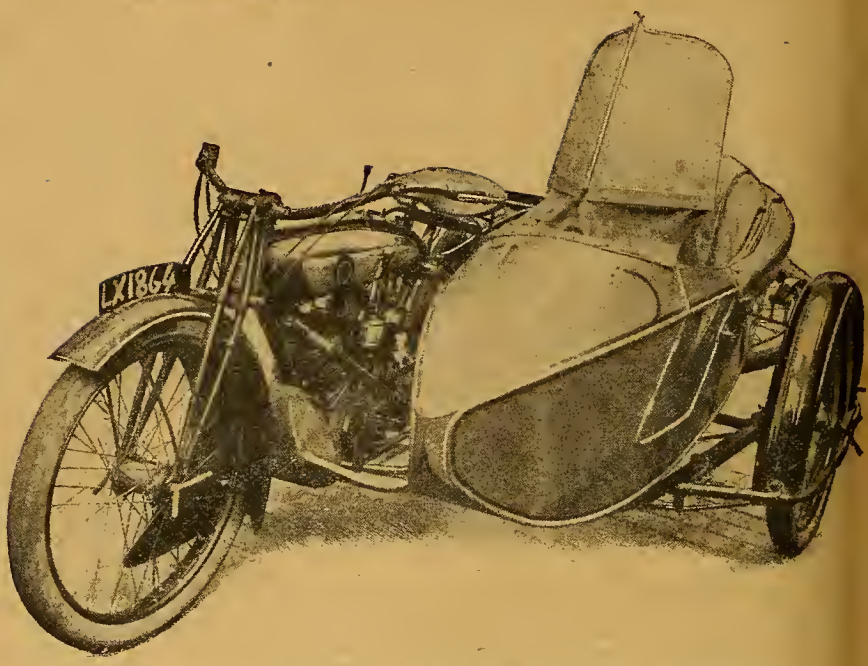
In order to acknowledge suitably the services rendered to their city and country by local motor cyclists, Birmingham and district riders are making big efforts to give them a welcome home, and a gathering will be held in Birmingham in the autumn, which will take the form of a dinner and concert with, possibly, presentations. It is hoped that the scheme will be taken a step further, and everything will be done to assist those who have not yet settled to congenial employment. Any Birmingham motor cyclist who has drawn service pay since August 4th, 1914, is eligible, provided he was a motor cyclist prior to that date or has served as a motor cyclist since in any branch of H.M. Forces, and the committee desire such men to send their names to the hon. secretary, Mr. R. H. Henderson, Midland Wheel Club, Queen's College, Birmingham.

A French Machine for the British Market.

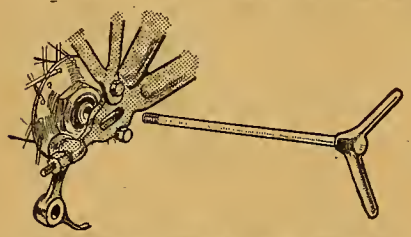
The 8 h.p. G.L. Sidecar, embodying English Engine and Gears.

IT is not often one sees a French motor cycle in England, but recently we had an opportunity of examining the G.L., which was brought round to our offices by M. Charles Sweerts, who is well-known in the Midlands, and was formerly with the Singer Co., Ltd.

The G.L. is manufactured by M. Georges Levy, Rue Michel Carré, Argenteuil, France, who, during the war, was a manufacturer of seaplanes. The G.L. is distinctive, in that it employs numerous British parts, such as a J.A.P. engine, Sturmey-Archer three-speed gear, and Amac carburetter. There are, however,



Threequarter view of the G.L. The wheel spindles can be removed without tools.



The detachable wheels are easily manipulated.

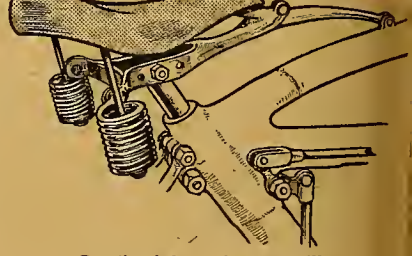
several interesting features concerning the frame and its fittings.

The front forks deserve special mention, being intensely strong and yet reasonably light, and being a combination of the Triumph pattern fork and the ordinary pattern. Not only are the forks pivoted at a point above the wheel, but an up and down movement is imparted to them through the vertical enclosed springs contained in tubes running from links at the top of the forks to a spindle running across the fork crown at the bottom of the steering post.

In the G.L. all wheels are detachable and interchangeable, and no tools are required to remove them, as each spindle bolt is provided with long arms so that it can be undone easily by hand and yet be sufficiently tightened by the same method so as not to become loose.

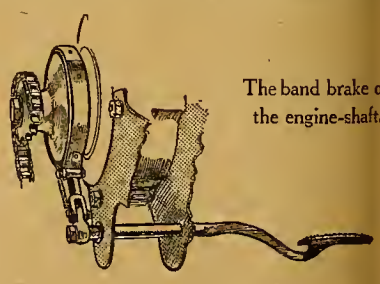
So far as the rear suspension is concerned, this is effected by mounting the saddle pin on a spring, the saddle peak running and sliding on a long rod attached to a lug on the frame top tube. The G.L. is particularly well equipped as regards brakes, and of these one is a distinct novelty, as it is of the external band variety applied to a drum on the engine-shaft and controlled by a pedal within easy reach of the rider's heel. It is most effective in action, and though the braking stresses are taken through the transmission, in the event of the failure of the transmission the rider still has a very powerful means of stopping in the internal expanding band brake in the rear hub. Noteworthy features of the G.L. are the wide and comfortable handle-bars and the spacious aluminium footboards.

The sidecar chassis is light but of great strength, while the body, which is most comfortable, bears some resemblance



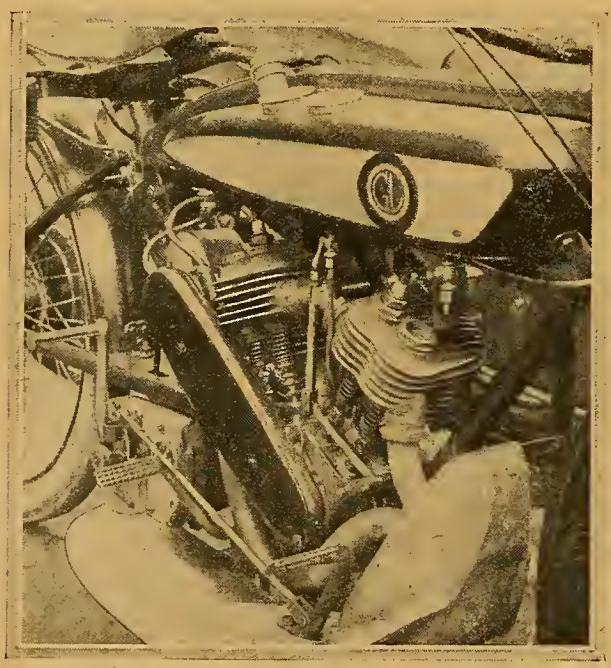
Details of the spring seat pillar.

to the boat body of a seaplane. The hood folds neatly away, and when out of action is protected by a cover. When erected it forms ample protection for the passenger, as it fastens neatly over the



The band brake on the engine-shaft.

top of the V shaped celluloid screen. The G.L. is handled in this country by Messrs. Vivian Hardie and Lane, Ltd., 24, Woodstock Street, Bond Street, London, W.1.



Peculiarly shaped silencer and spacious footboards are noticeable features of this French production.

Coventry and Warwickshire M.C.

The Coventry Club is holding a "go-as-you-please" 100 mile trial on Saturday next, starting from Davenport Road, Coventry, at 1 p.m. Entries (2s. 6d.) close to-day (Thursday 21st).

Wolverhampton M.C.C.

The trial to Barmouth arranged for last Saturday, was postponed owing to the proximity of the inter-club trial on the 30th inst., when it is hoped the Sutton Coldfield, Birmingham, and Hereford Clubs will combine with the Wolverhampton Club in a 100-mile trial over difficult cross-country roads.

Bristol M.C.C.

The annual speed trials (open and closed) will be held at Weston-super-Mare on Saturday, August 30th. There will be ten open classes and seven reserved for club members, and the course will be over a one mile stretch on the sands.

Entry forms and full particulars of the event may be had from Mr. P. Grout, Keynsham, near Bristol. Entries close on Saturday, August 23rd.

In the recent members' hill-climb, with the exception of the 275 c.c. class, in which A. E. Tozer (2½ O.K. Junior) was first, all the solo classes were won by E. Kickham (2¾ Douglas), who thus gained five first places.

Three of the four sidecar awards likewise went to S. L. Bailey (2¾ Douglas sc.), the remaining one being taken by H. Bradshaw (5 Clyno).

Liverpool M.C.

In connection with the meet at Monsal Dale on the 10th inst., the above named club held a speed-judging competition on the way back to Liverpool, between Buxton and Macclesfield. Competitors were timed over an unknown stretch by two concealed timekeepers, and were to average 20 m.p.h. The results were as follow :

SOLO CLASS.

	Secs. error.
Mr. Rose (3½ Rover), winner	2
Lt. Walker (2¾ Douglas)	3
Miss Cottrell (2¾ Calthorpe)	11
Mr. Cottrell (Triumph)	15
Mr. Parker (2¾ Coulson B.)	30*
Mr. Fox (4 B.S.A.)	30*
Mr. Hague (American Excelsior) ..	53
Mr. Wade (2¾ Sun)..	65

* Tie.

SIDECARS.

Mr. Lane (6 A.J.S.), winner	1
Mr. Jones (6 A.J.S.)	3
Mr. Honeyman (6 A.J.S.)	5
Mr. Meskuita (6 A.J.S.)	20
Mr. Raine (6 A.J.S.)..	30
Mr. N. Brown (Indian)	42*
Mr. R. H. W. Brown (A.J.S.)	42*
Mr. Wade (A.J.S.)	72

* Tie.

Future Events.

Aug. 22-23.—Essex M.C. 24 Hours Ride to York and Back.
Aug. 23.—S. Birmingham M.C.C. Run to Stratford-on-Avon.
Aug. 23.—N.M.C.F.U., Portsmouth. Run to S. Hayling.
Aug. 23.—Coventry and Warwickshire M.C. "Go-as-you-please" Trial.
AUG. 23.—BIRMINGHAM M.C.C. OPEN HILL-CLIMB.
Aug. 23.—Glasgow M.C.C. Reliability Trial.
Aug. 24.—Reading and District M.C. and L.C.C. Surprise Run.
Aug. 24.—Westmorland M.C.C. Reliability Run for Triumph Cup.
Aug. 24.—Ilkley M.C. and L.C.C. Speed Trial and Hill-climb for Dawson Trophy.
Aug. 24.—N.M.C.F.U. Inter-meet at Newtown Linford.
Aug. 24.—Stalybridge and District M.C. Run to Matlock.
Aug. 24.—Manchester M.C. Gymkhana.
Aug. 24.—N.M.C.F.U., Sheffield. Run to Lincoln.
Aug. 24.—N.M.C.F.U., Portsmouth. Run to Epsom Downs.
Aug. 24.—N.M.C.F.U., Leeds. Run to Grassington and Buckden.
Aug. 24.—Rochester, Chatham, and District M.C. Run to Wateringbury.
Aug. 28.—Stalybridge and District M.C. General Meeting at 7.30.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
Aug. 30.—S. Birmingham M.C.C. Hill-climb.
Aug. 30.—N.M.C.F.U., Sheffield. Week-end Run to Boston.
Aug. 30.—N.M.C.F.U., Portsmouth. Run to Halnaker.
AUG. 30.—BRISTOL M.C. SPEED TRIALS AT WESTON-SUPER-MARE.
Aug. 30.—Wolverhampton, Sutton Coldfield, Birmingham, Hereford M.C.C.'s Inter-club Trial.
Aug. 30.—Public Schools M.C.C. Hill-climb.
Aug. 31.—N.M.C.F.U., Leeds. Soldiers' Outing.
Aug. 31.—Ilkeston and District M.C.C. Run to Matlock.
Aug. 31.—N.M.C.F.U., Portsmouth. Run to Hayling Island.
Aug. 31.—Stalybridge and District M.C. Run to Rhyl.
Aug. 31.—Birmingham M.C.C. Social Run.
Aug. 31.—Rochester, Chatham, and District M.C. Run to Hawkhurst.
Aug. 31.—Woolwich, Plumstead, and District M.C. Picnic and Gymkhana at Brasted Hill.
Aug. 31.—Reading and District M.C. and L.C.C. Run to Kop Hill.
SEPT. 6.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
Sept. 6.—Birmingham M.C.C. Reliability Trial for Sangster Cup.
SEPT. 6.—YORK AND DISTRICT M.C. OPEN HILL-CLIMB AT SUTTON BANK.
SEPT. 15-20.—A.C.U. SIX DAYS RELIABILITY TRIALS.
Sept. 19.—Essex M.C. Gymkhana.
Sept. 20.—Blackburn and District M.C.C. Hill-climb on Waddington Fells.
Sept. 27.—Coventry and Warwickshire M.C. Hill-climb.
Sept. 27.—Wolverhampton M.C.C. Open Hill-climb.

N.M.C.F.U. (Birmingham).

Members are asked to turn out in force for the inter-meet at Newtown Linford. Meet at Fox and Goose Hotel, Washwood Heath, at 10.45 a.m., on August 24th.

Westmorland M.C.C.

A reliability run for the Triumph cup and other prizes will be held on the 24th inst., starting at 9.30 a.m. from the Grammar School, Kendal. Route cards will be sent on receipt of entry fee, 1s., which will be received up to-morrow, the 22nd, or at the start at double fees.

Warrington M.C.

The Warrington and District Amateur Motor Cycle Club has been re-formed and re-named the Warrington Motor Club. All motorists interested are invited to communicate with Mr. H. Aldred, 58, Church Street, Warrington, who is occupying the post of secretary. The club, which will hold a reliability trial on August 24th, has met with excellent support, but further members will be heartily welcomed.

Public Schools M.C.C.

An enjoyable run was recently made by members of this young and growing club to Hayling Island, where the party indulged in a most enjoyable bathe. The membership is increasing, and during this month the club is making a special effort to run competitions in which present members of public schools may take part.

Ilkley M.C. and L.C.C.

The old Ilkley and District M.C.C. has been re-formed under the title of the Ilkley Motor Cycle and Light Car Club, with headquarters at the Crescent Hotel, Ilkley. Mr. W. H. Sellers is the hon. sec. Local motor cyclists who are interested should communicate with him at Langley Avenue, Bingley. The results of the recent reliability trial are as follow :

	Marks lost.
1. W. R. Haggas (8 New Imperial), gold medal	8½
2. H. O. Wood (Scott), silver medal	12½
3. W. S. Crothers (4 Triumph sc.), bronze medal	17
4. W. Bradley (6 Royal Enfield sc.)	17½
5. N. O. Vinter (Scott sc.)..	25½
6. S. Haigh (Scott)	44½

Blackburn and District M.C.C.

The Blackburn Club is holding a hill-climb on Saturday, September 20th, on Waddington Fells, near Clitheroe, when the following events will be run off, commencing at 1.30 p.m. :

Class 1.—Motor scooters.
Class 2.—Light cars up to 1,500 c.c.
Class 3.—Lightweights up to 270 c.c.
Class 4.—Lightweights up to 350 c.c.
Class 5.—Standard touring machines up to 560 c.c.
Class 6.—Sporting machines up to 560 c.c.
Class 7.—Machines up to 750 c.c.
Class 8.—Unlimited.
Class 9.—Passenger class up to 560 c.c.
Class 10.—Passenger class (unlimited).

Further information, schedules, and entry forms may be obtained on application to the hon. sec., W. Geo. Guest, 9, Exchange Street, Blackburn. Entries close September 12th. Application for membership should be made to the secretary.

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

THE "BIG FOUR."

Sir,—We notice a letter in your issue of July 24th under the above heading. Reference to *The Motor Cycle* file will show that we were advertising in your columns a 4¼ h.p. model (single) of our make as far back as 1907. That size did not become popular at the time, hence we did not push it seriously, at any rate for the home markets.

As sidecars became more popular, we redesigned this model, and exhibited types at the 1911 show, for the 1912 season; you reviewed that model in your criticism of the 1911 show.

We have, in recent years, slightly enlarged this model, and now style it 4¼ h.p.

In view of the criticism appearing in your columns recently with regard to some clear definition as regards horse-power, it may interest you to know that even in 1912 we found the usual definition of horse-power somewhat misleading, and preferred to state the dimensions.

THE LLOYD MOTOR ENGINEERING CO., LTD.

THE SCOOTER DEFINITION.

Sir,—Referring to the letter appearing in your issue of August 14th over the *nom de plume* "Puzzled," I feel that your note clearly explains the definition to him. At the same time, I should like to amplify this by giving the reason of my Committee's decision on the matter of platform space. It is felt that the scooter would defeat one of its objects were it in any way difficult to mount or dismount—particularly in the case of lady riders, who would certainly be wearing skirts for this form of locomotion. It seems essential, therefore, that an entirely open frame should be used, thus permitting the rider to place either foot or, in case of emergency, both feet on the ground without fear of "tripping" over anything in the nature of a cross-member, however low. Your correspondent will notice the words "centre portion"—indeed he quotes them—and the object of this section of the preliminary definition was to eliminate frames following the practice of ladies' motor cycles or ladies' pedal cycles. It is considered that a *clear* centre portion of twelve inches allows ample room for standing, and provides no obstacles for mounting or dismounting.

T. W. LOUGHBOROUGH,
Secretary Auto Cycle Union.

PLEASE QUOTE PRICES!

Sir,—Your correspondent R. W. Paul in the issue of August 7th speaks of "illogical" statements regarding the discourtesy shown by some firms in the answering of enquiries. Would not he be speaking more logically were he to say: "*The Motor Cycle* is a medium of information. Its readers search its pages for detailed information, and not for misleading or illusory matter. I will see that my adverts. contain a clear account of my position to deal with the would-be patron. In so doing, I shall eliminate unnecessary correspondence, my clerical staff will not be 'hopelessly overtaxed,' I shall establish a true understanding and so safeguard the reputation of my firm."

I think R. W. Paul and others would do well to adopt this procedure.

L. A. JOHNSON.

Sir,—Mr. R. W. Paul's letter, in your issue of August 7th, offers no excuse whatever regarding the statement in my letter in your issue of July 24th, which is far from being wholly illogical, since many manufacturers invite enquiries in their advertisements. If they are overtaxed, and their works and offices are congested, why invite enquiries? If they cannot cope with them, the only reasonable solution is to word advertisements in a different manner, whereby they could still keep their names before the public without being worried to any extent; or, on the other hand, many thousands of demobilised soldiers who are walking the streets in search of work would be pleased to deal with manufacturers' correspondence were they given the chance. It is well to acknowledge correspondence if a full reply cannot be made at once; thereby customers may be held for a reasonable time. No acknowledgment sends customers elsewhere. I still contend that prices should be quoted, with details of machines or parts in all advertisements.

H. F. BARTLETT.

SPEED WOBBLE.

Sir,—I would be glad if you would insert my experience of a speed wobble I had the other day. I was trying a new Rudge-Multi I had never ridden before, and was doing about 60 or 65 m.p.h., as I had full throttle and a good wind behind me on a flat road, or, if anything, a slight downward slope, with a top gear ratio of 3½ to 1. As soon as I felt the wobble I shut the throttle, and used all my will power to hold the machine straight, but the wobble increased until I had gone another hundred yards down the road and got into some thick dust at the side, when the front wheel skidded, and I was precipitated on to the road.

I should be very glad to hear a good theory on the cause of speed wobble, and the best means to overcome it. I might mention I did not attempt to use brakes to pull myself up, but just shut the throttle and hung on. G.E.S.
Sheffield.

ARMY HUTS.

Sir,—These are being extensively advertised for sale. Some are useful for conversion into bungalows and garages, but motorists who think of buying Army huts for storing their cars or motor cycles in would be well advised to obtain a copy of the local byelaws, and study the list therein of exempted buildings.

Byelaws vary in different districts, but, generally speaking, the question whether a building like an Army hut can be put up depends upon its size (length × width × height) and its positional proximity to existing buildings, and to its owner's own property boundaries. Also, such a building should not project beyond the general building line of houses, etc., without some precedent.

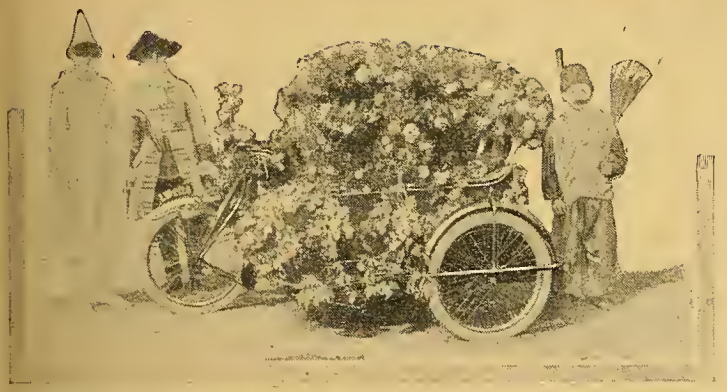
Applications for copies of the building byelaws should be made to the engineer or surveyor to the local council.

HENRY JAMES WISE, F.R.I.B.A.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—I have been reading with interest in your issue of August 7th the testimony of R. Politi to the value of the automobile associations. I also have heard these associations criticised, and used to wonder whether they *did* give anything of value in return for the subscription. However, I joined the A.A., and on Whit-Monday started southward on my first tour with a sidecar combination. We did 110 miles by 8.15 a.m., and then sat down on the roadside just north of Bawtry for breakfast. On rising to resume the journey I found my back tyre was flat. Almost before I had time to lament the delay which this would involve, a quiet voice behind me enquired as to the trouble, and I turned to find the A.A. patrol ready to assist. We passed on to London, through Surrey, along the Thames valley, and back through the Midlands, and whenever trouble threatened or difficulties arose there was an ever-ready A.A. man at hand. Some may say I was fortunate, but I attributed my good fortune to the familiar badge carried on my handle-bar.

(Rev.) F. A. RAINBOW.



The sidecar lends itself admirably for fancy decoration, as will be seen by the prettily decorated Douglas outfit which was present at a recent carnival at Potter's Bar.

THE SIDECAR IN CARNIVAL.

Sir,—I am forwarding a photograph of my sister's 4 h.p. Douglas combination, decorated at a recent carnival at Potter's Bar.

The base of the design was the Lord Mayor's coach, and the flowers were supported on a cane canopy and by strings around the car.

Readers may be interested in this photograph, as it shows that a sidecar outfit can be made very gay without the use of a single piece of bunting. Much of the beauty is, of course, lost owing to the lack of colouring in the photograph.

CLIFFORD W. TINSON.

STEERING.

Sir,—With reference to "Chinook's" statement that he has ridden machines easier to steer than the new Douglas, does it not suggest, from the photograph accompanying his article in *The Motor Cycle* of August 7th, that the apparent weight on the carrier may have had something to do with his finding? The machine I ride (a 3½ h.p. single Rover), to me, seems faulty in the steering, and I came to the conclusion that the weight of engine, etc., is carried too far back. The least downward tilt of the saddle at the rear, and consequent removal of the rider's weight further back, seems to make the front wheel light and render steering more difficult.

The Scott, to my mind, and the P. and M., with their engine units in a forward position, counteract this front wheel lightness, and make steering easier. Unfortunately, my opportunity of gaining practical proof or otherwise of my theory is somewhat limited, and therefore I should like to read "Chinook's" opinion of this, and also that of P. and M. riders, as to whether they *ever* find steering difficult.

JANEY.

Bagshot.

ENGINE DESIGN.

Sir,—May I be permitted to endorse the opinions of your contributor "Entente" on the subject of the inside or outside flywheel?

The smooth running of outside flywheel engines of the type exemplified by the A.B.C., Brough, Douglas, and Forestì is well-known, but I am inclined to think that it is more due to the nearly perfect mechanical balance of the reciprocating parts and their disposition relatively to one another than to the disposition of the flywheel.

When a piston is placed under firing stress a transverse couple is set up between its crank and the counterbalance weight of the flywheel. (Naturally, the greater the number of cylinders the less the bad effect of this couple upon the running of the engine.) Now the greater the distance between the flywheel and the crank in question the more detrimental will the couple be to perfect running. This, I think, is one of the greatest disadvantages of the outside flywheel engine.

Having regard to this, the best balance should be obtained in an engine where the cylinders are opposed, the cranks at 180°, the flywheel inside, and as near as practicable to the cranks, with a bearing on the side of the flywheel opposite to the cranks. This reduces the arm of the couple and makes for great rigidity of the crankshaft unit.

I do not know if any such design exists, but it would be interesting to know if any of the horizontal twin manufacturers have experimented with such a construction.

S. LATOUR HORDLE.

HONOUR TO WHOM HONOUR.

Sir,—The letters from correspondents appearing from week to week in the motor cyclist's "Best" give one the impression that far too many firms are only out to rake in the cash, and have no intention of giving efficient service.

Now and again someone strikes a first-rate firm, and I feel bound to place on record in your widely read and valuable journal that I have been fortunate in finding such a firm in Messrs. Alldays and Onions, Ltd. In short, my experience of this veteran firm is that its attention to customers is beyond reproach; also that its staff of experts are masters of their work, and the nett result, as far as I am concerned, is that it will not be necessary for me to think a moment where to go—it will be just "Alldays" first, last, and all the time.

I must add the usual disclaimer, as I only render to Cæsar, etc.

HB 659.

Aberdare.

COURTESY OF THE ROAD.

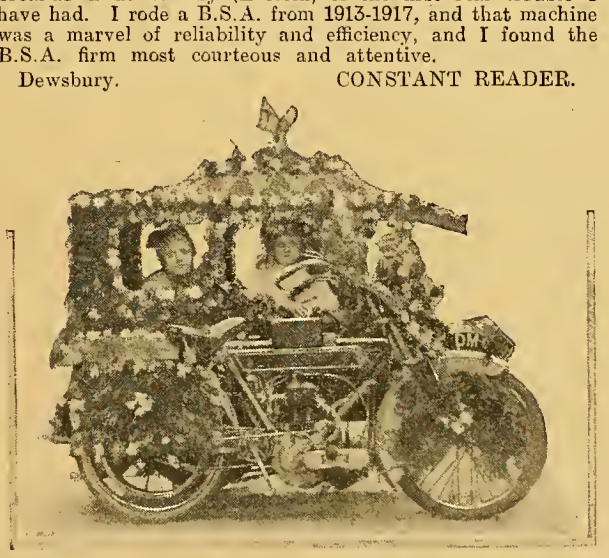
Sir,—I have seen by your correspondence columns that some appear to think that the freemasonry of the road is dying, but I had an experience on July 19th, ten miles outside Lincoln, which shows it is not yet dead by any means.

My Enfield gear became locked and wedged absolutely tightly owing to free wheel lock nut working loose and jamming the whole gear solid. I spent two hours trying to loosen the lock nut on gear spindle, but owing to lack of a hammer without any success. It was fortunate for me, however, that a motor cyclist, on an 8 h.p. Zenith, came on the scene. Although he was an entire stranger he undertook the job and told me to sit down and rest. He took the whole gear to pieces, taking no end of trouble to see that everything was in perfect condition before replacing. After three hours' hard work everything was ready, but he was not yet satisfied; he must accompany me ten or fifteen miles to satisfy himself that the thing did not jam again. However, it did not, so he left me after obstinately refusing to be recompensed in any way for his time and trouble. I need scarcely add that I shall be a long time in forgetting him.

I have been a motor cyclist for six years now, and that breakdown at Saxilby (Lincoln) is the first real trouble I have had. I rode a B.S.A. from 1913-1917, and that machine was a marvel of reliability and efficiency, and I found the B.S.A. firm most courteous and attentive.

Dewsbury.

CONSTANT READER.



Another beautifully decorated sidecar. This outfit, owned by Mr. A. Smith, took part in a carnival at Wolverhampton.

PRICES AND PRINCIPLE.

Sir,—I read with interest the letter by "Buyer," also the reply by the A.B.C. people.

I put an A.B.C. on order in January, risking a pig in a poke, on the strength of the "approximate" price of £70. At the fixing of the figure of £85, I wrote the S.A. Co. suggesting that those who were sporty enough to risk buying before seeing should have the machine at £70 or £75—a good approximate—and the "wait and see" buyers should pay the advance. They, however, could not agree.

When I saw for a few weeks the price of £85 deleted from the advertisement, I thought it looked ominous, and decided at once to cancel if any increase were made. In any case, if, as "Buyer" says—and it was not contradicted by Mr. Fenn—it will be three months before any deliveries are made, I am not wanting a tour fixing up for Christmas, and will declare off, and wait the advent of the £10 Ford, plus tariff charges.

WM. TURNER.

BENZOLE AND THE SCOTT.

Sir,—As an enthusiastic Scott rider and a strong believer in benzole, perhaps you will allow me to differ with your reader quoted in "Current Chat," who states that benzole dissolves the rubber rings on the Scott cylinder joints.

Both before and since the war I have used practically nothing but neat benzole, and never had any trouble on this point. During the war, however, the Scott people supplied rubber washers which used to dissolve after about 300 miles running on petrol, or what passed for petrol. On remonstrating, the firm expressed their regret, said they knew they were not suitable, but they were all that they could obtain in those difficult times.

Since then they have supplied me with a new type of black rubber washer, which appears to be as good when I decarbonised after 1,000 miles on neat benzole as when I put them on.

I am convinced your correspondent has got hold of some of the war-time substituted washers, and if he gets the new washers from the Scott Co. this trouble will disappear.

I used to have some trouble with benzole sooting up the transfer port gauzes, but as it has not done so latterly I think it was some temporary defect in carburation.

ERNEST CREIGHTON.

COST OF RUNNING A TWO-STROKE MOTOR CYCLE.

Sir,—Having been a constant reader of your valuable paper for the last six years, I thought you might be interested in my experiences with a Junior Triumph. I purchased it new from the makers in September, 1915, for £42, and have ridden it solely by myself for twelve months, ending September, 1916. I sold it in May, 1917, for £33, so the depreciation shows £9; this seems fairly great, but you will see I kept the machine the last six months without using it.

Mr. Bertram Westall on his Junior Triumph.

I have kept a very accurate account of all expenses, and the running costs were as follows:

Front lamp	£1	16	0
Rear lamp		12	6
Horn		9	0
Petrol 43½ gallons	5	1	1
Paraffin 2 gallons		2	6
Oil 3¾ gallons		11	3
Sundries		12	3
Chain and belt		13	2
Registration		5	0
Driving licence		5	0
Revenue	1	0	0
Insurance	2	0	0
Depreciation	9	0	0
Total	£22	8	7

Total mileage covered, 4,942 miles.

This works out at 1.09d. per mile. Now I have seen many riders' experiences from time to time in your paper, but find them vary very much. If I had done a greater mileage, it would have reduced the cost per mile, but, for the average rider, 5,000 miles will be as much as he will care to do for pleasure only.

I will now give you a brief explanation of the running of the machine. I think the Junior Triumph the finest two-stroke on the road. It climbs hills with the greatest ease on top gear, and I have not found a hill it will not take on bottom gear—8¾ to 1. Most of my riding has been done in Derbyshire and North Wales, so you will see I have not been in flat rural districts. The machine will average 25 m.p.h. on good roads. I have not the slightest hesitation in recommending the Junior Triumph to any reader of *The Motor Cycle* who contemplates the purchase of a two-stroke.

BERTRAM WESTALL.

PILLION RIDING.

Sir,—As a waiting customer for delivery of a motor cycle, I have read with keen interest your paper and all the expressions concerning pillion riding, particularly as I am a keen front rider of a tandem cycle. Naturally I have no actual experience of the addition of a "passenger" on the balance of a motor cycle, but I have much experience in tandeming, and I have been wondering wherein is the difference—allowing for minor differences of set of handlebars and saddle position, of course. All cyclists know the comparative safety of the tandem and its steadiness when riders are accustomed to it; also given similar speeds (and down some hills I can ride at between 30 and 40 m.p.h. between milestones checked by cyclometer and timed), there seems to me to be little difference. Can any of your readers give experience as tandemists and pillion drivers?

Again I wonder—in my ignorance, perhaps—what the difference may be between a pillion passenger and some of the heaped-up and heavy luggage one sees on the carriers of some machines (at holiday times, etc.) Of course, the falling off of luggage is no loss of life, but surely it does not fall off with any frequency or else riders would not carry it, and it cannot inconvenience them much apparently.

I trust that some reader can give information on this also, as probably there are many prospective new-comers to motor cycling who would be glad to use the experience without getting the nasty knocks having it first hand would entail.

JOHN TREWAVAS, JUN.

Useful Books and Maps for Motor Cyclists.

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QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

When is Ignition Advanced?

I have a 1915 3½ h.p. twin-cylinder T.T. Indian, and I shall be greatly obliged if you will answer the following questions: (1.) How to time the ignition to obtain best results. (2.) How can I tell whether the spark is advanced or retarded? (3.) Is it advisable to send a carburetter for overhaul, or obtain a new one?—W.I.P.

(1.) Time ignition thus: Fully retard the magneto control, revolve engine until piston is at the top of the firing stroke, and connect up the magneto with the contact breaker points just separated. (2.) In ascertaining which is the advanced position, remove the contact breaker cover, notice the direction in which the armature revolves, then operate the control until the segments move as far as possible in the opposite direction. This will be the fully advanced position. (3.) If the carburetter is not seriously deranged your local repairer should be capable of tuning it up for you

Knocking.

(1.) My machine is fitted with a B. and B. carburetter. At the base of the jet chamber is a small lever which can be rotated in either direction. What effect has this? (2.) When travelling at about 17 m.p.h. my engine runs well, but on opening up the throttle it develops a loud knocking, which cannot be cured by either reducing the air or retarding the spark. What might cause this? (3.) Should the crank case be periodically drained of oil, and, if so, how often? There is a small cock at the bottom of the crank case, but I can get no flow from it.—B.C.S.

(1.) The B. and B. carburetter to which you refer is the 1912-13 variable jet model. On removing the float chamber, which also combines the jet platform, you will find that the small lever operates a cam-shaped piece which covers and uncovers the jet orifices. These should be fully open when the lever is in the forward and outward position. (2.) The knocking in your engine is apparently due to pre-ignition. The cylinder and piston probably need decarbonising, also you might try a sparking plug with stouter electrodes. The engine may require a little more oil. You do not state the horse-power, but if it is a 3½ h.p. single give one pumpful every eight or ten miles. (3.) The crank case should be drained of oil every 500 or 600 miles. Possibly the drain tap you speak of is stopped up, in which case it will be necessary to clear it with a piece of wire.

Removing Magneto Sprocket.

You kindly gave me your advice on my 1912 5-6 h.p. twin Rex, and the machine now runs well, but the blow-back through the carburetter is just as bad in spite of new springs and valves. I put it down to overlapping of valves in front cylinder, as both exhaust and inlet valves are slightly open at the same time. On attempting to rectify this I could not remove the magneto sprocket (Bosch), thus holding back part of chain cover. (1.) Is this sprocket a driving fit? (2.) How can I remove it? (3.) Can I rectify this overlapping of valves in the front cylinder without upsetting the back cylinder?—C.S.

(1.) The magneto sprocket is fitted on a tapered shaft. (2.) On some models of the Rex, the lock-nut may be taken out, reversed, and screwed into a recess at the end of the sprocket, when it butts against the shaft and withdraws the sprocket. If yours is not of this type, remove the lock-nut, and while pulling on the sprocket give the end of the shaft a smart blow, using a brass punch or a piece of hard wood to protect the threads. (3.) In the 1912 twin Rex, the valves are both operated off the same cam; therefore it will be impossible for you to alter the overlapping

An Early Scott.

Having an old type pump without sight-feed on my Scott, I find the oil in the tubes constantly pumping up out of the filler cap, and have to run with the automatic device cut off and use the pump as a hand feed only. I wrote to the makers, but got a reply to the effect that the trouble was inherent with this type of pump! I could not get a sight feed lubricator, so looked into the cause. It is this. Instead of the oil hole in crank case registering with the pump when the maximum suction occurs in the engine crank case, it registers when the piston is almost at the bottom! Is it possible for me to shift the outer main roller race round to the correct position? I had the crankshaft out once, but did not touch this ring. How can it have shifted round? Both crank cases are alike.—S.A.R.

As the Scott Co. inform you that the trouble is common with the type of oil pump fitted to your machine, we scarcely think you will be able to effect a complete cure. The main roller race is pressed into the crank case, and we scarcely think it advisable for you to attempt to move the position of this. We suggest experimenting with petroil lubrication as an alternative.

MOTOR CYCLE TESTERS.
The competition men in embryo. An every-day scene at the Triumph Works

Overheated Two-stroke.

I should be very much obliged to you if you could explain why: (1.) The crank case of my 2¼ h.p. Radco gets very hot, so hot, in fact, that the timing chain, which was heavily oiled, became absolutely dry and fast when the engine cooled after a thirty-mile run. (2.) What amount of oil should there be in the crank case? I use one measure of oil to half a gallon of petrol. (3.) The petrol consumption is very heavy, about 34 m.p.g.—R.B.

(1.) Probably the piston rings of your engine are carboned in their grooves. As they will most probably break when removing them, it will be necessary to fit new ones. No doubt this is the cause of your engine running so hot. (2.) You require one part of oil to sixteen of petrol. (3.) The heavy petrol consumption is no doubt due to the engine being out of tune. Overhaul the petrol system for leaking joints, also reduce the level if necessary.

Speed Timing.

Owing to the makers having ignored my query, may I ask you for information *re* the valve timing of my 3½ h.p. horizontal opposed o.h.v. twin? What is the best timing for speed work? I had occasion to take the engine down, and the timing wheels are not marked.—H.F.

We suggest the following timings for your engine—the more suitable of the two will need to be found by experiment or by examination of the dwell of your cams. *Normal Setting.*—Inlet opens 10° after top dead centre; inlet closes 20° after bottom dead centre. Exhaust opens 40° before bottom dead centre; exhaust closes 10° after top dead centre. *Speed Setting.*—Inlet opens 10° before top dead centre; inlet closes 10° after bottom dead centre. Exhaust opens 55° before bottom dead centre; exhaust closes on top dead centre. *Ignition.*—Fully advanced 9 mm. before top dead centre.

Standard and T.T. Models.

I should be glad if you would answer the following: (1.) Is there any difference in the engine of the New Imperial 2¾ h.p. motor cycle and the T.T. model of the same make? (2.) What is the speed of the T.T. model? (3.) What is the capacity of oil and petrol in the tank? (4.) Will this bicycle take a light sidecar? (5.) Do you really recommend this machine for touring?—G.W.L.

(1.) There is probably very little difference in the engines fitted to the New Imperial standard and T.T. models, but the latter no doubt receives special attention as regards tune. (2.) The maximum speed on the road should be somewhere in the region of 45 m.p.h. (3.) The capacity of the tank is about one and a half gallons petrol and one quart oil. (4.) This machine would take a light sidecar, but we do not recommend these small machines for serious sidecar work, as it is altogether unfair to the engine to expect it to undertake work for which it was never designed. (5.) For solo touring you would find this machine quite satisfactory.

The Sturmey Gear Box.

I have a 1919 Model H Triumph, two weeks old, which I have ridden 800 miles solo. (1.) With the middle gear in position there is at least 1in. play between the belt pulley and the chain sprocket on the gear box before the drive is taken up. This is sometimes felt when running on the road slowly on top. There is about ½in. play on top and bottom gears. (2.) Is the following method of descending long hills in any way detrimental to the transmission? Declutch and slip into neutral. Run down hill in neutral, and at the bottom, before the machine has come to rest, restart with the kick-starter, and bring the gear lever into the middle or top according to speed? (3.) Recently, after a run of about seventy miles, with a total of about 800, when coasting down hill in this manner a most distressing intermittent grinding and scraping noise proceeded from the gear box. I stopped and ran the engine on the stand for a few seconds with the gear lever in neutral and the scraping noise was still in evidence. I put about three pumpfuls of oil in the gear box with the squirt, though it seemed to be well lubricated. What was the cause of this noise? (4.) How often should the Triumph gear box be lubricated? If the oil runs through to the clutch and causes slipping, as, I understand, often happens, should the clutch be taken down and the plates dried? (5.) Can the clutch be slipped pretty considerably without harm?—E.L.S.M.

(1.) The play, or backlash, in your gear box certainly appears slightly more than normal, but we cannot think that there is anything to worry about, as the design of the gear wheels necessitates a fairly large amount of play. (2.) Your method of descending hills is not to be recommended, since it is easily possible for the gears to jump into engagement. (3.) Possibly this happened (see No. 2). (4.) Lubricate the gear box every 500 miles. Should oil reach the clutch plates it may be necessary to clean them, but this trouble will not occur if the gear box is not over-lubricated. (5.) The clutch may be used freely in traffic or for descending hills.

READERS' REPLIES.

Petroil on Scotts.

Further to the letter by Mr. Chas. Harby in the issue of August 7th, we should like to say that we have known many riders who use the petroil system with success; but we think that Mr. Harby's quantity of oil is excessive. The proportions giving the best results vary slightly on individual machines, but, as a rough guide, it will be found that half a pint of oil to two gallons of petrol (*i.e.*, one tankful) as a maximum, and quarter of a pint to two gallons as a minimum, will be ample.—THE SCOTT MOTOR CYCLE CO., LTD.; N. O. Vinter, Capt., Sales Manager.

Magneto Ignition.

Under the above heading, "B.S.A." is in doubt with regard to the apparently conflicting advice given to Mr. H. E. Porter to remove the glaze from the carbon brush on an N.S.U. low-tension magneto, and that of Mr. A. P. Young, who says that the glaze on a carbon brush does *not* affect the working of a magneto. As a matter of fact, both are correct as regards the machines to which they allude. The magneto of an N.S.U. is really a low voltage dynamo, supplying current to a coil—taking the place of an accumulator, in fact. The voltage is probably not more than 4 or 5 volts, and the glaze (which more often than not is composed of oil or grease and dirt) is practically a non-conductor at this pressure, and will not allow the current to pass through it. It is quite conceivable that either a glazed brush or a dirty commutator will prevent such a machine from generating enough current for the coil. Mr. Young doubtless refers to the high-tension brush of an ordinary magneto, and he is, of course, correct. Here one deals with an infinitesimal amount of current and a very high voltage (nearer 4,000 than 5), and no amount of glaze would affect it; in fact, there is no need for the high-tension brush to touch the slip ring at all. When the primary circuit is broken, the resultant high-tension current will seek to complete its circuit *via* the brush, high-tension wire, and plug, and, even if the brush is not touching, it will jump to it from the slip ring, provided the distance is less than that of the safety gap. As a matter of fact, in some American ignition systems the revolving distributer is never actually in contact with the high-tension wires at all, the spark merely jumping across when the contacts are opposite each other. At the same time, of course, it *is* necessary to keep the low-tension brush of a magneto clean, as well as the platinum points, as they are in the primary circuit, which is comparatively heavy in current and low in voltage.—CLEVEDONIAN.

EXPERIENCES WANTED.

Can anyone give me his experiences of the F.R.S. magneto lighting set as fitted to a Douglas (or other twin machine), as regards (1) quality of light given at fast and slow speeds; (2) effects, detrimental or otherwise, on sparking at slow speeds, and on the magneto?—W.H.S.

RECOMMENDED ROUTES.

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Leicester, Hinckley, Atherstone, Fazeley, Brownhills, Wellington, Shrewsbury, Oswestry, Llangollen, Corwen, Pentre Voelas, Llanrwst, Llandudno. Approximately 240 miles.

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BOSCOMBE TO PRESTON.—S.L.S.

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All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

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For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. 000, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

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Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt. The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½ %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited. The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

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Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

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A.B.C.

A.B.C.—Callyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

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MOTOR CYCLES FOR SALE.

A.B.C.

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A.B.C.—Sole agents for these famous machines. Orders booked now for early delivery.—Chandler, Reyre, and Williams, Sun St., Hitchin. [0996

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

Abingdon.

ABINGDON King Dick, 3½h.p., 1913; £32.—5, Eglon Mews, Primrose Hill, N.W.1. [1641

ABINGDON King Dick Combination, 2-speed gear, hand clutch, handle starter, chain-belt drive, complete, lamps and horn; £45; apply after 6.—211, Queen's Rd., Peckham, S.E. [1686

ABINGDON, King Dick, 3½h.p., 3 speeds, clutch, top-hole condition, finished black and gold, all accessories; £53; lightweight part exchange.—Decourcy, Frankfort St., Birmingham. [1635

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A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [5601

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4h.p. A.J.S., Bosch, B. and B., fast, 16 gns.; offers.—172, New Bain St., Pluistow. [X9432

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A.J.S., 1915, 6h.p., sidecar, 3-speed, clutch, kick starter, just been overhauled and enamelled; £110.—Gilbertson, 13, Fishergate, York. [X9501

A.J.S., 1915, 2¾h.p., 3 speeds, kick start, hand clutch, 2 lamps, horn, speedometer, perfect order; £65.—21, Barmouth Rd., Wandsworth, S.W. [1116

A.J.S. 6h.p. Combination, 1913, excellent order and running condition, electric horn, lamps, and acetylene; what offers?—Holmes, Oatleys, Ledbury. [X9195

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries [0007

A.J.S. 6h.p. Combination, 1915, inter-changeable wheels; £140; want lower power combination, P. and M., Douglas, Sunbeam, or offer.—R., 24, Fulham Rd., S.W.3. [X9720

A.J.S. 2¾h.p., 1914-15, tyres new, overhauled, re-enamelled, replated, speedometer, Lucas, accessories; £65, offer.—Write, Smith, 27, Howley Place, Paddington, W. [1497

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., 3-speed, clutch, C.B. sidecar, speedometer and Meek hooter, just overhauled, enamelled, and plated, tyres as new; a bargain, £100.—2, Schubert Rd., E. Putney. [1368

A.J.S., 2¾h.p. T.T., 2 speeds, clutch model, just been thoroughly overhauled, speedometer, lamps, etc., good tyres; £55.—Premier Motor Garage, 11a, Stone St., Gravesend. [X9474

A.J.S. 1919 6h.p. Combination, complete, new 2 weeks ago, done 120 miles, Cowey speedometer, Klaxon motor horn, tools, spares; £180, or offer.—41, Vicarage Rd., Eastbourne. [1700

A.J.S. 1916 6h.p. Combination, hood, wind screen, spare wheel, 3 new tyres, Lucas dynamo lighting set, electric horn, speedometer; £150.—Shaw, St. Mary's Camp, Dunwich, Suffolk. [1565

A.J.S. Combination, 1914, hood, screen, speedometer, lamps, Klaxon; £105. Also Harley-Davidson, 1914, overhauled, enamelled, and plated; £85.—Pugh, East Barnet Rd., New Barnet. [1860

A.J.S. 1916 Combination, mileage under 5,000, fitted hood, screen, extra seat, electric lights, speedometer, 4 detachable wheels, almost as new; £150, bought car.—S., 95, Acre Lane, Brixton, S.W. [1505

A.J.S. Combination, 1919, just delivered, spare wheel, oversize tyres, screen, stormproof apron, tools; best offer over £175; will drive outfit anywhere.—Styles, Bloxwich, Walsall. [X9651

4h.p. A.J.S. C.B. Combination, 1916, insurance, wind screen, lamps, spares, and tools, complete, low mileage and exceptional condition throughout; London district; offers.—Box L3,523, c/o *The Motor Cycle*. [1848

LATE 1917 6h.p. A.J.S. Combination, lamps, horn, new Easting wind screen, Tan-sad saddle, spare cover and tube, absolutely as new, not done 1,000, seen any time; best offer over £160.—Lee, Outfitter, Axbridge. [X9747

1919 A.J.S. Combination, delivered May 20th, only done 800 miles, lamps, horn, etc., enamelled black, glass screen, hood, cover, spare wheel, perfect condition, does 65 m.p.g.; combination at Staff College, Camberley, Surrey; £180, or near offer.—Reply, Major Cumberbatch, George Hotel, Buxton. [X9497

1919 6h.p. A.J.S. Combination, delivery London, fairly certain next week, front, rear, sidecar lamps, Lucas horn, Watford speedometer, with special A.J.S. hub fitting, all new; insurance; best offer over £190, or part exchange unused 1919 2¾ Douglas.—Young, The Great House, Lodsworth, Petworth, Sussex. [X9530

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

Alldays.

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [001

ALLON.—Quick delivery, single-speed models, limited number.—Parker's, Deansgate, Manchester. [X9682

ALLON, 1919, 2¾h.p., special model, accessories complete; 65 gns.—"Fairhaven," Wavertree Rd., South Woodford. [1201

ALLDAYS Allon, 1916, 2¾h.p., excellent condition and appearance accessories; £50.—1, Macoma Terrace, Plumstead. [1625

ALLDAYS Allon Latest Model de Luxe.—Write, or 'phone, F. J. Atkin, Glenlea, Dulwich Common, S.E.21. Sydenham 1664. [1298

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2931

1919 Allon, perfect, electric horn, Miller head lamp; 55 gns.; buying combination.—Cole, Dentist, 65, Broomwood Rd., Clapham Junction. [1626

1915 Alldays-Matchless 2¾h.p. single-speed 2-stroke, excellent condition, stored 3 years; £38.—George and Dragon, Cosham, Hants. [1815

ALLON, late 1916, 2¾h.p., 2-speed, mechanically perfect, expert examination, complete less gear box; cheap, £40; seen Brentwood.—Box 152, c/o *The Motor Cycle*. [X9223

ALLDAYS Allon, 1919, 2-stroke, single-speed, brand new, just arrived, not ridden; at makers' price, £65; first one secures.—Wilkins, Simpson and Co., 11, Hammersmith Rd., London. [1285

ALLDAYS-Matchless 1916 3½h.p., fitted with new engine, condition as new, lamps, horn, speedometer, tools; £60, or offer; also sidecar, re-upholstered and repainted; £8.—257, Cavendish Rd., Balham, S.W. [1701

ALLON, 1919, very latest model, 2¾h.p., 2-speed, free engine and clutch, fitted with electric lighting set horn, all accessories complete; only done 25 miles, Sensspray and E.I.C., perfect condition and running order; ride away; bought car; 78 gns.—Harrop, Abergele. [1882

Ariel

ARIEL, 2¾h.p. Bosch mag., running order; £20, or near offer.—Flint's Garage, Grays. [1184

CROW Bros., High St., Guildford.—Ariel agents since 1913. 1919 deliveries have begun. [5299

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In pre-war times certain unscrupulous dealers, having no business qualities to commend them to the prospective purchaser of a motor cycle, resorted to the short-sighted policy of secretly cutting prices. In this way they obtained orders from misguided clients who overlooked the fact that "first cost" is not the most important factor for consideration when purchasing a motor cycle.

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Throughout the whole of the twelve years The Eastern Garage Company have been established it has been their inflexible rule to adhere strictly to list prices, and, whilst in pre-war days they relied upon "service to customers" and not price cutting to secure business, they are now equally determined to maintain minimum list prices, and are able to state that not a single new motor cycle has been sold by them at anything but fixed retail price.

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MOTOR CYCLES FOR SALE.

Ariel.

3½h.p. Ariel Combination, in good running order; £65.—73, Lyndhurst Grove, Peckham, S.E. [1219

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [5269

ARIEL Combination, 4h.p., 3-speed, clutch, lamps, splendid condition; £62/10.—Grant, 16, Manson Mews, S. Kensington. [1440

ARIEL, 3½h.p., 2-speed, Bosch, fine machine; bargain, £28.—Speechley, 1, Gunnersbury Lane, Acton Hill, London, W.3. [1463

3½h.p. Ariel C.B. Combination; £65; 3-speed and kick slightly out of order.—19, Wilcox Rd., South Lambeth, London, S.W.8. [1429

ARIEL, 3h.p., splendid engine, Bosch, good tyres, less belt and mudguard, slight repairs; first cheque £11.—The Supply Stores, Strabane. [X9600

2¾h.p. Ariel, coil, engine overhauled, good tyres, new brakes, hooter, battery; first M.O. £15; carriage paid in England.—R.J., 330, St. Peter's St., Ipswich. [X9205

ARIEL Combination, 1916, 6h.p., perfect condition, valuable spares; £140, offer considered.—No. 1, Ashley Villas, Victoria Av., Grappenhall, Cheshire. [X9489

OLD Type Ariel, mag., could be made good mount, £15, or cycle and cash; also old type Triumph engine and carburetter, no tank, £5, or lady's cycle.—Murphy, Stationer, Blackridge. [X9193

BIRKENHEAD.—1919 3½h.p. Ariel, Sunbeam Millford sidecar, Lucas head lamp, electric tail, Klaxon, spare tubes and tools, in first-class order, new April, under 2,000; trial; £135.—Box 145, c/o *The Motor Cycle*. [X9214

6-7h.p. Ariel 1919 Combination, purchased (makers) end of May, done about 1,000 miles, accessories include 3 lamps, horn, Cameo windscreens, luggage carrier to sidecar; any trial; offers.—Mead, 2, Walton Rd., Lower Walton, Warrington. [X9423

3½h.p. Ariel, 3-speed countershaft, kick start, and cane torpedo sidecar, just overhauled, rebushed, and new cyl., sprockets, chain, valves, springs, and cups and cones for wheels fitted; any trial; 90 gns.—G. George, Louvain, Duncombe Rd., Goldalming, Surrey. [1223

ARIEL 4h.p. Combination, 1912, variable gear, decompressor, Bosch mag., B. and B. carburetter, new tyres and belt, lamps, mechanical horn, speedometer, spares, etc., stored 3½ years, and just been overhauled; trial; £45; after 6.30, or Saturday afternoon or Sunday.—Chidcock, 2, Chase Bridge, Whitton Rd., Twickenham, Middlesex. [X9703

Arno

ARNO 1914 3½h.p., mileage under 500 miles, as new, perfect; £50.—Tatham, 73, Westbourne Park Rd., W.2. 'Phone: Park 350. [1792

ARNO, 3½h.p., 1914 T.T. model, racing cams, good running order, new lamps, everything complete £38.—Perren, 6, Neeld Crescent, Hendon. [1266

Auto-Wheels.

AUTO-WHEEL, splendid order; £14; seen running.—93, High St., Northfleet, Kent. [1121

AUTO-WHEELS, 3 models, £12 to £15.—C. H. Parkes and Co., 27, High St., Notting Hill Gate, London. [1805

WALL, 1915 Model de Luxe, splendid condition with shock absorber; trial; £15.—Whitcher, Pickworth, Stamford. [X920

AUTO-WHEEL, model de luxe, and Premier cycle £25; splendid condition, good hill-climber; bargain.—Alderton, 10, West St., Reigate. [115

AUTO-WHEEL de Luxe, used summer 1914 only with or without lady's special bicycle, perfect condition.—Box L3,486, c/o *The Motor Cycle*. [134

Bat.

BAT-J.A.P., 4h.p. Bosch, B. and B., pull anything, ride away, £32; sidecar, £4/10.—Bartlett, Milton-on-Sea, Hants. [127

BAT-J.A.P. Combination, 8h.p., 2-speed, clutch, W.P., Bosch mag., P. and H. lamps, speedometer and spares; £80; perfect running order.—Elaine Grove Gospel Oak, N.W.5. [140

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and can give early deliveries. [530

STANLEY RUSSELL Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [61

BLACKBURNE.—Sole agents. Book now for early delivery.—Chandler, Reyre and Williams, Sun S. Ritchin. [09

BLACKBURNE, 1914, 4h.p., Sturmey-Archer 3-speed gear box, chain-cum-belt, accessories, Stream coach sidecar; offers over £100.—Ramm, Godstone, Surrey. [X95

MOTOR CYCLES FOR SALE.

Blackburne.

ONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside rade, North Finchley. [2932

LACKBURN 1919 4h.p., single-cyl., 3-speed, counter-shaft, clutch, and kick starter, used for few miles only.—Elce and Co., 15-16, Bishopsgate .. Camomile St., E.C.3. [0552

LACKBURNE, 1916, 3½h.p., 3-speed Sturmey-Archer countershaft gear, h.b. clutch, large Lucas lp set, tail lamp, Lucas horn, tyres good, belt and in practically new, enamel and plating excellent, ry conceivable spare, complete tool kit, fitted with 19 Millford sidecar, bought new fortnight ago; £100 h, no offers.—W. Austen Fell-Smith, Deer Park, niton, Devon. [X9612

Blumfield.

LUMFIELD, 3½h.p., fixed, 1912-13, semi-T.T., Simms mag., Hutchinsons, good running order; er 4; £35.—43, Lickhill Rd., Stourport. [X9713

Bradbury.

RADBURY.—Order now for early delivery.—Agents, Bright and Hayles, 78, Church St., Camberwell, E. [1759

h.p. Bradbury Combination, 2-speed, kick start, for 2-speed lightweight; sell £60.—Old Hall, Coton, ncaster. [X9805

4h.p. 2-speed Free Engine Bradbury and Sidecar, gnod condition; trial; £55, or near.—Boon, tfield Peverel, Essex. [1386

h.p. Bradbury Motor Cycle, complete, less magneto and carburetter; bargain, £12.—3, Oakland Ter-e, Ross, Herefordshire. [X9408

RADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhamp-n St., Walsall. Tel.: 444. [5606

RADBURY.—Immediate delivery, 1919, 6h.p., hand and foot controlled clutch, solo or combination. Parker's, Bradshawgate, Bolton. [X9684

RADBURY, 4h.p., T.T., N.S.U. 2-speed, free engine, new belt, tyres as new, Bosch mag.; £35, ir offer.—Davy, 55, Newton Rd., Faversham. [1244

RADBURY 4h.p. Coachbuilt Underslung Combination, 2-speed clutch, kick start, speedometer, res; trial; £70; after 6 p.m.—15, Caird St., Queen's rk, W.10. [1797

RADBURY, 4h.p., N.S.U. gear, wicker sidecar, new Dunlop back tyre and belt, lamps, tools, and res, splendid condition; £48; ride away.—66, Recrea-n Rd., Tilehurst, Reading. [1251

914 4h.p. Bradbury, 3-speed, lamps, horn, also coachbuilt sidecar, all in perfect condition; any ll; £68, or exchange lightweight, cash adjustments. 71, Gulson Rd., Coventry. [X9854

RADBURY 1913-14 4h.p., Brampton multi gear, kick start, Bosch mag., Dunlop studded tyres, ps, horn, etc., just overhanled, any trial; £47; ker sidecar for same, £5; exchanges.—R. D. Varty, ndersley, Essex. [1574

RADBURY Late 1915 6h.p. C.B. Combination, 3 speeds, free engine, kick start, countershaft, de-hable back wheel, Binks carburetter, Bosch mag., lamps, generators, foot pump, spares, thoroughly rhauled by makers this year, not run for 2 years; t offer secures; war injury cause of sale.—4, Edgeley d, Stockport. [X9794

Brough

ROUGH, 3-speed, in good running order, new belt and back tyre, lamps, and horn; £50.—Ball, re, Somerset. [X9739

OUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., ial Dealers, Liverpool-Manchester. [7039

ROUGH, 3½h.p., horizontal twin, T.T., special engine, fast machine, for immediate sale, owner ng delivery of new combination; £65.—Corner se, Links Rd., Epsom. [1434

Brown.

h.p. 3-speed Brown, B. and B., Bosch, lamps; £40.—27, London Rd., St. Albans. [1821

ROWN, 3½h.p., perfect running condition; £26, bargain.—Fox, c/o Charts, Fairgreen, Mitcham. [1147

B.S.A.

S.A., 1919, chain-cum-belt, done 250 miles; £100.—46, Cottingham Rd., Hull. [X9204

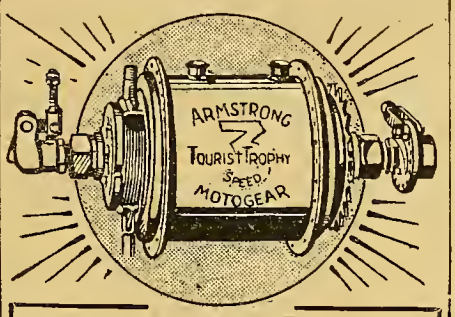
19 B.S.A., Model K, ridden few miles; offers over £90.—Hough, Leamore, Walsall. [X9402

S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5602

S.A.—Order immediately, second-hand machines in stock.—Parker's, Deansgate, Manchester. [X9683

S.A. 1917 Combination, all accessories, as new; £100; any time.—C.S., 14, Swaton Rd., Bow, E.3. [1602

S.A., 3½h.p., 2-speed, chain-cum-belt; £30.—After 6, E., 49, Crescent Place, Hackney Rd., London, N. [X9201



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B.S.A.

4¼h.p. B.S.A. 2-speed combination, 1913; £65; all on.—19, Wilcox Rd., South Lambeth, London, S.W.8. [1428

B.S.A. Combination, 1913, 3½h.p., fine appearance; best offer over £70; after 6 p.m.—95, King St., Maidenhead. [1817

B.S.A., 3½h.p., good condition, free engine, Bosch, and B. and B.; £58.—143, Keeton's Rd., Bermondsey. [X9769

1915¼ B.S.A., 3-speed countershaft, faultless condition; 76 gns.—82, Sterndale Rd., Hammersmith, W. [1385

B.S.A. 1914 T.T. Model, lamps, horn, etc., very fast, splendid condition; £50.—1, The Rise, Crayford, Kent. [1788

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2919

1917 B.S.A., 4¼h.p., model K, countershaft, excellent condition, what offers.—Tudor, Midland Bank, Carnarvon. [X9410

£65; 1915 B.S.A. 4¼h.p., countershaft 3-speed, K.S., clutch, perfect mechanical condition.—Gray, 57, Queen's Rd., Watford. [X9809

1914 B.S.A., 3½h.p., recently overhauled, and in excellent condition; £45, no offers.—Wood, Station Rd., Okehampton. [1586

1914 T.T. B.S.A., new condition, mileage 3,600, Cowey, horn, tools; £65.—Harry Fielding, Tobacconist, Hebden Bridge. [X9723

B.S.A., 1917, 4¼h.p., model K, chain, belt, Millford C.B. sidecar, lamps, etc., good condition; £95.—Wells, Furnells Wharf Rd., Rochester. [1128

B.S.A. 4¼h.p., 1915, Campion coachbuilt sidecar, 3-speed, new chain, running order; Nottingham; 85 gns.—Box L3,512, c/o *The Motor Cycle*. [1834

B.S.A., 3½h.p., 2-speed, clutch, pedal start, nearly new tyres, lamps and horn; bargain, first £42 secures.—Kirby, North St., Bourne, Lincs. [X9473

B.S.A., 1915, 4¼h.p., 3-speed, kick, countershaft, all-chain drive, lamps, tools, tyres and machine very good; £70, no offers.—1, Kenlor Rd., Tooting. [1403

B.S.A., 1914, 4¼h.p., 2-speed, coachbuilt sidecar, good condition, ride away; £75.—129, Widmore Rd., Bromley, Kent. 'Phone: 351 Bromley. [1110

B.S.A. 4¼h.p., 3 speeds, countershaft, chain and belt, late model, perfect condition, everything as new; best offer.—20, Valnay St., Tooting, S.W. [1477

B.S.A., 1914, Model K, and wicker sidecar, 3-speed countershaft, perfect condition; £85, no offers; any time Sunday.—Harrison, 216, Drakefell Rd., Brockley, S.E.4. [1159

B.S.A. Coachbuilt Combination, 3-speed, countershaft, wind screen, lamps, speedometer, bought March, 1915; £92; after 6 o'clock.—36, David Lane, Shadwell. [1475

B.S.A. 1916-17 4¼h.p., 3-speed countershaft, overhauled, chain-cum-belt, excellent condition; £80.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1774

B.S.A. 1917 4¼h.p. Coachbuilt Combination, 3 speeds, countershaft, bead and rear lamps, horn, excellent condition; Yorkshire; £115.—Box 169, c/o *The Motor Cycle*. [X9734

B.S.A., 1913, chain driven, 2-speed, free engine; £65; 50 mile trial ride given; also long goods carrier to fit same chassis £2 extra.—F. Applebee, 9, Church Hill, Walthamstow. [1511

B.S.A., Model K, 4¼h.p., 1916, equal new, unused 2 years, Canoelet sidecar, Cameo windscreen, 100 gns., no offers; seen after 6.—Tibbetts, Powke Lane, Blackheath, Birmingham. [1359

B.S.A. The Birmingham City Agents and B.S.A. Specialists, County Cycle and Motor Co., 307 and 308, Broad St. All replacements in stock. Tel.: Comocyco, Birmingham. [6311

B.S.A. 4¼h.p. Motor Cycle Combination for immediate delivery, new and never ridden; price £137.—Apply, Fraser, c/o Emanuel and Sons, 13, Gt. George St., Manchester Sq., W. [1218

B.S.A. 1916 4¼h.p. Coachbuilt Combination, 3-speed countershaft, new tyres, lamps, mechanical horn, many spares, excellent condition; £25; any trial.—225, Nantwich Rd., Crewe. [9955

1916 B.S.A. Countershaft Combination, as new, fully equipped, £20 worth accessories, guaranteed perfect; any trial; 105 gns., or nearest.—17, Marlborough Crescent, Bedford Park. [1273

1915-16 B.S.A., Model K, enamelled, overhauled makers April, 1919, 1919 sidecar, wind screen, lamps, specdometer, spares, new condition; £115.—12, St. Michael's Terrace, Wood Green. [1302

B.S.A. 4¼h.p. 1919, model K, Palmer cord tyres, in perfect tune, done 500 miles.—Inspect any time at School House, Stoke Bishop, Bristol, on Avonmouth 'bus route, alight Stoke Druid; or write to J.O.S. [X9312

4¼h.p. B.S.A., 1914, 3-speed C.S. gear, C.B. sidecar, Jones, Lucas lamps, Stewart warner, tyres sound; 75 gns.—Seen before 6 p.m., 25, Sedgwick Rd., Leyton, E.; after, 82, Fallow Court Av., Finchley, N. [1604

MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A., 4¼h.p., Millford sidecar, 3-speed countershaft gear, oil-chain drive, kick start, Stewart speedometer, lamps, horn, new condition; nearest offer to £130; any evening after 6.—W. M., 69, St. Mary's Rd., Ilford. [1392

B.S.A. 3½h.p., 1912, 2-speed, free engine clutch, Bosch mag., heavy Dunlops, Watsonian lightweight sidecar, lamps, tools, etc, a very reliable combination; any trial; £50.—Sgt. Salfe, Seaplane Base, Westgate-on-Sea. [1691

B.S.A. 1914 4¼h.p. Combination, 2-speed, F.E. kick-starter, all chain drive, head lamp, speedometer, horn, watch, tools, good running order; 68 gns. Selling reason obtaining new machine. Seen after 6.30.—43 Guildford Av., Surbiton. [1446

B.S.A., 1916, 4¼h.p., 3-speed countershaft, C. and B., with Millford sporting cane sidecar, Cowey, new tyres all wheels, spare belt in case, tube, valves, chain links, sprocket, etc., excellent mechanical condition; £100.—Barge, 24, Beaumont St., Oxford. (Before 6, or by appointment.) [1801

B.S.A. 4¼h.p., 1915, Canoelet coach, countershaft combination, chain-cum-belt, 3-speed clutch, kick start, 3 lamps, 2 generators, horn, mirror, speedometer, and extra carrier, mechanism, plating, and enamel O.K., perfect running order; £94.—48, Prince George Rd., Dalston, N. [1384

B.S.A., 4¼h.p., 1917, chain-belt, lamps, horn, Watford speedometer, mirror, switch, knee grips, watch, mileage 4,500, fitted with 1919 Mills-Fulford Corvette coachbuilt sidecar, Easting wind screen, excellent condition and order, tools, etc.; £126, lowest.—Seen after 7 p.m., Drew, Instow, The Gardens, West Harrow. [1312

Calcott

CALCOTT Lightweight, smart, fast machine, splendid condition throughout, plated handles and rims, lighting set, horn, tools; £40.—Murphy, Eynesbury, St. Neots, Hunts. [X9643

Calthorpe.

CALTHORPE Junior, 2-speed, good tyres and condition; accept £29/10.—E., 277, Camberwell Rd., S.E. [1782

CALTHORPE Junior. 2-speed, nice little machine; £26, or offer.—H. Deering, Forresfield, by Caldercruix. [X9192

CALTHORPE Junior, 1914, 2h.p., 2-speeds, easy starter, climb anything; £32.—23, Victoria Rd., Bexley. [1307

2¾h.p. Calthorpe-Jap, believed 1916, Enfield 2-speed gear; £40; good running order.—Regards, Leather Merchants, Barnsley. [1439

CALTHORPE, 2h.p., Enfield 2-speed gear, lamps, perfect condition; £42/10.—Grant, 16, Manson Mews, S. Kensington. [1441

CALTHORPE, 2¼h.p. Precision, 2-speed, free engine, smart appearance, fine running order; £29.—16, Howard St., Loughborough. [X9705

CALTHORPE 2¾h.p. 2-speed 2-stroke, lamps, horn, and all accessories; £45, or near offer.—Seen 7 to 8.30 p.m., 3, The Crescent, Surbiton. [1102

CALTHORPE-PRECISION 4-stroke, 2 speeds, B. and B., nearly new Dixie mag., slight adjustment necessary; £30.—6, Bulstrode Av., Hounslow. [1136

CALTHORPE Junior, 1915, 2-speed, F.E., splendid condition, ride away; £35; accept gent's 3-speed cycle part exchange.—87, Truro Rd., Wood Green. [1706

CALTHORPE, 2-stroke, latest model, as new, not ridden 100 miles, Enfield 2-speed, free engine; first offer over £50 accepted; bargain.—47, Gipsy Hill, S.E. [1178

CALTHORPE-J.A.P., 1916, 2¾h.p., excellent condition, only done 500 miles; £40, or exchange for Zenith combination and cash.—9, Millbrook Rd., Brixton, S.W. [1460

1917 2¾h.p. Calthorpe, with special J.A.P. engine, 2-speed clutch, P. and H. lamps, horn, in splendid condition, extremely fast; £50.—85, Wiverton Rd., Sydenham, S.W. [1796

CALTHORPE, 1916, 2¾h.p. J.A.P. engine, Enfield 2-speed clutch, Palmer Cord and Avon tyres, lamps, and horn, excellent condition, just overhauled; £46; exchanges.—R. D. Varty, Thundersley, Essex. [1575

Campion.

1916 Campion, Villiers engine, lamps, etc.; perfect condition.—The Forge, Cross St., Farnborough, Hants. [1716

CAMPION-J.A.P., 1914, 4h.p., waterproof Bosch, 3 speeds, accessories; £49, offer.—49, Well St., Hackney. [1812

CAMPION-J.A.P. 4h.p. 1917 Combination, 3-speed gear, countershaft, kick start, like new; £90.—231, Covoutry Rd., Red Hill, Yardley, Birmingham. [X9418

1917 Campion-Jap, 2½h.p., 2-speed, chain-cum-belt, lamps, horn, like new; best offer over £40.—Joseph Chappell, Marlboro' Rd., East Kirkby, Notts. [X9197

1914 Campion-Jap 6h.p. Twin Combination, countershaft, splendid machine, all on, any trial given, only wants seeing, ready for any tour; 106 gns., near offer considered.—7, Richmond Rd., Ilford. [1351

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"Flash" 4½ volt Battery 12/6
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"Mignon" 4½ volt Battery smaller size, at Special Price due to cancellation of Government Contracts. 3/9 each.

H.A.H. MEASURING INSTRUMENTS.

Fig. 150.
0/7 volts 12/-
0/15 ,, ,,
0/15 amps. ,,
0/25 ,, ,,

Fig. 133, Combined.
0/7 volts, 0/15 amps. } 1/5-
0/15 volts, 0/15 amps. } 15/-

Fig. 150.

Dashboard Type.
Fig. 160 0/7 volts 0/15 volts 0/25 volts 15/6.
,, 161 ,, amps- ,, amps. ,, amps. 15/6.

H.A.H. INSPECTION LAMPS.

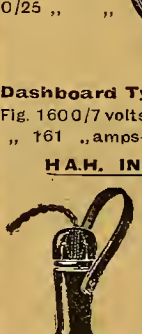

Fig. 358.
Large Size Price 8/6 each.

Fig. 359.
All brass model smaller size with hook. Less bulb & glass Price 9/- each.

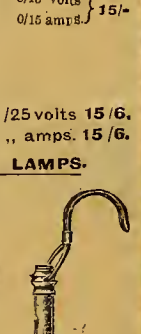

Fig 359

Fig. 358.

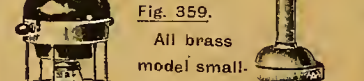

Fig. 313. H.A.H. Oil Syringe. Price 3/-.

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Note.—Postage extra on all the above.
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A. H. HUNT, 115-117, Cannon St., LONDON, E.C.4.

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CAMPION, twin J.A.P. 6h.p., 1915, free engine, coachbuilt sidecar, only done 3,000 miles, perfect running condition, speedometer, all accessories; owner buying car; £120, bargain.—McKinnell, Wood Hill, Northampton. [X9469

1915 Campion-Jap 8h.p. Combination, unused during war, all-chain drive, nearly new tyres (700×80), speedometer, 3 lamps, horn, etc., de luxe sidecar, hood, screen, etc., smart, powerful outfit; £135.—Lead. 23, Wellclose Mount, Leeds. [X9568

CAMPION 6-8h.p. Twin C.B. Combination, J.A.P. engine, powerful countershaft gear and kick start, take 3 or 4 up any hill, enamelled cream, green leather car, lighting set, excellent condition; £120.—30, Winchcombe St., Cheltenham. [X9614

CAMPION-J.A.P. 1915 8h.p. Countershaft, kick start, with Corocet coachbuilt sidecar, speedometer, P. and H. lighting set, horn, etc., tyres in new condition, very powerful machine; trial with owner; £135.—Brodie, Felixstowe Beach Station, 6 p.m., Thursday or Friday. [1539

Centaur.

2¾h.p. Centaur Twin, perfect condition, tyres nearly new; £35.—Scotlands, Manor Rd., Stoughton, Guildford. [X9520

CENTAUR 3½h.p., fine condition, lamps, tyres almost new, all accessories; £35.—Clifford, 119, Villa St., Walworth, S.E. [1735

CENTAUR, 1914, 4h.p., 2 speeds, F.E., countershaft, good condition, suitable for sidecar; bargain, £33.—8, Bishop's Park Rd., Fulham. [1249

Chater-Jap.

CHATER-J.A.P., 4h.p., new cyl., piston, rings, engine rebushed, lamp, horn, etc.; condition perfect; 40 gns.; carriage paid.—Curry, Brook St., Dundalk, Ireland. [X9318

CHATER-J.A.P. Combination, 7-9h.p., 3-speed gear box, spring frame, large family sidecar, in excellent condition; will accept £87/10, or exchange part payment car.—E., 277, Camberwell Rd., S.E.5. [1784

Chater-Lea

2¾h.p. Chater-Lea, F.N. magneto, B. and B., ride away; £12/10.—Geo. Purdon, Girvan. [X9585

SOUTH Lancashire Only.—Chater-Lea enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7040

CHATER-LEA 6h.p. Twin, good condition, needs timing only; £30, or exchange lightweight.—After 6 p.m., 68, Orchard Rd., Dorking. [X9481

CHATER-LEA, 1916, 8h.p., 3-speed, kick start, Bosch, Lucas horn, lamps, speedometer, Mills-Fulford twin sidecar, perfect; £145.—S. Brewer, Finsbury, Oxford Rd., Clacton-on-Sea. [X9401

3½h.p. Chater-Lea Combination, Fairfir engine, C.A.V., mag., Auto carburetter, Millford radia. C.B. sidecar, perfect running order; £40. After 7 p.m. —1a, Ranelagh Rd., Wembley, Middlesex. [1448

8h.p. Chater-Lea C.B. Combination, 3-speed, Bosch mag., B.B. carburetter, 3 lamps, speedometer new tubes, back tyres, steel stud, new, etc; no offers after 7 p.m.—2, Crouden Street, Islington, N.1. [X964

3½h.p. Combination, Chater-Lea frame, J.A.P. engine Bosch mag., B. and B., N.S.U. gear, tyres good good running order, ride away; as standing, £40 cash after 6 p.m.—Barkham, 1, Albert Rd., Romford, Essex [109

Chater-Lea-Jap

CHATER-LEA, 8h.p. J.A.P., Canoelet sidecar, 3-speed and clutch, handle start; £85.—5, Rossiter Rd. Balham, S.W. [122

CHATER-LEA-J.A.P., 2-seater sidecar, and pillion ride away, like new; £115, quick sale.—38, Angel Rd., Brixton Rd. [131

4h.p. Chater-Lea-Jap, in splendid condition, good tyres and appearance, very fast and powerful £35.—The Firs, Broomfield Rd., Chelmsford. [X966

Chater-Lea-Peugeot.

CHATER-LEA-PEUGEOT 5-6h.p. Twin Combination, new tyres, Sturmey-Archer 3-speed, Bosch B. and B., coachbuilt sidecar, complete with lamp hood, wind screen, horn, speedometer, ready to ride away; first 65 gns. secures.—Smith, 116, Pinhoe Rd Exeter. [X957

Clyno.

CLYNO 6-8h.p. Combination, 1916 model; £115. 234, Brixton Rd., S.W.9. [160

GROVER, Smith, and Willis, Basingstoke, Clyno Agents.—Deliveries in strict rotation; order no [57

CROW Bros., Bigh St., Guildford, West Surrey agents for the new Clyno.—Order now for ear delivery. [90

2½h.p. Clyno 2-stroke, 2-speed, H.B. clutch, tyres and enamelling as new, lamps, horn, tool £30.—J. Hebden and Son, St. James' St., Burnley. [16

CLYNO Combinations and Lightweights. Write 'phone, or call for particulars of deliveries. Kays, 8, Bond St., and 116-122, Pitshanger Lane Ealing. 'Phone; 553 Ealing. [11

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CLYNO Coachbuilt Combination, 2-speed countershaft, clutch, kick start, lamps, £30 overhaul, ading new tyres, splendidly equipped; 75 gns.—nett, 11, Umfreville Rd., Harringay. [1567

CLYNO Coachbuilt Combinatioo, 1913-14, 6h.p., 3-speed, kick start, chain drive, interchangeable els, stored 3½ years, all perfect order, lamps, tools, , spares; £100.—Haworthia, Chase, Coulsdon, rey, or City 3917. [1605

Connaught.

1919 Connaught 2-stroke, 2¾h.p., not done 300 miles; £45.—Taylor, Patmos, Todmorden. [1568

CONNAUGHT 2¾h.p., absolutely as new, all accessories; a bargain, £35.—Kinmel Park Garage, r Rhyl. [1350

COVE Eogineering Works, Davigdor Rd.—Sole district Connaught agents; deliveries in rotation; all essories and repairs. [7961

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3¼h.p. Coulson B in stock; £75.—J. Hebden and Son, St. James' St., Burnley. [1652

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., cial Dealers, Liverpool-Manchester. [7041

Coventry Eagle.

3¼h.p. Coventry Eagle, 2-speed, Bosch, good condition; £45.—Lynmead, Lattice Barn, Ipswich. [1525

COVENTRY EAGLE, 3¾h.p. Villiers; what offers?—Ericholme, Neuhaw Rd., Addlestone, Surrey. [1334

COVENTRY Eagle, 1913-1914, 2-speed, splendid condition, will take sidecar anywhere; £40.—Ludlk, Luston, Leominster. [X9765

Dalm

1916 Dalm 3h.p. 2-speed 2-stroke, take two up any hill; £45.—Furniture Shop, 54, Pritchard's ., Hackney Rd., London. [1534

De Dion.

DE DION, 2¾h.p., Bosch, good mechanical condition, new Dunlop belt; £17, lowest.—Tugela, Warwick , Olton, Birmingham. [X9545

DE DION, 4h.p., B. and B., U.H. magneto, perfect condition, speedy, ride away; £35; after 7.—232, adway, Bexleyheath, Kent. [1241

Diamond.

DIAMOND 1919 2-stroke, complete with Lucas lighting set, Lucas horn, special footboards, only e 200 miles, guaranteed perfect in every respect complete with tools; £55; Northumberland.— 171, c/o *The Motor Cycle*. [X9646

Dot.

DOT-J.A.P., 10h.p., 90 bore, 2-speed Jardine, clutch, fastest solo 'bus in London; £80.—5, Boulevard, h Rd., Balham, S.W. [1223

Douglas.

¼h.p. Douglas, 1915, 2-speed; £50.—9, Church Rd., Willesden, N.W. [1667

DOUGLAS 1915 2¾h.p., 2-speed; £52.—Adams, 8, Meadway, Golder's Green. [1409

1916 4h.p. Douglas; £80; new condition.—18, Wix's Lane, Lavender Hill, S.W. [1612

NEW Douglas Motor Cycle, 2¾h.p., ready for the road; £70.—84, Tulse Hill, S.W.2. [1320

DOUGLAS 2¾h.p., 1914, 2 speeds, good condition; £48.—11, Winifred Rd., Erith, Kent. [X9660

DOUGLAS, 2¾h.p., 2 apeeds; ride away; £45.—Hales, 212, St. Paul's Rd., Highbury, N.5. [1864

DOUGLAS, 1915, 2-speed, tyres excellent; £53.—5, Eglon Mews, Primrose Hill, N.W.1. [1642

4h.p. Douglas Combination, 3-speed, about 1918, as new; £110.—7, Gibson Sq., Islington, N.1. [1795

1915 Douglas, new condition, lamps, etc.; best offer over £55.—10, West End Lane, Kilburn. [1617

DOUGLAS 2¾h.p., 1915, 2-speed; £47.—Stevens, 184, Pentonville Rd., King's Cross, N.W. [1482

DOUGLAS Combination, 4h.p., 1919, just delivered; offers.—Box 159, c/o *The Motor Cycle*. [X9558

DOUGLAS, 1914, 2¾h.p., 2-speed, fast, complete; 50 gns., lowest.—21, Fordel Rd., Catford. [1177

DOUGLAS, 1915, 2¾h.p., 2-speed, excellent condition; £60.—8, Bishop's Park Rd., Fulham. [1248

DOUGLAS 2¾h.p., 2-speed, as new; 60 gns.; seen after 7.—59, Blenheim Rd., Walthamstow. [1304

1914 Douglas, 2¾h.p., 2-speed, Bosch mag., splendid condition; £59.—5, Station Rd., Shortlands, Kent. [1294

1919, May, 4h.p. Douglas combination; £125.—M.N.C., Fair View, Coggeshall Rd., Braintree. X9849

DOUGLAS.—Now booking, all models for 1919-20 deliveries.—Parker's, Bradshawgate, Bolton. [X9685

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DOUGLAS.—Now delivering new 1919 model 4h.p. combination; £123.—Moffat, Yeovil. 'Phone 50. [1103

2¾h.p. Douglas, 2-speed, lamps, horn, tools; 70 gns. —J. Hebden and Son, St. James' St., Burnley. [1653

1919 W.D. Model Douglas, 2¾h.p., done under 20 miles; £95.—Allen, 33, Huskisson St., Liverpool. [X9548

DOUGLAS 2¾h.p., speeds, new; best offer over £70; after 6.—22, Riseldine Rd., Honor Oak Park, S.E. [1679

DOUGLAS 1919 4h.p. Combination, new July, perfect; £150.—Arthur James and Co., Queen Sq., Bristol. [X9319

DOUGLAS, 2¾h.p., discs, long exhaust, just uncrated; £75.—Rose and Young, Willow Rd., Hampstead, N.W. [1399

DOUGLAS 1915 2¾h.p., 2-speed, lamp sets, horo, etc.; £65.—W., 28, Frant Rd., Thornton Heath, Surrey. [1703

DOUGLAS, 2¾h.p., 2-speed, perfect; 40 gns.—After 6, Saturday 3, Bentley, 77, Lotting Rd., Barnsbury, N. [1636

DOUGLAS, 1915, 2¾h.p., 2-speed, smart running order; £50, near offer.—Acacia, Centre Av., Acton (side door). [1861

1915 Douglas Combination, good condition, just overhauled; £110.—2, Monknotte Rd., Crouch End, N.8. [X9759

DOUGLAS, 2¾h.p., 1912 model, in perfect order, just overhauled; £35, a bargain.—Apply, Anning, Forest View, Chingford. [1288

2¾h.p. Douglas, new W.D. model, run 50 miles, perfect, with horn; 73 gns.—54, Wharncliffe Rd., Loughborough. [X9722

DOUGLAS Late 1914 2¾h.p., 2-speed, in fine condition, fast machine, ride away; £50.—4, Byron Av., Sutton, Surrey. [1367

DOUGLAS 1919 4h.p. Combination, done under 100; offers.—Letters only, Mason, c/o 49, Worcester Cross, Kidderminster. [X9738

DOUGLAS, 2¾h.p., 1913, sound machine, excellent condition, lamps, guards, spares.—Hewes, 8, Birchfield Rd., Northampton. [X9211

2¾h.p. 1914 Douglas, kick start, clutch, Bosch, splendid condition, footrests, 2-speed; 50 gns.—Banes, Rhosmore, Potton, Beds. [X9216

DOUGLAS 1915 2¾h.p., in excellent order; £55.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1771

DOUGLAS, 1915, 2-speed, T.T., in fine running order; £55; first cheque secures.—L. M. Bull, 44, Hill's Rd., Cambridge. [1688

DOUGLAS, 1914, 2¾h.p., 2-speed, excellent condition, just overhauled; £52/10.—Holker, 103, Hough Lane, Tyldesley, Lancs. [X9621

SEVERAL 2¾h.p. Douglases, want attention, but with mags. and carburetters; £35 each.—Hole, 129, Park Lane, Carshalton. [1531

DOUGLAS 2¾h.p., good condition, good tyres, new bush, pillion seat, ride away; £26.—Seen at 64, Bellamy St., near Balham Hill. [1561

DOUGLAS, 2-speed, purchased 1914, brand new tyres and belt, perfect condition; £52/10.—Wilcox, 1, Kiog's Rd., St. Pancras. [1322

DOUGLAS 2¾h.p 1913 T.T., just rebushed, very fast, lamp, horn, must sell; 38 gns.; after 6 p.m.—Oaklands, Grove Park, S.E.12. [1362

1919 New 4h.p. Douglas Combination, done 500 miles; best offer over £120.—Thomas, 127, Commercial St., Maesteg, South Wales. [X9740

1919 Douglas Sidecar Outfit, new from works, new type clutch, delivered this week; £160.—Tanks, 16, Hesper Mews, Earl's Court, S.W. [1765

DOUGLAS, 2¾h.p., 2-speed, lamps, all accessories, new tyres, in excellent condition; trial; bargain, £48.—16, Trinity Sq., Brixton, S.W. [1415

LATE 1914 2-speed Douglas, run 200 since war, first-class appearance and running order; any trial; £52/10.—51, Church St., Wolverton. [1813

DOUGLAS, 1919, 2¾h.p., with complete new accessories; best offer over £65; seen after 7 p.m.—3, Victoria Rd., Sidcup. 'Phone: 239. [1806

DOUGLAS, 2¾h.p., 2-speed, lamps, new tyres; splendid condition; £45, or near; seen any time.—The Haven, 120, Sutherland Rd., West Croydon. [1723

DOUGLAS, 2¾h.p., 1916, excellent machine, all accessories, tyres, tubes new, very little used; £65.—Box L3,485, c/o *The Motor Cycle*. [1279

DOUGLAS and Sidecar, 3½h.p., late 1914, hardly used during war, excellent condition.—Offers to Bottomley, 34, Montalt Rd., Woodford Green. [1787

DOUGLAS, nearly new, 2¾h.p., Colonial model, 3 speeds, lamps, Klaxon, speedometer, mileage 800; £60.—48, Prince George Rd., Dalston, N. [1383

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Douglas

DOUGLAS 1915 2¾h.p., 2-speed, semi T.T., all black, good order; £50, or near offer; Midland district.—Box 162, c/o *The Motor Cycle.* [X9666

DOUGLAS 2¾h.p., 1914, countershaft, single-speed, unused 3 years, splendid condition; best offer over £35.—Lines, Union House, Foleshill, Coventry. [X9857

DOUGLAS 2¾h.p. 2-speed, 1915, excellent condition, very fast, 2 new tyres and tubes, lamps, horn; £55.—Ludwick, Luston, Leominster. [X9764

1919 Douglas 4h.p. Combination, post-war finish, new mid-July, run 400 miles; £150, or nearest offer.—'Phone: Croydon 496. Garage extension. [1295

GIBB, Douglas specialist, Gloucester, solicits your enquiries for anything concerning Douglases; try him for the part you require. 'Phone: 852. [6340

DOUGLAS, 2¾h.p., single, running order, tyres nearly new; £22/10; quick sale, bargain.—82a, Bedford Rd., S.W. (near Clapham Rd. Station). After 7. [1194

4h.p. Douglas, late model, 3-speed gear box, in excellent running condition; first cheque £75 secures.—15, Bristol Mews, Warwick Av., W.9. [1611

DOUGLAS 1914 2¾h.p., Bosch, T.T., footboards, £50; also set of Douglas K.S. and clutch parts; offers.—A.B., 70, King's Rd., Camden Town, N.W.1. [1469

2¾h.p. Douglas's.—Write for pamphlets, with specification and price. It is just possible we may be able to deliver, and we solicit your enquiries.—Robinson's, below.

4h.p. Douglas's.—Write for pamphlets with specification and price. It is just possible we may be able to deliver, and we solicit your enquiries.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [1769

DOUGLAS 4h.p. 1919 Combination, just arrived, new pattern clutch; 146 gns., or close offer.—Write, Hamilton, Smith's Bookstall, Ealing Common Station, W.5. [X9570

DOUGLAS 2¾h.p., 1915, perfect condition, with Bosch mag., Amac, and all Bowden controls complete; best offer over £20.—E.B., 18, Thomas St., E.14. [1726

DOUGLAS 1916 4h.p. Coachbuilt Combination, overhauled and in fine running order; £100.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1772

1914 Douglas, 2¾h.p., 2-speed, just enamelled and plated, new Dunlop, spare belt, valves and springs, footboards; £48.—19, Woodlands Park Rd., Harringay, London. [1554

DOUGLAS, 2¾h.p., 1919, W.D. model, buffer springs, heavy tyres, splendid running condition, practically new, with all accessories, plus many spare parts; £80.—Boyd, Keble College, Oxford. [1571

DOUGLAS, 1914, 2¾h.p., 2-speed, in splendid running order, Bosch magneto, fully equipped; £45.—14, Leamington Av. Hoe St., Walthamstow, E.17. [1300

DOUGLAS 4h.p. Combination, 1919, 2 weeks old, specially fast machine, lamps, Klaxon, etc.; best offer over £160.—13, Claremont Gardens, Surbiton, Surrey. [X9522

DOUGLAS, 2¾h.p., 1911, Bosch mag., single speed, recently overhauled, enamel good, economical; £26, no offers; ride away.—Lord, Ruckinge, Ashford, Kent. [X9565

DOUGLAS 1919 4h.p. Combination, as delivered by makers end July, under 100 miles, perfect; owner called away; £160, near offer.—46, Wyndham Rd., Salisbury. [X9190

1919 Douglas 4h.p. Combination, mileage 300, 2 spare tubes, insurance, motor suit; £148 cash, no offers; letters only.—Thompson, St. Marie's Hotel, Purley, Surrey. [1089

DOUGLAS, 2¾h.p., W.D. model, brand new, 4 spare valves, complete, belt and chain; best offer over £75.—Hall Green Motors, Ltd., Stratford Rd., Hall Green, Birmingham. [X9602

DOUGLAS Combination, 1919, only done 500 miles, lamps, horn, and extra tyre, also insurance; complete, £155, bargain.—Apply, Barrett, 207, Shooters Hill Rd., Blackheath, S.E. [X9438

DOUGLAS, 1914, 2¾h.p., engine just overhauled, new tyres, racing bars, speedometer, all accessories; stored during war, very fine machine; £60.—Smith, Richmond House, Plaistow, E.13. [X9555

DOUGLAS, 2¾h.p., 1912, idle during war, rebored, new pistons, rebushed, etc., by makers, new tyres, runs perfectly; £35; letters only to view.—P. Charleston, 14, Elsham Rd., Kensington, W.14. [1426

DOUGLAS, 1919, 2¾h.p., W.D., not ridden 500 miles, perfect tune, as new, Lucas horn, large head lamp, tail lamp, Stewart speedometer, trip, spares; £90.—Luyano, Old Rd., Frinton-on-Sea. [1455

DOUGLAS, 1916, in new condition, 2-speed, free engine, good tyres, belt, toolkit, speedometer, generator, reflector mirror, all complete; a real good 'bus; 66 gns.—9, Park Rd., Enfield Wash, Middlesex. [1633

DOUGLAS, 2¾h.p., 2-speed, lamps, tools, spare belt and valves, long exhaust pipe, special mudguards, perfect condition, carefully overhauled; £60; seen by appointment.—39, Wallingford Av., North Kensington, W.10. [1591

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Size.	Per Pair
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1919 4h.p. Douglas W.D. Combination, deliver March, 3 lamps, P. and H., Klaxoo horn, spa belt, new back tyre, perfect condition, good tools, surance; £140; can be seen any time.—Crosbee, Digl near Lincoln. [X97

4h.p. Douglas, 3-speed, clutch, kick starter, n Dunlop tyres, engine just overhauled and perfect condition, newly enamelled; best offer o £75; can be tested any time in London.—Box L3,52 c/o *The Motor Cycle.* [18

DOUGLAS 2¾h.p., T.T., 3-speed, Bosch ZA2, a justable pulley, Lucas lighting, Stewart magnet trip speedometer, horn, tools, mileage 2,500, wh outfit unscratched; 75 gns.—Beak, 136, Sinclair R W. Kensington. (After 5.30.) [18

DOUGLAS 1914 2¾h.p., 2-speed, ultra-smart T. machine, perfect condition, polished aluminiu disc wheels, aluminium number-plates, very comple equipment and spares, Binks carburetter; £68.—Ho Cottage, 52, North Hill, Highgate, N.6. [15

DOUGLAS, 2¾h.p., engine No. 40843, brand ne 1919 W.D. Model, electric lights, aluminium di wheels, complete tool sets, not run 10 miles, owner oblig to take delivery of previous order; £85.—Write or app F. Forward, Nunholme, Springfield Rd., Bickley, Ke [11

1919 4h.p. Douglas Combination, engine No. 790 delivered May, wind screen, electric and carbi lighting, spare new cover and tube, valve complete, ext tools, locker for spares; any trial genuine buyer; ava able August 22nd; best offer over 120 gns.—Laugto H.M.S. Undaunted, Chatham. [X86

DOUGLAS 1919 4h.p. Military Model, special sid car, fully equipped with Lucas lamps, Watfo trip speedometer, watch, and full complements of to and spares, used for holidays only, and ready for t same purpose; nearest offer £130 secures at once.— Doggett, The Limes, Oxford Rd., Cambridge. [14

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Elswick.

1916 Elswick 2-stroke, 2 speeds, Dixie, B.B., Stewa speedometer, horn, perfect condition; £3 after 6 p.m.—268a, Latimer Rd., North Kensingto [14

Enfield.

1914 2¾h.p. 2-speed Enfield, overhauled, fine orde £41.—41, Alexandra Rd., Stafford. [X84

1913 (Late) Enfield, 3h.p., stored 3 years; near £45.—May, 220a, High Rd., Leyton. [12

ENFIELD Combination, 8h.p., new; highest offe Midlands.—Box 164, c/o *The Motor Cycle.* [X97

ROYAL ENFIELD 3h.p., 2-speed model, in perfe condition; £55.—Brook Bros., Burnham-on-S [96

ENFIELD 1916 3h.p. Twin, 2-speed, kick start, lam etc.; £40.—31, Colchester Rd., Walthamstow. [15

ENFIELD 6h.p. 1917 Combination, as new; £150 Lambert, Goose Yard, St. John St., Angel, E.C [15

ROYAL ENFIELD, 1919, 2-stroke, 2-speed, bra new; 59 gns.—116, Askew Rd., Shepherd's Bu [15

ENFIELD Combination, 6h.p., smart turnout, vately owned; 100 gns.—21, Newton Av., Act W. [1

3h.p. Twin Enfield, 1917, in splendid condition, lam etc.; £65, no dealers.—26, Holland Rd., Ham. [1

ENFIELD 8h.p. Combination, in good conditi £100.—Newnham, 223, Hammersmith Phone: 80. [1

ROYAL ENFIELD 2¾h.p. Twin, lamps, horn, s cover and belt; £30.—E. Swiffin, Huntly Gr Peterborough. [X9

ENFIELD Twin 2¾h.p., tyres as new, chain dr £28; after 6.—Benstead, 81, Peterborough Fulham, S.W.6. [1

ENFIELD Coach Sidecar, 1916 pattern, underslu chassis, complete; £14.—29, St. Leonard's Bromley-by-Bow. [1

JONES' Garage, special agents for Enfields, Br way, Muswell Hill, N.10, and Woodside Par North Finchley. [2

6h.p. Enfield Combination, as new; £125, exch lower power and cash.—Mosedale, 30, Canter Rd., Kilburn, N.W.6. [1

ENFIELD 1919 2¼h.p. Lightweight, 2-speed, c drive, indistinguishable from new.—Park Bradshawgate, Bolton. [X

2¾h.p. Enfield Lightweight, twin, Bosch, new and belt; any trial; £30, or near offer.—Mo Sculptor, Portway, Frome. [X

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Enfield.

NFIELD 1916½ 2¼h.p. 2-stroke, 2-speed, good tyres, stored 2 years; £49; after 7.—18, Lamhton ., Hornsey Rise, London. [1710

h.p. Enfield, 2-speed, in good condition, tyres as new, lamps, horn, complete; 60 gns.—J. Hebden d Son, St. James' St., Burnley. [1654

NFIELD 1914 Combination, hood, screen, lamps, speedometer, mechanical horn, spares; after 7 p.m.; 10.—79, Clyde Rd., Wood Green. [1401

OYAL ENFIELD 3h.p. Twin, 3-speed, 1914 model, very nice condition; £48.—Godfrey's Garage, anbrook Rd., Ilford. Tel.: Ilford 83. [1336

NFIELD 1913 6h.p. Combination, 2-speed, cane sidecar, accessories; £85.—Elce and Co., 15-16, hopsgate Av., Camomile St., E.C.3. [0551

NFIELD, 6h.p. Combination, complete with lamps, generator, horn, tools; first-class running order; 7/10.—Viggers, 50, North Bar, Banbury. [X9541

NFIELD Twin, 2¾h.p., 2-speed, kick, all chain, lamps, etc.; £35; evenings.—Beddoes, Hollydene, ldwin's Lane, Hall Green, Birmingam. [X9768

NFIELD, sidecar, latest model, 3 lamps, oversize tyres, mat, apron, perfect order; 145 gns.—Edrds, 7, Exhibition Rd., South Kensington. [1764

NFIELD, late 1915, 3h.p., 2-speed, good condition; 50 gns.; with light sidecar, 55 gns.—Gloucester nse, Farnborough Rd., Farnborough, Hants. [1695

16 3h.p. Enfield Twin, 2-speed, kick starter, with light coachbuilt sidecar; £84.—Blake, 4, Park scent Mews East, Gt. Portland St., W.1. [1819

NFIELD Combination, coach sidecar, wind screen, new tyres, lamps, mechanical horn; £100, or near r; bargain.—Croxton, 234, Langsett Rd., Sheffield. [X9745

NFIELD 3h.p. 1916 Twin, 2 speeds, kick start, lamps, speedometer, horn, splendid condition, ; £60.—Perrott, Cluntagh, Ryde, Isle of Wight. [X9797

NFIELD-J.A.P., 4h.p. twin, 1913-14, Enfield 2-speed gear, chain drive, Dunlops, horn, good solo sidecar machine; £55.—14, Victoria St., Wolverhamp- [X9587

NE 6h.p. Combination, 1914, or 1915, Enfield, condition as new, with lamps, horn, and tools; price 0.—A. Bonfield, 41, Victoria Grove, Bridport, Dor- [1798

NFIELD 1916 3h.p. Twin, 2 speeds, kick start, fine condition, little used, original tyres, fully ipped; £55; after 2.—52, Durlston Rd., Upper oton. [1822

16 Enfield 6h.p. Combination, splendid turnout, fine condition throughout, all lamps, speedoer, etc.; £130.—2, King Edward's Gardens, nsley. [1438

NFIELD 3h.p., 1916, perfect order and appearance, lamp tools, copper exhaust, semi-T.T. bars, tyres; £65, or offer nearest.—Shepherd, North Havant. [1671

17 6h.p. Royal Enfield Combination, hood, screen, speedometer, horn, lamps, spares, all in first-class lition, mileage under 3,000; £125.—36, Madeira Foleshill. [X9471

NFIELD, 1919, 2¼h.p., 2 speeds, clutch, all accessories, 4 months old, tyres unpunctured, fine con- n; £60, or nearest offer.—40, Radnor Rd., Hands- h, Birmingham. [1143

15 Royal Enfield Combination, as new, lamps, speedometer, mechanical horn, Palmer cords, etc.; £95, no offers; seen any time.—135, Plasket Upton Park. [1151

FIELD Combination, 1917, 6h.p., hood, wind screen, 2 lamps, good tyres, 1 new, beautiful ition; trial; £128, lowest; Lake district.—Box 147, *The Motor Cycle.* [X9500

19 Royal Enfield 6h.p. Colonial Model Combination, delivered June, mileage about 500; owner ng car; £150.—Harrison, Branksome Gate Hos- it, Bournemouth. [X9762

YAL ENFIELD 2¾h.p. Twin 2-speed, lamps, hulb and mechanical horns, plating as new, perorder, been stored; £38.—13b, Peabody Estate, ley Rd., Walworth. [1476

17 Enfield Combination, 6h.p., hood, screen, side curtains, luggage carrier, dynamo lighting, very lot; price £150.—Apply, Contractor's Yard, 9a, on Rd., Bermondsey. [1324

Enfield Combination, late 1914 model. Lucas lamps, horn, wind screen, tools, etc., 700×80 tyres, ent condition; owner-driven; 110 gns.; after 5.30. Thornbury Rd., Clapham, S.W.2. [1391

YAL ENFIELD Combination, 6h.p. J.A.P. engine, Bosch mag., speedometer, electric lighting, ggage carrier, mirror, in splendid condition; £128.— lrose Rd., Merton Park, S.W.19. [1751

AL ENFIELD Combination, late 1916 model, speedometer, lamps, horn, and luggage carrier, condition throughout; £150.—Godfrey's Garage, ook Rd., Ilford. Tel.: Ilford 83. [1335

7 Enfield, 3h.p., twin, 2-speed, clutch, K.S., Lucas set (used twice), fast, good climber, conperfect, mileage 1,000, any trial; 60 gns.—Mat- 149, Chichester Rd., Portsmouth. [X9404

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ROYAL ENFIELD, 3h.p., late 1916, splendid condition, complete with lamps and horn, 65 gns.; or would consider exchange for good make combination of recent date.—Fulford, Glen-Devon, Bideford. [X9409

ROYAL ENFIELD, late 1916, 6h.p. coachbuilt combination, unused 2 years, Bosch, Amac, Palmer cords, engineer owner, guaranteed absolutely perfect in every detail.—Box 175, c/o *The Motor Cycle.* [1378

1917 (late) Royal Enfield 6h.p. Combination, specially designed double sidecar, perfect condition, little used, all accessories; any trial; £132/10.—Ogden Smith's, 34, St. John's Hill, Clapham Junction. [1805

1919 Enfield, 2-speed, 2¼h.p., Lucas lamps, horn, all black, Palmer tyres, delivered end July, therefore as new, phenomenal hill-climber, low consumption; best over £60.—Ernest Hartley, Walverdene, Nelson St., Kirkham Lancs. [X9583

1916 Enfield 6h.p. Combination, Bosch mag., coachbuilt sidecar recently overhauled, ready for road, 700×80 light car tyres, back and side lamps, horn, and luggage carrier, tools, excellent condition; £135.—Bolton, Lord St., Rawtenstall, Lancs. [1424

ENFIELD Combination, 6h.p. twin, 1914, 2-speed, wind screen, speedometer, Klaxon, lamps, spare tyre, tools, spares, excellent order, very smart turnout; would ride out 50 miles to meet prospective buyer.—Chas. S. Ives, Halesworth, Suffolk. [1606

1916 Enfield, 6h.p., Enfield sidecar, wind shield and speedometer, mileage 2,000, good tyres, spare covers, tube, and chain; any examination or trial; price £125, first cheque secures.—James S. Lomax, Pleasant View, Blackwood, Stacksteads. [1099

ENFIELD 1917 8h.p. Combination, not done 1,000 miles, in perfect order, practically unscratched, complete with Lucas dynamo lighting, also acetylene lighting, 2 head lamps, 2 sidecar lamps, rear lamp, Klaxon horn, speedometer, hood, and luggage grid, spare Palmer Cord tyre, tools, etc., only wants seeing, any trial; £148; exchanges.—R. D. Varty, Thundersley, Essex. [1579

Excelsior.

1919 2¾h.p. Excelsior-Jap, 2-speed; 58 gns.—J. Hebden and Son, St. James' St., Burnley. [1656

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers. Liverpool-Manchester. [7038

AMERICAN Excelsior, 7-9h.p., latest dynamo, counterashaft, coachbuilt combination, almost new; £135; solo part.—"Bleucathra," Highfield Rd., Walton-on-Thames. [X9718

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EXCELSIOR (American) 3-speed Motor Cycle, hand and foot clutch control, electric light and horn, speedometer, coachbuilt sidecar, in perfect condition, ready to go anywhere at any time.—Can be seen at Rawlinson's, 53, Brownlow Hill, Liverpool. What offers? Call or write. [1278

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1913 3½h.p. Fafnir Chain-cum-belt 2-speed Combination, Bosch, wicker sidecar; £40.—Laurence Green, Norwood Hill, Horley. (Would meet at Horley Station.) [1522

F.N.

F.N., 5-6h.p., 2-speed, in splendid condition, reed cane sidecar; £55.—Francis, 279, New Cross Rd., S.E. [1245

5-6h.p. 4-cyl. F.N., Bosch, B. and B., running order, good tyres; £35, or near offer.—E.H., 21, Dunstable Rd., Richmond, Surrey. [X9725

F.N., 5-6h.p., 4-cyl., 2-speed, hand clutch, B. and B., Bosch, speedometer, lamps, horn, and sidecar, splendid condition; £55, or nearest.—23, Foord St., Rochester. [X9206

F.N. Lightweight, jockey pulley, just overhauled and enamelled, lamp and generator, new Dunlops; first cheque £28.—Nobbs and Trotman, Durham Yard, Union Rd., Cowes. [1371

F.N., 4-cyl., condition thorough, re-enamelled, new tubes, front cover, drop frame, T.T., shaft drive, very fast, great on hills; £35, near offer.—Particulars, photo, Sparks, 31, Broadwater Down, Tunbridge Wells. [1589

F.N. 5-6h.p. Combination, 2-speed, clutch, practically new, mileage 800 miles, original tyres still on with spare new heavy Dunlop, lamps, tools, accessories; 85 gns.—Ledger, 48, Plough Lane, Haydon's Rd., South Wimbledon, S.W.19. [1535

Gamage.

GAMAGE-VILLIERS, 1919 model, 2¾h.p., 2-stroke, 2-speed, Albion gear, Dunlops, accessories, ridden 100 miles; 60 gns.; after 6.30.—54, Clifton Rd., Squires Lane, Finchley, N.3. [1129

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2½h.p. Givaudan, good order, Dixie mag., B. and B. carburetter, good tyres.—Dorman, 25, Rosebery Av., Gaywood, King's Lynn, Norfolk. [X9743

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1915 Harley-Davidson Combination, 3-speed, clutch; bargain; £125.—198, King St., Hammersmith. [X9588

1919 Harley-Davidson Combination, new condition; £225.—Newnham, 223, Hammersmith Rd. 'Phone: 80. [1660

HARLEY-DAVIDSON 1915 Combination, guaranteed perfect; 120 gns., or best offer.—Broom, 77, Marylebone Lane, W.1. [1620

HARLEY-DAVIDSON Combination, 1915, guaranteed perfect; 128 gns.—Longman Bros., 17, Bond St., Ealing. 1578 Chiswick. [1719

HARLEY-DAVIDSON Combination, 1915, 7-9h.p.; a bargain, £120.—Lambert, Goose Yard, St. John St., Angel, E.C. [1655

1915 Harley-Davidson, electric model combination, in perfect condition; £125.—5, Boundary Mews, Boundary Rd., Swiss Cottage, N.W.8. [1117

HARLEY-DAVIDSON Combination, late 1915, condition perfect, lamps, horn, etc.; £100; ready to drive away.—Scotland House, North Malvern. [X9700

1914 Harley-Davidson Combination, luxurious sidecar, machine just overhauled by makers; guaranteed in good running order; £110.—Sharman, 1a, Marina Ct. Bexhill. [1234

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HARLEY-DAVIDSON 1915 Combination, electric, fine mechanical condition.—Can be seen and tried at 6 and 7, Snow Hill, E.C.1, between 9.30 a.m. and 6 p.m. 'Phone: 896 City. [1449

7-9h.p. Harley-Davidson C.B. Combination, 1916 electric model, engine and tyres splendid condition; £150; letters only to view.—P. Charleston, 14, Elsham Rd., Kensington, W.14. [1425

HARLEY-DAVIDSON, 1918, mag. model, enamel and plating absolutely unscratched, disc wheels, very fine lot; 145 gns.—Broom, 77, Marylebone Lane (first floor flat), Oxford St., W.1. [1618

HARLEY-DAVIDSON Combination, large roomy coachbuilt sidecar, mag. model, 1916, tyres as new all round, in lovely mechanical condition; £135.—158, Rosendale Rd., W. Dulwich, S.E.21. [1175

HARLEY-DAVIDSON, late 1915, 7-9h.p., 3-speed, mag. model, tandem sidecar, new back tyre, humps, etc.; excellent condition; 125 gns.—Apply, Sndeley Garage, Dalmeny Rd., Tufnell Park, N. [1390

HARLEY-DAVIDSON 1915 Combination, perfect running order, Bosch mag., 3 speeds, very fast, large 1919 coach sidecar, luggage grid, tools and spares; £130; trial Inverness.—Box 143, c/o *The Motor Cycle.* [X9309

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HARLEY-DAVIDSON 1914 Combination, mechanically sound and in splendid condition, beautiful coachbuilt sidecar with wind screen, any trial or examination; £100.—Letters only, Hutchinson, 12, Park Grove, York. [X9804

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1914 4-5h.p. Hazlewood-Jap, 3 speeds, kick start, mechanical horn and lamps; 75 gns.—Reeves, Bath Cott., Reading Rd., Farnborough, Hants. [1715

HAZLEWOOD, 5-6h.p., Bosch, lamps, horn, speedometer, 1915, and Bramble sidecar, climb anything; trial; 90 gns.—Lewis, Newsagent, Cwm, Mon. [X9407

1915 Hazlewood, J.A.P. twin engine, 5-6h.p., Armstrong 3-speed, K.S., O.B. sidecar, Bosch, etc.; £70.—W. Speakman, 6, Mayor St., Deane Rd., Bolton. [X9601

Henderson.

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7036

Hobart.

HOBART 3½h.p., 3-speed, and coachbuilt sidecar, in running order, 1912; £50.—29, Brudenell Rd., Leeds. [X9757

1915 Hobart-Villiers 2-stroke, only 2 months' use, perfect condition; offers.—Johns, 27, St. Gabriel's Rd., Cricklewood, N.W. [1465

HOBART 1915 Combination, 5-6h.p. twin J.A.P., 3-speed Sturmey, hand and foot clutch, Bramble sidecar (minus cushion) with hood and screen; £110, or near offer.—3, Thanet Rd., Erith, Kent. [1199

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3½h.p. Humber and Sidecar; 30 gns.; going orde Write, Cole, 7, Nile Rd., Plaistow, E.13. [12

3½h.p. Humber, spring forks, clutch, going ord £16; side door.—27, Princess Rd., West Kilbu [19

3½h.p. Humber, 2-speed, free engine, handle sta roomy sidecar; £42.—Green, 13, Park Rd., He lford. [10

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HUMBER Lightweight, Bosch, B.B., adjustable p ley, good condition; £25.—50, Strand St., Sa wich, Kent. [18

3½h.p. Humber, B. and B., chain drive, good c dition; £25, or offer.—42, Beech Hill R Eltham, S.E.9. [14

HUMBER Combination, coach sidecar, 2-spe Bosch mag., good tyres; accept £49/10.— 277, Camberwell Rd., S.E.5 [17

1913 Humber, 2h.p., Bosch, B. and B. carburett excellent condition; £20, or near offe Harvie, Crossways, Wootton-Bassett, Wilts. [X9

1913 3½h.p. Humber, 2-speed, handle start, n Dunlop tyre and belt, perfect order; £43, offer.—33, Tunley Rd., Craven Park, Willesden, N.W. [16

HUMBER 1914 2¾h.p. Twin, 3-speed hub ge clutch, Bosch, B. and B., new Palmer tyr accessories, condition as new; 50 gns.—Cornwell, T hurst, Sussex. [66

HUMBER 2¾h.p. Twin, Armstrong Mark VI. speed, clutch, Dunlops, hardly been used, in rea fine condition; £48; after 7.—21, Leamington Garde Seven Kings, Essex. [12

BRAND New 1919 3½h.p. Flat Twin Humber, lu equipped, lamps, horn, tools, etc., just been livered from the makers; £105.—Redhead, 9, Hemi ford Rd., Cambridge. [X9

HUMBER Combination, 3½h.p., handle start, speed, good wicker sidecar, in good running ord £45, or near offer.—W. J. Withers, 127, Crossbrook Witham Cross, Herts. [14

3½h.p. Humber, 2-speed, free, good order; will sa fice £33 for quick sale, or £25 down and balan after delivery and trial.—Sherwood, Rose Cotts Nelson, Saxmundham, Suffolk. [1

1914 Humber, 3-speed, kick starter, 3¾h.p., t and belt nearly new, machine recently overhau and in splendid condition; bargain; £55.—Oliver, 1 Bollo Bridge Rd., Acton, W.3. [1

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HUMBER, 1914, 3½h.p., 3-speed hub gear, co built sidecar, absolutely new condition, so turncut, complete with lamps, and new tyres all roc £88.—Godfrey's Garage, Cranbrook Rd., Ilford. T Ilford 83. [1

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HUMBER (prices down) 6h.p. Flat Twin, wa cooled, 3 speeds, countershaft, handle st chain drive, coachbuilt sidecar, sweet running, pu ful lot; £95.—Sidedoor, 211, Garratt Lane, Wa worth, S.W.18. [1

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INDIAN, 1913, 7-9h.p., wicker sidecar; £70.—Me son, Ivydene, Atherstone. [X

1915 Red Indian, 7-9h.p., T.T., clutch, spares, fect.—10, Empress Av., Ilford. [

1916 7-9h.p. Indian, clutch model, perfect c tion; £65.—Stainer, High St., Ryde. [

INDIAN, 5-6h.p., 1915, 3 speeds; £68, off Thomas, 83, Davenport Rd., Shepherd's Bu

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NDIAN, 1914 T.T. model, stored 3 years; £75; new torpedo sidecar to fit; £15.—17, Ranelagh Rd. ith, Ealing. [1858

NDIAN 5-6h.p. Clutch Model, English controls; first offer near £50; after 5.—6, Hemstal Rd., Hampstead. [1745

½h.p. Indian, twin, T.T., speedometer, lamps; ride away; 2-speed, hand clutch; £55.—Lindfield, wley, Sussex. [1738

NDIAN Combination, 1914, sporting sidecar, just thoroughly overhauled; 80 gns.—Broom, 77, Maryone Lane, W.1. [1621

9h.p. Indian, 1914, late, 2-speed, F.E., kick start, condition as new, fully equipped; £78.—10, Em- Grove, Manchester. [1687

NDIAN 3½h.p., twin engine, 3-speed model clutch, complete with lamps, horn, and tools; £65.—Brook s., Burnham-on-Sea. [9642

6h.p. Indian Combination, 3 speeds, K.S., discs, sporting model, excellent condition; £115.—104, k End, Bromley, Kent. [1494

NDIAN Combination, 1916, Powerplus, 3 speeds, clutch, fine sporting outfit; £120.—Loweth, 6, unt Pleasant Rd., Ealing. [1451

NDIAN, 7-9h.p. (1917 Powerplus), electric lighting set, 3-speed, kick start; splendid outfit; price £150. riffiths, 8, King St., Yeovil. [1365

15 5-6½h.p. Indian Combination, 3-speed, clutch, kick-start, as new, any trial; £95.—Adams, 6, ond Rd., Wantage, Berks. [1564

9h.p. Indian Combination, spring frame, electric lamps and horn, fine condition; £100.—J. Hebden Son, St. James' St., Burnley. [1657

NDIAN, 5-6h.p., 1916, 3-speed, kick start, good condition, lamps, and accessories; £85.—Rose and ng, Willow Rd., Hampstead, N.W. [1398

NDIAN 7-9h.p., clutch, T.T., discs, 1915, lamps, horn, tools, in very good condition; £75, or exchange r power.—1, Kenlor Rd., Tooting. [1402

NDIAN 7-9h.p., 2-speed, kick start model, with coach sidecar to match; £85; solo, £65.—Stevens, Pentonville Rd., King's Cross, N.W. [1479

NDIAN, 6-7h.p., 1916 model, 3-speed, countershaft gear, free engine, kick start, lamps; in splendid lition; price £90.—Griffiths, 8, King St., Yeovil. [1364

15 Indian 5-6h.p., 3-speed, kick start, Rudge coachbuilt sidecar, perfect running order; £85. yle, 132, Longwood Gate, Longwood, Hudders- [X9724

NDIAN, 1916, 3-speed, K.S., new heavy Dunlops, new C.B. sidecar (red), in splendid condition, £105.—53, Duncombe Rd., N.19. 'Phone: Horn- 1012. [1366

NDIAN, 1915 model, twin, 3-speed, clutch, kick starter, lamps, mechanical horn, excellent condition; any time; £97, lowest.—Burdett, 15, Waldemar Av., ng, W.13. [1236

NDIAN 7-9h.p. 1915 Coachbuilt Combination, spring frame, 3-speed, kick, electric lamps and horn, lometer; £100, or best offer.—5, Park Rd., Sitting- ne, Kent. [1458

TE 1915 Indian Clutch Model, condition as new, and just overhauled, lamps, mechanical ; £75, or nearest offer.—37, Ennismore Av., wick, W.4. [1744

15 5-6h.p. Indian Combination, 3-speed, clutch, kick start, Swan sporting sidecar, lighting set, trial after 7.30; £100.—27, Criffel Av., Streat- Hill, S.W. [1087

15 7-9h.p. Indian Road Racer, beautiful condition, 70 m.p.h., new chains, good tyres, accesis, tools, spares; £85.—A. Mackenzie Cott, Ashby ga, Lutterworth. [X9632

14 Indian, 7-9h.p., T.T., clutch, overhauled, new tyre, all accessories, spares, etc., excellent con- n; £72/10; after 6 p.m.—228, Portsdown Rd., a Vale, London, W. [X9791

.p. Indian, clutch model combination, new tyres, lamps, mechanical horn, etc.; complete, excellent tion; bought car £110; near offer; seen any time lton, 222, Mitcham Rd., Croydon. [1724

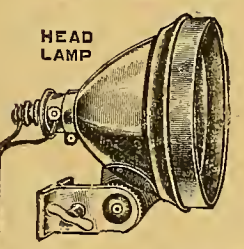
DIAN, 1914, 7-9h.p., racer, clutch, Lucas King of Road, speedometer, horn, spare sprockets, valves, , beautiful condition, mileage 10,000; £55.— , 4, Orchard Rd., Ilfracombe. [1323

DIAN, 5h.p., 1915, 3-speed, K.S., hand clutch, lamps, spares, excellent condition, with Swan sidehood, windscreen, electric light; trial; £135, offer. Westcombe Park Rd., Blackheath. [1243

IAN 7-9h.p. Combination, 2-speed, clutch, electric lighting, coachbuilt sidecar, tyres in good tion, and machine in good running order; £100 Brownlow Rd., Harlesden, N.W.10. [1790

IAN Powerplus, 1916, special C.B. S.C., discs, ccessories, sporty, excellent appearance; first t £136 secures; taking delivery cycle car.—37, nd Rd., Thornton Lodge, Huddersfield. [X9714

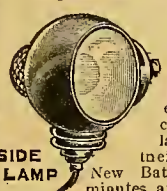
"Volex"



DRY BATTERY Lighting Sets.

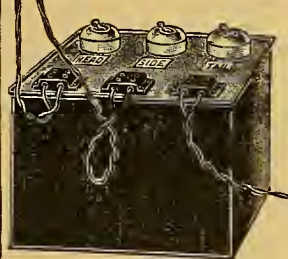
BRITISH MADE.

Volex Lighting Sets are the ideal, no-trouble outfits for the Motor Cycle and Sidecar.
For over ten years they have been in use for this service, and of recent years, in consequence of their dependency, the demand is constantly increasing.
Dynamo Lighting Sets with Accumulators require careful attention and owing to complications have a tendency to go out of order. Accumulators if not regularly charged, whether in use or not, sulphate and become useless.



VOLEX DRY BATTERY LIGHTING SETS give no trouble whatever. The Battery, which is fitted in a metal container with switchboard mounted on top, lies conveniently in the bottom of the sidecar and with ordinary care will last, when in use, from six months to eighteen months without renewal. New Battery can be fitted in a few minutes at but little cost. The Battery case contains three separate Volex 4-volt Aero Dry Cells, with separate connecting boxes for the cables to Head, Side and Rear Lamps. If one of the batteries becomes exhausted it can be replaced independently of the others. Unless specified, we always provide 4 volt Metal Filament Bulbs to each lamp, but 8 volt Bulb for Head Lamp will be provided where desired.
Complete outfit (as illustration), including Head Lamp, Ball Pattern Side and Tail Lamps, 3 Volex Aero Dry Batteries in metal container with switchboard, Metal Filament Bulbs, and Waterproof Conducting Cords. - - Price £6/10.
Spare "Volex" Aero Batteries 15/-.

CAUTION.—We would warn users that they may be offered substitutes for the "Volex" Dry Battery. No other battery will approach in reliability, durability, or capacity the British Made "Volex"



List M. 200, Motor Cycle Lighting, free on request.

BATTERIES IN CASES, complete with waterproof conducting cords to work in conjunction with own lamps.

Description.	Price.
3 Volex "Aero" Batteries in metal container, with switchboard mounted on top as illustrated	60/-
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Ward & Goldstone
SALFORD MANCHESTER

MOTOR CYCLES FOR SALE.

Indian.

LATE 1916 Indian, 7-9h.p., T.T. clutch model, disc wheels, large P. and H. head light, extremely fast and in excellent condition; £85.—Lt. P. D. Gibson, R.A.M.C. Officers' Mess, McGrigor Barracks, Aldershot. [1543

INDIAN Combination, 7-9h.p., 2-speed, spring frame, only done 3,500 miles, like new, stored throughout war; photo; what offers over £105? owner after light car.—Thornton, Waterloo House, Whitby, Yorkshire. [X9657

INDIAN 1916 7h.p. Powerplus Combination, electrically equipped, electric horn, speedometer, mirror, coachbuilt sidecar, hood, windscreen, coverall, luggage carrier; £160.—Bond (junr.) Shawes, Anderton, Nr. Chorley, Lancs. [1231

1917 Indian Combination, 7-9h.p., 2-speed, clutch, kick start, lamps, accessories, just been overhauled and repainted royal blue, new sporting body on Millford chassis, disc wheels; £110; owner going abroad.—136, Main Rd., Sidcup. [1105

1916 7-9h.p. Indian, Powerplus model, 3-speed, clutch, K.S., and lovely coachbuilt sidecar, 2 new tyres, mechanical horn, pump, tools, no lamps, splendid order; £118.—L. Nicholson, Tattenhall House, Hinstock, Market Drayton, Shropshire. [1566

1914 7-9h.p. Indian, and Mills-Fulford cane underslung sidecar, 2-speed, clutch, dynamo lighting and electric starter, 3 lamps and electric horn, good tyres; £105, or nearest offer; after 4 p.m., Thursday.—Green, 1, Hollingbourne Gardens, Ealing, W.13 (close to terminus of 105 'bus). [1396

INDIAN, 5-6h.p.. 1915, 3-speed, foot clutch, kick starter, Klaxon, Empire petrol economiser, brand new extra heavy Dunlop back, good front, heaps of power, easily controlled, a real goer, in lovely mechanical condition; owner bought car; £90; after 6 p.m.—Allen, Suffolk House, Duppas Hill, Croydon. [1296

INDIAN 7-9h.p. 1915 Coachbuilt Combination, 3-speed, clutch, mag., electric equipment, 3 lamps, horn, and charging dynamo, 2 accumulators, spring frame, tools, and spares, extra heavy Dunlops to all wheels, tyres, enamelling, and plating almost new condition, a really good turnout; £125; trial given.—97, High St., Wimbledon. [X9521

INDIAN Combination, 1914, 7-9h.p., spring frame, mileage 6,000, re-enamelled 1918 Harley colour, 3 lamps, speedometer, T.T. and touring handle-bars, 2-speed and new hand clutch K.S., new heavy Dunlops and tubes, Milford sidecar, C.B., triplex wind screen and spring grid, splendid condition; 90 gns.—G. Salmon, 47, Grove Rd., Eastbourne. Tel.: 490. [1297

VERY Sporting Indian Combination, 2-speed, handlebar clutch, large exhaust pipe, speedometer, mechanical horn, complete set of box spanners, also shifters, chain repair tool, spare chain and link, red torpedo sidecar, disc wheel, handsome electric set, large motor head, also side and tail, new 6-volt 60-amp. hour accumulator in sidecar, with dashboard containing voltmeter and ammeter, insurance policy (third party, 8 months), excellent touring combination and in good order; 140 gns.; privately owned.—May be seen Hedley's Garage, Gunnersbury, Chiswick, W.4. [1694

Ivy.

IVY 2-stroke, 2¼h.p., Senspray carburetter, condition good; £32.—23, Victoria Rd., Bexley. [1308

1919 Ivy 2-stroke, 2-speed Albion countershaft, delivered July; £55.—77, Craven St., Coventry. [X9852

IVY.—For the earliest possible deliveries, book your order now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5603

H. G. HENLY and Co. are sole London Agents for the popular Ivy 2-stroke.—91, Gt. Portland St., W.1. 'Phone: Mayfair 4084. [0023

2½h.p. Ivy, had very little use, paint, tyres, belt, etc., just like new, must sell immediately; best offer over £38; lamps and spare belt with same.—Brown, Pennant View, Rhuallt, St. Asaph. [X9413

James.

JAMES.—Sole agents for Hertfordshire. 1919 machines in stock.—Chandler, Reyre and Williams, Sun St., Hitchin. [0997

JAMES Lightweight, 1915, 2-speed, overhauled with makers 1918 splendid condition; £40.—Alton, Little Eaton, Derby. [X9675

JAMES 1913 Combination, 3-speed, K.S., perfect, fully equipped; £120, or nearest.—White Gates, Mottram, Manchester. [X9754

A RELIABLE James 2-stroke, 2 speeds, 1914-15, countershaft, guaranteed sound, enamel poor; £45.—Keen, Broad St., Leominster. [X9569

JAMES 1914 4½h.p. Combination, 3-speed, clutch, lamps, horn, speedometer, hood, good condition; £85.—5, Frederica Rd., Chingford. [1677

JAMES, 4½h.p., clutch, new tyres, tubes, belt, enamel and plating good, excellent condition; £52.—Badnell, 8, Foresters Terrace, Alton, Hants. [X9465

4¼h.p. James, 1919, 3-speed, K.S., clutch, condition perfect, not done 200 miles, complete Lucas set; price £115.—Tarr, 10, Oyster Lane, Byfleet, Surrey. [1544

MOTOR CYCLES FOR SALE.

James.

JAMES 1917 3½h.p. Twin, 3-speed, clutch, speedometer, Klaxon, lamp, spares, nearly new tyres; £85, or nearest offer.—Lt. Lambourne, R.A.F., Uxbridge. [1354

1917 James Combination, 4½h.p., complete with all accessories, in first-class condition, ready ride away; price £115.—Roberts, 8, Pen-y-Bryn, Old Colwyn, N. Wales. [1166

JAMES Combination, 4¼h.p .big single, Armstrong 3-speed, F.E., P .and H. lamp, Bosch mag., W.P., in perfect condition; £75.—2, Elaine Grove, Gospel Oak, N.W.5. [1406

JAMES 1916 4¼h.p. Countershaft Coachbuilt Combination, and accessories, 3-speed clutch, kick start, smart turnout; £100.—48, Prince George Rd., Dalston, N. [1381

JAMES 5-6h.p. De Luxe Combination, new last month, perfect condition, Lucas lamps, windscreen, leg guards, luggage grid; £160.—Lee, Queenhill Manor, Tewkesbury. [1731

1919 James 5-6h.p., 3-speed, kick start, lamps, horn, tools, spares, delivery July; £135; no offers; after 5.—Brown, c/o Thorne, 67, London St., Greenwich, S.E. [1749

JAMES 1917 4¼h.p. Combination, C.B. sidecar, C.A.V. lighting set, electric horn, spares, etc., excellent condition; £120; seen after 5.—132, Naletta Rd., Acton, W.3. [1464

1918 5-6h.p. James Combination, 28×3 wheels, 3 speeds, pedal clutch, lamps, accessories; £165; scarcely soiled, ridden only 200 miles; owner's illness reason for sale.—Robinson, Sutterton, Boston. [X9534

1914 4¼h.p. James, 3-speed gear, kick start, clutch, all enclosed chain drive, James coachbuilt sidecar, perfect condition; £125, or offer—Monro, 24, York House, Highbury Crescent, N.1. Gerrard 4227. [X9671

1919 James 4¼h.p. Big Single Combination, 3-speed, all-chain, Lucas horn, Orto wind screen, coverall, spares, not run 500 miles; £150, no offers; appointment.—71, Swinderby Rd., Wembley, Middlesex. [X9670

JAMES 1916 4¼h.p. Big Single, with 1917 special Campion sidecar, 3-speed, clutch, kick start, recently overhauled, mileage under 3,000, condition perfect; any trial; £85.—Smith, 8a, Watling St., Wellington, Salop. [X9792

JAMES 1915 C.B. Combination, 3½h.p. twin, 3-speed, clutch, K.S., enclosed chains, sporting sidecar, all accessories, stored 2 years, splendid condition; £82/10; after 6 p.m.—27, Cedars Rd., Chiswick, W.4. [1648

4¼h.p. James with model de luxe sidecar, new 1916, 3 speeds, countershaft, lamps, horn, speedometer, tools and spares, excellent condition; £90, or would exchange for 2-speed solo machine with cash adjustment.—H., 88, The Brent, Dartford. [1216

JAMES Big Single Combination, 1916, 3-speed countershaft, clutch, kick starter, engine and machine overhauled and necessary replacements made, tyres good, excellent throughout, lamps, spares inclusive, stored 2 years; 88 gns.; any trial and examination; Midlands.—Box 166, c/o *The Motor Cycle.* [X9781

J.A.P.

3½h.p. J.A.P., Bosch magneto, in perfect condition; best offer.—F. J. Webb, 8, Queen's St., Chelmsford. [X9638

6h.p. Jap-Enfield, splendid machine, about 1913; cheap.—Brown, Rangemore Village, Burton-on-Trent. [X9707

1914 J.A.P., 8h.p., Indian red, very fast, condition as new; for quick sale, £50.—Roberts, R.A.F., 43, Osman Rd., South Tottenham. [1431

4h.p. J.A.P., 2-speed, clutch, all-chain, new tyres, splendid sidecar machine; perfect condition; £48.—Grocer, 69, North St., Plaistow, Broadway. [X9636

J.A.P., 1915, 2¾h.p., 2-speed, thorough good running order, nearly new, very fast; and also light sidecar; the lot; £50.—J.A.B., 17, High Rd., Tottenham, N.15. [1874

J.A.P., 4h.p., adjustable pulley, waterproof Bosch, Senspray, Dunlop tyres, belt new, Miller lamps, excellent condition, fast, reliable; £35.—After 6, 10, Princes Parade, Church End, Finchley. [1647

J.A.P. 5h.p. Twin, Bosch, B.B., 3-speed, clutch, K.S., Canoelet sidecar, lamps, luggage carrier, wind screen, tools, touring model, excellent condition, heap of spare parts; £80.—Cox, 23, Campbell Rd., Bow, E. After 7 p.m. [1755

J.E.S.

LANCASHIRE and Cheshire Only.—J.E.S. motor cyclette and attachment sets; enquiries invited.—J. Blake and Co., Liverpool-Manchester. [7042

Kerry

KERRY, 2¾h.p.; £29; good condition; first cheque secures.—Alderton, 10, West St., Reigate. [1157

Lea-Francis.

LEA-FRANCIS, 1919. Place your name on our waiting list for delivery of these aristocratic mounts.—A. J. Sproston, 186, Gt. Portland St., W.1. [6612

THE CENTRAL HOUSE for BARGAINS

TWO BRAND NEW 3½ h.p. SUNBEAM COMBINATIONS IN STOCK, WHAT OFFERS?

NEW 2¾h.p. W.D. DOUGLAS IN STOCK, £80.

COMBINATIONS.

1917 **CLYNO** Combination, 3 speeds, kick starter **£135**
1918 6 h.p. **ENFIELD** Combination, condition almost new **£145**
1919 4 h.p. **DOUGLAS** Combination, very good order **£140**

SOLOS.

1919 Brand New 4 h.p. **TRIUMPH.** What offers?
1918 4 h.p. **TRIUMPH,** splendid order ... **£95**
1917 4 h.p. **TRIUMPH,** " ... **£87**
1916 4½ h.p. **B.S.A.,** all chain drive " ... **£68**
1919 4½ h.p. **B.S.A.** Combination, only done a few miles. What offers?

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Light Car and Motor Cycle Specialists,

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PILGRIM STREET

MOTOR CYCLES FOR SALE.

Lea-Francis.

LEA-FRANCIS, 3½h.p., 1914, hand and foot clutch, kick start, 2-speed, excellent condition; £69, no offers.—3, Craven St., Coventry. [X9470

LEA-FRANCIS 4h.p. Twin Coach Combination, late 1916, 3-speed countershaft, accessories, speedometer, like new; £125, solo part.—R., 5, Victoria Av., Surbiton. [X9717

Levis.

LEVIS 2-stroke, all accessories, as new, been stored; £45.—Kinnear, 39, Marine Parade, Dover. [1692

LEVIS, 2¼h.p., excellent running order; £24.—101, Lancaster Rd., Morecambe, Lancashire. [X9719

LEVIS, 2¼h.p., fine, fast, condition, lighting set; £45.—Clark, 9, Monks Rd., Lincoln. [X9787

HOVE Engineering Works, Davigdor Rd., are executing Levis orders in strict rotation; all accessories and repairs. [7962

LEVIS 2¾h.p., late model, new heavy Dunlops, all in excellent condition; after 7 p.m.—111, Byrne Rd., Balham. [1447

LEVIS Popular, the finest 2-stroke in the world; book now for early delivery and super-service.—The Walsall Garage, Walsall. Tel.: 444. [5604

Lincoln-Elk.

LINCOLN-ELK, 2½h.p., perfect, Bosch, B. and B.; £30.—The Avon Motor Cycle Co., Southbridge Rd., South Croydon. [1183

LINCOLN-ELK 4h.p., 2-speed, free, countershaft, underslung coach sidecar, powerful, fast, nice condition; £55.—Taylor, 637, Seven Sisters Rd., London. [1380

LINCOLN-ELK, 3½h.p., Sturmey-Archer 3-speed and clutch, Bosch, B. and B. adjustable jet; 35 gns.—Batten, Myrtle Cottage, Southington, Overton, Hants. [X9557

4¼h.p. Lincoln-Elk, hand-controlled clutch, Bosch, B. and B., lamps, horn, new tyres and tubes; splendid machine; £40.—Whate, Builder, Dunham, Newark. [X9640

LINCOLN-ELK 3½h.p., 2-speed, Dunlop tyres, privately owned for 12 months, changed hands and stored during war, now overhauled and in first-class condition; price £65.—Halse, West St., Ashburton. [1361

3h.p. Lincoln-Elk, single gear, adjustable pulley, Bosch, B. and B., T.T. bars, tyres, belt nearly new, tubes new, engine in good order, reliable machine; 35 gns.; after 6 p.m.—Addicott, 71, Arica Rd., Brockley, S.E.4. [1212

L.M.C.

L.M.C., 4h.p., in first-class order; £42 with sidecar, £38 without.—Rear of 90, Leyton High Rd., Stratford, E.15. [1340

L.M.C., 3½h.p., splendid order throughout, Bosch mag.; £25.—Speechley, 1, Gunnersbury Lane, Acton Hill, London, W.3. [1461

L.M.C. Motor Cycles.—The motor cycle with the comforts of a car. All models available shortly; demonstration model now in stock.—The sole distributing agents for London and the Home Counties, Mehes and Mebes, the Original Light Car Specialists, 144, 154-6, Gt. Portland St. W.1. [3695

Matchless.

MATCHLESS. 1919-20 models; to ensure delivery order immediately.—Parker's, Bradshawgate, Bolton. [X9687

CROW Bros., High St., Guildford, West Surrey agents for the new Matchless.—Order now for early delivery. [4085

JONES' Garage, special agents for Matchless, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2921

MATCHLESS, 1913, 6h.p., C.B. sidecar, 2-speed, in good running order; price £70.—199, Albert Rd., Jarrow-on-Tyne. [X9667

8h.p. Matchless and Sidecar, hood, wind screen, speedometer, lamps, etc.; £100.—16, Ringstead Rd., Catford, S.E. [1457

6h.p. Matchless Combination, chain drive, kick start, 2-speed, clutch, ride away; 85 gns.—Muggeridge, York Rd., Byfleet. [1538

MATCHLESS 8h.p. Coachbuilt Combination, speeds, kick-starter, any trial; sacrifice £90.—68, Bingham Rd., Croydon. [1556

MATCHLESS-J.A.P., 4h.p., Bosch mag., good running order; £43; apply after 2 o'clock Friday.—40, New St., Kennington, S.E. [1255

MATCHLESS-J.A.P. Combination, 8h.p., 2-speed, chain drive, kick start, all accessories; £95.—10, Monmouth Rd., East Ham. [1411

MATCHLESS 1915 Combination, M.A.G. engine, Bosch, 3-speed, lamps; £125, no offers.—Muirhead, 36, Grainger St., Newcastle-on-Tyne. [X9403

MATCHLESS-J.A.P 6h.p. C.B. Combination, 2-speed, engine needs slight adjustment; £50.—Private Garage, Christchurch Av., Brondesbury. [1404

4h.p. Matchless-Jap, T.T., Bosch, B.B., engine in good condition; £40; a real sportsman's mount.—F. Pepper, 3, Gladstone Rd., Ashtead, Surrey. [1713

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SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

The Rights of the Irate Pedestrian.

IN our last issue we referred to some extraordinary evidence which came to light in the hearing of a case at the Southend Police Court, where a young motor cyclist was charged with driving to the common danger.

Unfortunately, the affair was somewhat prejudiced by the fact that he was unable to produce his licence when stopped by a constable, and also had another charge against him in respect of driving without lights.

On the main charge, however, the evidence was conflicting. The chief witness, at whose instigation the proceedings were taken, alleged that the defendant's speed was from "40 m.p.h. to 45 m.p.h., and, in my own mind, more"—such a statement should discredit any evidence—but other witnesses called stated, and we learn also from a person present who saw the proceedings, that the motor cyclist was doing from 10 m.p.h. to 12 m.p.h.

The point we wish to raise, however, has regard to the actions of this particularly malignant witness. Feeling aggrieved by the manner in which the defendant was riding up and down the road, he, according to his own evidence, endeavoured to hook him off the machine, and, not being successful, on a subsequent evening again went to the same spot with the intention of waylaying the offender, and stopping him. Again failing in his utterly unlawful project, he reported the matter to the police: a thing which he would have been perfectly justified in doing in the first case if he considered he had a proper cause for complaint; but surely by no means excusable following on, and no doubt in pique through the failure of an assault.

We commend this case to the notice of the various organisations which protect the interests of the private motorist, for, despite the fact that the pedestrian's conduct was such that, had he achieved his object, he might easily have brought about circumstances which would have resulted in his own trial on a charge of manslaughter, not one word of censure or reproof was addressed to him by the Bench.

Motorists as a body have every right to demand some explanation of this omission, otherwise a precedent appears to be established whereby anyone, believing himself to be aggrieved, may deliberately waylay the supposed offender and assault him with *malice prepense*.

Imported Motor Cycles.

AT the present moment a tariff of 33⅓% is payable upon all motor cycles imported into this country, and until September 1st next imports are restricted. After that date the restrictions are to be removed, but Mr. Lloyd George's speech and subsequent amplifying statement did not make it perfectly clear whether the tariff duty was to be retained or not. In the case of "Unstable Key Industries," of which the most important, from the motor cyclist's point of view, is the manufacture of magnetos, it is clearly stated that a licence fee will be charged which will be fixed "with regard in each case to the difference between the price at which the article can be imported and the price at which similar articles can be sold in the United Kingdom." It may be necessary for the Government to assist these "key industries" for some years, but care will be taken that no undue profits are made at the expense of the community.

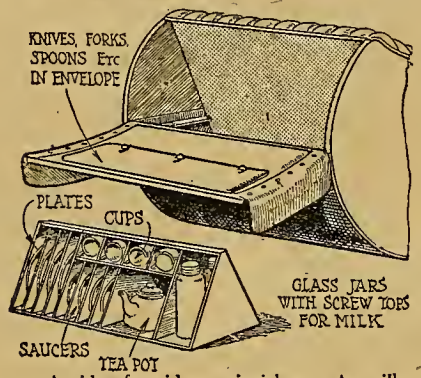
Enquiry at the Home Office has elicited the information that the 33⅓% import duty has still to be paid on American motor cycles. This duty was imposed during the war, primarily to aid British manufacture and as a spur to the nation generally in production. But, rather than acting as a spur, it has had a neutralising effect, or no effect at all, on the workers, for production, as everyone knows, has lessened to an alarming degree. Originally, it was proposed to lift the 33⅓% embargo in September, 1920, the date afterwards being altered to May.

An Index to the advertisements in this issue will be found on the page facing the back cover.

IDEAS: Useful and Ingenious.

A Sidecar Pantry.

A NORTH of England reader sends particulars of the picnic pantry on his sidecar. It will be seen that the rear locker of the type of sidecar illustrated may readily be converted to meet the requirements of the family party who wisely take their meals in the open. The lid of the locker is provided with a dust-proof envelope, in which knives, forks, spoons, etc., are carried, and a "lift-out" rack accommodates cups, saucers, plates, and teapot. The lower part of the locker is utilised to carry water cans and tins for foodstuffs.



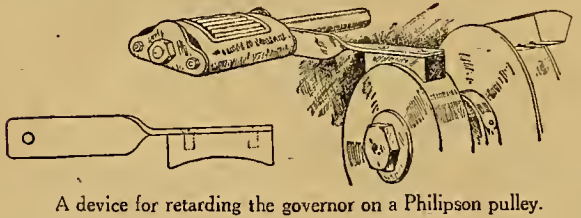
An idea for sidecar picnickers. As will be seen from the illustration, the equipment is carried in the rear portion of the sidecar.

A Philipson Pulley Control Brake.

THE Philipson governor pulley on many machines may be very simply fitted with a small foot control brake, which can either be operated with the heel, resting the toe on the footrest, or with the toe only.

The sketches are practically self-explanatory, the brake consisting of a short length of flat steel twisted through a right angle for half its length, one end being drilled with a ¼in. hole to accommodate the specially long bolt which replaces the standard footrest-rubber bolt. The other end of the steel has two ¼in. countersunk holes to receive the Whitworth screws which secure the fibre pad.

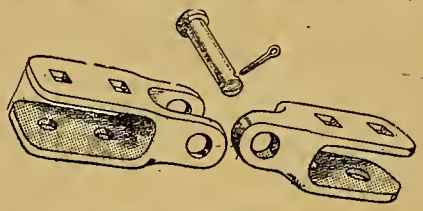
Red fibre is used for the shoe, as it is found to have the minimum braking effect on the engine and yet retards the governor of the pulley sufficiently, and the fitting may be just light enough on the footrest to stay up if not required, or it may rest lightly on the pulley.—H. BRUNSDEN.



A device for retarding the governor on a Philipson pulley.

An Improved Belt.

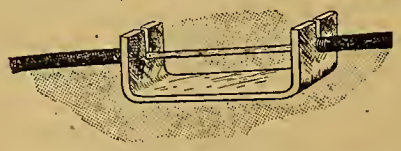
IN order to obtain belt fasteners suitable for use on his privately constructed 8 h.p. cycle car, Mr. Duncan, a Smethwick dental surgeon, made two fasteners from solid steel. The design of these is depicted below, and may appeal to other motor cyclists who require exceptionally strong belt fasteners to be used in conjunction with large pulleys.



A belt fastener made from the solid by Mr A. J. Duncan for use on his cycle car.

A Bowden Wire Repair.

THE value of this tip is possibly limited in the case of home-country riders, who are never very far distant from garages and repair men, but coming from an overseas correspondent, it casts an interesting side-light on the manner in which quite simple replacements may necessitate the use of some makeshift until a proper renewal can be made.



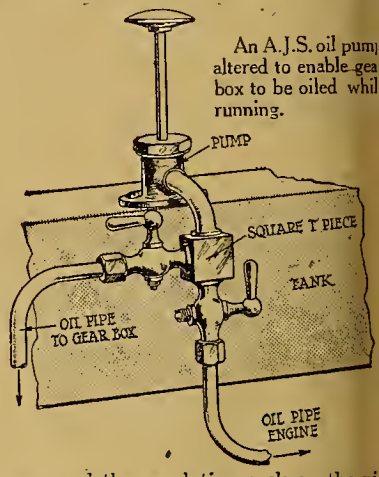
An improvised Bowden wire casing repair

When a Bowden casing is damaged by being squeezed, the inner wire generally sticks, but a temporary repair can be made by unwinding the outer coil for an inch or two, cutting out this part and replacing it with a piece of strip iron, bent and slotted at the ends as shown in the sketch; finally pinching the saw cuts together.—G.W.N.

Gear Box Lubrication.

IN order to provide a simple and ea method of maintaining a corre supply of lubricant in the gear b of an A.J.S. the apparatus here illu trated was devised.

A brass T piece was first obtained a fitted between the elbow piece on the



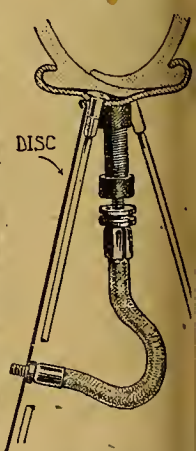
An A.J.S. oil pum altered to enable gea box to be oiled whil running.

pump and the regulating cock on the pi to the engine and a tap was fixed i this and a copper pipe led therefr underneath the tank and down the sad tube of the frame to the gear box.

By closing one tap and opening t other a charge of oil may be passed either engine or gears as desired.—. REILLY (Lt. R.A.F.)

Tyre Valve Adapter for Disc Wheels.

AN adapter which can easily be fitted to the tyre valves of motor cycles with disc wheels consists of an ordinary cycle inflator connection, one end of which is screwed to the valve and the other let into the disc, with the dust cap on the outside. This allows for inflating the tyre without moving the sliding inspection hole covers. (The usual chain attached to the dust cap can be soldered on to the disc.)—J. MUNCASTER.



A permanent inflato connection for dis wheels.

Occasional Comments

"Ixion"

Catering for the Duffer.

the Rapson unpuncturable tyre proves to be all that is claimed for it, the last obstacle in the path of motor cycling for the million is removed. —I do not say "motor cycling for the ,000,000," which would imply an insurmountable obstacle. Mechanical reliability has already hed a high standard, if the ideal is still distant; the certainty of punctures with existing types of s has deterred the nervous from buying motor cycles. en a puncture-proof tyre, the men and women who he tinkering will be emboldened to buy. It follows controls will have to be simplified very consider-. Take gears as an example. I am now riding achine adorned with a gear box which is quite one he best I could have. It is possible to make an olutely shockless change with this box; but it is possible by a feat of legerdemain. If I manipu- the handle-bar valve lifter and clutch lever whilst nging gear, the gears go in as a knife enters butter. both the aforesaid levers are situated on the left- d grip, I usually change gear on the valve lifter ne, in which case the machine gives a convulsive , exactly as if a spring frame were passing over a boulder or pot-hole. I have taught several athletic ngsters to ride on this machine. It is instructive ride behind them when they have reached the stage which they can be trusted out on main roads. *They ays wobble when they change gear.* I have also d to teach one or two elderly men and several girls ride this same machine. Such persons dare not nge its gears until they have undisputed possession a nice, wide, straight piece of road. I might write a similar vein about the carburetter, the levers of ich require lightning and knowledgeable manipula- n when starting up, or rounding a sharp turn; or ut the ignition, which, in conjunction with an urdly high compression ratio, wants quite a lot of mouring.

Cinquevalli Outclassed.

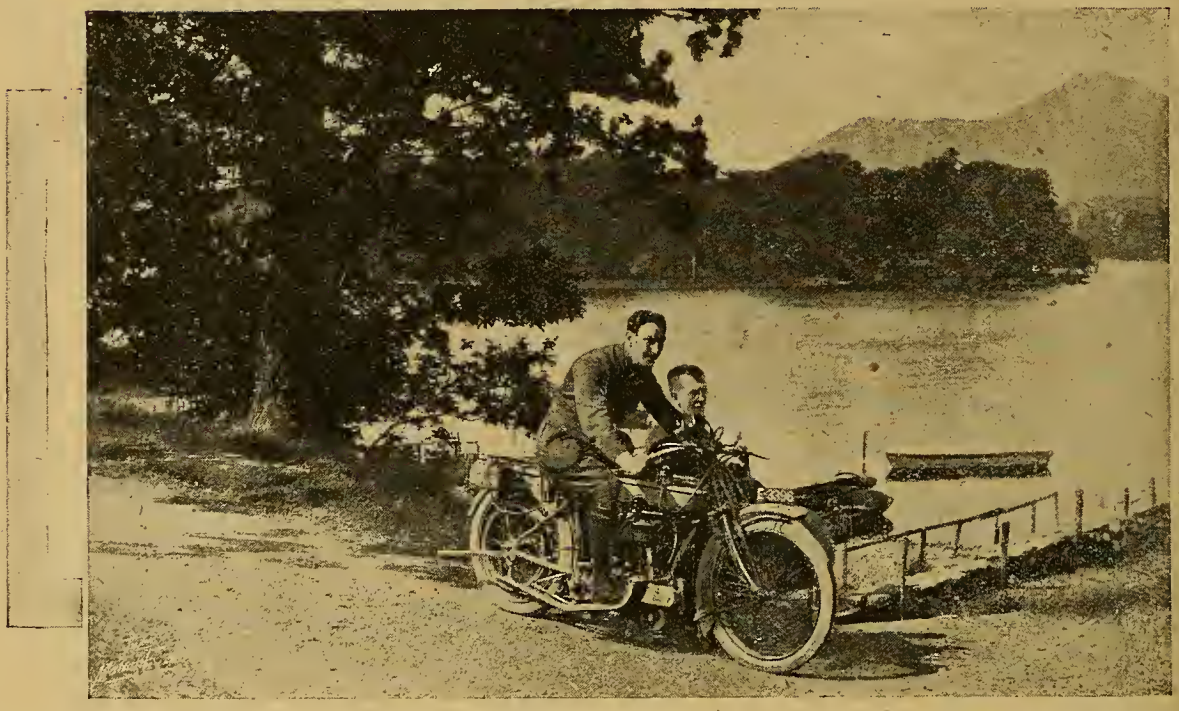
N fine, I do not think the trade realises what demands the conventional machines make on the attention of unskilled riders. They are actually tinctly more alarming to a novice than any car and uire far more handling. In the forefront stands obvious fact that the learner has to balance the chine, whilst he performs actions as complex as y car can call for. If he concentrates too exclusively getting a perfect mixture or letting in the clutch ntly or finding the right notch in the gate, the front eel begins to wobble most fearsomely; and, as his scles have yet to master the instinctive correction steering errors, he is correspondingly perturbed. the second place he must face all the early terrors ne, whereas, in learning to drive a car, he has a mpanion who undertakes general responsibility, and ows the pupil to concentrate on one point at a time— ering, clutch work, throttle work, brakes, or gear-changing—but never all together. Thirdly, the car driver is always provided with an automatic carburetter and a simple control for it. The motor cycling novice has usually to wrestle with a two-lever carburetter, which is often extremely sensitive, and a bad blunder confronts him with the task which he probably dreads above all others—that of restarting the engine. Fourthly, he must on no account forget to oil the engine, whereas a car engine oils itself. Reviewing these points of contrast, one is not surprising that motor cyclists continue to be drawn almost exclusively from the ranks of youth and sportsmanship. But, given unpuncturable tyres and a simplified control system, there is no reason why millions of duffers should not share our pleasures and conveniences. If the trade would only see it, the scooter craze is a very strong pointer in this direction. Its popularity is partly accounted for by its low weight and cheapness; but, nevertheless, its supposed simplicity is a large element in the craze, for the buying public have yet to learn that simplicity obtained by means of a single gear and a tiny engine is not necessarily preferable to sundry complications.

Our Smooth Chain Drives.

AS I often grumble, I am bound to raise my hat to the trade when I find they have genuinely floored an awkward antagonist. The drawbacks of belt drive, like the quality of Government ale, have always been obvious. When a few daring makers began to coquet with the all-chain drive, especially upon single-cylinder machines, I felt dubious. For years we had been accustomed to ride in sublime oblivion of our transmission for perhaps 75% of our mileage. When we changed over to the chain, we certainly bade farewell to such heart-breaking interludes as broken fasteners or chronic belt-slip implied. On the other hand, the snatchy drive of the early chains made us perennially conscious of our transmission, as thudding vibrations had always made us conscious of single-cylinder engines. Only with the engine running fairly fast on a low gear ratio under light load was the early chain drive at all comparable to the belt. This week I have been driving a high-compression single-cylinder mount with all-chain drive. I say deliberately that its drive is as smooth as the best belt, well run in and perfectly adjusted. Even if I make the engine baulk and conk on the pick-up, after a fierce corner or on the foothills, I remain unconscious of the fact that I have a rigid drive beneath me. This is very real progress. I do not say that all chain systems are as good as the one I own; but I do say that it is at least possible for a machine fitted with the roughest type of engine to be chain-driven and yet to feel as if it were belt-driven. I must now eat my own words of long ago, and admit that the function of the belt is just about fulfilled. Spring drives and cush hubs are reaching a miraculous efficiency.

Low-powered Sidecar Touring.

A 3½ h.p. Norton Outfit on Lakeland Hills.



A pretty peep by the shore of Derwentwater. The sidecar is a 3½ h.p. Norton, on which a Lakeland tour was successfully undertaken

THE outstanding feature of a record motor holiday crowd in Lakeland has been the number of comparatively low-powered sidecar outfits on the road. One refers here to those with engines in the vicinity of 3½ h.p. Of course, the bigger powers are better for real hill work, but there has been plenty of evidence that these machines can get about successfully amongst the hills and dales of the Lake District.

In this connection the writer had an interesting talk with Lt. I. G. Bethwaite, a north-country sportsman and competition rider. His usual mount, the big Harley-Davidson, is familiar in the North, but as an expert tuner he is more enthusiastic about the efficiency of the 3½ h.p. type. Lt. Bethwaite achieved distinction in the war, first as a despatch rider and latterly in the Air Force as a fighting pilot. On thr occasions he was brought down "badly holed" twice his petrol tank and once himself. Along wi Lt. C. R. White he has been recovering amongst t Lakeland mountains, and the performances of th 3½ h.p. Norton have been worthy of note.

Climbing Castlerigg, a hill leading from the Vale of Derwentwater on the road to Windermere.

The remarkab petrol consumpti of ninety-five mi to the gallon the Norton achieved throu careful valve ti ing and carburet adjustment. Th exhaust val spring is slight stronger than t inlet. Few ride realise that we takes place on t variable taper needle for the of the B. and carburetter, a r this causes faul running. A n needle is easi fitted, and th should be adjust to give full cont of the air leve that is, to obta

w-powered Sidecar Touring.—

h an adjustment that when travelling on the road it ossible to bring the air lever back from fully open to point where a proper mixture is obtained. The most portant detail is to adjust the petrol level to 1/8in. ow the top of the jet—this is the secret of the arkable petrol consumption. In the engine all rings are, in Lt. Bethwaite's words, a "sloppy" but the magneto chain drive should be kept at per stretch by moving the magneto bodily forward its bed. The Sturmey-Archer three-speed gear box gives splendid results if filled up systematically with thick gear oil every 300 miles. Finally, Lt. Bethwaite believes in having everything throughout the machine thoroughly lubricated; oilers on forks, steering head, and wheels are not put on as makers' ornaments. The keen ear for the note of the engine, whether of the small land type or swift air-fighting type, is a gift of inestimable value, but the few practical hints given above may, during the coming days of peaceful motoring, help those who wish to obtain the utmost horse-power out of the moderate-powered sidecar outfit.

Motor Cycle Mountaineering.

Climbing a Mountain Two Miles High on a Harley-Davidson Flat-twin.

THE mountain popularly known to our erican *confrères* 'Old Baldy" (Mt. n Antonio) has re- tly been climbed Jack Fletcher, unted on a Har- -Davidson sport- model of the e described on ge 181 (issue dated gust 14th). This model, in country of its gin, is referred to the "little" chine, but as its pacity is 584 c.c. certainly cannot nsider it to be in lightweight class; at the same time its performance climbing a mountain two miles high speaks well its power and controllability.

At the summit of "Old Baldy." J. Fletcher on a flat-twin Harley-Davidson fitted with tractor rear wheel, which enabled him to achieve the first ascent by motor cycle of Mt. San Antonio.

A tractor rear wheel was fitted to enable the machine make progress over the loose shale and crumbling nite, and the climb was accomplished without mechanical trouble in actual riding time of 3h. 42m., *i.e.*, after deducting the time spent in waiting at various points for recovery of breath, and for the photographer and cinematographer who followed the trail on foot, driving three mules which carried their apparatus.

The first two miles passed over a well-defined track, after which follows Hard Scramble Ridge, rising 2,000ft. in one mile, and higher still on a section known as the Devil's Backbone, the trail is barely a foot wide, sloping away at both sides in a drop on to loose stones some 3,000ft. deep.

At an altitude of 8,000ft., the rarity of the atmosphere was particularly noticeable, and the engine power fell off considerably.

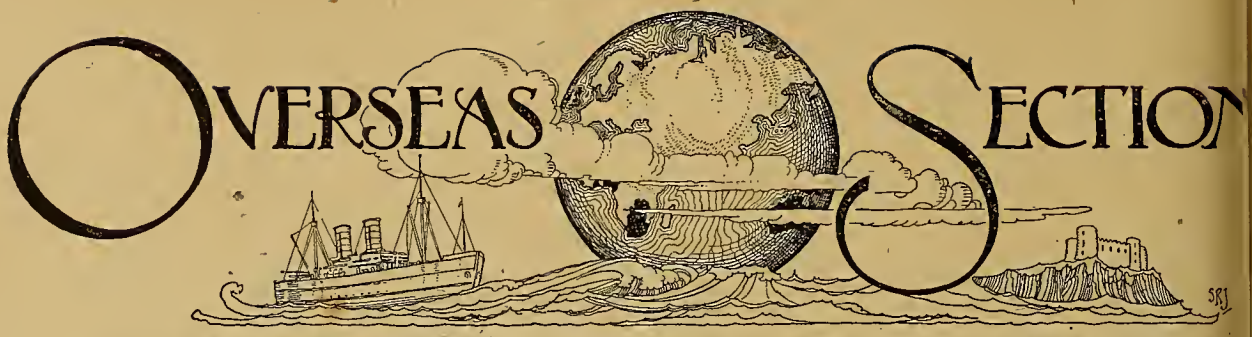
Eccentrically Bored Chain Wheels.

A Point for Consideration when adjusting Driving Chains.

A FAULT occasionally to be found in chain-driven machines is inaccurate boring of chain-sprockets. This causes the sprockets to be entric, and the chains to be alternatively tight and se, so that correct tensioning is not possible. The uble is not confined to any one particular make. tor cycles, which have recently come under our ice having this fault, include a couple of light- ghts, a single, and two twin sidecars. Obviously s a matter for works' managers seriously to investi- e. It may be found that war-worn machinery is re- nsible, and the difficulty of obtaining new plant. mention the point, as it is one that is not likely enhance the reputation of motor cycle makers as gineers, and because the demand for motor cycles at the present may tempt a production manager to "pass" faulty parts which under other conditions would be "scrapped."

Eccentric chain wheels in the hands of those who merely tighten their chains and take no measure to ascertain if the tension is more or less correct at all positions of the wheels, will also place undue strains upon engine and gear units, and worn bearings will result, besides incurring risks of chain breakages, which may bring into disfavour a system of transmission that has so much to commend if only it be properly applied.

Owners of chain-driven machines on adjusting their chains should take care to note that there are no "tight places."



A Commentary based upon Practical Experience and a Study of Overseas Opinions.

Spring Luggage Grids.

As a result of the notes which appeared in our last "Overseas Comments," urging the need for better springing of the luggage carrier on sidecars intended for colonial roads, and yet avoiding the light type of grid attached to the bodywork, several readers have suggested a rearward extension of the body side-members to form a platform, so that luggage would be insulated from shocks by the springs which support the passenger. One large firm has already perceived this advantage, Rudge-Whitworth, Ltd., having adopted this system on its sidecar, which was described on page 384 of *The Motor Cycle* dated April 17th. As will be remembered, in this design the springs carry a large rectangular frame of angle steel of sufficient size to support the body, and also to form a grid and petrol can carrier; the mudguard is also attached thereto, so that nothing likely to suffer from vibration is directly fixed to the chassis.

Lessons from Trials.

THE Scottish Six Days Reliability Trial may be taken as the Overseas trial of the British Isles, and the lessons to be deduced from it should be contemplated by all who are interested in Overseas trade. This year's Scottish event brings home one or two old, old lessons, foremost among which, perhaps, is the desirability of interchangable wheels—not only for sidecar machines, but for solo mounts also.

To quote one single instance. A competitor on the first day of the trial had the misfortune to encounter a jagged rock with his rear wheel. It cut clean through the outer cover, and punched a neat little hole in the tube. There was no time between the short checks of that day to change the cover over to the front wheel, so the competitor had to do the best he could by means of patches and a gaiter.

As onlookers, we ourselves were sure that all chances of an award of any kind for this man were gone, as he carried no spare cover, and was not, according to the rules of the trial, allowed to buy one after starting. It was distinctly hard lines, as the rider and the machine were pretty sure of pulling through had fortune favoured them, whereas it was now vastly improbable that the tyre would hold out on the rear wheel until a long blind to get ahead of time when the going was favourable made it possible to change the wheels. Later in the day the tyre gave out again, and a frenzied repair enabled the competitor to check in with about three seconds to spare.

That night he requested permission to buy a new cover, explaining his misfortune, and the sporting Scots —rather to our surprise—acceded to the reque Luck favoured the competitor again, for he found cover of the desired size at the very garage where t machines were stored, and managing next day to g ahead of time, in spite of unending trouble with t old cover, he succeeded in making the change, a finally gained a premier award.

Here, however, was a choice example of a premi award hanging in the balance owing to no defect in t machine as it stood—it was one of Britain's best and owing to no fault of the rider. Had he, at t first, been able to whip out his rear wheel, make t best repair possible, then change his wheels over, that the cut cover rode easily on the front wheel, wh anxious moments would have been spared him! T cut cover would probably have lasted out the tri with perfect safety on the front wheel, but fifty mil on the rear wheel was sufficient to aggravate the inju so that the tyre became practically useless.

Economy in Tyre Purchase.

IT is to be hoped that, ere long, machines will be fitted with interchang able wheels, for; quite apart from the co venience thus afforded, the addition mak a considerable difference to one's tyre bill. Generally rider buys the best cover procurable for the re wheel, while the front is shod with a cheaper a lighter production. Such a method is not economica and it is far better in every way to buy heavy cove for both wheels. The thin cover, if transferred to t rear wheel when the latter begins to wear somewha is seldom satisfactory. It soon proves itself not to puncture proof, and very probably the canvas go inside after quite a short mileage. Far better is it tyre both wheels alike, and then one is certain of punctures through the heavy tread of the front, a when the back cover wears down and it becomes nece sary to reverse them, one still has the front whe well shod and fit for many hundreds of miles, besid possessing puncture-resisting properties at least equ to a cheap tyre.

Strength of Construction.

BROKEN frames are usually a veritab epidemic in the Scottish Trials, but it worthy of note that only one fram breakage occurred this year, and that was due pressure of time necessitating the use of a brazed fittin instead of standard solid forging for the particul frame member which collapsed. There were, of cours several instances of broken sidecar couplings, and the will probably be just as many in every such trial t spring sidecar wheels become the rule rather than t

rseas Section.—

eption. The war has tended to stiffen up many tish designs, and though this may be desirable so as solo machines are concerned, too much stiffening sidecar design generally leads to breakage. Stiffen r motor cycle frame so that it cannot break and bably it will break your sidecar chassis; stiffen r sidecar chassis at its previously weak points and bably you create new weakness, and if the stiffening cess be carried too far, the point is reached at which sidecar chassis will break the motor cycle frame. And so we go on piling on weight *ad infinitum*, the weakness of the whole structure lies in its dity, and the only way to neutralise this condition o employ spring frames and spring sidecar wheels, whereupon the weight of the whole outfit can be cut down to a minimum.

At the same time, it must be stated that most of the sidecars competing which did not break their frames were subjected to an extremely severe test—more severe than would be meted out to them by the ordinary tourist. Thirty-seven miles in the hour over mountain roads—roads strewn with boulders and consisting of a wild succession of pot-holes and fly-crawls—is what more than one of the competing sidecars were called upon to do, and they stood the awful gruelling without so much as shaking loose a fitting. In fact, those that succumbed were extraordinarily few, and the breakages were in every case traceable to some acknowledged weakness in the design or workmanship.

It was noticeable that the passengers in the sidecar outfits complained of fatigue even more than the drivers—a condition of things that further strengthens the plea for spring sidecar wheels.

This Scottish test hill—Aultnaharie—conveys a slight idea of the state of some of the roads encountered during the recent Trials. These stretches approximate to Colonial conditions, and valuable data may be gathered during this strenuous test by manufacturers who cater for the Overseas market.

A Selection of Letters from Readers scattered all over the World.

Handle-bar Clutches.

New South Wales reader writes: "Please tell the ufacturer in England to fit handle-bar controlled clutches y time. Sometimes we have to negotiate stretches of l with steep banks upon which it is impossible to ride achine, and with a handle-bar clutch we can walk along , allowing the engine to do the work."

Advertisers and Prices.

Besquand," writing from Bombay, India, says: "May your columns, have a grouse that may eventually be a to others interested in the pastime. Why is it that ufacturers of electric lighting sets and electric conversion never publish in their advertisements the two details a most wishes to know, viz., *(a)* candle-power of bulb *(b)* approximate life of the dry battery (if this is to supply current)?

Why do some manufacturers of engines take the trouble t glass inspection windows to their crank cases so that oil level can 'be seen at a glance' when their booklets ot state what the level should be? Let us peep into one hese inspection windows, and what do we see? The oil l? Not a bit of it. A reflection of one's eye, or of the itry behind one's head is about all. Is the difficulty of g a sheet of bright metal a little distance from the inside of the glass insurmountable? The oil could be seen against the metal instanter.

"I notice several manufacturers still refuse to publish prices. Possibly all right for home customers, but hopeless from the Colonial customer's point of view."

Brakes.

"Colonial Engineer" discourses on braking systems in general: "As a Colonial engineer and a motor cycle rider of some eight years' experience it has been most disappointing to see the motor cycle industry (with one or two exceptions) back to their old slogan, 'What is good enough on a push cycle is good enough on a motor cycle.' I refer to the so-called 'new' (?) models which are being placed on the market.

"One of the principal things which I object to is the inefficient braking system adopted at present—a more or less efficient belt rim brake and a useless front rim brake. Now, sir, you may reply the front brake is never used. Perhaps not every day, but some day it will be wanted, and wanted badly. Some years ago, mounted on a first-grade English machine, I was descending a long steep hill, using my belt rim brake and compression. Half-way down the belt snapped, and I therefore applied the belt rim brake harder, and also the front rim brake. A hundred yards further down the hill the rubber came out of the shoe on the belt rim brake, leaving

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me at the mercy of the front brake, the Bowden wire of which snapped under the unusual strain. The nett result was one smashed machine and one smashed rider.

"Now, sir, with some few exceptions, the machines made in this country fit this useless front rim brake, which, besides being useless, scrapes off the enamel on the rims. Why do the manufacturers do it? Personally, I will never ride another machine unless it has band brakes.

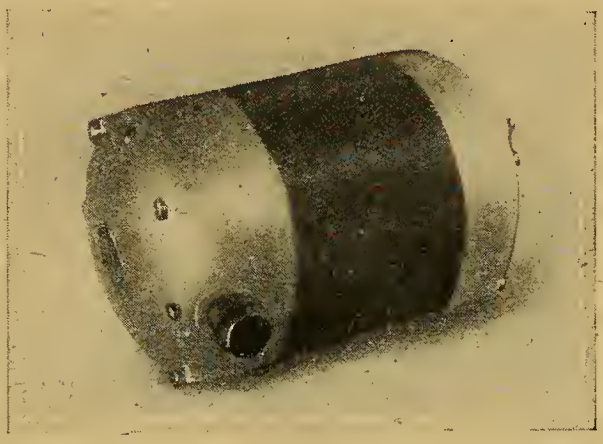
"Again, why do the manufacturers fit coiled springs to their forks? Any designer who knows the elements of mechanics must be aware that an undamped coil spring only slightly takes up the shock, and then tends to oscillate, whereas the fitting of leaf springs inherently damps these vibrations.

"Also, let us have no nickel, please. Enamel the machine all over. We wish to *ride* the motor cycle, *not* clean it all day, or have a rusty looking article. The control levers, clutch, and brake pedals, might be the same on all machines. One does not find a car with the clutch on the right and the brake on the left.

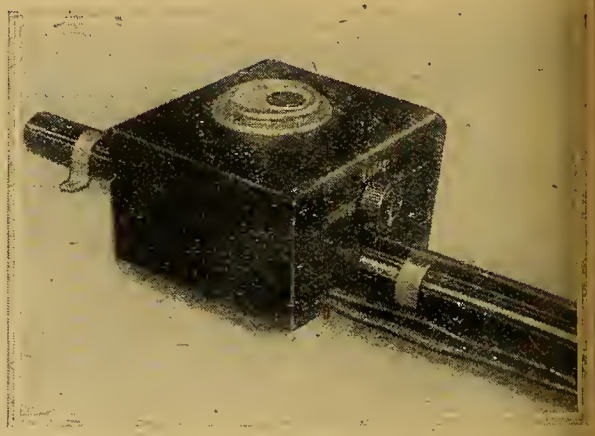
"In conclusion, one word to the motor industry. We prefer English machines to American, if suitable for our needs; but if you will not give us good brakes, springing, finish; and large wheels and rims, then the Americans will prosper in the Colonies as they did during the war."

A New Dynamo Lighting Set.

Electro-magnetic Cut-out: Illuminated Ammeter Dial: Tail-lamp Tell-tale: Dimming Arrangement for Lamps when Standing.



The 40 watt 8 volt "Perna" generator.



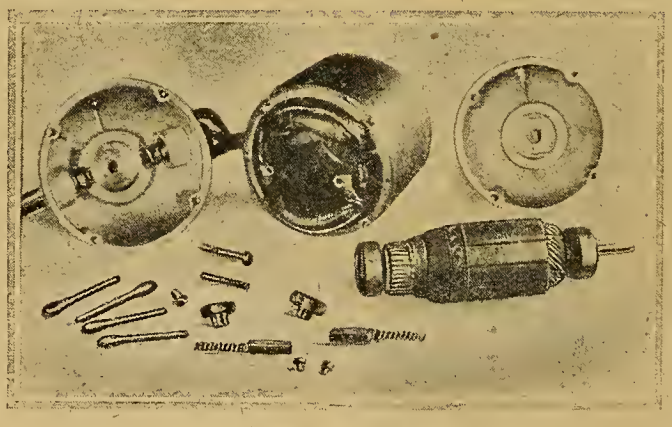
Switch box showing ammeter on the top

THE war has been responsible for the postponement of many designs of interest to motor cyclists; indeed, while much experimental work was undertaken as a result of the requirements of modern warfare, almost as many things were laid on one side for the same reason.

A device coming within the latter category is the Perna electric generator for motor cycles, which has been undergoing test privately since 1914, and in continuous use has proved to be thoroughly reliable.

The set consists of the dynamo, switchbox, accumulator, and the usual three lamps, and follows well-established practice in its constructional details.

Considering the generator first, the windings are arranged to give a continuous output of forty watts at eight volts, and will supply a constant current of one ampère above that taken by two thirty-two candle-power half-watt lamps and one four candle-power tail lamp when running at a normal speed of 3,000 r.p.m., and it is impossible to overcharge the batteries, no matter what speed is attained. The overall dimensions of this part of the unit are quite modest, being $4\frac{1}{16}$in. outside diameter × $5\frac{3}{4}$in. over the bearings.



The generator dismantled.

Fuller block accumulators are employed, and the wiring passes through a switch box arranged for mounting on the top tube of the motor cycle. The switch box has an ammeter in the top, easily visible while driving either by day or night, as when the lamps are switched on a small bulb beneath the dial, in circuit with the tail light, is illumined, thereby acting as a tell-tale for the latter.

Inside the switch box also is the electro-magnetic cut-out, which automatically breaks the circuit when the generator speed drops to 800 r.p.m., thus preventing the batteries discharging themselves through the dynamo when the voltage from the latter falls.

Another feature is the half-voltage device, whereby the lamps can be dimmed while the machine is stationary, or when riding through fog, where a yellow undazzling light is so necessary. By this arrangement only a quarter of the current is consumed, consequently a much smaller battery may be used.

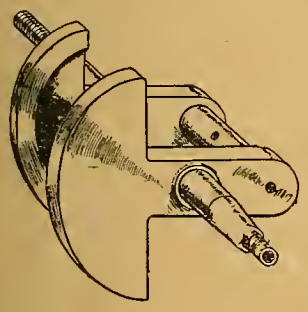
Mechanically, the construction of the whole outfit is on sound lines, the dynamo especially following car practice, the armature shaft being mounted on large double-row self-aligning bearings, and being driven by a $\frac{3}{8}$in. Whittle belt, or by chain as required. The weight is under 10 lb.

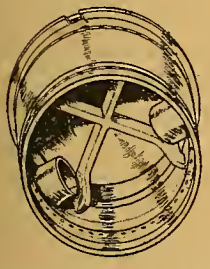
The makers, whose address is the Perna Engineering Works, Castlegate, South Shore, Blackpool, are listing the complete outfit at the moderate figure of eighteen guineas, and they may introduce a cheaper set for two lamps only.

A SPORTING SOLO SINGLE.

The "Buzmo"—a New "3½" with Overhead Valves, Outside Flywheel, and Mechanical Lubrication.

SINGLE-CYLINDER motor cycles of entirely new design are few and far between, and to learn of a new 3½ h.p. machine with an engine differing in many respects from general practice is always interesting. The machine to which we refer is the 3½ h.p. "Buzmo," which at no distant date is to be placed on the market by the Portable Tool and Engineering Co., Ltd., of Enfield Highway, N. Having a bore and stroke of 88.9 mm. and 76.2 mm. respectively, with 475 c.c. capacity, the cylinder is of cast iron, and fitted with a detachable head. The latter is hemispherical, and accommodates two tungsten steel valves, which are operated by rockers oscillating in bearings formed in two lugs on the cylinder head.

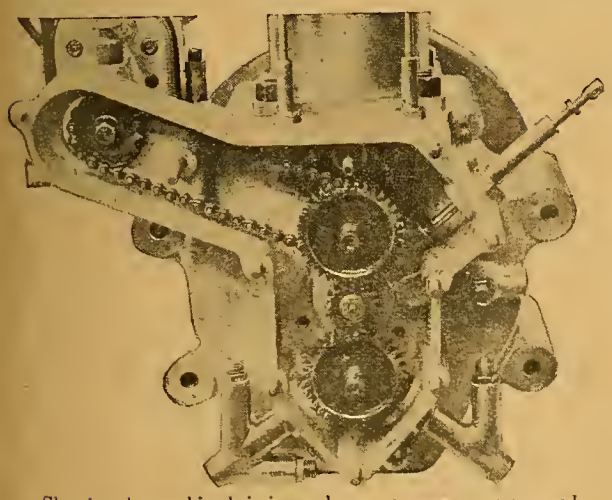




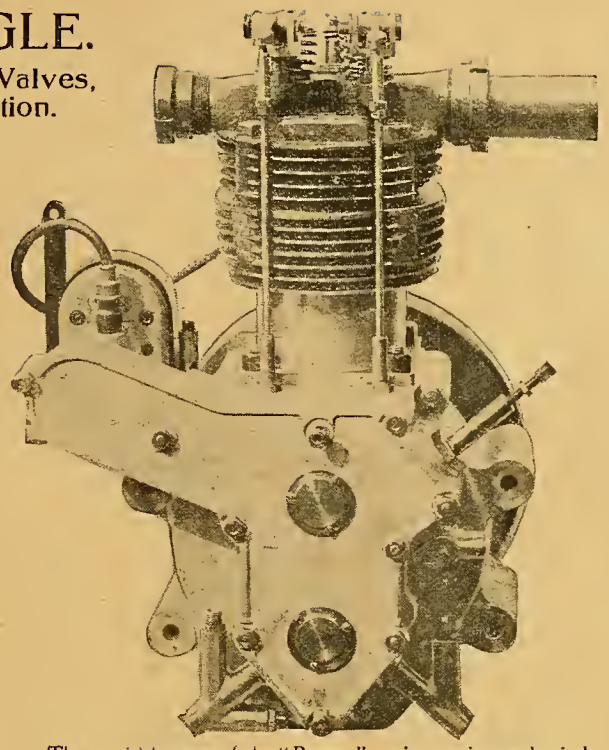
The milled and balanced crankshaft, and the cast aluminium piston, which has two unusually deep rings and two oil retaining grooves.

Two adjustable tappet rods transmit the lifting action from two rockers operated by a single cam wheel which is mounted above and meshes with the pinion on the engine shaft. Mounted on the cam wheel shaft is the chain sprocket which drives the C.A.V. magneto. The chain case is cast integral with the crank case. Below the main shaft pinion, and engaging with it on its under side, is another gear wheel of equal size, which is provided on the inner side with an eccentric on which ride two steel plungers operating two oil pumps. The function of these two pumps is to force the oil, contained in the front end of the large petrol tank, through various channels to the engine.

The oil passes down a pipe, coiled to offer a greater cooling surface, to one of the delivery pumps located at the front end of the timing gear case. This pump consists of a steel plunger reciprocating in a brass cylinder, its forward end resting on the eccentric, whilst the rear end rests against a steel return spring. Two brass pipes, provided with unions, are cast with the pump cylinder, each equipped with a ball valve, the seatings for which, however, are located on opposite sides to each other in order to operate the flow and return of the oil forced through the pump. The oil is forced by the pump to a channel in the crank case, which conducts it to the drilled crankshaft. Lubricating both the roller bearing on the pulley side and the plain bearing on the other side, the oil then passes to the big-end and is forced by centrifugal force up a pipe mounted on the connecting rod to the floating gudgeon pin bush and the gudgeon pin, and thence to the cylinder walls. The oil collected in the sump of the crank case is drawn through a pipe to the second pump, and is forced, through a sight-feed lubricator, back to the tank, providing a continuous flow of oil.



Showing the combined timing and magneto gear cover removed.



The special features of the "Buzmo" engine are its mechanical lubrication, outside flywheel, and overhead valves. The cylinder dimensions are 88·9 × 76·2 mm., giving 475 c.c.

An Aluminium Alloy Piston.

An aluminium alloy piston has two cast iron rings of unusual depth, and is provided with two annular slots around which a number of small holes are drilled. The edges of these slots, nearest to the centre of the piston, are cut at right angles, whilst the outer edges are bevelled; consequently, on the up and down strokes of the piston, oil is collected by these bevelled edges and contained in the slots, thereby distributing oil around the cylinder walls.

Fitted with the heavy pattern Druid spring forks, the frame departs somewhat from the conventional, the engine-supporting tubes being of the twin type. The wheels have knock-out spindles, and are, therefore, quickly detachable, while the rear wheel is equipped with an internal-expanding brake in the hub and also a shoe brake acting in the belt rim; both are heel-operated and Ferodo-lined.

Both front and rear mudguards are of ample width, and are fitted with side shields.

Negotiations for extensive premises are being made, and it is confidently anticipated that the machine will be produced in quantities early next year at a price between fifty and sixty guineas. A limited number, however, may be available before the end of this year. The "Buzmo" is designed as a simple solo single, and, as such, there should be a brisk demand for it on the part of those who desire a sporting machine for solo use.

DAY TRIPS and WEEK-ENDS

by

Chas. G. Harper

III.—OXFORD to FARINGDON, CIRENCESTER and CHELTENHAM

Previous instalments appeared in "The Motor Cycle" August 7th and 14th.

The old ruined abbey at Besselsleigh.

WE leave Oxford along the most uninteresting street in that city: Queen Street, which leads to the railway stations. It is almost inevitable, I suppose, that streets to railway stations should have that air of squalid modernity which is the mark of Queen Street, Oxford; but a very apt comparison comes at once to my mind: that with the Hills Road, Cambridge; which, although it is the way to the station, is a dignified, nay, almost a noble, street. However, I have not set out here to draw invidious distinctions. To Queen Street succeeds the long, straight length of the road past Botley: the "Seven Bridges Road." as Oxford men know it. At the fork we bear left and ascend to Cumnor, whose Norman church crests the hill. In it you will find the tomb of Anthony Forster, who died in 1572. He is commonly supposed to have had a hand in the mysterious death of the Countess of Leicester, Amy Robsart, who was found with a broken neck at the foot of a staircase in Cumnor Place. She stood in the way of her husband's ambition to marry Queen Elizabeth. Those were the times of an Italian Renaissance feeling in England, alike in art, architecture, crooked statesmanship, and lack of private morals. "An Italianate Englishman is the very devil," said some accurate observer; and the Earl of Leicester was that. A manuscript notice of the interesting things in Cumnor church concludes with the observation, "The future is not yet." This, it will be admitted, bears of no contradiction. It is the surest of things.

A Thames pastoral at Fairford.

Past a beautiful avenue, we have on the right the little church of Besselsleigh, and all that remains of the old manor house—a stone pillar of one of the entrance gates. Thus vanished the glory of the Besils and that of the Fettiplace family who succeeded them. Forward, past a junction of roads at the hamlet of Tubney, and through Fyfield and the quaintly-named Kingston Bagpuize, the road goes fairly level, and for nearly eight miles, into Faringdon, almost lonely, save for sight of the little hamlets and villages some distance off to the right. One of these, Buckland, four miles beyond Kingston Bagpuize, is interesting, alike for its church and the vastly lengthy mansion adjoining, once a seat of the Warwickshire Throckmortons, and before them of the Yate family, who have left as relic of their race a monument, dated 1648, to Sir Edward Yate and Lady Katherine.

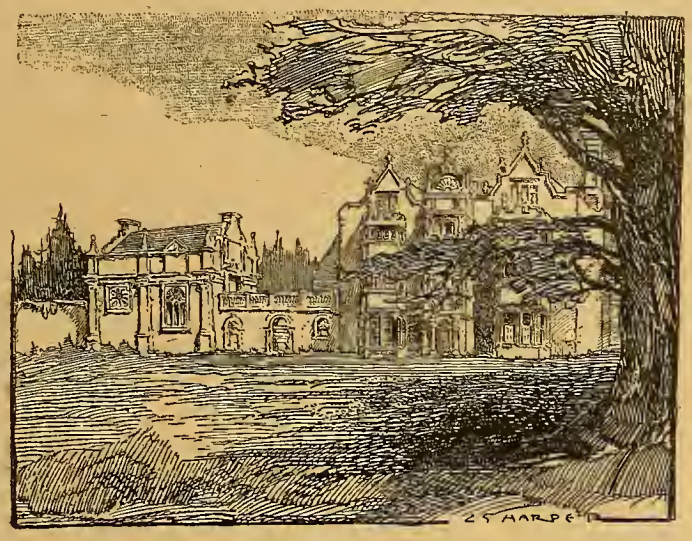
"The Baronet particularly honoured for
Morall, economical and prudential merit.
The ladie reverenced for
Sanctimonious zeal, humble and constant patience,
Abundant charitie, and admirable justice.
Reader! Depart! Imitate!"

We depart, but we cannot hope to compete.

Faringdon Clump, a landmark of trees on a hill to the left, is visible over many miles. The little town of Faringdon itself lies in a hollow; a decayed place with a market house missing its market and now housing the fire engine. At one end is a little lock-up, with the remains of a hand pillory outside, by which petty offenders were kept in durance, for the jeers of passers-by. The right-hand road from the Market Place is our way, and leads to Buscot, beside the Thames, which we cross to enter Lechlade, whose church spire is visible for miles. It is another of the little decayed towns of the upper Thames, with little life or interest in it. Four miles beyond comes Fairford, of much the same character, but with a church remarkable for its complete set of ancient stained glass windows. Church and windows alike were provided by John

Day Trips and Week-ends.—

Tame, 1498, and by his son, London merchants and natives of Fairford. The twenty-eight windows are of Flemish workmanship, and are famous; especially the great west window, displaying in vivid pictures the rewards of the blest and the torments of the lost souls. Horrific imps and devils are shown, taking great delight in the tormenting work. There are two or three especially engaging imps; one strawberry-coloured and covered all over with pips, who is beating a poor soul with a spikey iron ball at the end of a chain, seems to be really enjoying himself. And so also will the tourist who visits Fairford and studies this window.



Burford Priory, a fine old country seat.

Cirencester, in a further 8½ miles, is reached along a road of no remarkable features; villages lie a little way off, rather than upon it. At Poulton an ingenious blacksmith, it will be noticed, has made a wayside trophy out of some thousands of old horseshoes accumulated in his way of business. "Ciceter," as Shakespeare calls it, wears that air of aristocratic dignity which sits so splendidly upon nearly all such ancient stone-built towns; and its great church forms an effective centre, the lofty tower being the feature of the town. Now that everyone can read, it is only the very old-fashioned country folk and Lord Bathurst and his county circle who call the town "Ciceter." Everyone else styles it "Cirencester." Who is, or was, that siren (spelt with a "c") after whom the place was named? There never was one. You can take your choice of derivations; from the Roman "Corinium," or from the Saxon "Ceorn-ceaster," for in both of those names that of the river Churn is hidden. The town is situated on it. Near at hand are the villages of North and South Cerney, which take their name from the same source.

The Market House, Witney.

Our way out lies to the right, round by the church; a very narrow and obscure exit. In passing, notice how the ambitious builders who reared that mighty church tower in the first years of the sixteenth century, or, it may be, the last of the fifteenth, grew alarmed at their own daring, and, fearing lest the foundations should give way, propped up the great bulk with a buttress like a timber shore. Absolutely ugly and by no means architectural, it has at least saved the beautiful tower from collapse.

It is a long straight road that takes you towards Gloucester: ten miles of a forthright Roman way, with nothing in the style of villages to hinder full speed ahead. Thus we come to Birdlip, at the crest of the famous Birdlip Hill: that long, dangerously crooked descent into the vale of Gloucester. The tourist may, if he wishes, try it, and turn to right for Cheltenham down below; or he may take the right-hand turn at top of the hill, and so descend lengthily into Cheltenham that way, through Leckhampton: six miles.

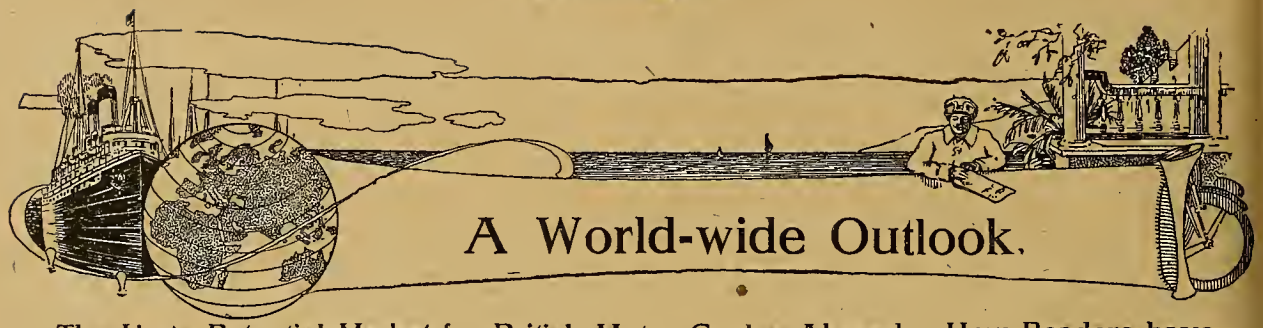
Rather than take the main road all the way home to Oxford, let us make a *détour*. Leaving Cheltenham past its suburb of Charlton Kings, and thence rising past the reservoir, we turn off to the right at Dowdeswell, coming in four miles to Withington. These are byways, and pleasant ones, leading through Chedworth Woods. At two miles beyond Withington, another byway leads on the right to the famous Roman villa discovered there, some fifty years ago. Straight ahead, the road goes on until it reaches the Fosse Way at Fosse Bridge. Here, turning left, and then right, we follow the winding valley road beside the river Coln, past Coln St. Denis, Coln Rogers, Winson, and Ablington, into Bibury, charmingly situated by the stream, with the lovely old-world hamlet of Arlington on the other side.

Our way to Burford lies past Aldsworth, three and a half miles, and six miles beyond. It is all rather grim Cotswold country, and, reaching Burford, we may be thankful for the homely welcome of that little town, lovely beyond compare, in its utter detachment from the life of to-day.

Burford owes a good deal of its quiet to being situated on a slip road just down below the great Oxford and Gloucester highway.

It is nineteen miles from here to Oxford through Witney. Having reached Oxford, we have compassed a circular tour of some ninety-seven miles.

(This series will be continued in subsequent issues.)



A World-wide Outlook.

The Huge Potential Market for British Motor Cycles Abroad. How Readers have Assisted "The Motor Cycle" Overseas Campaign.

CONSISTENTLY, and for several years, we have endeavoured to bring before British motor cycle manufacturers facts which would induce them to make strenuous efforts to capture the ever-increasing trade of the British Dominions and Colonies. Our campaign has been largely assisted by true Britons Overseas, whose informative communications have been published regularly. Useful suggestions as to improvements and modifications to existing British models, which have been considered by Overseas riders as essential to the full enjoyment of the pastime, have been widely read and studied.

British Overseas Models.

The fruit of that world-wide co-operation is seen in the 1919 Overseas models which several manufacturers have produced. Many of these models embody the most important of the improvements for which our Overseas readers have asked, as well as countless other modifications in construction which are the direct result of the manufacturers' experience with machines used under war conditions. These new Overseas models are fit and worthy representatives of the Mother Country. When once British manufacturers have got down to quantity production and lowered costs of manufacture, these models, quality for quality, will enable them to defy foreign competition in any part of the globe.

The question of price is just as important abroad as it is at home, and although British machines have had in the past, and still have, the benefit of preferential import duties in most of the British Dominions and Colonies, as well as the advantage of the Colonial buyer's natural leaning towards British articles, prices will have to be more on a level with those obtained for the American product, otherwise pockets will be considered before patriotism. Reduced prices are brought about by organisation and increased output. British makers are fully alive to that simple fact. The world's potential market for motor cycles has as yet barely been touched. The idea of the United States having five and a half million registered owners of motor cars in 1919 would have been ridiculed ten years ago, but it is now an accomplished fact, and we recommend British motor cycle manufacturers to think, if not in millions at present, at least in hundreds of thousands.

British Exports.

The number of motor cycles exported during 1913 from the United Kingdom to other parts of the British Empire was 11,302, valued at £500,768, and had not the war intervened the 1914 figures would have been much larger, but we want to see the figures increased tenfold before feeling satisfied that home manufacturers are even beginning to approach the position in the markets of the British Empire which they are rightly entitled to occupy.

New Zealand.

How popular the motor cycle has become in New Zealand is perhaps hardly realised by many. The climatic conditions of both islands are such that the pastime can be followed practically throughout the year. Many of the roads are as good as those in Europe, and seldom impossible for riding, but naturally all kinds of roads are to be found. During the six years ended 1917, New Zealand imported 13,606 motor cycles, or one for every eighty-one inhabitants, white and aboriginal—truly a remarkable proportion! Out of every hundred machines seventy-five were British, but this proportion has diminished greatly, for, while in 1913 the proportion of American machines imported as compared with British was as one is to twenty-five, in 1916 it had changed completely, British and American imports being practically equal, and in 1917 it was almost three to one against the British.

Australia.

Motor cycling has made very good progress in the Commonwealth, particularly in New South Wales, but the proportion is a good way behind that of New Zealand. One machine to every 224 inhabitants was the average in use throughout Australia in 1918. In 1917 America supplied 75% of the new motor cycles imported by Australia. In addition to the good roads in the principal cities of Australia and in the suburban areas of such cities, there are many thousands of miles of tracks on the natural surface providing good going, and to a large extent it is owing to this that motoring is becoming so general in Australia.

British South Africa.

This wealth-producing country easily heads the list of our Overseas Dominions so far as motor cycling is concerned. Figures for the five years ended 1917 show that motor cycles were imported into South Africa at the rate of one to every seventy-four of the white population. Our American friends have had a good picking of the South African market during the war, as their proportion of the trade in motor cycles and parts, which in 1913 was under 3%, rose steadily year by year and reached 54% in 1917.

AUTO-CYCLE UNION — R.A.C. ASSOCIATE

T. W. Loughborough, A.M.I.A.E., Secretary.

Are You Insured?

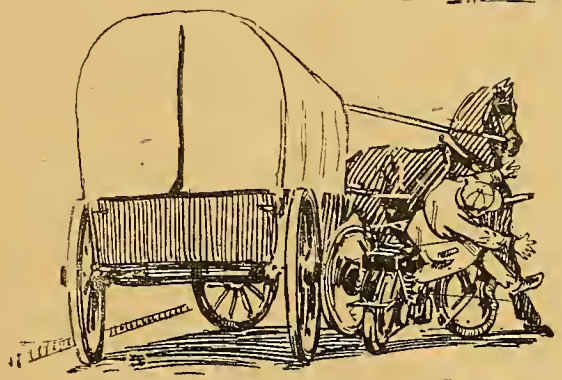
The mishaps that may overtake the most careful of motorists are numerous. It behoves every rider to insure both himself and his machine.

To encourage motor cyclists to take out a complete Policy under Table 3, such policy holders are admitted to full membership of the Auto-Cycle Union at one-half the usual subscription.

The A.C.U. Insurance Policy provides for every contingency, and its terms bring it within the reach of everyone who can run a motor cycle.

It is a straightforward contract, affording exceptionally generous benefits. Its conditions are stated clearly and without ambiguity; and you are invited to compare it in every particular with other policies.

The A.C.U. Policy is issued by the Law Accident Insurance Society, Ltd., a company of the highest standing; who have agreed that in the rare event of a dispute between themselves and a Member of the A.C.U., the decision of the A.C.U. Committee shall be final.

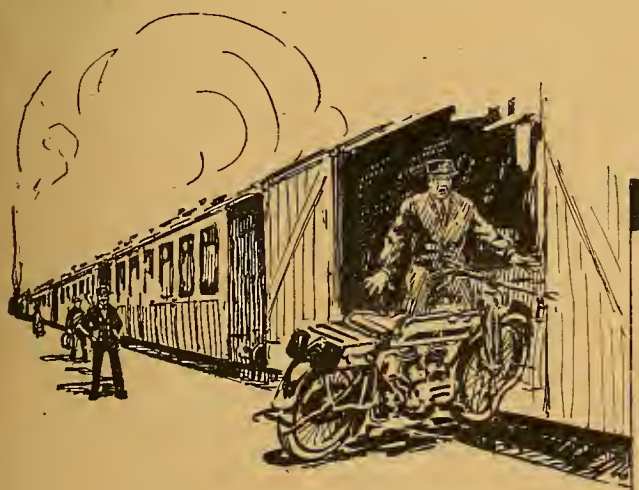


THE AUTO-CYCLE UNION,
83, PALL MALL, LONDON, S.W.1.

Telephone: Regent 5350.

THE LAW ACCIDENT INSURANCE SOCIETY

Write to-day for full particulars of A.C.U. Insurance and Membership.—Fill in the Coupon NOW.



Inquiry Coupon

The Secretary,
AUTO-CYCLE UNION
83, PALL-MALL,
LONDON, S.W.1.

Please send me further particulars regarding the advantages of becoming a member of the A.C.U. together with Application form for membership.

Name.....

Address.....

"The Motor Cycle," 28/8/19.

The TOURING G.N.

ENGINE.—The engine is the 90° air-cooled twin which has been fitted to the G.N. since 1912.

The G.N. engine is vibrationless, the running balance is superior to the balance of an ordinary four-cylinder engine.

Its two cylinders, 84×98, give a capacity of 1093 c.c., and the G.N. system of air-cooling, with deep cooling fins and arrangement of inlet and exhaust valves, gives excellent results. The engine is placed across the frame, and the cylinder heads and exhaust ports are very thoroughly cooled by the full and direct air draught.

A large external flywheel is fitted, and gives very steady running and slow pulling.

The rockers operating the overhead inlet valves are entirely enclosed in a neat casing, cast integral with the dome.

The cylinder heads are easily detachable, and their extreme accessibility enables carbon deposit to be removed in a few minutes.

LUBRICATION.—G. N. system of semi-automatic pump, delivering direct to crankshaft bearings, air-cooled sump to crank case.

TRANSMISSION. — Through 3-plate G.N. clutch to bevel-driven cross-shaft, thence by Renold roller chain to rear axle. Drive is taken through only one chain at once, and all changes are made by substantial hardened steel dog-clutches.

SPRINGS. — G.N. semi-cantilever springs with radius rods.

STEERING. — A neat steering gear box is fitted with bevel-gearing.

WHEELS. — G.N. detachable and interchangeable wire wheels, 650×65, with spare wheel and bracket.

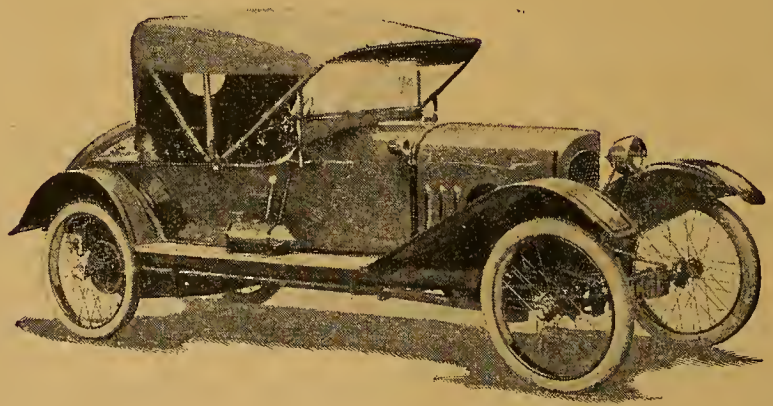
WHEELBASE.—Touring 8ft.6in., track 3ft. 6in., overall length 11ft., width 4ft. 2in., height 3ft. 4in., with screen 4ft. 1in. Ground clearance 9in. Weight Touring, 6½ cwt.

The Standard TOURING G.N. *With detachable interchangeable wheels, but not equipped with accessories - - - approximately* £140

Fully equipped with hood, screen, dynamo lighting set with head lamp, side and tail lamps, spare detachable wheel with tyre, horn, pump, tool kit, jack, and number plates approximately £167 10

G.N. LIMITED, ETNA WORKS, ALBERT ROAD, HENDON, N.W.4.

York and District Motor Club, 4th August. — York-Edinburgh and back (406 miles — 23 hours); 2 G.N.'s entered, Mr. G. Finch on a "Standard TOURING G.N." 1919, and Lt. T. Gilmore-Ellis on a Vitesse G.N. 1919, both qualified for the highest award (The Silver Victory Cup). Petrol Consumption: Standard TOURING, 62 m.p.g.; VITESSE, 75¾ m.p.g.



Raymond.

In answering this advertisement it is desirable to mention "The Motor Cycle."

A World-wide Outlook.—

India, Ceylon, and Malaya.

In these countries the demand for motor cycles comes not only from the white population, but also from the wealthy and educated natives, and represents a potential market of great value. Over a period of three years, from April, 1914, to March, 1917, British India imported 5,504 motor cycles, American machines making no headway until 1916-17, when 525 were imported as against eight in 1913-14. Nearly 190,000 miles of roads are maintained by public authorities throughout the country, a third of which are metalled and in fairly good condition.

The American share of the motor cycle imports into Ceylon jumped from just over 10% in 1915 to 60% in 1917.

There were 1,130 motor cycles in use in the Federated Malay States in 1916, which number has undoubtedly increased by now.

Canada.

From the point of view of numbers of motor cyclists, the Dominion of Canada is the most backward of all the daughters of Britain. Canada has some of the finest roads in the world, one motor car to every thirty inhabitants, but only one motor cycle to every 916! Here is a splendid opportunity for enterprise on the part of British manufacturers. There is no apparent reason why motor cycles should not become as popular as cars: on the contrary, many places are accessible to a motor cycle that a car could never reach owing to the width of track.

To those manufacturers who intend to make a serious bid for Overseas trade, we would emphasise the imperative necessity of making adequate arrangements for the holding of stocks of all spare parts at reasonable prices and at convenient centres in all Overseas countries.

We venture to suggest that if replacements of broken and worn parts of foreign machines had been as difficult and as costly to obtain as those of British motor cycles, the large increase in the use of foreign machines Overseas may not have taken place to the extent it has done.

It is futile to expect the Colonial rider to lay up his machine pending correspondence between the Colonial agents and the British manufacturer, which in the case of New Zealand would mean a minimum delay of three months.

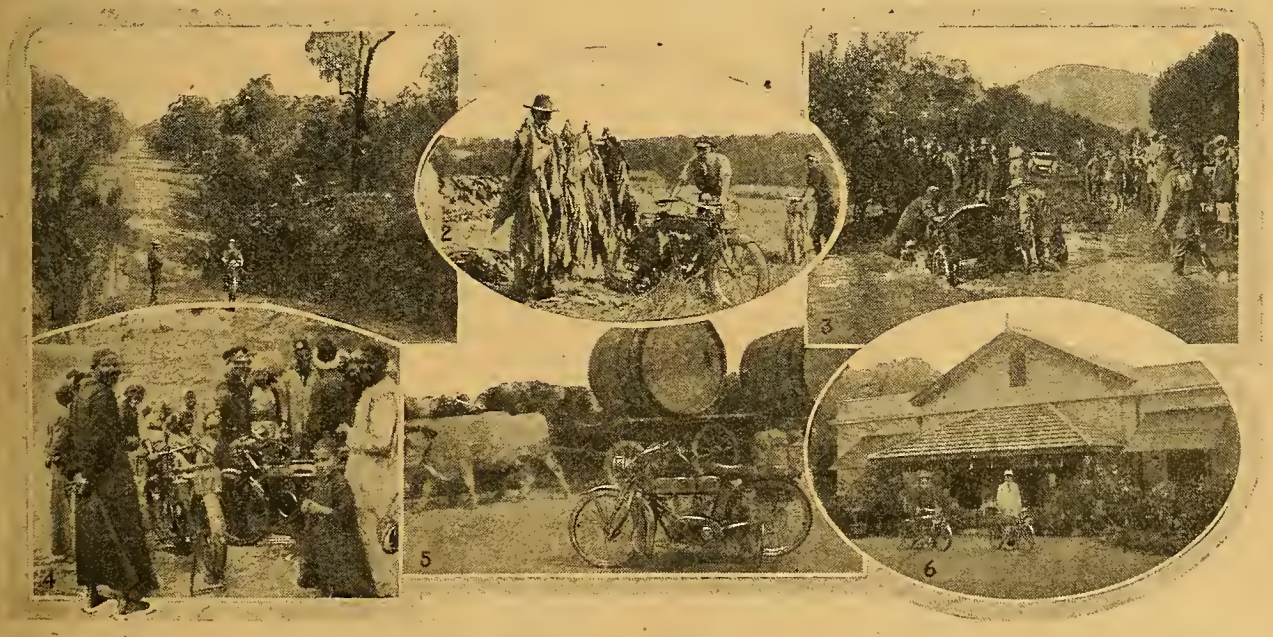
Advantages British Manufacturers Should Offer.

The advantages which the British manufacturer must be prepared to offer are: First, a machine embodying all the chief requirements of the Overseas rider at a price equivalent to that of the foreign article; secondly, a guarantee that in the event of an accident necessitating replacement of any part of the machine, the buyer will be supplied from stock, actually in the country, with the necessary part at a reasonable cost; and, thirdly, the feeling that when a sale has been effected, the account is not closed, the manufacturer retaining a paternal interest in the machine supplied.

Assisting Overseas Trade.

Our offer to the British motor cycle industry is to do all in our power to assist them in their trade with the Overseas Dominions and foreign countries—the furtherance of which we look upon as a patriotic duty—by placing at their disposal, upon request, information we may possess concerning the possibilities of trade and peculiar conditions in any particular part of the world.

From our readers Overseas we welcome any particulars of the conditions relative to motor cycling, which assist us in fostering the most fascinating type of motor vehicle extant.



THE MOTOR CYCLE OVERSEAS. (1) A typical New South Wales country highway. (2) At a tobacco farm, New England, U.S.A. (3) A trial scene in South Africa. (4) Natives interested in D.R.'s machines in Egypt. (5) On a Venetian highway. (6) Motor cyclists at a Government residence, Madras.

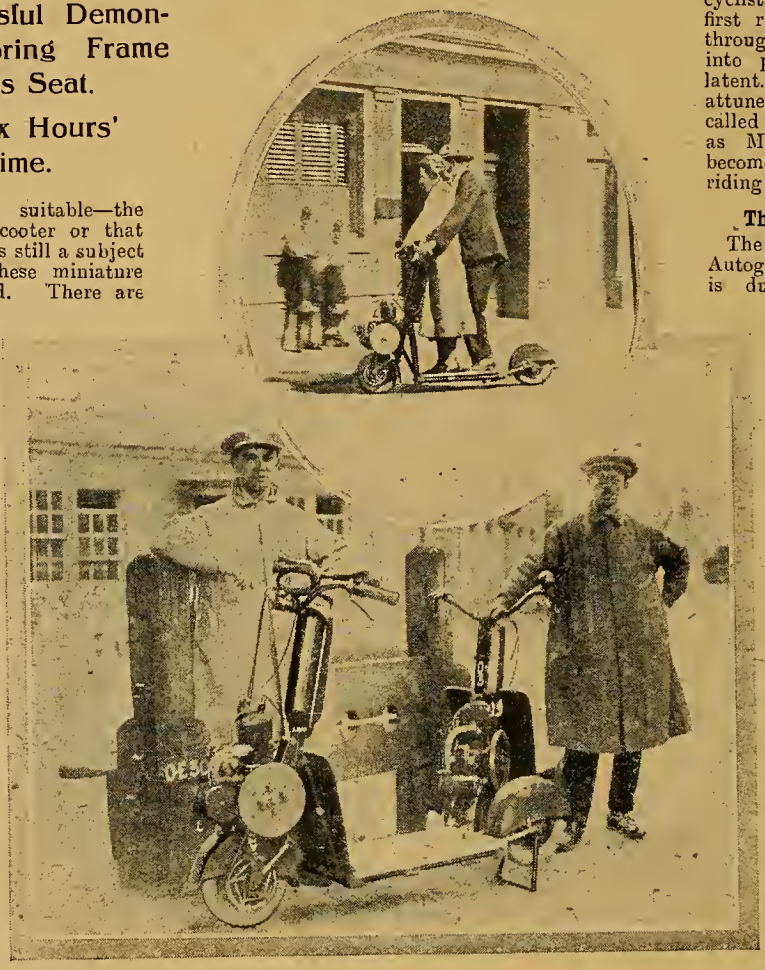
BIRMINGHAM TO LONDON BY SCOOTER.

A Highly Successful Demonstration of a Spring Frame Scooter minus Seat.

112 Miles in Six Hours' Running Time.

WHICH is the more suitable—the platform type of scooter or that fitted with a seat—is still a subject for argument whenever these miniature motor cycles are discussed. There are quite a number of people who, at present, prefer the idea of the platform, but so few scooters have been made and tried that the question is only decided on imagination by the bulk of the scooters' critics. It is therefore interesting to meet a scooter rider who claims to have ridden over 3,000 miles on a platform machine, and is convinced that the seat is not necessary. This rider is Mr. C. R. Townsend, the designer of the Autoglider illustrated on this page, and, since it would be simple to fit a comfortable seat, that he is not doing so is significant.

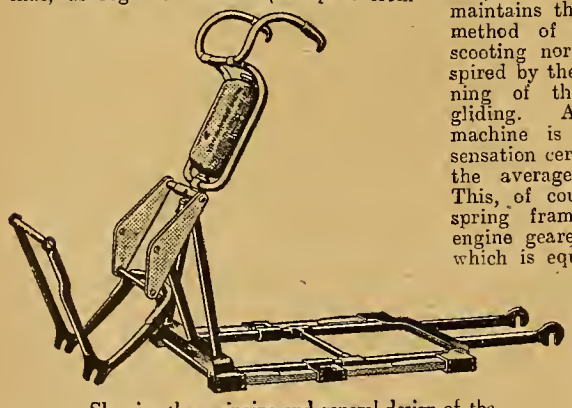
Most "stand up" scooters we have tried are not suitable for anything more than short-distance trips, and even after a mile we have experienced certain leg strains which, at the end of the run, suggested that it was easier to kneel than to stand.



(Top) Initiating a lady in the art of "autogliding."
(Bottom) The Autogliders posed near the stocks in Dunchurch.

Absence of Vibration.

The Autoglider is different, however. It has an efficient spring frame, and a short test of its running revealed that road vibration was to a very large extent minimised, and it would therefore appear that, as regards comfort (as apart from the question of popularity), the answer to the query "to stand, or not to stand?" may depend largely upon the design of the scooter.



Showing the springing and general design of the Autoglider frame.

We raised this point with Mr. Townsend, but the designer of the Autoglider maintains that his machine opens a new method of transport which is neither scooting nor motor cycling—an idea inspired by the smooth and high speed running of the machine which suggests gliding. At high speeds—and this machine is capable of 30 m.p.h.—the sensation certainly is different from riding the average motor cycle or scooting. This, of course, is due to the resilient spring frame, and a smooth running engine geared 4 to 1 with 12in. wheels, which is equal to 8 to 1 with the 24in. wheels of a lightweight.

Mr. Townsend agrees that at first one experiences a certain stiffness after the initial rides on this machine, but maintains that this only approximates to that which is suffered by cyclists and oarsmen after their first ride or spell at the oars, through muscles being brought into play which normally are latent. Once these muscles are attuned to the work they are called upon to do, autogliding—as Mr. Townsend terms it—becomes less fatiguing than riding a bicycle or walking.

The Frame Construction.

The smooth running of the Autoglider, as before mentioned, is due to its spring frame and platform, but the machine would be robbed of this comfort were it not fitted with a smooth running engine and its slipping clutch shock absorber.

The illustration shows the design and construction of the Autoglider sufficiently to render a lengthy description unnecessary. It will be seen from the drawing that the frame is rectangular, and is pivoted at its four corners in brackets forming part of the front and rear fork members. Four laminated leaf springs are carried from this point, and slide in a box approximately in the middle of the frame. Two heel-operated band brakes are fitted on the rear wheel.

A 2¾ h.p. Union two-stroke will, we understand, be adopted, and the price has been provisionally fixed at forty guineas.

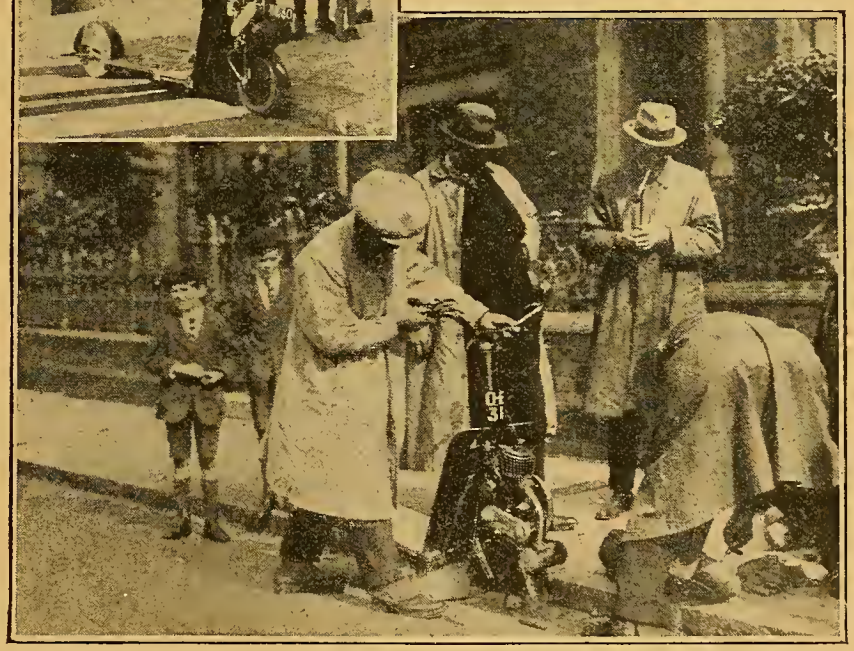
A Long-distance Trial.

In order to prove his contentions, the maker arranged a prolonged run on Thursday, the 21st inst. Meeting at the works in Great Charles Street, Birmingham, a commencement was made, London being the objective.

Two Autogliders started, one, of the latest type, with Union two-stroke engine, being driven by Mr. Skinner, works manager of Messrs. Townsend and Co. Mr. Skinner's task was to demonstrate the possibility of a rider covering 100 miles without undue fatigue, and so prove the redundancy of the saddle. The other machine was an early demonstration model, with over 3,000 miles to its credit, and was taken along so that any of the pressmen, who followed in Mr. Townsend's car, could sample and delights of autogliding.

Leaving Birmingham at 9.40 a.m., the party headed for Coventry, and, on the rough surface of Meriden Hill, near the latter place, it was quite impressive to notice the efficient manner in which the springing of the frame was operating.

Hereabout, the companion "hack" machine began to shed the rubber off its driving tyre, which had recently been



(Top) The two Townsend Autogliders waiting to commence their journey from Birmingham to London. Mr. Skinner (in white coat) covered a distance of 120 miles in running time of six hours
(Centre) In North London; refilling the tank of the Autoglider with petroil mixture.
(Bottom) Changing the front cover on the old demonstration model on which members of the party sampled the art of gliding.

retreaded, and a stop was made to replace the cover with a new Palmer cord. During the tyre-changing operations, which took exactly twenty-five minutes, the test machine was demonstrated to us and ridden by Mr. Stafford, another seatless scooter manufacturer, outside whose works, by a curious coincidence, the *contretemps* occurred.

It was distinctly illuminating to hear the views of these exponents of the platform machine. Both, of course, champion the stand-up position, advancing, as arguments, that the unavoidable vibration resulting from the short wheelbase and small diameter wheels, even when minimised by such a complete system of frame springing as that of the Autoglider, is transmitted directly to the base of the spine when a seat is provided. When standing on a platform, the vibration, it is urged, is not felt, since it is absorbed by the natural spring and poise of the rider's body and legs. Incidentally, the point of any vehicle least affected by road vibrations is at its centre, and, in the machine under test, the rider stands midway upon the platform.

35 m.p.h. Attained.

Having refitted the wheel, fast time was made through Coventry to Towcester; in many places a steady 25 to 30 m.p.h. was maintained, and, on one particular stretch, the speedometer needle of the car, which followed the two scooters at a distance of about a hundred yards, remained for three miles on the 35 m.p.h. mark.

After Towcester the writer took over the companion machine, and rode alongside Mr. Skinner, who was going well, having had no involuntary stops, and, with half the journey covered, still appeared to be perfectly fresh.

This is quite the fastest glider we have sampled (the engine is a 2½ h.p. Villiers two-stroke), but the management was found to be perfectly simple, steering and steadiness at speed being quite as good as experienced on a solo motor cycle.

Running down through Barnet we paused in the Finchley Road to fill up, and then made the crossing of London quite easily, having only one traffic stop in Farringdon Road. A crowd at once assembled in Tudor Street as the machines arrived outside the offices of *The Motor Cycle*, and the cleanly appearance was favourably noticed.

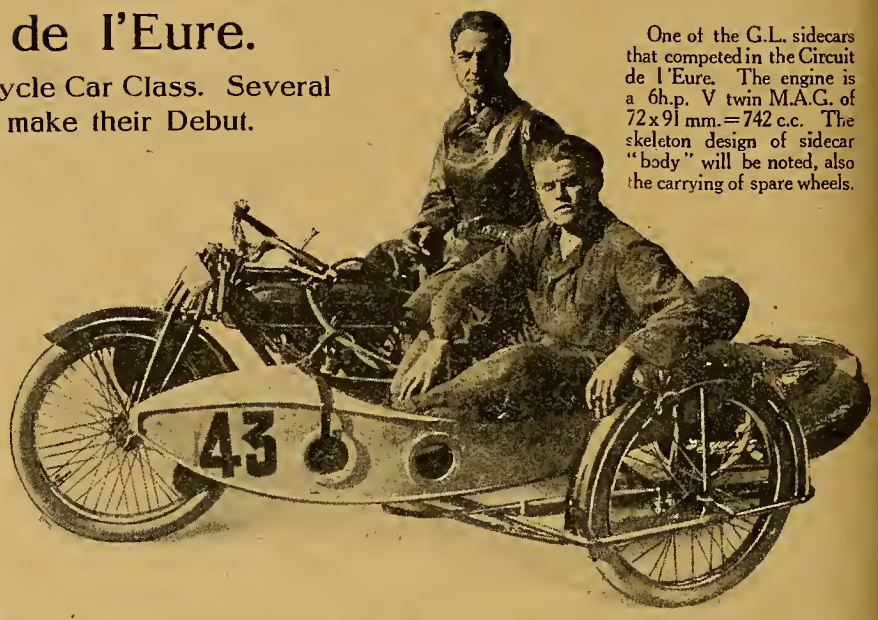
The Rider Quite Fresh.

Mr. Skinner, who had "glided" the whole distance from Birmingham, was remarkably fresh and fit, and, despite his long standing, protested that he was not tired. It is a fact that, throughout the whole run, he had experienced no phyiscal inconvenience other than that caused by lack of goggles. His miniature mount ran faultlessly throughout, without any mechanical stop. The distance covered by the accompanying car (by trip recorder) was 112 miles, but the additional demonstration runs on the way would easily bring the day's mileage of the glider up to 120. A little over a gallon of spirit was used on the "observed" machine.

This average of 20 m.p.h. compares with a lightweight motor cycle performance, as, of course, it should do if one considers the fact that a proved lightweight two-stroke engine of 70 × 70 mm. was fitted. But the fact of such a journey being possible of successful accomplishment, and the machine moreover able to finish in excellent mechanical condition, must be ascribed to the excellence of the springing system adopted. With larger wheels (it is proposed to replace the 12in. wheels by wheels of 16in. diameter), the Autoglider will be much improved both in comfort and by increasing the ground clearance. As it is, Mr. Townsend can be congratulated upon having made the most convincing demonstration of a scooter up to date.

The Circuit de l'Eure.

A British Success in the Cycle Car Class. Several New French Models make their Debut.



One of the G.L. sidecars that competed in the Circuit de l'Eure. The engine is a 6h.p. V twin M.A.G. of 72 x 91 mm. = 742 c.c. The skeleton design of sidecar "body" will be noted, also the carrying of spare wheels.

PROBABLY what is the nearest French approach to our Tourist Trophy Race was held on a course in the Eure district of France on the 15th and 16th inst.

There were classes for motor bicycles with engines not exceeding 250 c.c., 350 c.c., and 500 c.c., and for sidecars with engines not exceeding 500 c.c. The cycle car class was confined to engines of 1,100 c.c.

The event was divided into a two-days race, the sidecar and cycle car classes competing over a distance of 178¾ miles on the 15th inst., and the bicycles 223½ miles on the 16th inst.

All machines were sealed on the cylinders, frame, hubs, steering head, and change speed gear box, and competitors had to bring their machines to the weighing scale with the wires already fixed, for receiving the lead seals. Every machine had to carry a large circular number plate, on both sides of the machine attached either to the front or rear forks, and a similar number plate with smaller figures in front fastened to the girder tubes of the fork.

A Hilly Course.

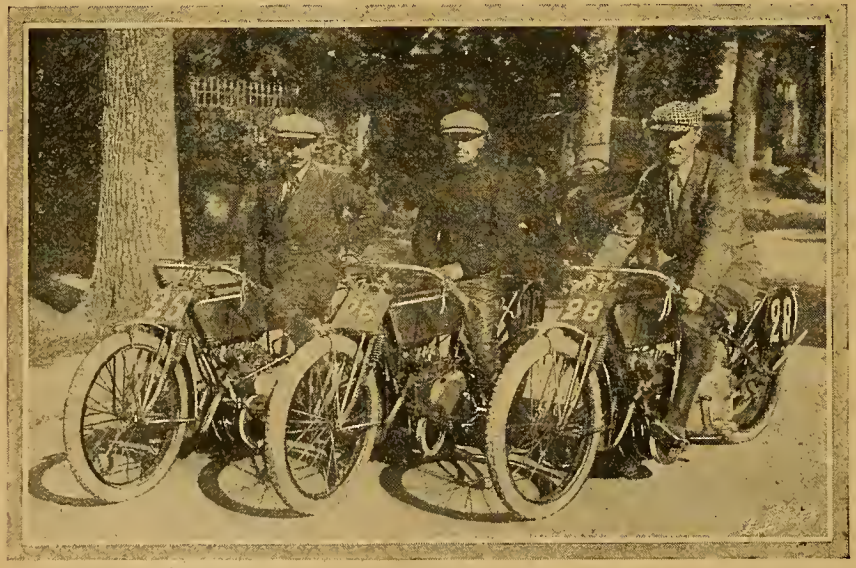
The course, which was a hilly one, started from near Vernon and travelled in an easterly direction towards Paris, through Gasny, Bionval, Valcorbon, and Herbécourt, to the finish near Vernon.

Among the machines that took part may be mentioned the G.L. sidecar. Four outfits of this make took part in the 750 c.c. sidecar class, only one British machine, a Rover, being pitted against this formidable team. The G.L. is a twin-cylinder machine, fitted with a M.A.G. engine. Two spare wheels were carried at the back of the racy-looking sidecar. Details of this model were given last week.

New French Design.

The Peugeot team were mounted on machines with side-by-side vertical twin-cylinder engines, chain driven, change speed gears, kick starters, Druid type spring forks, and outside flywheels. Two separate exhaust pipes were carried forward to one silencer. The engine had four overhead valves to each cylinder, these being inclined, and operated by overhead camshafts rotating in dust-proof casings, and specially lubricated.

Th Motosacoche machines, which have been greatly improved in general design, had overhead valve M.A.G. engines, all chain transmission gears, and Druid type spring forks.



The Peugeot team in the 500 c.c. class, Péan, Perrin and Desvaux. The engine is a vertical twin, with side by side cylinders having four overhead valves per cylinder and outside flywheel. The transmission is all chain, and the front forks of Druid pattern.

The Results.

The results of the sidecar and cycle car class are :

SIDECARS WITH ENGINES NOT EXCEEDING 750 c.c.
DISTANCE, 178¾ MILES.

	H.	M.	S.
1. Huret (G.L.)	5	16	34⅕
2. Le Pen (G.L.)	5	37	20
3. Delabre (Rover)	5	52	58

Winner's average speed 54.58 km. = 33.9 m.p.h.

SIDECARS WITH ENGINES NOT EXCEEDING 1,000 c.c.

	H.	M.	S.
1. Milliman (Harley-Davidson)	6	23	56
2. Oblin (Enfield)	6	35	53⅖

Winner's average speed 45 km. = 27.9 m.p.h.

CYCLE CARS.

	H.	M.	S.
1. P. Houel (Morgan M.A.G.)	5	10	23⅗
2. Enders Jack (Enders-Jack)	5	24	15⅗

Winner's average speed 55.67 km. = 34.5 m.p.h.

Two or three other Morgans competed, and Delabre's Rover made the fastest lap, 22m. 10s., 65 km. = 40.3 m.p.h.

The Second Day's Race.

On the 16th the motor cycle classes resulted as follow :

ENGINES NOT EXCEEDING 250 c.c.
DISTANCE, 178.8 MILES.

	H.	M.	S.
1. Louis (Alcyon)	6	9	40

Winner's average speed, 46.74 km. = 29.02 m.p.h.

ENGINES NOT EXCEEDING 350 c.c.
DISTANCE, 223½ MILES.

	H.	M.	S.
1. Milland (Motosacoche) ...	5	28	59⅗
2. Vulliamy (Alcyon) ...	5	33	18
3. Joly (Alcyon)	5	38	34

Winner's average speed, 65.6 km. = 40.6 m.p.h.

ENGINES NOT EXCEEDING 500 c.c.

	H.	M.	S.
1. Péan (Peugeot)	5	35	50⅗
2. Perrin (Peugeot)	5	49	3⅗

Winner's average speed, 40 m.p.h.

Current Chat

Times to Light Lamps.

SUMMER TIME.

Aug.	28th	... ...	8.56 p.m.
,,	30th	... ...	8.52 ,,
Sept.	1st	... ...	8.46 ,,
,,	3rd	... ...	8.41 ,,

Dumping.

The Government is to prevent "dumping." Mr. Lloyd George said in the House of Commons last week that proposals would be submitted to stop imports of goods at prices lower than the prices at which they were sold in the country of their origin.

Second-hand Motor Cycles.

Manufacturers say it is very difficult to stop profiteering in new motor cycles. They cannot control second-hand prices of machines, which have been turned into "second-hand" after an hour's running on the road, and it is the price of these machines that sets the standard.

Lakeland Motor Road Refused.

The proposed new road suitable for motor traffic over Sty Head Pass in the Lake District is not to mature, as the scheme for its construction has been turned down by the Cumberland County Council on a vote of thirty against eleven.

A sum amounting to nearly £10,000 was allotted to the furtherance of this project by the Musgrave will, and as the construction was to have been commenced within two years, there is every prospect of the time limit being exceeded, and in consequence the money will revert to members of the testator's family.

The Prime Minister on Imports.

The 33⅓% import duty on motor cycles is *not* to be removed on September 1st, as some people imagine, but only the war-time restrictions.

Motor Cycle Prices in South Africa.

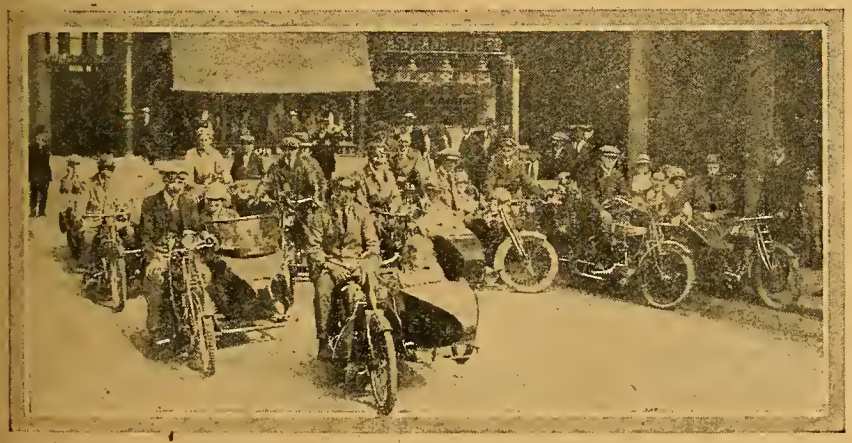
High prices for motor cycles are ruling in South Africa at the present time. The Municipal Council of Johannesburg recently invited tenders for a combination, and was quoted £148 4s. for a B.S.A. and sidecar, and £164 for a Triumph with cane sidecar. If these figures were for new machines the difference between prices in South Africa and England is not so great as might have been expected.

Cylinders.

How many years will elapse before the one-piece cast iron cylinder will be obsolete on motor cycles?

A Cool Request.

In these days of reliability one does not see many motor cyclists who have difficulty in starting. We saw a lightweight owner the other day with a girl on the carrier who had enlisted the sympathy of a passer-by to give him a start. The pusher was stout, and the temperature about 80° in the shade, and he was requested to push machine, rider, and passenger until the engine fired. We watched them out of sight round a corner and forgot all about them. Soon after the trio returned, and we were astonished at the coolness of the rider, who, turning to the stout pusher, said, "You want to give it a good, long, strong push and *run;* it won't start at walking speed!"



Members of the Reading and District Motor Cycle Club at the start of their club run to Newlands Corner last week Among the machines assembled are Scott, B.S.A., Norton. Rudge, and Bat

Special Features.

LOW-POWERED SIDECAR TOURING.
A FRENCH T.T.
OVERSEAS SECTION.

For Meritorious Service.

Mr. "Jack" Healy, who rode a B.S.A. in the 1914 T.T. (finishing 19th), has been awarded the Meritorious Service Medal. He joined up as a despatch rider in 1914.

Major Walter Hyde (son of Mr. C. A. Hyde of the B.S.A. Company) has been appointed to take charge of all commercial and technical matters of the B.S.A. motor cycles. No doubt the energy and initiative which his fine war record shows will prove of great value to the company

Police Traps.

A police trap is in operation on Half Moon Lane between Hune Hill and Dulwich; cut-outs and number plates are examined.

We are informed that a police trap is working in the ten-mile limit through Deganwy village, near Llandudno, and another, where brakes are examined, between Warrington and Wigan.

An Absence of Signposts.

A rider who has just visited the Isle of Wight informs us that on landing he was struck by the almost complete absence of signposts. On reaching Ryde there is no direction post showing the way to Sandown, Shanklin, or Ventnor until the outskirts of the town are reached, right on the top of a hill. We sincerely hope that the motoring institutions will take notice of this deficiency.

M.C.C. Team Trial.

The latest addition to the list of teams entered for the M.C.C. Team Trial for *The Motor Cycle* cup is that which will represent the Ilkley and District M.C.C.

Postponed Trials.

The wavering of the Manufacturers' Union on the subject of supporting competitions was the cause of the lack of entries and consequent abandonment of the South Birmingham M.C.C. open trial for the Palmer cup on the 16th inst. The Essex Club's two days run to York and back, which was to have taken place last Saturday and Sunday, was also abandoned.

Police Trap.

On the London-Southend road, just before entering Leigh-on-Sea, a police trap is in operation, but, we believe, only over the week-ends.

Motor Cycle v. Aeroplane and Car.

E. Kickham, who is to ride a 2¾ h.p. Douglas in the Bristol M.C. speed trials at Weston-super-Mare on Saturday, will be matched against A. H. R. Fedden (15 h.p. Straker-Squire) and Capt. A. N. Appleford (110 h.p. Le Rhone Avro). The course will be a mile in length, and a cup is being presented by the Hutchinson Tyre Co.

British Excelsior Developments.

Coventry is to lose one of its manufacturers of motor cycles. Messrs. Bayliss, Thomas and Co. (Excelsior Motor Co., Ltd.) are moving to Tyseley, Birmingham. Having manufacturing interests in Birmingham with space to extend, the makers of the British Excelsior decided to utilise this land and works for the manufacture of their motor cycles, and, with the facilities available, it is expected that an output of 100 motor cycles will be possible within the next three months. Mr. W. H Carson, who has been connected with the firm for so long, and who has done so much to demonstrate the capabilities of the machines in sensational hill-climbing expeditions and reliability trials, continues as general business manager. From September 1st, the address of the company will be Excelsior Works, King's Road, Tyseley, Birmingham.

R. H. Lochhead, 3¾ Scott, one of the gold medallists in the Glasgow M.C.C. Trial last week end (see page 237).

IMPORTANT DATES.

A.C.U. Six Days Trial,	Sept. 15th to 20th.
Paris Salon - -	Oct. 9th to 19th.
Olympia Car Show.	Nov. 7th to 15th.
Olympia Motor Cycle Show,	Nov. 24th to 29th.
Brussels Show -	Dec. 8th to 13th.

Novel Consumption Test.

The Ealing and District M.C.C. held a petrol consumption test recently, when some remarkable figures were credited to the winners. Since each machine had a graduated glass tube on the tank, designed by Dr. Low, the performances should admit of no doubt. The distance traversed, however, was too short to enable figures to be given, which form a real guide to the comparative consumptions of various machines.

The star performance of the day was credited to a Wooler flat twin, which, although rated at only 2¾ h.p., is extremely efficient, and by skilful designing of the inlet pipe, etc., blow-back is very well prevented and great economy obtained.

Some of the best figures are given herewith :

Mr. Chidley (2¾ Wooler)	..	311 m.p.g.
Mr. Douglas (3½ Sunbeam sc.)..		162 „
Mr. Hudson (4 Triumph)	..	146 „

American Three Flag Record.

The "Three Flag" record from Canada to Mexico for the third time this year has been broken, this time by Wells Bennett on an Excelsior, who covered the 1,716 miles in 53h. 28m., an average speed of 32.09 m.p.h. The history of this American "classic" is as follows :

Aug. 24-27, 1915.—E. G. Baker (Indian), 81h. 15m.
July 17-20, 1917.—Roy Artley (Henderson), 72h. 25m.
Aug. 23-26, 1918.—Wells Bennett (Excelsior), 70h.
June 18-21, 1919.—H. C. Sherer (Harley-Davidson flat twin), 64h. 58m.
July 9-11, 1919.—G. G. Baker (Indian), 59h. 47m.
July 23-25, 1919.—Wells Bennett (Excelsior), 53h. 28m.

A.C.U. Six Days' Trial Entrants.

TO the lists of entries for the Auto Cycle Union Six Days Reliability Trial, September 15th to 20th, we are now able to add the following :

E. W. Choldcroft (A.J.S.)
V. Horsman (Norton)
H. P. B. Motor Co.—P. J. H. Plase (Dot-Jap)
H. F. S. Morgan (Morgan)
J. Marston, Ltd.—G. Dance (Sunbeam), J. Dudley (Sunbeam), and De la Haye (Sunbeam)
G. B. Hardee (Matchless)
J. A. Newman (Sunbeam)
R. H. Baxter (Radco)
Rex Mundy (——)
New Rover Cycle Co.—W. Danskin (Rover), D. H. Noble (Rover), and C. Featherstonhaugh (Rover)
Lt. Lauri de Aranzo (Harley-Davidson)
F. S. Jones (——)
Dot Motors, Ltd.—H. Reed (Dot)
F. C. Townshend (Sunbeam)
J. A. Watson-Bourne (Blackburne)
Triumph Cycle Co., Ltd.—Three machines
Capt. Lindsay (Norton)
P. Pike (Levis)
F. C. McClasham (Matchless)
T. B. G. Vale (Ariel)
R. C. Davies (Chater-Lea)
W. A. Fell Smith (Harley-Davidson)
B.S.A. Cycles, Ltd.—P. Turbey, jun. (B.S.A.), W. J. Chambers (B.S.A.), H. T. Edwards (B.S.A.), L. L. Sealey (B.S.A.), F. W. Applebee (B.S.A.), and A. E. Wood (B.S.A.)
Zenith Motors.—H. Jepson (Zenith) and S. Bourne (Zenith)
S. W. James (Morgan)
W. R. Hoggas (New Imperial)
J. Baker (Scott)
J. A. Hoult (Matchless)
C. Collins (A.J.S.)
H. Greaves (Morgan)
James Cycle Co.—J. Lidstone (James), G. A. Strange (James), G. S. Stobart (James), and T. Stevens (James)
A. V. Sumner (Zenith)
V. Kershaw (Verus)
Scott Engineering Co.—W. Leslie, C. T. Wood, and H. C. Wood
A. Don (Zenith)
Lt. B. Alan Hill (Scott)
H. Pattinson (Triumph)
S. Sawer (Morgan)
C. R. Collier (Matchless)
Phelon and Moore, Ltd.—W. Drake (P. and M.), C. S. Chidley (P. and M.), and R. Lewis (P. and M.)
A.B.C. Motors.—H. Fairley and J. Emerson
Eric Williams (A.J.S.)
Enfield Cycle Co.—D. Alexander (Enfield)
A. J. Stevens, Ltd.—S. W. Giles (A.J.S.) and H. C. Heath (A.J.S.)
W. J. Baker (Henderson)
Ariel Works, Ltd.—J. L. Stocks (Ariel)
T. Peck (Ariel)
C. W. Smith (Ariel)
Clyno Engineering Co.—Hugh Gibson (Clyno)
J. W. Phillips (Sunbeam)
Vivian Hardie and Lane.—F. Thorpe (G.L.) and G. Levey (G.L.)
P. J. Enticknapp (Blackburne)
J. S. Holroyd (Blackburne)
Veloce, Ltd.—D. S. Goodman (Veloce)
J. W. Wills (——)
New Imperial Cycles.—Two machines
Oswald Wade (A.J.S.)

Entries close (at double fees) on Saturday next, the 30th.

Reading and District M.C. and L.C.C.

Members of the Reading club recently had an enjoyable run to Wisley Hut and Newland's Corner, and hope that on the next outing, to Kop Hill, on August 31st, all local motorists interested will join them at the start from Cork Street, Reading, at 10.30 a.m.

Wolverhampton M.C.C.

The Wolverhampton Motor Cycling Club holds its inter-club reliability trial on Saturday next, this being open to members of the Wolverhampton, Birmingham, Coventry and Warwickshire, Sutton Coldfield, and Hereford clubs. Hill-climbing, brake, and acceleration tests will be included.

N.M.C.F.U. (Wolverhampton).

All members of the Wolverhampton branch of the N.M.C.F.U. are requested to join in the paperchase to be held on Saturday. The entrance fee is only sixpence, and prizes, in the form of useful accessories, will be awarded; the secretary is Mr. W. J. Saunders, 223, Dunstall Road, Wolverhampton.

Open Hill-climb at Sutton Bank.

The York and District M.C. will hold an open hill-climb at Sutton Bank on Saturday, September 6th. This event is one of those supported by the Motor Cycle Manufacturers' Union, and classes for motor cycles, sidecars, cycle cars, and scooters will be included. Entries close on Saturday, August 30th, and forms may be had from the hon. sec., Mr. G. A. Reed, 6, Blake Street, York.

The Junior Car Club.

The above club holds its annual general efficiency trial on Saturday, September 6th, 1919, and classes are arranged for monocars, cycle cars, and light cars. The tests consist of a sixty mile reliability trial, an acceleration test at the start, a timed hill-climb, stopping and restarting tests, and a secret test. Full particulars may be obtained from the hon. organising secretary, Mr. G. N. Higgs, 30, Prince of Wales's Mansions, London, S.W.11.

Aberdare and District M.C.C.

A hill-climb on novel lines was recently held amongst members of the Aberdare M.C.C. This took place on the Graig Mountain road, and six or seven hundred spectators were present. The first 150 yards had to be covered as slowly as possible, and the remainder of the climb (almost a mile) was taken fast. Owing to war conditions, the road has been neglected, and, on the 1 in 7 corners, the surface was very loose and dusty The results on formula are not yet worked out.

Future Events.

Aug. 28.—Stalybridge and District M.C. General Meeting at 7.30.
AUG. 30.—WOLVERHAMPTON M.C.C. OPEN RELIABILITY TRIAL.
Aug. 30.—S. Birmingham M.C.C. Hill-climb.
Aug. 30.—N.M.C.F.U., Sheffield. Week-end Run to Boston.
Aug. 30.—N.M.C.F.U., Portsmouth. Run to Halnaker.
AUG. 30.—BRISTOL M.C. SPEED TRIALS AT WESTON-SUPER-MARE.
Aug. 30.—Public Schools M.C.C. Hill-climb.
Aug. 30.—Wolverhampton M.C.C. Inter-club Reliability Trial.
Aug. 30.—N.M.C.F.U. (Wolverhampton). Paperchase.
Aug. 31.—N.M.C.F.U., Leeds. Soldiers' Outing.
Aug. 31.—Ilkeston and District M.C.C. Run to Matlock.
Aug. 31.—N.M.C.F.U., Portsmouth. Run to Hayling Island.
Aug. 31.—Stalybridge and District M.C. Run to Rhyl.
Aug. 31.—Birmingham M.C.C. Social Run.
Aug. 31.—Rochester, Chatham, and District M.C. Run to Hawkhurst.
Aug. 31.—Woolwich, Plumstead, and District M.C. Picnic and Gymkhana at Brasted Hill.
Aug. 31.—Reading and District M.C. and L.C.C. Run to Kop Hill.
Aug. 31.—Eastern Counties M.C. Run to Thaxted.
Sept. 4.—Carmarthen M.C. and C.C.C. Speed Trials at Pendine Sands.
Sept. 6.—Junior Car Club. General Efficiency Trial.
SEPT. 6.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
SEPT. 6.—YORK AND DISTRICT M.C. OPEN HILL-CLIMB AT SUTTON BANK.
Sept. 13.—N.M.C.F.U. (Wolverhampton). Run to Rudyard Lake.
Sept. 13.—Lincolnshire A.C. Hill-climb.
Sept. 13.—Luton and S. Beds. A.C. Open Speed Trials at Luton Hoo.
Sept. 14.—Manchester M.C. Speed Trials.
SEPT. 15-20.—A.C.U. SIX DAYS RELIABILITY TRIALS.
Sept. 19.—Essex M.C. Gymkhana.
Sept. 20.—Blackburn and District M.C.C. Hill-climb on Waddington Fells.
Sept. 27.—Coventry and Warwickshire M.C. Hill-climb.
Sept. 27.—Wolverhampton M.C.C. Open Hill-climb.
Sept. 28.—N.M.C.F.U. (Wolverhampton). Run to Crackley Bank, Wellington.
Sept. 28.—Manchester M.C. Closing Run.
Oct. 4.—Essex M.C. Hill-climb.

Middlesex M.C.C.

The Middlesex Club recently held a very successful evening at the Great Eastern Hotel, and it was decided that no entrance fee should be required of new members. The subscription is 15s. per annum, and motor cyclists joining now will be entitled to membership until the end of the 1920 season. A team is being entered in the M.C.C. Trial for *The Motor Cycle* Cup.

Essex M.C.

The annual outing for crippled children, organised by the above club, will be arranged some time in September. The organiser, Mr. E. J. Bass, 18, Market Square, Bishop's Stortford, will be glad to have the loan of vehicles for the journey, to Epping Forest, or to receive subscriptions to defray the cost.

A hill-climb is being organised by the Essex M.C., and the venue and full particulars will be announced at a later date.

Public Schools M.C.C.

On Saturday, the above club will meet at Purley Corner at 2 p.m. for a fifty mile non-stop competition, including brake and acceleration tests.

Sangster Cup Trial Postponed.

The secretary of the Birmingham M.C.C. advises us that the Sangster cup reliability trial has been postponed owing to its clashing with the inter-team trial for *The Motor Cycle* cup on Sept. 6th.

Open Speed Trials at Luton.

On September 13th the Luton and South Bedfordshire Automobile Club will again hold its open speed trials in Luton Hoo Park, Luton, commencing at one o'clock. The course is over a kilometre (flying start), and there are ten classes for motor cycles, scooters, sidecars, and three-wheelers.

Admission to the park will cost 2s. 6d., and the whole amount thus taken will be handed to a charity nominated by Lady Wernher, by whose kind permission the event is being held in the park.

Entries cannot be received later than Wednesday, September 3rd. The address of the secretary, Mr. J. Simpson, is 440, Hitchin Road, Luton.

Hull and East Riding M.C. and L.C.C.

The members of the Hull and East Riding Motor Cycle and Light Car Club were recently invited to a rally at the residence of its vice-president, Major A. J. Atkinson, who is an enthusiastic motorist of long standing. His garage contains a collection of pictures of motors he has used, and forms an almost complete history of automobilism, and he was induced to give a short lecture thereon. Tea was provided by the host and hostess, and afterwards a gymkhana was held and several handsome prizes, including a cup for the smartest outfit, were given by Major Atkinson, to whom the club members express their gratitude.

Carmarthen M.C. and C.C.C.

The above club recently held a successful hill climb, the results of which are as follow:

Class 1.—Up to 350 c.c.: J. Haggard (2½ Union two-stroke). Class 2.—Up to 557 c.c.: Dr. Lindsay (3½ Norton). Class 3.—Unlimited sidecars: A. Lewis (5 Rover sc.) Class 4.—Cycle cars: J. O. Smith (8 Morgan). Fastest time of the day, Dr. Lindsay (3½ Norton).

This club intends holding a series of speed trials on Pendine Sands on September 4th. The classes will include 350 c.c. and 557 c.c. solos and sidecars. Visitors may become members for the the purpose of competing on payment of 2s. 6d. Entries will be received up to the day of the event.

A Well-organised One Day Trial.

Redditch and District M.C.C. Open Reliability Run over a Stiff Course. Some New Hills Included.

THE committee of the Redditch and District M.C.C. is indeed fortunate in having at its service such an excellent band of helpers as those who assisted in the organisation and running of the 150-mile reliability trial on Saturday. The arrangements were carried out without a hitch, and at every hill there was no lack of marshals and observers, so that every competitor had the knowledge that his efforts would not be thrown away through confusion or misunderstanding.

Starting from Church Street, Redditch, the first man got away promptly at 8 a.m., and, taking the Alvechurch Road in a few miles, was switched into a grassy lane, which deteriorated on rounding a right-angle bend into a track of loose stones and shingle on a fairly steep grade. This was Gravel Pit Lane, Rowney Green, and coming early in the run, before the riders had got into the swing of things, it caused a little trouble, though not actually a severe gradient. B. Kershaw on a 2½ Verus came up very steadily, and Dosher (8 Enfield sc.) picked a winding course. The spectators at the top were scattered by W. E. Smith (4 Triumph), who evidently knew the hill, for he rode from one side to the other, following the grassy footpath at the edge. The little Enfield two-strokes were running very well, and S. Bright made a remarkably steady climb, whereas Southwell, on a "Big Four" Norton, dashed up much too fast and skidded right round, finishing up in the bushes at the side.

H. L. Hanks, 2¼ Enfield two-stroke and L. Southwell, 4¼ Norton, in the stopping and starting test on Saintsbury Hill.

Brown (3½ Sunbeam sc.) came up well, but in very theatrical manner, bouncing on the saddle like one possessed; his sidecar was a very light affair, and the lady passenger gave much assistance in throwing weight on the back wheel when needed.

W. N. Bowkett (3½ Sunbeam) appeared to be nervous, as, although he did not actually use his feet, he was continually putting out first one foot and then the other; his mount was fitted with a spring frame.

Passing through Bidford and Wixford into the Broadway district, a stopping and restarting test was held on Saintsbury.

The smaller machines, of course, did not make such clean restarts as the heavyweights. Bright (2¼ Enfield) had to use his feet, and H. Greaves, on the new 350 c.c. Calthorpe-Precision two-stroke, although making an excellent restart with such a small engine, had to give a little foot assistance.

Descending from the top of Saintsbury by way of Willersey Hill, the brake test was reached. This was a practical trial of braking power under conditions such as would occur in actual touring.

The competitors were stopped some little distance away from the observer and instructed to engage high gear and release brakes; they then ran down the hill a matter of fifty yards and were signalled to stop, the performance being judged by their ability to pull up within a ten-yard space marked on the road.

Dudley (3½ Sunbeam sc.), W. Jackson (6 L.M.C.), and Minton (4¼ Norton) were all very smart in pulling up, and the inevitable Denley brought his well-known Morgan to a standstill in an exceptional manner. The brake of H. L. Hanks's 2¼ Enfield gave a shriek and clatter as though the machine would fall to pieces, but nothing serious happened and he stopped quite well.

Better going followed from Broadway through Winchcomb to Cheltenham, but, beyond the latter, *détour* was made to reach Upton St. Leonards, in order to climb Portway.

Eagle Hill, turning abruptly off the main road, was the last acclivity, after which the time check was entered, and

R. C. Atcherley, 4 Triumph, and T. H. Weaver, 2¼ Verus, on Willersey during the brake test.

The lunch check at Stroud.

the lunch stop at Stroud for the time being put an end to the competitors' troubles. Only four men failed to check in at the lunch stop.

Terrible rumours were floating around as to the terrors of the new hill which had been included, and it proved to be quite up to its reputation.

Commencing at Brimscombe, with a right angle bend off the main Stroud-Cirencester Road, it is known as Quarhouse Lane, and has a gradually increasing gradient, and another right angle bend, crossed by a step or ridge of stones; the rise here is quite 1 in 3. A little easier stretch follows, then, sharply to the left, the riders were confronted by a narrow defile ascending the hillside with a gradient of about 1 in 5 for about 200 yards. There was some doubt as to the ability of the Morgans to get through this passage, so narrow was it.

Poole (4¼ B.S.A.) came up well, but his handle-bars became loose and he had to stop.

Bicknell on one of the 8 Enfield sidecars (which were fitted with extra large sprockets to obtain low gears) made a fine recovery, and H. Boynton (5-6 James sc.) likewise all but came over and righted the machine adroitly. W. E. Smith (4 Triumph) came up quite fast, hit the projecting stones, and jumped in the air; and Southwell also came up at speed, making frantic jabs at the gear lever of his Norton; he ended on the bank, and would no doubt have made a better climb had he cut down the pace. B. Brown on the yellow disc-wheeled Sunbeam sidecar came up beautifully, the severity of the climb not leaving him an opportunity for the customary heroics which otherwise rather minimise his excellent performance.

Greaves brought up the Calthorpe two-stroke very steadily, and H. R. Lane (4¼ B.S.A.) took the corner well. Bowkett (Sunbeam) had to use his feet, and was apparently unhappy. R. C. Atcherley probably made the finest ascent of the day, riding at a moderate pace, picking his way, and keeping his Triumph engine turning over with a splendid beat. Nicholls, driving a B.S.A. sidecar, is something of a demon driver, and invariably scatters the spectators—he kept up an appalling pace, but displayed excellent judgment. To drive a machine up a road of this description with a flat front tyre is a feat of no mean order, and this was done by F. W. Giles (6 A.J.S. sc.), who simply wrenched his outfit round.

Denley and Alan Hill (on Morgans) both came round steadily and with great skill, but the latter unfortunately failed on the next climb, Nap Hill, near Bussage, which followed almost immediately after Quarhouse. Mundy also failed here through wheel slip.

Good running followed these stiff tests, and Birdlip, the main road hill, caused no trouble, although Dosher (8 Enfield sc.) only just succeeded in surmounting the crest.

Through Alcester a roundabout route was taken so as to include the watersplash on the Beoley Road into Redditch, but this only accounted for one failure.

Altogether the trial was thoroughly satisfactory from every point of view, and the competitors freely praised the excellent arrangements, alike as regards route marking, number of officials, and prevention of baulking on hills; indeed, the organisation was such that it might well be copied by many older and more experienced clubs.

Results.

B.S.A. CUP AND GOLD MEDAL.
J. Dudley (3½ Sunbeam sc.)

TERRY CUP AND MEDAL.
W. B. Gibb (2¾ Douglas)

CLUB GOLD MEDAL.
J. A. Newman (3½ Sunbeam)
H. B. Denley (8 Morgan)
J. W. Wills (5-6 James)
G. E. Stobart (5-6 James)

SPECIAL GOLD MEDAL (750 c.c. SIDECAR CLASS).
H. Boynton (5-6 James)

CLUB SILVER MEDALS.
B. Kershaw (2½ Verus)
H. Poole (4¼ B.S.A.)
C. Atcherley (4 Triumph)
W. Jackson (6 L.M.C.)
H. Minton (4 Norton)

MEMBERS' PRIZES.
350 c.c. SOLO.
H. L. Hanks (2¼ Enfield)

OVER 350 c.c. SOLO.
H. Poole (4¼ B.S.A.)

SIDECAR.
R. H. Nicholls (4¼ B.S.A.)

THE ENFIELD CUP.
The Sunbeam Team (Messrs. R. Brown, J. Dudley, and J. A. Newman)

H. Boynton, 5-6 James sidecar on Quarhouse Hill.

HIGH SPEEDS AT STILE KOP.

Remarkable Performances of Sunbeam Riders in the Birmingham M.C.C. Open Hill-climb.

A Racing Morgan, Fastest of the Passenger Machines.

THERE was something of the old enthusiasm prevalent at the hill-climb last Saturday, organised by the Birmingham M.C.C. at Stile Kop, near Rugeley. A sprinkling of trade men certainly provided all the sensational ascents, but the performances of that ceteric were something to marvel at. The record for the hill must have been broken on several occasions, and the exhibition of G. Dance, a comparatively unknown rider from the Sunbeam factory, earned for him constant applause from the spectators, most of whom congregated on the natural terrace at the hill summit. No matter whether he rode his special overhead valve 2¾ Sunbeam or a 3½ of the same brand, the result was the same—an easy win.

No less wonderful was the performance of that fine old sportsman J. E. Greenwood—the Sunbeam designer—who, piloting a 4 single-cylinder Sunbeam sidecar, streaked up the hill in 57⅘s. = 44.2 m.p.h.—thus knocking a second off his 1915 record. The Sunbeams, it might here be stated, were splendidly workmanlike special two-speeders with nothing freakish. They had Dunlop tyres and Amac carburetters. Each of them shot off the starting tape like a catapult, and accepted top gear at a good 40 m.p.h. within sixty yards of the starting point, gathering speed to a mile a minute. Probably nothing like it has been seen hitherto.

The Pace of the Two-strokes.

But if the Sunbeams shone so conspicuously, there were other mounts possessing a surprising turn of speed. Those who are apt to look upon baby two-strokes as potterers' mounts—as "Ixion" so fondly terms them—should see the hill-climbing Levises perform. In the touring classes they had matters entirely their own way, whilst in Class IV. for 350 c.c. machines young Gus Kuhn covered the threequarter-mile course in 57⅘s., his exhaust droning like a monster bumblebee. But he was beaten by a second by an older hand in E. Kickham, who rode a yellow-finished Douglas with an overhead valve engine, though the latter had in turn to admit defeat by the invincible Dance—who simply "jazzed" up—on his overhead valve 2¾ Sunbeam. The striking successes of overhead valve engines on Saturday may have an influence upon future design, for, as we have many times urged of late, the old fear of broken valve heads falling into the cylinder should be non-existent, for valves of correct design and of aircraft specification need not break.

Axford had them on his M.A.G.-engined Matchless, which was notable for its smooth ascent of the hill. This machine had a governor pulley of a type tried many times in years gone by, wherein balls attached to bell crank levers fly outward by centrifugal force and close the pulley flanges. Belt slackness was taken up by a lever mounted beside the tank.

Horsman, of Liverpool, had a Singer tuned to perfection in Class VI. (solo mounts up to 600 c.c.). He rode magnificently, and led this big class on time until the ascent of the last man; it happened to be Dance! The open event perhaps naturally attracted the most entries, J. W. Woodhouse being among them on his 8 Zenith-Jap. An entry of a 3½ "Draper" proved to be a 1910 Triumph with an extraordinary cylinder touching the top tube. It is owned by A. D. Draper, a clever and enthusiastic amateur, who, as an engineer, delights in experimental work. His machine had, too, a variable pulley and scoops collecting air for the main and extra air supplies of his old pattern B. and B. carburetter, and we were assured that the machine will touch 80 m.p.h. when in perfect condition. Several Norton riders did well, travelling at a rare pace on the straight, steep stretch; but they, as many others, were handicapped at the start by the absence of a gear and clutch. We timed several riders to lose four seconds in the first 120 yards. One or two American big twins provided variety, but, monotonous as it may seem, these and all the other big machines were handsomely beaten by the 2¾ Sunbeam, Dance up, whose time was 48⅕s., which performance at the same time gave the rider the highest figure of merit of the day. He had already accomplished fastest time on his 3½ in 45⅕s., equalling 56.56 m.p.h.

In the passenger class several touring machines made good climbs, but Saturday was no day for amateurs. O'Donovan's speed was something to behold; but, naturally, in using a single-geared belt-driven machine, the valuable seconds he lost in laborious pushing to start (no assistance was allowed) could never be regained. J. E. Greenwood was clocked 57⅘s. on his two ascents, which means quite 50 m.p.h. on the steepest stretch. On the last ascent he swung out to avoid a competitor on the bend at the top and shot up the bank, overturning the machine. He and his daughter (who occupied the sidecar seat) were severely shaken, but, luckily, escaped serious injury.

Fifty-five Miles per Hour Uphill.

The last ascent was probably the most spectacular climb of the day. H. F. S. Morgan, with Mrs. Morgan as passenger, had entered their eight valve M.A.G.-engined racing runabout, famous in pre-war days. The bellowing of its exhaust foretold something exceptional, and the spectators were not disappointed, for, at the word "Go," the machine shot off the mark, the top gear being engaged within eighty yards and a speed of 55 m.p.h. attained, which was subsequently reduced to 50 m.p.h. on the steepest stretches of 1 in 9—we quote Mrs. Morgan's observations of the speedometer needle—flashing over the tape at little short of 60 m.p.h. This exhibition was greatly enjoyed by the spectators, and proved a fitting climax to a long but interesting afternoon's sport, upon which the many willing officials of the Birmingham Motor Cycle Club are to be congratulated.

The Results.

CLASS I.—SINGLES AND TWINS (SOLO) UP TO 230 C.C.

	Time. Sec.	Figure of Merit.
W. H. Butterfield (2¼ Levis)	75⅖	257
A. Butterfield (2¼ Levis)	76⅘	219
O. E. Carter (2¼ Levis)	92⅖	140
G. Denley (2¼ Velocette)	93	162

CLASS II.—SINGLES AND TWINS (SOLO) UP TO 275 C.C.

A. Butterfield (2¼ Levis)	74⅘	230
W. H. Butterfield (2¼ Levis)	76⅘	247
G. Kuhn (2¼ Levis)	86⅕	147

CLASS III.—SINGLES AND TWINS (SOLO) UP TO 300 C.C.

R. E. Pugh (2½ Levis)	68	202
W. H. Butterfield (2¼ Levis)	76	252
G. R. Haggard (2½ Haden Union)	85	146

CLASS IV.—SINGLE AND TWINS (SOLO) UP TO 350 C.C.

G. Dance (2¾ Sunbeam)	49⅘	370
E. Kickham (2¾ Douglas)	56⅘	255
G. Kuhn (2¾ Levis)	57⅘	252

As showing the value of the formula recommended by *The Motor Cycle*, and now almost universally adopted, it may be noted that the positions on time and formula were identical in the case of the first three in this class as well as the following:

CLASS V.—SINGLES AND TWINS (SOLO) UP TO 500 C.C.

	Time. Sec.	Figure of Merit.
G. Dance (3¼ Sunbeam)	47⅘	307
T. C. de la Hay (3½ Sunbeam)	49⅕	285
J. Shaw (3½ Norton)	53⅘	248
H. Petty (3½ Norton)	55	—
H. Le Vack (3½ Edmund-M.A.G.)	55⅘	—
J. Smith (3½ Triumph)	56	—

CLASS VI.—SINGLES AND TWINS (SOLO) UP TO 600 C.C.

G. Dance (3¼ Sunbeam)	45⅕	317
V. Horsman (3½ Singer)	52	249
S. R. Axford (3½ Matchless-M.A.G.)	52⅘	290
H. Petty (3½ Norton)	53⅘	249
S. A. Vandervell (3½ Norton)	54⅘	254
J. W. Draper (3½ Draper)	54⅘	219

CLASS VII.—SINGLES AND TWINS (SOLO) OPEN.

G. Dance (2¾ Sunbeam)	48⅕	398
E. Bottomley (7-9 Harley)	51	—
J. Shaw (3½ Norton)	51⅘	261
V. Horsman (3½ Singer)	52⅖	253
H. Petty (3½ Norton)	53⅖	253
S. R. Axford (3½ Matchless)	53⅘	279

There were thirty competitors in the above—the best supported class.

Acceleration Test.

A stopping and restarting contest was sandwiched among the classes, open to all entrants in the other classes. Some excellent performances were witnessed. In the end, G. Dance (3½ Sunbeam) won.

CLASS X.—SIDECARS UP TO 600 C.C.

	Time. Sec.	Figure of Merit.
J. E. Greenwood (4 Sunbeam)	57⅘	284
D. R. O'Donovan (3½ Norton)	72⅖	218
H. Smethurst (3½ Norton)	83	166

CLASS XI.—SIDECARS OVER 600 C.C.

J. E. Greenwood (4 Sunbeam sc.)	57⅘	285
J. W. Woodhouse (8 Zenith sc.)	68⅘	—
D. R. O'Donovan (3½ Norton)	74⅗	210

CLASS XII.—THREE-WHEELERS.

H. F. S. Morgan (10 h.p. Morgan)	56⅕	—

A protest was lodged against E. Kickham. The foregoing results were issued with commendable promptitude on Saturday evening, but they are subject to confirmation by the Birmingham M.C.C.

THE LATE MR. J. R. NISBET.

A Great Loss to the Motor Cycle Movement.

IT is with sincere and deep regret that we have to announce to our readers the sudden death of Mr. James R. Nisbet, chairman of Messrs. Bowden Wire, Ltd., and of Messrs. Hay, Nisbet and Co., of Glasgow, publishers. He had been in poor health for some months, but had apparently received considerable benefit from a visit to the United States on behalf of the first-named company, so his sudden demise at his Golder's Green residence on the 17th inst. came as a great shock to his numerous friends.

The late Mr. Nisbet's work for automobilism has been of incalculable value from the earliest days. He was a member of the committee of the Royal Automobile Club and of the Touring Committee of the same institution, but it was not until 1909 that he took a serious interest in the motor cycle movement. It arose from a visit to the Isle of Man to witness the Tourist Trophy Race of that year, and we remember well when talking to him on the boat on the way home how enthusiastically he expressed himself as to the magnificent sport motor cycling provided. From that date on he devoted his spare time to encouraging the pastime in every possible way, and became a member of the Auto Cycle Union committee as an R.A.C. representative.

He was an exceedingly busy man, but except during the war, when he devoted himself to working entirely in the national cause, he always found time to attend the various committees of the A.C.U. He was a vice-president and chairman of that body, and a member of the Management Committee, on which his sound common-

Mr. J. R. Nisbet, late chairman of the A.C.U.

sense, his shrewdness, his Scotch thoroughness, and his wise decisions played a most important part in bringing the Auto Cycle Union from a very small beginning to the high position it now occupies.

The Auto Cycle Union has lost a valuable leader and one whom it will be very difficult to replace; while the movement on the whole has lost a valuable patron, who was no figurehead, but one who worked skilfully and assiduously for the cause, and who will indeed be sorely missed. We extend our heartfelt sympathy to his widow, sons, and daughter in their sad bereavement.

Mr. Jas. R. Nisbet was buried on Friday, the 22nd inst., at Cathcart Cemetery, Glasgow. Amongst those present were: Mr. Alex. Nisbet, Mr. Jas. R. Nisbet, Mr. W. Nisbet (sons of the deceased), and several other relatives; Mr. John Adam, Mr. R. J. Smith (Scottish Automobile Club), Mr. T. Loughborough (Royal Automobile Club and Auto Cycle Union), Mr. Norman MacMillan and Mr. J. S. Fulton (Scottish Auto Cycle Union), Mr. Otto Thomas (Messrs. Iliffe and Sons Ltd.), Mr. Alex. S. Ross (Bowden Wire Ltd.), Mr. Jas. Gibbon, Mr. Jas. Livie, Mr. Chas. Middleton, Mr. Robert Livingston, Mr. Jas. Woodburn (director, Messrs. Hay, Nisbet and Co., Ltd.), Mr. Geo. H. Cuthush *(Motor World)*, and Mr. A. C. McMinn *(Scottish Cyclist and Motor Cyclist)*.

Wreaths were sent by the following: Frank Shorland, Alec Ross, Iliffe and Sons, Edmund Dangerfield, Otto Thomas, Royal Scottish Automobile Club, Royal Automobile Club, Auto Cycle Union, Hay, Nisbet and Co., Ltd., Cycle and Motor Cycle Manufacturers' and Traders' Union, Bowden Wire, Ltd., and J. Mackenzie.

Glasgow M.C.C. 100 Miles Non-stop Reliability Trial.

THE annual trial was held on Saturday over the usual circular course, starting at Strathblane. The route was *via* Lennoxtown, Fintry, Killearn, Blanefield, Cult Brae, Dryman Road, Kyber Pass, and back to Strathblane.

Competitors had to cover this course three times, the total distance being approximately 100 miles. In addition to the usual gold medal for competitors who ran to time at the various checks and had no stoppages a special prize was presented by Geo. H. Cuthush, the vice-president of the club.

Sixteen competitors started from Strathblane at 3 p.m. I. A. T. Cheyne (6 A.J.S. sc.) was the first victim, puncturing three miles from the start.

The majority of the competitors made good ascents of Cult Brae. One or two, however, took the top bend a little too fast, notably G. Munro (5-6 James), who nearly came to grief.

G. Grinton (7 Harley-Davidson sc.) made one of the best ascents of the round.

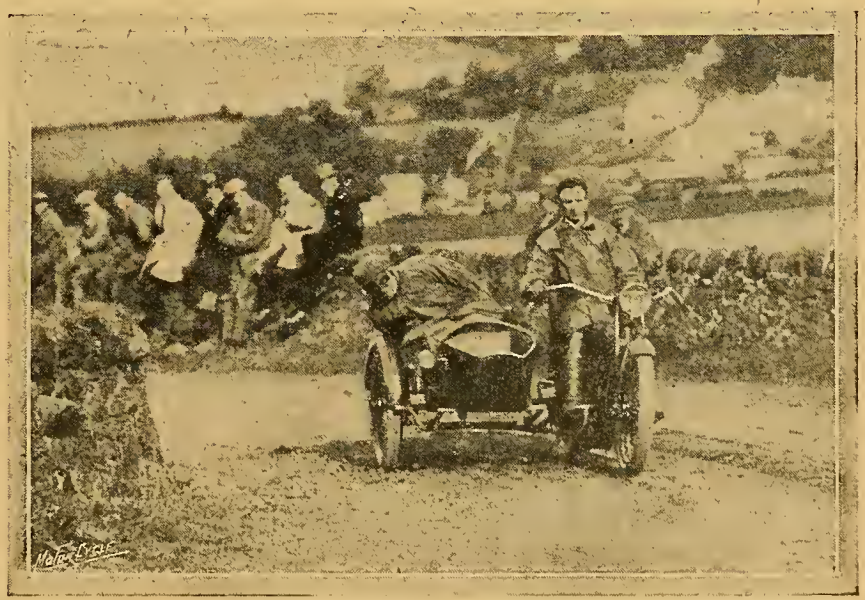
R. D. Robertson (8 Ariel sc.) stopped while changing his gear on Strathblane on the second round.

Several of the competitors had auxiliary tanks fitted, the more favourite being a petrol tin strapped on the carrier.

W. Deans (3½ Ariel) had a new puncture-preventer fitted, which appeared to serve the purpose very well.

The following are the gold medallists:
W. Deans (3½ Ariel)
G. Munro (5-6 James)
S. J. Brown (4¼ New Hudson)
R. N. Lochhead (3¾ Scott)
E. S. Pleiffer (8 New Imperial)
D. S. Alexander (8 Enfield sc.)
G. Grinton (7 Harley-Davidson sc.)

The special prize was won by G. Grinton (7 Harley-Davidson sc.), whose total error was 2m. 42s., W. Deans (3½ Ariel) being next with an error of 3m. 47s.



G. Grinton, 7 h.p. Harley-Davidson sidecar, on the top bend of Cult-Bray. He won the special prize.

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

A TRIAL FOR SCOTT RIDERS.

Sir,—We have pleasure in informing your readers that it is our intention to hold the Scott Trial this year, as before the war.

It will be held by permission of the Cycle and Motor Cycle Manufacturers' and Traders' Union, Ltd., and will be a private one by invitation, and we hope shortly to be able to publish all particulars.

THE SCOTT MOTOR CYCLE CO., LTD.,
N. O. VINTER, CAPT., Sales Manager.

MOTOR CYCLES FOR EX-SOLDIERS.

Sir,—I notice in your issue of June 26th that a special concession has been granted by the Government to the War Motors Association by which ex-motor cycle despatch riders are to be given first refusal of surplus Government motor cycles. Do you not think this unfair? Why should not every ex-soldier who has seen Active Service have the same opportunity? Surely an infantryman has as much right to the concession as a despatch rider, and, as regards Army pay, the latter is more able to purchase a new machine.

DISCHARGED HIGHLANDER.

A HEAVY FINE.

Sir,—I should like to call your attention to a summons and fine recently inflicted on a friend of mine which occurred at Huntingdon Police Court on Wednesday, August 13th, and warn readers of your world-read journal to avoid a similar expensive awakening.

My friend and I were visiting friends at Huntingdon, but, unfortunately, my tyre burst at Godmanchester, so my friend offered to take me into Huntingdon for necessary repair outfit. We exceeded the ten-mile limit, and the police summoned him to appear on the Wednesday. He started from town and had a breakdown *en route*, and arrived late. He then learned in his absence he had been fined £5—his first offence, as he has just commenced riding.

Highworth. FAIR PLAY.

A MOTOR CYCLE TEST OF BENZOLE.

Sir,—With regard to your article in the issue of *The Motor Cycle* of August 21st concerning benzole, I have pleasure in informing you that arrangements were put in hand for a motor cycle benzole test at the same time as those for the car test.

It is not proposed to run a motor bicycle over the same route as the 10,000-mile car test, but to conduct the trials from the various local areas of the Automobile Association.

Further particulars with regard to the test will be communicated as soon as arrangements have been completed.

STENSON COOKE,
Secretary, Automobile Association and Motor Union.

SPARE PARTS.

Sir,—Having noticed several times in *The Motor Cycle* letters from motor cyclists who have received prompt attention to orders and delivery of spares by various firms, I think that the Auto-Carrier (1911) needs some beating. I have one of the above firm's sociables, and from time to time I have sent for spares. I have aways received return of post delivery, which is remarkable considering that the firm is not now making the machines.

I might add that I am not in any way connected with the firm, nor a relation or "pal" of any of the staff.

F.A.T.

Sir,—Motorists generally have a grievance. I have one, and I put down the same to the prosperity of the times. Firms can be independent, and the "dust plugger" consequently comes in for a great deal of annoyance and inconvenience when he is out for spares. To the firms spares may be trivial things: to him who is wont to bang along the King's highway they are of vital importance.

In need, sore need, of two chains recently, I sent a prepaid wire to the makers for an estimate of cost and asking them to send at once as the matter was urgent. To this day I have had no reply, and this in face of the fact that I sent another wire. Silence is golden, and the firm must be in a position of beautiful and golden security when it can afford to ignore the possessor of the machine manufactured by it.

R. WARD-DAVIES.

THE LIGHTING REGULATIONS.

Sir,—I most certainly disagree with your leader *re* lighting regulations. Not, mind you, on the merits or demerits of the question of whether it is advisable to carry a rear or sidecar lamp, but (and I have the ninety and nine point nine with me here) on your hope that in the near future legislation will be revised. *(Deus avertat!)*

Surely to goodness we have had enough interferences from the police during the war to satisfy without asking for more. Is it necessary for us to provide the police with one of the finest sports they ever had?—a sort of cat and mouse thing, inevitably successful even against the most careful and law-abiding.

Of all tantalising evils I think the rear lamp is the prince. To keep it burning with certainty is an absolute impossibility. It requires a look round every 100 yards, and the only accident I have had in ten years riding was due to that self-same "eyes back," and too late to dodge a cyclist issuing from a side street.

No, sir; I do not think your advocacy of legislation will "take on."

LIBERUM ARBITORIUM.
St. Helens.

A 5-6 h.p. Rudge sidecar with a happy party of potential motor cyclists aboard. Cramped quarters and pot-holes only add to the fun for these youthful sidecarists. Would that it was always so when fair and more critical passengers take the sidecar seat! The photograph was sent by Mr. E. J. Parkins, of Putney.

A.A., FORWARD!

Sir,—While riding from Bristol to Seaton *via* Bridgwater, Taunton, Chard, etc., I had a bad smash at a place known locally as "Hatch Corner," near Hatch. When coming along the road it appears that the corner is a very gradual one, but really it is an acute angle, with the road sloping in the wrong direction and a stone wall in front. The farmer to whom the wall belongs told me that there were three or four accidents a week there. There is absolutely no danger sign whatever. GOFTON H. GEE.

PILLION RIDING.

Sir,—There have been three fatal accidents to motor cyclists in the Darlington district this summer. In each case there was a pillion passenger, and in each case the pillion passenger was killed. Also in each case the driver failed to avoid collision with an approaching vehicle, whose drivers, singularly enough, were all exonerated. In every reported case of fatal accidents to motor cyclists this summer there has not been one in this locality where a pillion passenger was not carried. J 1824.

Darlington.

Sir,—I read with infinite amusement the remarks made by Harold Karslake in his letter published in your issue of the 14th inst. Since his powers of observation (through the *Daily Mail)* appear to be so great, perhaps he has read particulars of deaths of passengers in aeroplanes, and through accidents occurring to train, tram, and omnibus—in fact, every moving vehicle. Many people have been drowned bathing in the sea and river.

When will these senseless and criminally dangerous practices be prohibited?

Someone fell into a canal the other day and was drowned—canals are dangerous things and should not be allowed.

The first time I drove a motor cycle I took a friend on the back. Nothing happened. When I first started driving a sidecar I had two accidents in one day.

A. F. PHILLIPS.

Sir,—I am the last in the world to fly into print, but feel I must to express my sentiments on pillion riding.

If "A.C.R.," "Harold Karslake and Co." do not like it themselves, then my advice to them is to leave the sportsmen alone who do like it.

I was the owner of an 8 h.p. Zenith-Gradua and sidecar, and one day near Catterick I had to take my sidecar through the hedge to avoid a lady on a push bicycle, who was travelling round a corner on her wrong side. It all happened in a moment, and if I had not had that beastly sidecar on I should not have been walking with a stick for days after.

One lives and learns, and now my sporting flapper climbs up behind me, and we have consigned our broken sidecar to the scrap heap.

If some of your readers knew more about the principles of mechanics than they appear to do, they would not raise the sidecar above the pillion.

If they want to be confined to bath chairs all their lives, then I for one would not object, so in return I expect at least to be allowed to choose my means of transport.

Newcastle. BIG TWIN.

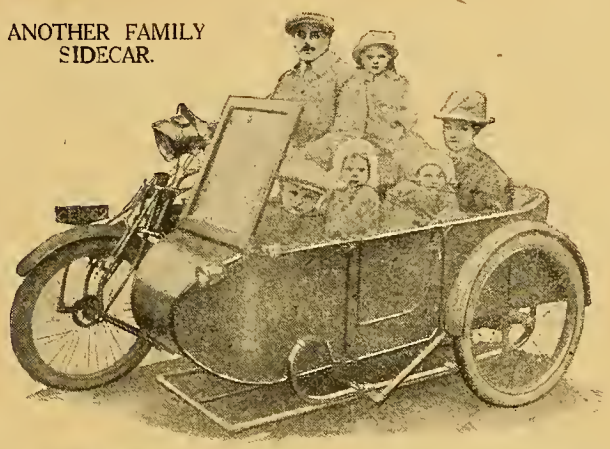
COURTESY OF THE ROAD.

Sir,—During the week-end I have been touring in Suffolk with a friend on the back of my 2¾ h.p. Douglas, and on Sunday afternoon, after spending the morning on the lonely beach near Dunwich, I found that my magneto was wrong, and, in spite of the combined efforts of a motorist and his wife, we could not rectify the fault. I was ten miles away from the hotel where we had arranged to spend the night, and, although in an opposite direction to the way they were going, they offered to tow my friend and me into Yoxford—our stopping place—and before doing so asked us to share their tea, which we were pleased to do after a nine hour fast. This, I think, is an excellent example of courtesy.

As regards the magneto mechanic, I was recommended to go by train to Oulton Broad and see Mr. Chipperfield, and although he was witnessing a Regatta on the Broad, he came along to his shop, very smartly traced the fault to a small hole in the plug attaching the H.T. wire to the magneto, which allowed the current to short on to the magneto. He offered to turn up a new plug from ebonite for me at once, and after about three hours I had this on the machine and ready for the road, both cylinders firing regularly and well; for the service I was charged 7s. 6d., which I consider very cheap, and the work is well done—evidently by a man who knows the magneto from A to Z.

ALLEN S. BERRY.

ANOTHER FAMILY SIDECAR.



Photographs of outfits with five or six passengers aboard continue to reach us. All of them point to the fact that if ever the runabout replaces the sidecar—which is questionable—the family man will have bigger accommodation problems than he had with his sidecar. The Matchless shown accommodates six in all.

Sir,—I desire to add my experience regarding the matter of the "old-time" courtesy of the road. I agree with "W.W.B." that to an extent this has diminished, but I am quite certain the matter has only to be discussed through your columns and there will be an improvement in a very short time.

There are few motorists who go any distance from home but find they are soon able to give assistance, or require this. My Whitsun run was from Bristol to Birmingham and back, returning *via* Chipping Norton and Cirencester. About 6 p.m., on Monday, I found myself between Chipping Norton and Burford, where there was very little traffic, with tyre trouble, and foolish virgin that I was no tyre levers—through a lost companion, and no patches. The only passers-by, in the course of an hour, were two ordinary cyclists and two drivers of motor cars. When one of the latter came in sight I signalled, and obtained very kindly the help desired.

What I suggest is that any motorist hung up and desiring assistance might help the case by a timely signal to an oncomer by, say, raising the right hand. It frequently happens that a stop has been made and for no particular cause, and there is no assistance required. I have ridden since 1903, but I scarcely remember any instance when I have sought help, without having my signal answered. On the other hand, one does not wish continually to stop without any purpose. I recently ran to Cheddar, a matter of twenty miles, and passed several combinations pulled up for trouble of various kinds. I assisted at the first two, and slowed down at the rest, but in not one instance did I see any sign before approach that help was needed. I would like the opinion of other riders on the point. J. T. MAYO.

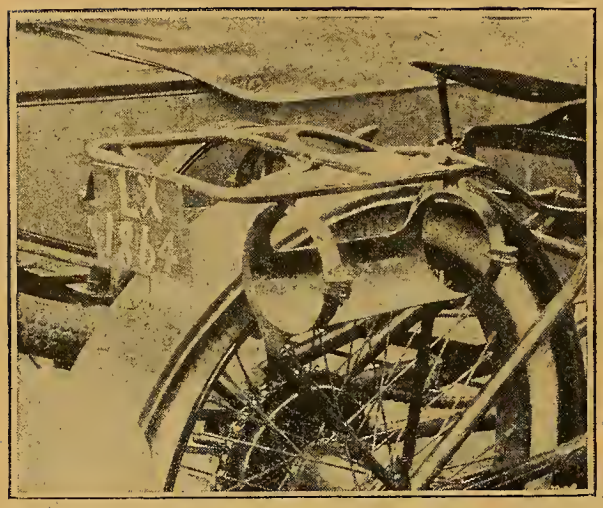
Bristol.

PLEASE QUOTE PRICES!

Sir,—Having noticed several remarks about the inadequate information given in advertisements, I feel that I must say a word in defence of the manufacturers. It seems to me that anyone requiring a motor cycle would want to know far more about the machine he fancied than any advertisement could possibly give. If "H.E.R." would like to have full particulars of the Scott he has only to write to that firm for them, and he will find his every wish gratified.

I may say that I am not interested in the firm in any way, except that I am shortly taking delivery of one of their most excellent machines, and in fairness to them I must say that no one could have shown me more consideration or sent more information than they did. S.B.

Keswick.



Special holders, integral with the carr.er, are fitted on the French G.L. motor cycle for the purpose of carrying D.A. cylinders. The G.L. was described in last week's issue.

A MOTOR CYCLE CLUB FOR THE ROYAL NAVY.

Sir,—It is with great pleasure that I read of Lt. Evans-Greaves proposed plan of forming a motor cycle and cycle car club for the Royal Navy.

Owing to the two bases of the Home and Atlantic Fleets being so far apart, viz., Portland and Rosyth respectively, I would suggest that each base has its own team, likewise the three depots—Portsmouth, Devonport, and Chatham. It might then be found possible for each centre to have its own garage, where machines could be stored.

A governing body could then be appointed, which would have charge of funds, etc., and which would arrange for competitions and runs, and be generally responsible for the well-being and future development of the club.

If Lt. Evans-Greaves can make use of my services in any shape or form I shall be only too pleased to give all possible assistance. F. C. FELLOWES, Signalman.

H.M.S. *Royal Sovereign.*

ENGINE DESIGN.

Sir,—One or two of your readers are asking for information respecting the advantages of outside flywheels. This, to my mind, is incomprehensible, as a few minutes' study of the question points at once to the friction losses generated by internal flywheel rims. When sufficient oil is present for lubrication purposes, this oil is in contact with the flywheels, and during rotation of the latter, is thrown off tangentially due to centrifugal force. A constant film of oil is thus maintained between crank case and flywheels (the clearance being very small). This film is in constant shear, and as the friction of a liquid increases as the square of the velocity, it is easy to see that a heavy oil which makes a good lubricant for working parts produces considerable braking effect when brought into contact with parts moving at high velocity, such as the rim of a flywheel.

The flexibility of machines possessing outside flywheels and the ease with which they accelerate must be known to most riders. This flexibility I attribute solely to two causes, the use of an outside flywheel and the substitution of ball or roller bearings for plain bearings on the crank-shaft. My remarks concerning friction of flywheel rims apply in a smaller degree to plain bearings, and the losses set up in these at high speed are not so small as the average man is inclined to think. When perfectly reliable ball bearings are so cheap it seems absurd to use any other in cases where the ratio of nett power to gross power developed is of the utmost importance if weight and petrol consumption are to be reduced to a minimum.

I am aware that the incorporation of new designs upsets existing standard designs, but where actual improvements are concerned, makers should not be backward in following a good lead. ENGINEER.

Newcastle-on-Tyne.

A CANDID CRITICISM.

Sir,—I notice a correspondent enquiring for experiences of 1919 machines. I have ridden a 1919 Triumph for about 3,000 miles, and venture to offer a few criticisms on this excellent machine. The handle-bars are adorned with no fewer than six Bowden wires, and it has so far defeated me to find any arrangement of the various levers by which they can all be used as and when required. Personally, I prefer a foot clutch, but as I believe I am in a minority in this respect I cannot blame the makers for fitting it there. The air lever I have never found any use for, the carburetter being entirely automatic, and certainly a Bowden wire for this is unnecessary. The magneto advance could be fitted on the tank, as it is seldom necessary to move it.

The tank capacity is inadequate, and I have frequently had to stop twice on a day's run to fill up. If the tank were 6in. wider, the comfort of the machine would be enormously increased. The front brake I find extremely useful. The spring forks I consider by no means so bad as they are made out to be. They certainly frequently broke springs in France, but the spring forks fitted to other machines there, so far as my experience went, suffered a far higher mortality, but escaped comment owing to the overwhelming variety of other troubles which beset the machines. The valve gear remains noisy. The paper washer under the cylinder is liable to get damaged when decarbonising, and something more permanent than paper might be fitted. Apart from this, the engine would keep very clean.

In reliability, the machine is the equal of the best American machines, but this is offset by the paltry tyres fitted. They make the machine miserably uncomfortable to ride, and punctures average about three and one-third per 1,000 miles, as against one and a half per 2,000 miles on American machines.

The engine is really delightful, and its balance at high speeds has been quite a revelation to me. The carburetter also is excellent, but anything more awkward than the handle-bar levers I cannot imagine. Why ever not fit a hand-controlled air slide on the carburetter itself?

Personally, I prefer the antiquated hand pump lubrication to any other system I have tried. The oil consumption is remarkably small. Petrol consumption is about 87 m.p.g. at 20 m.p.h. average, and about 70 m.p.g. when the machine is hustled, which I consider very fair. There are a number of small screws in connection with the tool bags which tend to lose themselves. The gear box is perhaps the least reliable part of the machine, but its troubles are of a minor nature. The fulcrum of the gear lever might with advantage be more securely seated in the quadrant. A draw bolt should be provided for adjusting the chain. The only method of sliding the gear box is by treading on the belt, which causes it to slip.

There is a delirious joy in riding the machine at speed like unto looping the loop on a bareback mule. On the average Yankee machine one becomes part and parcel of the outfit after a few rides, but I shall never grow to fit this Triumph. I have not called attention to the numerous good features of the machine, because we read of these in the papers. I think it leads many British machines by about five years. J. KENNEDY, Major R.G.A.

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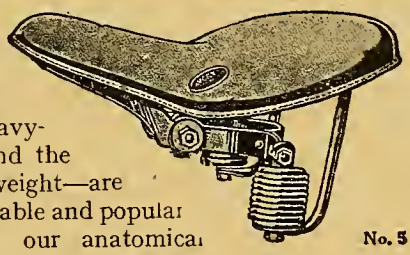

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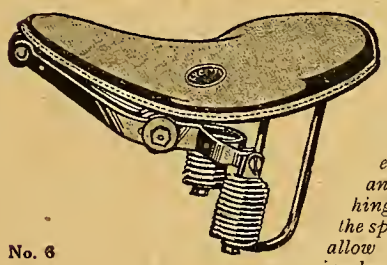

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The saddle is hinged at its peak, and its special springs are anchored dead-centrally at top and bottom on two swivel fastenings, which ensure a perfectly straight pull, eliminating twisting strains, and obviating breakages. The hinged peak, swivel action on the spring, and dead central pull, allow the saddle to describe a circular movement at the back when the seat is depressed under the rider's weight.

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Without cost or obligation to me, please send full information including price, of the Berol Mail Course in Memory Training, Concentration, and Will Power (M.C.)

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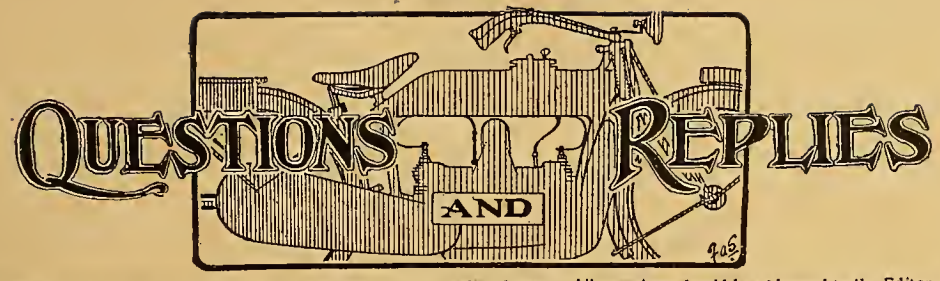


A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

A Vague Request.

As an absolute novice desirous of purchasing a new motor cycle, I shall be glad if you will tell me: (1.) What make and horse-power can you recommend? (2.) Where can I obtain tuition? (3.) What would be the approximate running expenses per hundred miles?—J.F.T.

(1.) Not knowing your requirements as regards the district in which you will be riding, or the weight you will have to carry, we can scarcely advise you on the make and horse-power of a machine to suit you. In any case, it is impossible for us to recommend one particular manufacturer's products, but if you will write again giving us more definite information, we will do our best to help you. (2.) You could no doubt obtain tuition in driving from a local garage, or the agent from whom you purchase the machine. (3.) For a 3½ h.p. solo mount you may reckon roughly 1d. per mile.

Magnetic Insulation.

I notice you have from time to time questions concerning electricity, chiefly magnetos. Could you by any means answer the following: Is there any substance that, when placed between the poles of a magnet or, rather, in a magnetic field flowing one way, say, from north to south, will resist the flow? I understand that mica and zinc will in a small degree, but I cannot see it. I have bought the best books and got advice from electricians, but with no result. My chief reason for wanting to know this is to protect some delicate electric measuring instruments from magnetic influences. I am quite familiar with cross magnetism, etc.—W.J.

We believe that there is no substance which makes any practical difference to the flow of magnetic lines in the same way as in insulating material will prevent the flow of an electric current. The usual course to adopt in such cases as you mention is to surround the instrument to be protected as completely as possible with a thick iron screen so as to deflect the lines of force. As the iron has so much greater magnetic permeability than air, the lines of force will naturally travel through the iron screen, and the air inside will be practically free from magnetism. For instance, if a piece of thick iron tube was placed between the poles of a horse-shoe magnet, the lines of force would almost entirely concentrate in the walls of the tube, and the space inside would be completely screened. We think that some adaptation of this method will answer your purpose, so far as we can judge from the particulars supplied.

A Novice's Requirements.

I require a machine for week-end runs between London and High Wycombe. It would not be used for touring, but I think a light sidecar for luggage would be useful. (1.) What is the lightest machine to do such work safely? (2.) Would a good 2¾ h.p. do it with a two or three-speed gear. (3.) Could I make a 2¾ h.p. do it by either temporarily or permanently reducing the belt ratio of the chain-cum-belt drive? (4.) Under normal conditions, what are the relative climbing powers of *(a)* a single four-stroke, *(b)* a single two-stroke, *(c)* a twin four-stroke? (5.) Would I be well advised to join the A.C.U. in order to get its engineer's services in examining a prospective second-hand machine? Also, is it best to buy from a dealer? (6.) Do you think a higher power than 2¾ h.p. advisable?—H.S.

(1.) You cannot expect much in the way of sidecar pulling with a 2¾ h.p. machine. Moreover, the possession of a sidecar is almost always a temptation to overload on occasion. (2.) A good 2¾ h.p. would do the work you require provided always that you kept well within the limits of weight and speed as you suggest. (3.) We do not know any two-speed lightweight which has a variable pulley on the gear box, therefore you could not make the temporary or permanent reduction of the belt ratios as you propose doing, unless, of course, you are prepared to have a special pulley of smaller diameter made. (4.) There is little to choose between the climbing powers of the three classes of engine you name. Probably the single four-stroke engine is the most suitable. (5.) We certainly recommend your joining the A.C.U., and also think it would be advisable to get your first machine from a reliable dealer. (6.) Probably a good second-hand 3½ h.p. two or three-speed single-cylinder outfit would suit you better than anything else.

3½ h.p. or 4 h.p.

Is there any rough and ready method of distinguishing between a 3½ h.p. and a 4 h.p. Triumph? I have one offered to me as a 4 h.p., but personally I think it is a 3½ h.p. It is fitted with a three-speed hub and clutch, and also decompressor under the inlet valve. If you could give me the difference in the outside measurements of the cylinders, say, that would suffice.—A.W.R.

Externally there is very little difference between the 3½ h.p. and 4 h.p. Triumph engines. The 1913 Triumph engine with decompressor was a 3½ h.p., and the 1914 4 h.p. You can most readily distinguish between the two machines by the fact that the 1913 3½ h.p. Triumphs had a straight top frame tube, while the 1914 models had a dropped top tube and tank.

Some of the members of the P.S.M.C.C. on the occasion of their recent run to Hayling Island. The central figure is H. B. Browning, the hon. secretary. On the extreme left is the Coulson-B, owned by G. W. Bonham-Carter, a member of the committee.

Misstated Date.

Three weeks ago I bought, second-hand, a Sun-Villiers motor cycle for £45, advertised as a 1917 model. I find, however, that it is actually a 1915. No date is given on the receipt which I hold, but the seller informed me he understood that it *was* 1917, and I only have his word (which is now proved to be incorrect) and the advertisement, which I have kept. Can I make the seller take the machine back again, as he obviously misrepresented the date of the machine in his advertisement, and I, of course, would not have given £45 for such an old model if I had known its real date of manufacture.—N.S.

If you can prove that the machine was represented to you as a 1917 model, and that you bought it on that understanding, you can return it and demand the repayment of your money; or you might effect some cash adjustment with the seller. The receipt is of small importance.

Garage Proprietor's Responsibility.

Owing to lack of room, I garage my combination with a local motor firm. The last time I used the machine I returned with it in good order. Two days later, on going for my machine, I found that it had been used, that the rear lamp generator had been stolen, and the gear broken. I made a complaint at once. I can obtain witnesses that the machine was all right when I last used it. The firm did not dispute my complaint, and one of their men took the gear to pieces and found the only thing broken was a ball race. At the firm's suggestion, the gear was sent to the makers to be repaired. As this was being done I asked that the kick-starter, which was out of order, should be put right as well. What the firm wrote I do not know, but all worn parts were replaced and a *pro forma* invoice for £5 2s. 10d. was sent. The firm refuse to send for the gear until I pay them this money. I did not order the gear to be overhauled, which the firm admit. The cost of repairing the kick-starter is only 1s. 4d., and the broken ball race 3s. The firm now say that I can have the gear for trade price. (1.) Is the firm liable for the damage to my machine, also the theft? (2.) Can the firm make me pay for the overhauling which I did not order and was not necessary? (3.) Should the firm refuse to send for the gear? What is the best thing to do?—W.R.B.

Our legal adviser replies as follows: "The owner does not explain the circumstances sufficiently for me to say whether the garage proprietor is or is not liable for the theft of the rear lamp generator, or for the damage done to the gear. To make him liable he would have to show that there was some negligence on the part of the garage proprietor. However, the firm do not appear to dispute their liability with regard to the gear, but, apparently, they are only liable for 3s., and if the order to the makers was quite clear it would seem that the most they could legally claim would be 4s. 4d. At the same time, the gear has evidently been improved, and it looks as if it would be reasonable to come to some amicable settlement. Failing this, I think the proper course is for the owner to send the makers the 4s. 4d. and to sue them for the return of the gear. I am assuming he sent it direct to them and not the garage proprietor. If the garage proprietor sent it to them, then the proper course would be to pay him the 4s. 4d. and sue for the return of the gear or for damages, and then let him bring the manufacturers into the action as third parties. As the matter is somewhat complicated, it would be well to put it in the hands of a local solicitor.

Gearing for Sidecar.

I am about to fit a new 4¼ h.p. engine and Sturmey countershaft gear to my motor bicycle, but am in difficulty as to (1) What number of teeth and what pitch and width should I have on engine-shaft? (2.) Number of teeth on countershaft sprocket? (3.) What gear ratios do you advise for use as passenger vehicle?—R.J.

(1.) Fifteen-tooth sprocket, ⅝in. pitch × ⅜in. width. (2.) Thirty teeth. (3.) The ratios will depend on the weight of the outfit and the nature of the district in which you are riding. We would suggest a top gear of about 4⅞ to 1.

Unsteadiness at Speed.

(1.) I have a 6 h.p. 1916 Zenith-J.A.P. with clutch, etc. I want to fit a drip feed like the Best and Lloyd, and take the pipe into the box on the side of the crank case, plugging up the valve hole at the bottom of the sump. Will this work all right? (2.) At speed over 35 m.p.h. the motor bicycle wobbles very badly. How can I stop this? It has heavy type Druid forks, the pins are a good fit, and the steering head properly adjusted.—JUNGLE (India).

(1.) There would be no objection to fitting a Best and Lloyd drip feed to your twin Zenith, but we should advise you to lead the oil pipe into the crank case in the same manner as it is led at present from the standard oil pump. If you plug up the valve at the bottom of the crank case you will interfere with the special lubricating system of the J.A.P. engine. (2.) In all probability the unsteadiness of the steering in your machine is due to the frame being out of truth, and, in consequence, the wheels do not track. You can test this by placing a straight edge along the wheels at each side of the machine in turn and noting whether the rims are equidistant at the four points passed by the straight edge. If a straight edge is not available, a piece of cord stretched tightly from wheel to wheel will answer the same purpose. Should the wheels not be truly in alignment it will be necessary to have the frame or forks trued.

READERS' REPLIES.

Damaged Fork-end.

In *The Motor Cycle* of August 14th one of your correspondents complains of a damaged fork end. If he is in London, might I suggest that he take it to Wards, 51, Upper Richmond Road, Putney (their advertisement is in your paper), who would weld on some extra metal, making it the same thickness and strength as before. These people can do anything with a motor cycle. They have done work for me, and I have always found them cheap, reliable, and, above all, one is not kept waiting, as the work is put in hand at once. I may add I have no connection at all with the firm mentioned.—W. D. ROE.

Lack of Power.

In reply to your correspondent "F.W.," I had exactly the same trouble with my Villiers engine; this is how it occurred. I took my engine to be rebushed; when I went for it I gave the engine a run in free and it ran quite all right, except that it would not take so much air; then when I got on 50% of its former power was gone. When I got home I had a good look round and found that about half of the crank case washer was missing, consequently I was losing compression in crank case; of course, he will have to take the whole of the engine down again to remedy this. I find a 25-jet most suitable for this engine.—T.M.L.

Re "F.W.'s" lack of power in his Sun-Villiers after dismantling. If he will examine the joint between cylinder and crank case, he will find that the joint of this portion will be damaged, most likely near the transfer port. Great care should be taken in remaking this joint, as the charge goes to atmosphere instead of being transferred to cylinder in the ordinary way; if the joint is damaged I would suggest that he remove the cylinder and remake joint with thick cardboard 1-32in. in thickness, taking care, of course, to construct correctly.—F. WILSON.

RECOMMENDED ROUTES.

GLOUCESTER TO BOURNEMOUTH.—W.G.J.

Gloucester, Stroud, Nailsworth, Bath, Bradford, Trowbridge, Westbury, Salisbury, Fordingbridge, Ringwood, Christchurch, Bournemouth.

EALING TO EASTBOURNE.—C.J.

Ealing, Acton, Gunnersbury Lane, Turnham Green, Fulham Palace Road, Putney Hill, Wimbledon, Merton, Mitcham, Mitcham Common, Croydon, Purley, Godstone, East Grinstead, turn right for Wych Cross, Uckfield, Hailsham, Eastbourne.

NOTTINGHAM TO LLANDUDNO. (TO INCLUDE WOLVERHAMPTON AND RUABON.)—W.N.S.

Nottingham, Derby, Burton, Lichfield, Wolverhampton, Shifnal, Wellington, Shrewsbury, Oswestry, Chirk, Llangollen, Corwen, Pentre Voelas, Llanrwst, Llandudno. Ruabon lies off the direct road, between Chirk and Llangollen.

BIRKENHEAD TO BATTLE.—J.C.

Birkenhead, Chester, Tarporley, Whitchurch, Nantwich, Woore, Pipe Gate, Stone, Weston, Rugeley, Lichfield, on to Watling Street, through Atherstone, High Cross, Daventry, Weedon, Towcester, Dunstable, St. Albans, South Mimms, Potter's Bar, Goff's Oak, Cheshunt, Waltham Abbey, Chigwell, Romford, Hornchurch, Upminster, Tilbury, by ferry to Gravesend, Meopham, Wrotham, Tonbridge, Lamberhurst, Hurst Green, Robertsbridge, Battle. Approximately 265 miles.

THE WORLD'S BEST MASCOT

How the A.A. Badge ENSURES the motorist against bad luck on the road.

That little brass badge, with its twin A's and its spread wings above, is the modern motorist's shield and buckler, his passport and his guide. With this talisman on his dashboard he may enter upon the true and full possession of the traveller's birthright—"The joy of the Open Road."

The A.A. Badge means more to the motorist than any other car accessory. Its uses are many and its failures *nil*. Its sphere of influence covers the United Kingdom, and its servants are to be found in every part of the Country.

It will bring assistance to the motorist stranded on the road miles from a town or garage. At sight of it a battalion of *khaki-clad* A.A. patrols will undertake roadside repairs, fetch motor fuel, tyres, or replacements from the nearest garage and render all possible assistance in case of need.

It gives access to every one of the A.A. Roadside Telephone Boxes which are distributed along main roads and may be used by members for calls to hotels, garages, home, or office.

It will summon a "Mechanical First-aid" Motor Cycle with its complement of spares and tools for light repairs to car or motor cycle.

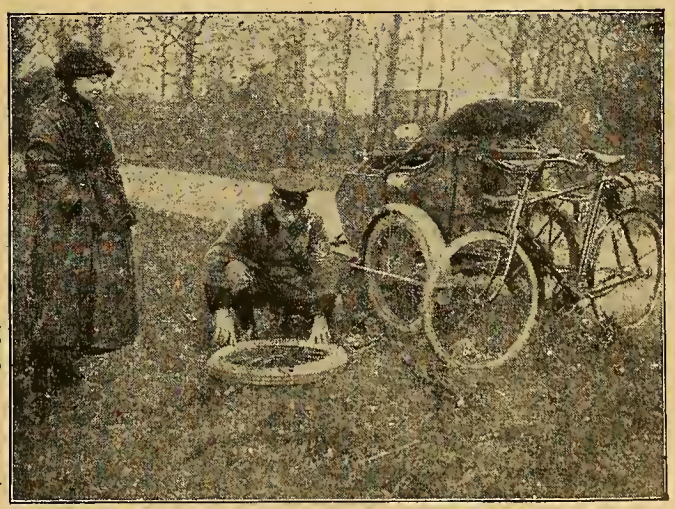
It enables a motorist to take his car into a 70 per cent. tariff country on a banker's indemnity alone and without depositing hundreds of pounds in respect of Customs dues.

It ensures good and reasonable service from any A.A. Agent and Repairer, also really satisfactory accommodation at any A.A. Hotel in England, Scotland, Ireland, and Wales.

It solves all questions regarding routes and accommodation for home tours and dispels the trouble and delay usually associated with a tour abroad.

It provides Free Legal Defence, Free Legal Aid, Special Insurance Facilities, Engineering Assistance, and in a hundred and one other ways gives the motorist what he wants when he wants it.

If you want to know how such a small object can achieve such great results, send a postcard *to-day* to the Secretary, The Automobile Association, 21, Fanum House, Whitcomb Street, London, W.C.2, for a free booktet and other information describing the many personal benefits enjoyed by members of the A.A.



MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co. Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. 000, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½ %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

CROW Bros., High St., Guildford, have contracted largely for the new A.B.C. Order now for earliest delivery. [5298

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

WAUCHOPE'S, 9, Shoe Lane, Fleet Street, E.C.

FOR SQUARE DEALS AND VALUE.

We have the best stock of second-hand machines in London. New machines offered for sale from stock.

The latest 1919

6 h.p. J.A.P. Twin Cylinder Engines

from Stock. Trade Supplied. Terms on application; these include extras. 50 Engines for immediate delivery, £42 10s. each.

Second-hand Engines taken in part payment. GOOD PRICE ALLOWED.

Makers' Guarantee.

Book your 1919 new machine now, it is never too late. We are City agents for all the best makes of British Motor Cycles, such as **Triumphs, Douglas, Enfield, Ariel, Royal Ruby, Rover, Matchless, New Imperial, Allon, A.J.S., Bat, B.S.A., Calthorpe, Blackburne, Bradbury, Chater Lea, Clyno, Humber, James, Levis, Norton, Quadrant, Rex, Rudge, Singer, Sunbeam, Williamson, Zenith, etc.**

Also book for 1920, when available. Second-hand machines taken in part payment and present market value allowed. There is no responsibility in booking a machine, you get the opportunity of taking a machine booked in turn when available. Should delivery be too late, we then offer it to the next in turn, and your booking responsibility ceases.

In any transaction you will be certain to get fair treatment from

WAUCHOPE'S, 9, Shoe Lane, Fleet Street, London, E.C.4

'Phone: Holborn, 5777.
Telegrams: Opificer, London.

EXCHANGES ARRANGED.

WAUCHOPE'S invite enquiries for particulars of their stock of second-hand and new Light Cars, Cycle Cars, and Motor Cycles.

MOTOR CYCLES FOR SALE.

A.B.C.

LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Parr St., Liverpool. [0003

A.B.C. Distributors for Radnorshire. Book your orders now to ensure early delivery.—Owens, Baveno Garage, Llandrindod Wells. [7863

A.B.C.—Sole agents for these famous machines. Orders booked now for early delivery.—Chandler, Reyre, and Williams, Sun St., Hitchin. [0996

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

A.B.C., 1915, 500 c.c., spring frame, 4-speed, hand or foot-controlled clutch, overhead valves, long exhaust, aluminium footplates, special mudguards and underscreen, Burbury coachbuilt sidecar, little used, wheels and tyres 26in.×2½in., spares, etc., all in good condition; £100.—Findlay, Westquarter Factory, Polmont, Scotland. [X0737

Abingdon.

1919 6-7h.p. Abingdon K.D. Coachbuilt Combination, kick start, 3 speeds, countershaft, only done 600 miles, delivered Aug. 5th, 1919; £140, or best offer.—Austin, 32, Wychife Rd., Battersea. [2166

ABINGDON King Dick (Dec., 1915) 4¼h.p. Coachbuilt Combination, 3-speed, kick start, foot clutch, Splitdorf mag., tyres good condition, recently overhauled, lighting set, mechanical horn, tools, and accessories; £60.—H. Saunders, 6, Dragon St., Petersfield, Hants. [X0550

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [5601

JACK HEALY, Cork.—Official A.J.S. agent.—Garage and works, Drinan St. [X8336

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

1914 6h.p. A.J.S. Combination, 3-speed, incomplete; £63.—53- Brownhill Rd., Catford. [2467

A.J.S. 2¾h.p., 1914, 2-speed, detachable cylinder head; £46.—14, Victoria Crescent, Newport, Mon. [2443

A.J.S. Prices Down.—2¾h.p., 2 speeds, clutch, chain drive; bargain, £45.—211, Carratt Lane, Wandsworth. [2752

BRAND new A.J.S. 6h.p., military model; what offers?—J. Smith and Co., 16, Hampstead Rd., N.W.1. [2770

1915 A.J.S. 6h.p. Combination; best offer over £130. —Walsh, Wollerton, Victoria Rd., Grappenhall, Warrington. [X0285

A.J.S. New Military Model; early delivery; £110.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [X0316

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

1916 4h.p. A.J.S. and Canoelet Sidecar, recently overhauled and enamelled.—Hilton, Sharp, and Co., Ltd., Foxhall Rd., Blackpool. [X0368

A.J.S. 6h.p. Combination, 1918, speedometer, spare wheel, 3 electric lamps, horn, wind screen, big tyres, good condition; 170 gns.—32, Butler Av., Harrow. [2437

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries [0007

1914 A.J.S. Combination, 6h.p., 3-speed, speedometer, 3 lamps, spares, etc., wind screen, new tyres, tubes, excellent condition; £115.—89, Somerset Rd., Farnborough, Hants. [2519

1916 4h.p. A.J.S. Combination, screen and hood, recently overhauled, various new parts, including mag. and chains, etc.; £120, no offers.—Hough, British Flag, Southgate St., Gloucester. [X0701

1919 A.J.S. Combination, 6h.p., delivered 2 weeks ago, Lucas lamps, horn, wind screen, interchangeable wheels and spare, hardly used, unscratched; best over £180.—5, Cottage Grove, Bow, E.3. [2768

4h.p. A.J.S. C.B. Combination; 1916, insurance, wind screen, lamps, spares, and tools, complete, low mileage and exceptional condition throughout; London district; offers.—Box L3,523, c/o *The Motor Cycle*. [1848

2¾h.p. A.J.S., 1916, 3-speed countershaft, hand-controlled clutch, kick start, enclosed chain drive, complete lamps, tools, and spares, splendid condition; £65.—351, Green Lane, Small Heath, Birmingham. [X0730

MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A. 1916-17 4¼h.p., 3-speed countershaft, over-hauled, chain-cum-belt, excellent condition; £80. Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1774

B.S.A. The Birmingham City Agents and B.S.A. Specialists, County Cycle and Motor Co., 307 and 308, Broad St. All replacements in stock. Tel.: Comocyco, Birmingham. [6311

B.S.A. and Sidecar, late 1917, mileage under 2,000, been stored over a year, 3 lamps, speedometer, and horn, fully guaranteed; 100 gns.—2, Theed St., Soupell St., Waterloo. [2246

B.S.A. 3½h.p., a powerful and elegant machine, a reliable mount, top-hole condition; 65 gns.—West Sussex Motor Co., Central Garage, Portland Rd., Worthing. 'Phone: 272. [2261

B.S.A., best Canoelet, Cameo screen, folding grid, footboard, Lucas horn, 3 lamps, unscratched, mileage under 2,000; trial willingly; £115.—Jeavons, Draper, 70, Lye, Stourbridge. [X0513

B.S.A. 1914 4h.p., 2-seater Montgomery sidecar, 3-speed gear box, countershaft, kick start, chain drive, screen, hood, lamps; trial; £85; evenings.—9, Kensington Av., East Ham. [2069

1h.p. B.S.A. 1913 (late) Combination, 2-speed, Binks, £4 Bosch (watertight), Dunlops, absolutely like new, lamps, tools, etc.; £65; low mileage; biggest snip this week.—19, Wilcox Rd., South Lambeth. [2660

1916 (late) B.S.A., 3-speed, kick starter, clutch, with Millford sidecar, excellent conditions, with lamps, horn, tools; £115, or near offer.—Badger, 13, Promenade, Whitley Bay, Northumberland. [2520

B.S.A. 1917 4¼h.p., all chain, 3-speed, countershaft, clutch, C.B. sidecar, wind screen, lamps, tools, small mileage, excellent condition; £98.—Waddams, 110, Orchard Rd., Erdington. [X0543

1915 B.S.A., 4¼h.p., 3-speed countershaft, kick start, Millford coachbuilt sidecar, Klaxon, all accessories, spares, perfect condition throughout; £100; after p.m.—6, Victoria Rd., Wombwell, Barnsley, Yorks. [X0328

B.S.A. 1916 B.S.A. Coachbuilt Combination, new condition, enclosed chain drive, 3-speed, clutch, kick start, 3 Lucas lamps, Lucas horn, speedometer, hood, and screen; sacrifice 110 gns.—35, High St., Dartford, Kent. [2411

B.S.A. 3½h.p. C.B. Combination, 2-speed, free engine, P.S. Model D., 2 new tyres, requires new free-wheel, which is on order, good condition; £75.—H. Goodwin, 274, Stockport Rd., Levenshulme, Manchester. [X0569

1916½ Guaranteed B.S.A., 4¼h.p., 3-speed countershaft, chain belt, perfect order, 3in. tyres, wicker sidecar, lamp, horns, tools, low mileage, carefully ridden; first cheque over £85.—Dr. Warner, Fakenham, Norfolk. [2425

B.S.A., 3-speed countershaft, coach-built combination, 3 Lucas lamps and Lucas horn, luggage grid, hood and wind screen, Dunlop tyres, splendid and reliable turnout; best offer over £90.—Ward, 38, Ribbie Rd., Coventry. [X0748

B.S.A. 1917 4¼h.p. Model K and B.S.A. Sidecar, perfect condition, complete with 3 new tyres and spare, 3 spare tubes, horn, lamps, tools, and spares; £130.—Capt. Godsave, School of Pilotage, Andover, Hants. (D) [2609

FOR Sale, 4¼h.p. 1919 chain-cum-belt B.S.A., horn, speedometer, and C.B. sidecar, with wind screen, hood, side curtains, all in perfect condition, only done about 500 miles; price £145.—Apply, 204, Foleshill Rd., Coventry. [X0474

1917 B.S.A. 4¼h.p., 3-speed countershaft, all-chain drive, kick start, complete with lamps, horn, quantity of spares, almost new C.B. sidecar, all in perfect condition; bargain, £95.—Cardosi, Thurso, Caithness, Scotland. (D) [1984

B.S.A. 1919 4¼h.p., and Montgomery sidecar, brand new, only driven from agents, fitted side door, screen, Klaxon, etc.; £147/10.—2, Kingswood Rd., Upper Norwood, S.E. Victoria—Gipsy Hill, Holborn—Sydenham Hill, No. 3 'Bus. [2579

B.S.A. Coachbuilt Combination, 4¼h.p., 3-speed countershaft, kick start, all enclosed chain drive, mechanicaly sound; any trial or examination:; late 1914 fully equipped, lamps, tools, spares; £95.—G. W. Green, Millgate, Thirsk, Yorks. [1928

B.S.A. Model K., 3-speed countershaft, kick starter, with Mills-Fulford coach sidecar, 3 lamps, horn, wind screen, tools, perfect condition; £100, no offers; seen before 8, or after 2 Thursday, or by appointment.—Barnes, Flat 2, 388, Finchley Rd., N.W.2. [2645

B.S.A. Combination, 1916, 4¼h.p., all-chain, 3-speed countershaft, kick start, Klaxoo, speedometer, watch, electric side, acetylene head, speres, condition like new; 100 gns.—6, Lower Paddock Rd., Oxley, Watford. 142 'Bus, or Bakerloo. After 6 or week-ends. [2109

B.S.A., engine new, unpacked, with special C.A.V. mag., silencer, B.S.A. carburetter, engine plates, bolts, sprockets, gate change, all controls, kick start, 3-speed gear box, drip feed, brakes, 2 lamps.—Offers, all or any, to 6, Tennyson Rd., Small Heath, Birmingham. [X0735

THE BIRMINGHAM HOUSE

P.J.EVANS

FOR MOTOR CYCLES & LIGHT CARS

WHEN PURCHASING A NEW MOUNT, THERE IS SOMETHING MORE IN IT THAN JUST OBTAINING THE MAKE OF MOTOR CYCLE TO MEET YOUR REQUIREMENTS ——

Orders now being booked for the following motor cycles:—

INDIAN,
ENFIELD,
EDMUND,
NORTON,
ROVER,
JAMES,
ZENITH,
HUMBER,
CALTHORPE,
BLACKBURNE,
NEW IMPERIAL,
ETC.

IT IS THE AGENT'S SKILL AND SERVICE BEHIND THE SALE, GIVING THAT FINAL TOUCH OF COMPLETE SATISFACTION, SO WELL-KNOWN TO MY CUSTOMERS.——

LET ME GIVE YOU THIS SATISFACTION.

Write, call or 'phone.

P.J.EVANS

'Phone: Mid. 662. 'Grams: 87-91, "Lytcar,B'ham."

JOHN BRIGHT ST.,

BIRMINGHAM.

MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A. 4¼h.p., 1914, and Ivy coachbuilt sidecar, all chain drive, 3 speeds, kick starter, nearly new tyres on all wheels, also spare tyre, 2 spare tubes, all accessories; just completed Devonshire tour; £75; after 7 p.m.—Vellacott, Lyndhurst, Lytton Rd., New Barnet, Herts. [2006

B.S.A. 1916 4¼h.p. coachbuilt Combination, 3-speed countershaft, luggage grid, Cameo wind screen, Miller lamps, also mag., rear light, horn, automatic oiling, drip feed, spare tyre, tube, chain, valve belt, perfect condition; £98.—Jennings, Forester's Arms, Headless Cross, Redditch. [X0702

B.S.A., delivered December, 1918, 4¼h.p., chain-cum-belt, 3-speed, countershaft, clutch, K.S., E.I.C. mag., Millford C.B. sidecar (dark green), tyres in excellent condition, Klaxon born, low mileage, careful usage, perfect running order; price £115.—St. Leonard's, Gloucester Rd. East, New Barnet. [2021

B.S.A., 4¼h.p., 1919 (delivered April), all chain drive, and No. 1 Montgomery sidecar with wind screen, done 700 miles, Lucas lamps and horn, and also Velox electric lighting set, lamps all unused, spare Dunlop cover (unused), and complete set of tools; seen Glasgow district; price £140, no offers.—Box 196, c/o *The Motor Cycle.* [X0171

B.S.A., 4¼h.p., 1917, delivered 1918, chain-belt, 3 lamps, 2 generators, horn, Klaxon, knee-grips, new Whittle belt, 2 spares, many tools and spares, including cover and tube, insurance, fitted with Phœnix sidecar, new apron, mat, etc., all in excellent condition; best offer by Monday night accepted.—Collins, Coal Merchant, Midland Bridge, Bath. [2446

B.S.A. (1917) and Canoelet Sidecar, model H, all chain drive; this combination is in splendid condition and perfect in every way; Dunlop tyres, practically new, and enamel unscratched; guaranteed 90 m.p.g.; this is an exceptionally smart lot; 105 gns., no offers.—Apply, after 6, or by letter, Tynwald House, Grove Park Rd., Chiswick. [2037

Calthorpe.

CALTHORPE 2¾h.p., J.A.P., Enfield gear, good condition.—Write, Conway, College Rd., Epsom. [2452

CALTHORPE Junior, 2¼h.p., 2-speed, excellent condition; £28.—Ward, 35, Red Bank, Chorley. [X0535

2¾h.p. Calthorpe-Jap, 2-speed, believed 1916, lamps, horn, etc.; £45, or nearest.—Warburton, 51, Tong Park Av., Bolton. [X0478

CALTHORPE 1919, J.A.P., 2-speed, brand new, just arrived not ridden; what offers?—Box 13,680, c/o *The Motor Cycle.* [2274

CALTHORPE-J.A.P. 2¾h.p., 1916, Enfield 2-speed, lamps, horn; £48, or nearest offer; after 6.—79, Carleton Rd., Tufnell Park, N.7. [X0317

CALTHORPE Lightweight, 2-speed, B.B., complete, less wheels and tyres; first £10 secures.—F. Rawson, Awkley, Nr. Doncaster. [2236

CALTHORPE, 1915, 2¾h.p., 2-stroke, 2-speed countershaft, free engine, perfect running order; 42 gns.—45, Dingwall Rd., Croydon. [X0438

1915 Calthorpe, 2¾h.p. J.A.P., Enfield 2-speed, Palmer and heavy Dunlop, Amac, E.I.C., lamps, new condition; hardly used; £48.—63, Solon Rd., Brixton. [2396

CALTHORPE-J.A.P., 2¾h.p., 1917, wedge tank model, 2-speed, Enfield gears, excellent order; first £47/10 secures.—Jewell, Trafalgar Lawn, Barnstaple. [2721

1916 2¾h.p. Calthorpe, Jap-Enfield 2-speed, fast, powerful, £40; also 1915 2¾h.p. Levis, 2-speed, new tyres; £33.—Luckett, Electricity Works, Banbury. [2488

CALTHORPE-J.A.P., early 1919, 2 speeds, clutch, lamps, horn, first-rate condition, done under 1,000 miles; owner going to India; £60.—J. Johnstone, The Lodge, Saltisford, Warwick. (D) [X0435

CALTHORPE-J.A.P. 1919 2¾h.p., 2-speed, clutch, speedometer, horn, P. and H. lighting set, spares, tyres, etc., as new, very fast mount; offer 63 gns.—C/o. Finsbury Park Garage, near Station. [2156

CALTHORPPE, 2¾h.p., 2-stroke, 1919, Enfield 2-speed gear, new this month, not done 250 miles; C.A.V. magneto, Amac carburetter, special front forks with spring licks.—John A. Cole, 24, Union St., Birmingham. [X0362

Campion.

CAMPION 4h.p., clutch, tyres like new; £34, bargain.—193, High St., Tonbridge. [2543

CAMPION Prices Down.—2½h.p. Villiers 2-stroke, 2-speed; sacrifice, £32.—211, Garratt Lane, Wandsworth. [2753

CAMPION-PRECISION, 2½h.p., 2-speed, good running order; £30.—8, Ashley Park, Chesterfield Rd., Bristol. [X0506

CAMPION-J.A.P. Combination, 1914, 4h.p., 3 speeds, watertight Bosch, lamps, horn; £49.—49, Well St., Hackney. [2705

3½h.p. Campion, 3-speed, coach sidecar, reliable turnout; seen after 5 p.m., or week-end; £70.—Freer, Cossington, near Leicester. [X0539

CAMPION-J.A.P. Combination, 4h.p., wicker sidecar, Bosch magneto, new Dunlop back cover and tube; trial 7 to 9 p.m.—Jefferyes 38, Oxford Rd., Chiswick. [X0422

MOTOR CYCLES FOR SALE.

Campion.

CAMPION, 1915, 4h.p. J.A.P., coachbuilt combination, Sturmey-Archer, countershaft, 3 speeds, clutch, kick start, new condition; £78.—52, Manor St., Clapham, S.W.4. [2538

Centaur.

CENTAUR, 3½h.p., 3-speed, clutch, lamps, Klaxon, fine condition, £40; wicker sidecar, nearly new, £5.—83, South End, Croydon. [2735

CENTAUR, shop soiled, 2½h.p.; a little mount that will serve you well and the upkeep little more than a push bicycle; 32 gns.—West Sussex Motor Co., Central Garage, Portland Rd., Worthing. 'Phone: 272. [2262

Chater-Jap.

5-6h.p. Chater-Jap Combination, good condition; what offers.—98, Chestnut Grove, Malden, Surrey. [X0556

CHATER-LEA-J.A.P. 4h.p., Sims mag., perfect running order; £25.—A. Viall, 31, Camrose St., Plumstead. [2654

CHATER-J.A.P. 8h.p., incomplete, comprises frame, Druids, engine, wheels, tyres; £30.—Smalley, Jessamine Cottage, Yateley, Hants. [X0325

CHATER-LEA-J.A.P. Twin, 3-speed gear box, chain drive, tandem seater sidecar, new, lamps, horn, speedometer, in good condition; accept £90.—E., 277, Camberwell Rd., S.E. [2524

4h.p. Chater-Jap, 1914, Amac, enclosed Bosch, extra air intake, copper silencer, spare valves, Druid Mark II. forks; would pull a house down; ready for anything; £45 secures this really smart bus.—48, Burchell Rd., Peckham, S.E.15. (D) [2122

Chater-Lea

3½h.p. Chater-Lea Motor Cycle, Bosch mag.; £27/10. —6, Prairie Rd., Addlestone, Surrey. [2451

CHATER-LEA 3½h.p., Bosch, B. and B., faultless condition; £35.—38, The Vineyard, Richmond. [2184

SOUTH Lancashire Only.—Chater-Lea enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7040

CHATER-LEA No. 7 1915 Coachbuilt Combination, 8h.p., 3-speed, clutch, kick start, insurance; £130, or exchange lesa power; after 7.—7, Maze Hill, Greenwich. [X0511

CHATER-LEA 3½h.p., C.B. sidecar, Mabon gear, Bosch, Druids, fine condition; first £50 secures; evenings. — Thomas, Nurseries, Upper Halliford, Shepperton. [2016

CHATER-LEA 9h.p. Twin, 3-speed, Cowey, 3in. tyres, F.R.S. lamps, chain drive, new Empire sidecar with hood, splendid condition; £110.—Janes and Adams, Each Finchley. [1974

3½-4h.p. Chater-Lea, 2-speed, clutch, speedometer, accessories; fast, reliable touring machine, perfectly flexible in traffic; A.1. condition (120 m.p.g.); 40 gns.—Brigham, 114, Maygrove Rd., Brondesbury, N.W.3. [2388

CHATER-LEA No. 7 Combination, 8h.p., Bosch waterproof mag., 3-speed, countershaft gear box, Renold's chains, large roomy coachbuilt sidecar, windscreen, hood, luggage lockers, lamps, and speedometer; mechanical condition as new; trial willingly; £84.—7, Killarney Rd., Wandsworth. [2687

Chater-Lea-Jap.

J.A.P., 1914, 4h.p., overhead, T.T., perfect, new tyres; 75 m.p.h.; £50.—Payne, 109, St. Leonard's Rd., Mortlake. [X0419

Chater-Lea-Peugeot.

3h.p. Chater-Lea-Peugeot, mag., good tyres and running order; £18.—Archer, 2, Avenue Rd., Huntingdon. [2476

Chater-Lea-Precision.

LATE 4½h.p. Chater-Lea Precision Combination, Sturmey 3-speed countershaft, chain-cum-belt, Mark II. Druids, large C.B. sidecar, Orto hood and screen, electric lighting, tools, accessories, new condition; 105 gns.; offer.—10, Crowborough Rd., Tooting, S.W. [2608

Clarendon.

CLARENDON 3h.p., low built, mag., B. and B., Grado gear, electric lighting set; £25, or nearest.—Goude, 106, Thistlemoor Rd., Peterborough. [2551

Clyno.

CLYNO Combination; £85.—Islington Motor Mart, 39, Essex Rd., Islington, N. [2078

GROVER, Smith, and Willis, Basingstoke, Clyno Agents.—Deliveries in strict rotation; order now. [5778

CLYNO Coachbuilt Combination, kick start, 2 speeds, new tyres; £75.—Wilding, Standish, Wigan. [2722

CROW Bros., High St., Guildford, West Surrey agents for the new Clyno.—Order now for early delivery. [4084

CLYNO 5-6h.p. Twin Coach Combination, 2 speeds, clutch; bargain, 65 gns.—c/o Mealar St. Works, Camberwell, S.E. Hop. 1293. [2317

CLYNO 5-6h.p. Combination, 2-speed, exceptional condition, stored 3 years; £85, or nearest.—17, Garden Av., Mitcham Lane, S.W.16. [2223

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Clyno.

CLYNO 1914 6h.p. Coachbuilt Combination, 3-speed, K.S., spare wheel and tyre, speedometer, lamp, etc.; perfect order; £85.—322, Whitehorse Rd., Croydon. [2242

CLYNO, 2-stroke, 2½h.p., aluminium footboards and silencer, long plated exhaust; good condition; running order; bargain £33.—Box L3,673. c/o *The Motor Cycle*. [2266

CLYNO Combinations and Lightweights. Write, 'phone, or call for particulars of deliveries.—Kays, 8, Bond St., and 116-122, Pitshanger Lane, Ealing. 'Phone: 553 Ealing. [1112

6h.p. Clyno Combination, 1916, 3-speed countershaft, clutch, etc.; just been overhauled and re-enamelled, condition perfect; £100, or best offer.—Mott, 10, Elm Grove Rd., Salisbury. [2515

CLYNO Combination, 5-6h.p., 2-speed, countershaft, kick starter, clutch, all chain, engine recently overhauled, rebushed, etc., Clyno coachbuilt sidecar, tyres practically new, lamps, horn, pump, and tools; £70—209, Broadway, West Hendon. [2569

Connaught.

CONNAUGHT 2-stroke, good condition; £35, or exchange 4-stroke.—John T. Edwards, Parkside, Ruahon. [X0299

HOVE Engineering Works, Davigdor Rd.—Sole district Connaught agents; deliveries in rotation; all accessories and repairs. [7961

1917 2¾h.p. Connaught, 2 Lucas lamps, Stewart horn, nearly new condition; 36 gns.—38, Ufton Rd., Downham Rd., Dalston. [2486

CONNAUGHT, late 1915, 2¾h.p., 2 speeds, accessories, spares, guaranteed mechanically perfect, belt, tyres as new; 38 gns.; after 6.—Burton, 20, Hencroft St., Slough. [X0358

Coulson.

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

Crescent.

CRESCENT 2½h.p. 2-stroke, single speed, nearly new, splendid condition; £40.—5, Derwent View, Belper. [X0485

Dalm.

DALM 2-speed 2-stroke, 3h.p., Dunlops, good condition, just overhauled; £38.—51, Caversham Rd., Kentish Town. [2384

£45.—3h.p. Dalm 2-stroke, 2-speed, new last November, all accessories, perfect; new motor suit, £2/10.—126, King Edward Rd., South Hackney. [1982

Douglas.

DOUGLAS, 1915, 2¾h.p., 2-speed; £50.—9, Church Rd., Willesden, N.W. [2290

4h.p. 3-speed Douglas, new condition, cheap.—15, Bristol Mews, Maida Vale. [2772

1911 2¾h.p. Douglas, running order; £25; bargain. —42, Lavington Rd., Ealing. [2730

1914 2¾h.p. Douglas, 2-speed, good order; £48.—53, Brownhill Rd., Catford. [2467

DOUGLAS, Bosch, good running order; 22 gns.—112, Portobello Rd., N. Kensington. [X0570

2¾h.p. W.D. Douglas, brand new in crate.—Ivyleigh, 277, Hagley Rd., Birmingham. [2508

DOUGLAS 2¾h.p., 2-speed, good condition, fast; £45. —52, Lower Hillmorton Rd., Rugby. [X0357

DOUGLAS, W.D. model, perfect running order.—16, Southdean Gardens, Southfields. [2691

DOUGLAS 2¾h.p., going order, but needs adjusting; £23/10.—Hill, Rathdrum, Co. Wicklow. [2575

DOUGLAS 2¾h.p., 1915, excellent condition, very fast; 58 gns.—33, The Vale, Golder's Green. [2085

1912 Douglas and 1916 Levis; what offers?—Capt. S. Johnson, 2, Winchester Rd., Highgate. [2030

DOUGLAS, 2¾h.p., 1915, T.T., 2-speed, disc wheels, all accessories; £60.—462, Old Kent Rd. [2515

1919 4h.p. Twin Douglas Combination, as new, all accessories; £142.—Gustance, King's Lyno. [1906

DOUGLAS.—Now delivering new 1919 model 4h.p. combination; £123.—Moffat, Yeovil. 'Phone: 50. [1103

1915 2¾h.p. Douglas, 2-speed; 50 gns. for quick sale.—301, North End Rd., West Kensington. [2007

4h.p. Douglas, sidecar model, thoroughly overhauled and fully equipped.—24, Gwendolen Av., Putney, S.W. [2072

1917-18 4h.p. Douglas, 3 speeds, K.S., good mechanical condition; £75.—13, North St., Barking. [2416

1914 Douglas 2¾h.p., 2-speed, with lamps, generator, and speedometer; £55.—Woolleys, Windermere. [2020

DOUGLAS 1914 2¾h.p., 2-speed, splendid condition; £50.—Spink, Edencourt, Thames St., Weybridge, Surrey. [2201

2¾h.p. 1916 Douglas, 2-speed W.D. Model, excellent condition; £48.—Tandy, 122, College Rd., Bromley. [2374

MOTOR CYCLES FOR SALE.

Indian.

INDIAN Combination, speed and clutch model, splendid running order; price £80 for quick sale.—Canty, Broadway, Crockenhill, Swanley, Kent. [2484

INDIAN, 1914, 2-speed, clutch, just overhauled; 70 gns.; lightweight part exchange.—Whitehead, 4, Montague Mews, Crawford St., Baker St., W.1. [2378

INDIAN Coachbuilt Combination, 1915, electric lighting speedometer, reliable outfit, condition perfect; London; £120.—Box L3,676, c/o *The Motor Cycle*. [2269

INDIAN 1915-16 3½h.p. Twin, 3-speed clutch, K.S., been stored, original tyres little worn, accessories, after 6.45; £65.—9, Knowles Rd., St. Anne's-on-Sea. [X0700

3½h.p. Indian, single, 2-speed, free engine, guaranteed perfect condition throughout, accessories; bargain, £55, no offers.—G., 10, Rushams Rd., Horsham. [2423

INDIAN Coachbuilt Combination, 7-9h.p., beautiful appearance, powerful, perfect mechanical order; 120 gns.—Wilbud, 85, Larch Rd., Cricklewood, N.W.2. [2478

INDIAN 7-9h.p., kick starter, purchased as 1915, grand running order; 78 gns.—West Sussex Motor Co., Central Garage, Portland Rd., Worthing. 'Phone: 272. [2259

1916 Powerplus Indian Combination, Swan sporting sidecar, tip-top condition; £135.—County Motor Works, 17, Gloucester Place, Brighton. 'Phone: 5991. [2563

INDIAN 7-9h.p., with coachbuilt sidecar, 3-speed gear, electric lights and horn, perfect condition; £135.—Chant, Duke of Cornwall Garage, Stoke-under-Ham, Somerset. [X0354

INDIAN Combination, 1915, 7-9h.p., 2-speed, clutch, underslung comfortable sidecar, tyres good, chains new, just overhauled; cheap, £90.—3, Kildowan Rd., Goodmayes. [2045

INDIAN 5-6h.p., 3-speed model, 1915, stored over 3 years, in excellent condition, privately owned and ridden; £95.—10, Augustus Rd., Edgbaston, Birmingham. [2110

INDIAN 7-9h.p., clutch, 2-speed, kick starter, new tyres, electric lighting, speedometer, Millford coachbuilt sidecar, hood, screen; best offer.—21, Airlie Gardens, Ilford. [2367

INDIAN, 1915, 5-6h.p., coach combination, 3-speed, kick, clutch, excellent condition; 89 gns.—'Phone: Battersea 780; or, after 6, Moreton, 78, Mount Ararat Rd. Richmond. [2552

INDIAN Combination, 7-9h.p., T.T., 2-speed, clutch, just overhauled, rebushed, new sprockets, etc., splendid condition; any trial; £75.—Bramwell, Kitterick, Woking, Surrey. [2450

1915 Indian Combination, 7-9h.p., 3-speeds, spring frame, kick starter, lamps, mechanical horn, tools, perfect condition; bargain, £110.—Richards, 16, Manor Gardens, Richmond [2252

INDIAN, spring frame, 7-9h.p. Powerplus and sidecar, speedometer, electric light and horn, late 1916, excellent condition; £165.—White, Seawell St., School House, Hackney Rd., London, E.2. [1887

PLACE your orders for Indians now; don't be left; will northern county customers note the new address.—Horswill, 42, Bridge St., Chester. Castra Motor Cycle Garage. 'Phone: 943. [2141

INDIAN, 1914, 7-9h.p., racer, clutch, Lucas King of Road, speedometer, horn, spare sprockets, valves, chain, beautiful condition, mileage 10,000; £55.—Irwin, 4, Orchard Rd., Ilfracombe. [1323

1914 Indian 7-9h.p. Coachbuilt Combination, 2-speed, clutch, electric lamps and horn, speedometer, tyres and condition good; 80 gns.—"Rowhill Mount," Wilmington, Dartford, Kent. [2599

1915 Indian 7-9h.p., 3 speeds, clutch, kick starter, just overhauled by makers, coachbuilt sidecar, all renovated, splendid condition.—Offord and Sons, Ltd., 67, George St., Portman Sq., W.1. [0031

SPECIALLY made 1918 Indian 10h.p. Powerplus Combination, December, under 1,000 miles, perfect; £140. Best offer secures, trials; cash wanted; evenings.—9, Redhill, Bassett, Southampton. [1096

1914 7-9h.p. Indian, 2-speed, clutch, spring frame, handsome 2-seated sidecar, hood, etc., tyres excellent, just finished tour in Devon; bargain, £115; evenings.—289a, Lea Bridge Rd., Leyton, E.10, Essex. [2160

1916 T.T. Powerplus, 3-speed, kick starter, hand and foot clutch, long exhaust pipes, lamps and horn, etc., perfect mechanical condition; seen and tried any time; £100.—237, Iffley Rd., Oxford. [2245

1916 7-9h.p. Powerplus Indian, 3-speed, clutch, K.S., fast, and in excellent condition; £95; offers.—Hammersmith Motor Co., 39-40, Rednall Terrace, Hammersmith, W. 'Phone: Hamersmith 1285. [2650

INDIAN 1916 Powerplus Combination, exceptionally fast, 3-speed, K.S., hand and foot clutch, Klaxon, lamps, tyres good; can be seen near Kingston; 120 gns., no offers.—Box L3,686, c/o *The Motor Cycle*. [2743

INDIAN 1916 7-9h.p. Powerplus Combination, hood and wind screen, 3-speed, hand and foot clutch, kick start and speedometer, tools and spares; £130.—W. Turner, Melrose, 194, Lincoln Rd., Walton, Peterboro'. [2445

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MOTOR CYCLES FOR SALE.

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INDIAN 5-6h.p., 1915 T.T., 3-speed, clutch, kick starter, low sporting Phœnix C.B. sidecar, disc wheels, condition as new, very sporty and fast; bargain, £120, or near; seen London if desired.—Medosweet, Worgrave, Berks. [2775

INDIAN 5-7h.p. red Combination, 1915, 3-speed, clutch, K.S., free engine, Klaxon, speedometer, lighting set, sporting cancelet sidecar, just been overhauled, tyres perfect; £110.—9, Temple St., Barford, Stoke-on-Trent. [X0498

INDIAN, 1915, 7-9h.p., red combination, beautiful Burberry sidecar, clutch, stored 3 years; guaranteed excellent condition, too fast for present owner; lamps, horn, spares etc.; a genuine bargain, £100.—45, Bridge St., Bolton. [2087

INDIAN 7-9h.p., T.T. clutch model, bought Nov., 1915, and stored 3 years, T.T. and touring bars, all accessories, very fast and powerful, and in faultless condition; accept £75, or best reasonable offer.—5, North Av., West Ealing. [2177

INDIAN 7-9h.p., 1915, road racer, stored during war; perfect running order and excellent condition; new Palmer cord back, large Miller head lamp, tools, and numerous spares; £80.—Burns, Kilsyth, Storey's Way, Cambridge. [2223

7-9h.p. Indian, 1915 engine, carefully overhauled, 1918 3-speed gear box and clutch, unused, new heavy Dunlops, spring frame, new P.M. head light, sound S.C. machine; seen Midlands; nearest offer to £85.—Write Box L3,608, c/o *The Motor Cycle*. [1956

1915 7-9h.p. Clutch Model Indian, stored since 1916, mechanically perfect, enamel very good, aluminium discs, electric lights, Klaxon, fast, fully guaranteed; £100, or reasonable offer; owner going abroad; S.E. London.—Box L3,682, c/o *The Motor Cycle*. [2739

T.T. Powerplus 1916 Combination, perfect condition, unscratched, kick starter, 3-speed hand and foot clutch, electric light, sporting Milford disc-wheel sidecar re-upholstered and enamelled red, luggage grid and petrol carrier; £135; seen any time.—72, Lonsdale Rd., Oxford. [2233

5-6h.p. Indian, clutch model, low bars, large long bright exhaust, new tyre and chain, lamps, horn, speedometer, etc., spare chains, very fast, good appearance, mechanically sound; nearest £65; consider exchange for lower power mount.—Red Lion, Harpenden, Herts. [2232

7-9h.p. Indian Combination, sporting model, disc wheels, electric lighting and starting, torpedo sidecar, new gears just put in, enamel as new, in splendid condition; any trial; £135, or nearest offer.—Apply by letter, Walker, 23, Gertrude Rd., Sprowston Rd., Norwich. [2460

1916 spring frame Powerplus, electric model, speedometer, ammeter, voltmeter, only done 1,300, just overhauled by works in all details, including gears, like new; £110. Inspection by appointment in Coventry or London, owner buying car.—I. Scott, 86, York St., Westminster. [X0516

INDIAN 7-9h.p., spring frame, genuine 1915, with kick starter, clutch, and 3 speeds, fitted luxurious sidecar with apron and screen, electric lighting, tyres perfect, speed indicator, the whole in splendid condition and quite sound, also tuned for tour; any trial; accept £125, or near offer.—Emerson, Wykeham Cottage, West Grove, Hersham, Walton-on-Thames. [1946

INDIAN 1915-16 Combination, 7-9h.p., 3-speed, spring frame, discs, electric lighting and horn, luxurious specially built sidecar, wind screen, clutch, hand and foot control, all tools and spares, just completely overhauled, sportiest, fastest, and most comfortable combination in district, perfect condition; selling owing to illness; £140.—Neads, Barry Rd., Oldland, near Bristol. [X0572

Ivy.

IVY, J.A.P., sporting 4h.p., adjustable pulley, discs, accessories; £40; after 7.30 p.m.—Plymouth House, Loughton, Essex. [1972

IVY.—For the earliest possible deliveries, book your order now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5603

H. G. HENLY and Co. are sole London Agents for the popular Ivy 2-stroke.—91, Gt. Portland St., W.1. 'Phone: Mayfair 4084 [0023

1914 Ivy-Precision 3¾h.p., 3-speed, perfect condition, take sidecar anywhere; price £59.—Thompson, 38, Sketty Rd., Swansea. [2459

1914 Ivy-Precision 4h.p., 2-speed, Smith speedometer, mechanical horn, Millers lamps, new heavy Dunlops, covers and tubes, plating and enamel as new, splendid low and fast machine; £60; no offers; low sidecar to suit if wanted.—Seale, Hardumout, Oatlands Drive, Weybridge, Surrey. [2433

Ixion.

IXION Prices Down.—2½h.p. Villiers 2-stroke, single-speed; gift, £24.—211, Garratt Lane, Wandsworth. [2754

1916 Ixion-Villiers 2¾h.p., appearance and mechanical condition as new, little used; £39/10.—106, Audley Rd., Hendon. [2240

James.

JAMES.—Sole agents for Hertfordshire. 1919 machines in stock.—Chandler, Reyre and Williams, Sun St., Hitchin. [0997

MOTOR CYCLES FOR SALE.

James

JAMES, 1919, 2¼h.p., 2-stroke, 2-speed, lamps, horn, spare belt, and tools, complete; £60.—Birch, 2, Newfield St., Tunstall, Staffs. [X0331

JAMES 2-stroke, 2-speed countershaft, 1915, just overhauled, practically new engine and gears; £44.—Lucas, Polesworth, Tamworth. [X0332

1919 4¼h.p. James Big Single, C.B. sporting sidecar, as new; offers over £80 for quick sale.—Watts, 55, Upper Dicconson St., Wigan. [2368

JAMES 5-6h.p., 1919 tandem sidecar, Lucas lamps, Klaxon, mileage 800, perfect condition; £165.—23, Mandeville Rd., Enfield Wash, Middlesex. [X6597

JAMES 4¼h.p. 1915 Combination, conchbuilt, speedometer, lamps, 3-speed, K.S., excellent condition; after 6; £98.—48, Prince George Rd., Dalston, N. [2762

JAMES 2-stroke, 1916, guaranteed perfect order, and in real nice condition; £55, or exchange higher power and cash.—Johnson, Eastbury, Cowleigh Rd., Malvern. [X0596

4¼h.p. Big Single James with wicker sidecar, 3-speed with kick start, perfect order and appearance, tank unscratched.—Ward, 13, Porfield Place, Leamington Spa. [X0726

1919 James 5-6h.p., 3-speed, sidecar, hood, screen, all accessories, done 400 miles; £165; perfect order; any trials.—Briggs, Motor Agent, Wellingborough. [X0591

6h.p. James, done 600, new June, 2 lamps and generators, Klaxon, Tansad, spare cover and tube; cost £145; seen daily; offer over £100.—Hippisley, West Lodge, Sidcup, Kent. [X0160

1919 4½h.p. James, 3 speeds, kick start, clutch (foot), mileage under 700, Klaxon, Lucas lamps, speedometer, watch, etc; as new; 110 gns.—Hedgcock, 67, Braxted Park, Streatham Common, S.W.16. [2392

JAMES 4¼h.p. 3-speed Combination, late 1914, not ridden since June, 1916, condition as new, Lucas lamps, auxiliary silencer, spare tyre and tube, and pillion seat; £85.—191, Torridon Rd., Catford. [2322

JAMES, 2-stroke, 2¼h.p., 2-speed, countershaft (1915-16, uncertain), Lucas acetylene lighting, pump, horn, tools, etc.; perfect condition; like new; ride away; £50, no offers.—Harvey, 5, Park Hill Rd., Chingford, E.4. [2302

JAMES 4¼h.p. Combination, 1914, unused 3 years; in excellent condition, every part in thorough working order; sidecar recently repainted; tyres new; £75; after 7 p.m.—Malford Lodge, Malford Grove, Snaresbrook, E.18. [2301

J.A.P.

2¼h.p. 4-stroke J.A.P., Bosch, Amac, low, fast, fine condition; 26 gns.—21, Sydney Rd., Enfield. [2333

J.A.P. 4h.p. Chater-Lea, in good order; trial; £30.—T. Coleman, 14, Elderberry Rd., Well Hall, S.E.9. [X0483

8h.p. J.A.P., m.o.v., little used, Bosch mag., J.A.P. carburetter, controls, adjustable pulley, spare valve; £225.—"Rowhill Mount," Wilmington, Dartford, Kent. [2600

J.A.P. 8-10h.p. Coachbuilt Combination, special model, spring frame, very powerful; £80.—Tyler, 20, Queensberry Mews West, near South Kensington Tube Station. [2094

8-10h.p. Twin J.A.P., 1914, 2-speed, F.E., and sidecar (2-seater), hood, lamps, Klaxon, splendid condition, ride away; £110; after 5 o'clock.—60, Camplin St., New Cross, S.E. [2319

1914 6h.p. J.A.P. Combination, new sidecar, engine just overhauled at J.A.P. works, cost £21, P. and M. countershaft, 2-speed gear, oversize tyres; bargain, 85 gns.—Kelham, Bourne. [X0731

BRAND New J.A.P. 6h.p. Twin, Bosch, 3-speed, clutch, kick start, beautiful machine for solo or sidecar; first offer over 95 gns.—Gibbons, 89, Southfield Rd., Bedford Park, London, W. [2612

6h.p. J.A.P., 4-speed, countershaft, thoroughly overhauled and all worn parts renewed, canolet sidecar, lamps, mechanical horn, speedometer, hood, Dunlops; equal to new; any trial; £85.—14, Oliver Av., South Norwood. [X0456

SPECIAL 8-10h.p. Overhead Valve 90×77¼ Racing J.A.P. Combination, late property of Mr. F. Barker, 3-speed Sturmey-Archer countershaft gear, clutch, and kick starter, Bosch, Sensspray, American type rims, nearly new 750×75 Avon tyres, lamp, horn, red steel racing sidecar, whole machine practically unscratched, and built for lightness and speed, large adjustable pulley for solo or track; 100 gns., or exchange Indian.—Ilsley, Harston, Cambs. [1919

J.E.S.

J.E.S. Lightweight, in perfect condition, no dealers; £25.—608, Old Kent Rd., London, S.E. [2052

LANCASHIRE and Cheshire Only.—J.E.S. motor cyclette and attachment sets; enquiries invited.—J. Blake and Co., Liverpool-Manchester. [7042

J.H.

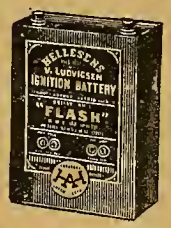
J.H. 7-9h.p. M.A.G. Combination, late 1916 engine, excellent, and tyres new, heavy Mills-Fulford sidecar; outfit stored 15 months; £90.—St. Alban's Garage, Teddington. [2029

REGISTERED

HAH TRADE MARK

ELECTRIC REAR LIGHTING SETS.

GENUINE HELLESEN DRY BATTERIES.



"FLASH" 4½ volt. Battery 12/6
Fig. 386 Metal Case, with clips... ...11/-
"MIGNON" 4½ volt. Battery 3/9
(Smaller size for lighting, one low current bulb).
Fig. 379 Leather Case, with straps ... 3/6

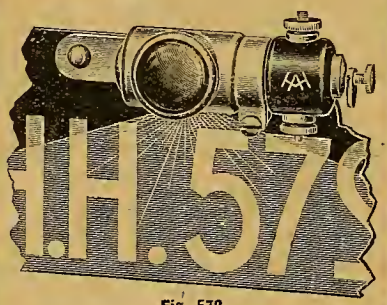


Fig. 572.
Complete with fixing bolts, inspection lamp, switch and bulb—totally insulated. The latest and best rear lamp obtainable.
NICKEL OR BLACK PLATED ..... 18/6 each.

H.A.H. REAR LAMPS.

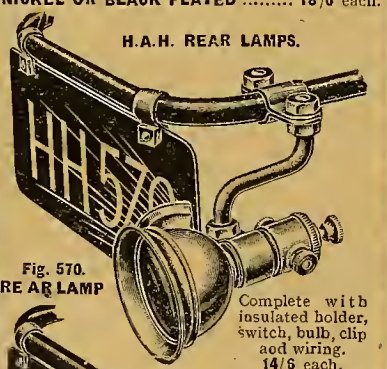


Fig. 570.
RE AR LAMP
Complete with insulated holder, switch, bulb, clip and wiring. 14/6 each.

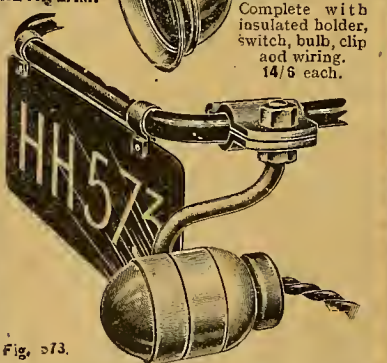


Fig. 573.
Adjustable in any direction, for any fixing, lights number plate, and shows red danger signal Complete with aluminium body, bulb, and wire; and Switch with locking device.
Price, 9/6 each.
Delivery of all above from stock.
Note.—Postage extra on all the above.
Write for latest Catalogue of H.A.H. Complete Electric Lighting Sets.

A. H. HUNT, 115-117, Cannon St., LONDON, E.C.4.

MOTOR CYCLES FOR SALE.

Kerry

2¾h.p. Kerry, a.o.i.v., accumulator ignition; first £12 secures; running order.—64, Burnley Rd., Dollis Hill, N.W. [2479

KERRY-ABINGDON 3½h.p., 2 speeds, clutch, new piston and bushes, the whole thoroughly overhauled, lamps and tools; £30; appointment.—138, Marylebone Rd., Baker St., N.W.1. [1965

Lagonda.

4h.p. Lagonda Motor Cycle, F.E., just been rebushed, good condition, sporty; nearest £25; after 6.30 or Sunday; ride away.—45, West Sq., St. George's Rd., Southwark, S.E. [2022

Lea-Francis.

LEA-FRANCIS, 1914, 3½h.p., 2-speed, in thorough order; £75.—Pike and Co., Alphington St., Exeter. [1986

LEA-FRANCIS, 1919. Place your name on our waiting list for delivery of these aristocratic mounts.—A. J. Sproston, 198, Gt. Portland St., W.1. [6612

LEA-FRANCIS late 1916 4h.p. Twin, coach combination, 3-speed, countershaft, accessories, speedometer, like new; £125; solo part.—R., 5, Victoria Av., Surbiton. [X0542

LEA-FRANCIS, 1915-16, 4h.p. twin J.A.P., 3-speed, C.S., K.S., H. and F. controlled, all chain drive, tyres new; 85 gns.—F. Roberts, Big Lock Stores, Middlewich. [2441

LEA-FRANCIS 1914, 3½h.p. twin J.A.P., 2-speed countershaft, clutch, kick start, chain drive, lamps, mechanical horn, etc.; offers over £55.—63, Station Rd., Woodhouse, Sheffield. [X0277

Levis.

2½h.p. Levis, lamps, economical; £38.—Ambleside, approach Rd., St. Albans. [2303

LEVIS, 1915, overhauled, lamps, horn, and pump, in good condition; £34.—37, Thorpe Rd., St. Albans. [2461

LEVIS Popular 2¼h.p., 1916, lighting set, running order; £39.—Smith, 5, Ashley Crescent, Wood Green, N. [X0458

HOVE Engineering Works, Davigdor Rd., are executing Levis orders in strict rotation; all accessories and repairs. [7962

LEVIS 2½h.p., 2-speed, T.T. bars, Bosch mag., Sensprav, speedometer, good condition; £46.—88, Park Rd., Dulwich. [2376

LEVIS Popular, 1915, lamp, horn, generator, pump; condition as new; after 6; bargain, £38.—209, Shakespeare Crescent, East Ham. [2725

LEVIS Popular, the finest 2-stroke in the world, book now for early delivery and super-service.—The Walsall Garage, Walsall. Tel.: 444. [5604

LEVIS Popular Model, perfect condition, splendid hill-climber, electric head light, semi-T.T. handles, horn, etc; £40.—Doverow, Aldin Av., Slough. [2706

LEVIS 2½h.p., single-speed, variable ignition, 26in. wheels, new tyres, belt, tools, accessories, lamps, horn, fine condition; £38.—J., 32, Lightcliffe Rd., Palmer's Green, N. [X0499

LEVIS (£62 2½h.p. model), 2-speed Enfield, all chain drive, new Aug. 1st, best offer above £54; also new featherweight Henderson sidecar, £16.—Tomlin, Cardigan Rd., Richmond, Surrey. [2206

Lincoln-Elk.

3½h.p. Lincoln-Elk, watertight Bosch, B. and B., Druids; £38.—144, Clarence Rd., Wimbledon. [2694

4h.p. Lincoln-Elk Combination, perfect order; accept £46.—Barton, 23, Oxford Terrace, Chigwell Rd., South Woodford. [2546

LINCOLN-ELK, 3½h.p., Bosch waterproof mag., B. and B. carburetetr, good tyres, tubes, Druid forks, excellent running order; £35, or nearest offer.—256, Division Rd., Hull. [2424

L.M.C.

1919 4½h.p. L.M.C., C.S. 3-speed, K. start, Sturmey-Archer, only done 100 miles, tip-top machine; £100 secures.—Watson, Greta Bridge, Barnard Castle. [X0162

L.M.C. Motor Cycles.—The motor cycle with the comforts of a car. All models available shortly; demonstration model now in stock.—The sole distributing agents for London and the Home Counties, Mehes and Mehes, the Original Light Car Specialists, 144, 154-6, Gt. Portland St., W.1. [3695

Martin.

MARTIN-J.A.P. 1914 6h.p. Combination, o.h.v., U.H. mag., Jardine 2-speed, clutch, Amac, new Dunlops, lamps, etc., splendid condition; after 5; £85, no offers.—46, New Rd., Chatham, Kent. [X0326

Matchless.

MATCHLESS, 6-8h.p. J.A.P., 2 speeds, F.E., K.S., solo; £65, or nearest.—33, Redhill St., N.W.1. [2679

MATCHLESS.—Secure your machines for next year now.—Inquire, Parker's, Bradshawgate, Bolton. [X0530

MOTOR CYCLES FOR SALE.

P. and M

P. and M. 3½h.p., fully equipped, sidecar or solo mount, excellent condition, just overhauled; £60, bargain.—Young, Hill View, Hampton Rd., Worcester Park. [1950

3½h.p. P. and M. 2-speed Motor Cycle with Montgomery sidecar, little used, very completely equipped; £80.—Milne and Russell, Ltd., 72, High St., Croydon. [2119

1919 P. and M. Combination, special model, 900 miles, horn, lamps, spare tube, luggage grid.—Write, or call, Coryn, 14, Wheeler's Terrace, Eastleigh, Hants. [2304

1919 P. and M., brand new, thoroughly equipped, lots of new accessories; cost over £100, best quickest offer secures; owner buying car.—15, Foster St. Warrington. [X8782

P. and M. Combination, 1914, recently overhauled by makers, all accessories, many improvements and spares; 80 gns.; after 8 p.m. Friday.—42, Rodenhurst Rd., Clapham Park, S.W.4. [X0324

P. and M. Combination, May, 1919, only done about 150 miles, lamps (for machine only), tools, horn; £125, or nearest; would sell sidecar separately.—259, Old Hall Rd., Chesterfield. [2704

1919 P. and M. Combination, Lucas lamps, mechanical horn, petrol carrier, tools, spare B.E. tube, spares, perfect condition, full insurance; £130.—55, Beckenham Lane, Shortlands, Kent. [2073

P. and M., 3½h.p., new March, 1919, also new Millford Skiff C.B. sidecar, perfect in every way, lamps, horn, petrol can carrier, etc., carefully driven; £130, or nearest offer.—Holland, 109, Carholme Rd., Lincoln. [X0486

Peco.

PECO, 2-stroke, 1914, engine rebushed throughout, paintwork not very good, mechanically perfect; £29.—Watts, 65, High St., Hounslow. [X0566

Peugeot.

PEUGEOT Twin, 2-speed, mag., running order; £25.—108, Borough Rd., London, S.E.1. [1949

5-6h.p. Peugeot, Chater frame, 24in. Chater wheels, very low, less mag.; £14.—14, Phœnix St., Euston, N.W.1. [1942

PEUGEOT 4h.p. Coach Combination; £75, or exchange for 2-speed lightweight.—Hooker, 10, Elm Villas, Elm Rd., Windsor. [2359

Precision.

PRECISION 1914 4¼h.p., 3-speed, clutch, Mills-Fulford C.B. sidecar, new condition; £75.—Machell, Ryhill, Wakefield. [X9960

PRECISION, 4¼h.p., T.T., Gradua gear, lamps, horn, etc.; very fast; £46.—158b, Norwood Rd., West Norwood, S.E.26. [2294

PRECISION Motor Cycle, 4¼h.p., and sidecar, 3 speeds, F.E.; £50, or sell separate.—R. Smith, 34, Preston Rd., Standish, near Wigan. [X0296

PRECISION 3¾h.p. C.B. Combination, 3-speed, pedal start, Bosch, B.B. carburetter, lamps, horn; £65.—54, Coombe Rd., New Malden. [X0555

PRECISION 2¾h.p., Sturmey-Archer 3-speed, good order; £28.—Hall, Hockman Cottage, next Green Man Hotel, Whetstone, near Finchley. [2352

PRECISION Junior, 2-speed, free engine, chain drive, perfect; £35.—Hall, Hockman Cottage, next Green Man Hotel, Whetstone, near Finchley. [2353

PRECISION, 1914 Elswick 4¼h.p. coachbuilt combination, 3-speed, clutch, tyres and sidecar nearly new; £65; after 6 p.m.—9, Copleston Rd., East Dulwich. [2418

1913 3¾h.p. Precision, single speed, Bosch mag., B. and B. carburetter, in good condition, £30; also coachbuilt sidecar, £3.—G. Ashworth, Moor House, Manchester Rd., Heywood, Lancs. [X0292

4¼h.p. Precision and Sidecar, 1916, 3-speed, clutch, Bosch, B and B., 3 lamps, tools, and accessories included, excellent running order, just overhauled; £80, or nearest; seen any day before 5.—25, Southwood Av., Highgate, N.6. [1995

Premier.

PREMIER 2½h.p., 1914, perfect condition.—Williams, 517, Wandsworth Rd., S.W. [2188

PREMIER Lightweight, good appearance, ride away; £28.—2, Bucklegh Rd., Streatham Common. [2497

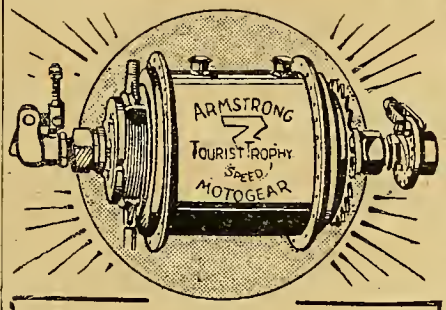
PREMIER 2½h.p. Lightweight, excellent condition, complete; £35.—Rogers, 42, Church Rd., Hendon. [2561

GENUINE 1914 Premier Lightweight, Bosch, B. and B., condition as new; £28.—82, Church Rd., Mitcham. [2225

PREMIER 2½h.p., 3-speed, Bosch mag., B. and B. carburetter, in first-class condition; £35.—Dinsdale, Dent, Yorks. [X0536

7-9h.p. Premier Combination, 2-speed countershaft, last machine, property of a client; £95.—Clapham (Motor) Co., Greenwich. [1184

4¼h.p. Premier, 3 speed, clutch, sidecar, complete; nearest £65; trial week-end.—H. Cullen, Cantelupe Rd., East Grinstead. [X0549



The joys of motor cycling are manifold—but they are always associated with freedom from mechanical trouble. From the grateful manner in which hundreds have written thanking us for the thorough way we have repaired their

Sturmey-Archer
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Armstrong Gear

We are justly conscious that we have done our part well

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COUNTY ENGINEERING CO.
64, STAINES ROAD, HOUNSLOW,
LONDON, W.

MOTOR CYCLES FOR SALE.

Premier.

PREMIER, about 2¾h.p., 3-speed, hub gear, clutch, little used, equal to new; £35.—Ridgers, St. Michael's Rd., Aldershot. [2673

1912 Premier, running order, wants new pedal arm, otherwise good condition; bargain, 25 gns.—Ernest Peters, Haddenham, Ely. [2591

1913 Premier 3½h.p., clutch, been carefully used, laid up during the war; £50.—Hillside, Vicarage Rd., King's Surgley, Herts. [2272

PREMIER 7-9h.p. Twin, countershaft, 3-speed, electric lamps, Gloria coachbuilt sidecar; £97; after 6 o'clock.—Martin, 4, Pinfold Rd., Streatham. [1853

PREMIER 1914 3½h.p., 3-speed, clutch, perfect condition mechanically, enamel original, tyres and belt as new, accessories; must sell immediately; £45.—49, Althorpe Rd., Wandsworth Common. [2783

PREMIER 3½h.p. Coachbuilt Combination, 3-speed gear box, kick start, lamps, horn, speedometer, tools, spare belt, tyre, good condition; £70; between 6 and 7.30.—18, Elmsdale Rd., Walthamstow. [1894

3¾h.p. Premier Combination, 3 speeds, free engine, complete, coachbuilt sidecar, hood, screen, lamps, and horn, stored during war, condition perfect, just overhauled; £80.—309, Bristol Rd., Northfield, Birmingham. [X9956

PREMIER 4¼h.p. Combination, 3-speed, free engine, handle start, Bosch mag., B.B. carburetter, new speedometer, horn, mirror, tools, lamps, spares, splendid outfit; sacrifice £65; giving up house.—15, St. James' Rd., Park Rd., Hampton Hill. [2580

3½h.p. Premier C.B. Combination, 1914, 2-speed countershaft, clutch, Bosch, 3 lamps, horn, storm apron, Cameo screen complete, spare valve, idle 4 years, excellent condition; any trial; just thoroughly overhauled; 85 gns.—Attwood, 8-9, High St., Ascot. [1923

P.V.

4h.p. P.V. Twin Combination, 1914, 3-speed, K.S., just overhauled, new tyres and tubes, spares, lamps, splendid sidecar with screen; no defects; a fine outfit; price £75; available August 31st, after tour completed.—E. Entwistle, West Haddon, Rugby. (Meet buyer Rugby or Coventry above date or near.) [1969

Quadrant.

QUADRANT, 1914, Canolet combination, 3-speed, clutch, lamps, horn, as new; first reasonable offer.—56, High St., Tooting. [2405

4h.p. Quadrant, Torpedo sidecar, disc wheel, Bosch, B.B., good tyres, genuine bargain; £45.—North, 41, Montpelier St., Brighton. [2528

7-9h.p. Quadrant, 2-speed gear, new Dunlop steel-studded tyre on back wheel, too powerful for present owner, coachbuilt sidecar, complete; £80.—6, Gipsy Hill, London, S.E. [2734

Radco

RADCO, 1915, good running order, lamps; £25.—Crouch, 75, Kingsgood Rd., Goodmayes. [2458

1919 Radco for sale, or part exchange for good combination.—Particulars, Ashley, Harcourt Rd., Llandudno. [X9952

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2923

RADCO 2-stroke, late model, unscratched, perfect condition, like new; £32/10; exchange higher power; would consider one requiring overhaul.—193, St. Luke's Rd., Birmingham. [X0520

Rex

TWIN Rex with Coachbuilt Sidecar; £37/10.—Carr, Knowsley St., Bury. [2455

REX Twin 6h.p., 2-speed, and sidecar; £45.—Adams, 31, South Rd., Southall. [2361

1914 Rex, 5-6h.p., 2-speed, in excellent order; £80.—Pike and Co., Alphington St., Exeter. [1987

3½h.p. Rex, requires slight adjustments; £11.—Apply, 108, Sandy Mount Rd., Wath. [2111

6h.p. Rex, excellent goer; £29/10.—Particulars from Appleton, Forest Lane Head, Harrogate. [X0494

4h.p. Rex, fixed, Bosch, B.B., good condition.—Wakelin, 157, Dimsdale Parade, Wolstanton, Staffs. [X0310

REX 4h.p., Bosch mag., perfect condition, any trial, no dealers; £35.—608, Old Kent Rd., London, S.E. [2051

REX, 3½h.p., running order, aviation magneto; first cheque for £40 secures.—Weygang, 13, Lawrence Rd., Southsea, Hants. [2226

5-6h.p. Rex Combination, 2-speed, handle start, Bosch, B. and B., roomy cane sidecar; £70.—148, High Rd., East Finchley. [2092

3½h.p. Rex, Grado gear, Bosch, B. and B., new Dunlop tyres and belt, good running order; £32.—209, Broadway, West Hendon, N.W. [2263

REX, 3½h.p., Bosch, B.B., back tyre new, belt new, footboards; ride away; believe 1910-11; £25, no offers.—Box L3,691, c/o *The Motor Cycle*. [2748

MOTOR CYCLES FOR SALE.

Rex.

3½h.p. T.T. Rex, m.o.v., Bosch mag., Amac carburetter, disc wheels, tyres equal to new, long exhaust, just being overhauled, and in good order; £45.—134, Durham Rd., Wimbledon. [2464

1919 Rex 4h.p. Model 77 Combination, delivery about 3 weeks, order booked April, no profiteering, list price £112-10; new electric light sidecar set if wanted, list price £6/10; owner bought higher power machine.—Box L3,690, c/o *The Motor Cycle*. [2747

REX 1913 6-8h.p Coachbuilt Combination, 2-speed clutch, handle start, Stewart trip speedometer, B. and B., Bosch, new 1½in. John Bull belt, good tyres, horn, mirror, lamps, re-enamelled, plated, engine overhauled, stored since 1914, pillion seat, spares, take 3 anywhere; trial; £80, or best offer.—110, Marston Lane, Bedworth. [X0725

Rex-Jap

REX-J.A.P. 1914 8h.p. Combination, coachbuilt sidecar, 3-speed, countershaft, kick start, hood, wind screen; £90.—110, Westfield Rd., King's Heath, Birmingham. [X0453

1914 Rex-Jap 6h.p. Combination, 2-speed, handle start, lamp, horn, speedometer, spare cover, mileage 2,500; exchange lower power, or £95 cash.—15, Half Acre Rd., Hanwell. (D) [2373

1915 REX-J.A.P., 6h.p., 3-speed countershaft, hand clutch, coach torpedo sidecar, lamps, 2 horns, speedometer, all tools, fine mechanical condition; £90.—53, Wadbrough Rd., Sheffield. [X9577

1913 8h.p. Rex-Jap de Luxe, 2-speed, Premier sidecar, double sprung, lamps, Bosch, B. and B., tyres good, in splendid condition, genuine; £110.—A. Jacklin, Butterwick, Boston, Lincs. [X0547

Rover

3½h.p. Rover, clutch model, good condition; £40.—122, Valetta Rd., Acton, W.3. [X9945

ROVER Combination, 3½h.p., 3-speed, good condition; £75.—H. C. Cecil, Homend St., Ledbury. [X0218

JONES' Garage, special agents for Rovers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2924

ROVER 1914 3½h.p., 3-speed, clutch, Mills-Fulford, good appearance; £75.—48, Prince George Rd., Dalston, N. [2761

1919 countershaft Rover and Millford Sidecar, splendid combination; best offer over £125.—Ivy Bank, Corley, Coventry. [X0517

3½h.p. Rover, 1911 clutch model, good condition, splendid solo machine; £32.—Medlicott, 92, Queen Mary's Rd., Coventry. [X0509

ROVER, 1914, 2-speed, clutch, kick start, Bosch, B. and B., splendid condition; 48 gns.—Pugh, Beachcroft, Mogdale Rd., Bexhill. [X0307

ROVER, 1915, 3½h.p., 2-speed, clutch, C.B. sidecar, splendid condition; any trial; £55; any time.—C.S., 14, Swaton Rd., Bow, E.3. [2429

ROVER 3½h.p., 3-speed countershaft, 1916, engine No. 5455, in perfect order, little used; best offer over £75.—Grace, Excise, Thurles. [X9948

1919 Rover 3½h.p., countershaft, from makers August 2nd, unscratched, mileage 150; £110, or nearest.—Bromley Oswell, Hadley, Salop. [X0475

1916 Rover 3½h.p. T.T., H.B.C., Philipson engine (6791), lamps, mechanical horn, tools, spare valve; £80.—Box 192, c/o *The Motor Cycle*. [X0236

ROVER 1919 3½h.p. T.T., Phillipson pulley, lamps, Klaxon, run 400 miles only; £95.—A. J. Sproston, Ltd., 198, Great Portland St., W.1. [2778

1919 Rover, 3-speed, countershaft, only ridden short distance; absolutely as new; first cheque secures; £110.—Lt. Heaven, Aerodrome, Driffield, Yorkshire. [2511

ROVER, 3-speed, late 1912, speedometer, lamps, Dunlops nearly new, cane wicker sidecar, wind screen, splendid condition; £60.—463, Archway Rd., Highgate, N. [2615

CAN Supply Now one 5-6h.p. and 3½h.p. Rover combinations, 1919 model, at list price; first cheque secures one of these machines.—E. Sleath, 6, Clemens St., Leamington. [X0276

ROVER Combination, 1914, 3½h.p., 3-speed, clutch, lamps, horn, etc., tyres excellent, running perfectly; nearest £70.—Cooke, Wanda, Barnett Wood Lane, Ashtead. [2420

1919 3½h.p. T.T. Rover, as new, Philipson; not done 1,500 miles; spare valve, horn, rear lamp, etc.; £82/10, no offers.—Piegrome, 247, Camden Rd., N.7. After 6 p.m. [2584

ROVER 3½h.p. coachbuilt Combination, first-class condition, tyres unscratched, new belt, spare, N.S.U. 2-speed and free; £65. Appointment.—Osman, Ingleside, Cobham, Surrey. [2489

1919 Rover, 5-6h.p., twin coachbuilt combination, 3-speed, countershaft and clutch; in perfect order, complete with lamps, horn, etc.; £150.—Write, Cresswell, 32, Lee Ter., S.E.3. [2391

ROVER 3½h.p. 1914 Coach Combination, 3-speed, clutch, Lucas lamps and horn, speedometer, stored 4 years; 70 gns.; after 7 p.m.—Watkins, 2h, Morgan Mansions, Holloway, N.7. [2135

For the Summer Holidays.

SIDECARS from £20 to £32.

Lamps sets from 32/6. Horns from 12/6. Tools, every description

Spares for

A J S., Morgan, J.A.P., B.S.A. EASTING WINDSCREEN, 90 -

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Tyres, all makes and sizes. Belts, all makes and sizes. Chains, all makes and sizes. At to-day's list price

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DURING THE whole of 1919 we have consistently declined premiums on New Machines. It is therefore up to you to deal with the "NO PREMIUM HOUSE."

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MOTOR CYCLES FOR SALE.

Rover.

ROVER, 1915 countershaft model, about to be delivered from works, completely overhauled and new parts fitted where ever required; £85, or near offer.—Apply, Scott, 60, Albemarle Rd., Beckenham. [2034

1919 Rover Combination, 3-speed countershaft, Mills-Fulford coachbuilt sidecar (nearly new), lamps, horn, tools, spare valves; a perfect combination; seen by appointment only; best offer over £120.—G.H., 47, Wellington Sq., Oxford. [2167

ROVER 3½h.p., 1914, delivered 1915, 3-speed, clutch, scarcely used, almost like new, P. and H. lamps, horn, spring pillion seat, sidecar fittings, accessories, mirror, etc., tyres just renewed; 70 gns.—F. Wilson, 29, Shakespeare St., Barrow-in-Furness. [X0734

1919 Rover-Jap, 5-6h.p., extra strong sidecar, 5-point connection, 28in. wheels, 3 tyres, oak luggage carrier, hood, wind screen, lamps, speedometer, Klaxon, exhaust whistle, gentleman's turn-out; practically new; 150 gns.—Edwin, Woodlea, 32, James' Lane, Leyton, E.10. [2138

ROVER, 1914, coachbuilt sidecar, speedometer and watch (Jones'), Sturmey 3-speed, wind screen, Tansad seat, luggage box and sprung carrier, accumulator or acetylene lighting, all tools and spares, set of waterproofs; best offer over £80.—Box 208, c/o *The Motor Cycle*. [X0403

ROVER 1919 5-6h.p. J.A.P. Combination, as new, 3-speed; hand and foot clutch, best Lucas lamps, speedometer, Klaxon, tools, Auster Triplex wind screen and hood, polished aluminium apron; a handsome outfit, owner engineer; cost £174, best offer over £160.—Box 217, c/o *The Motor Cycle*. [X0484

ROVER Combination (1914), 3-speed and clutch, disc wheels, speedometer, horn, watch, new tyres, spare belt and inner tube, luggage grid, A.K. knee grips, Lucas lamps, a fine sporting combination; in excellent condition throughout; what offers?—Ivyleigh, 277, Hagley Rd., Birmingham. [2507

Royal Ruby.

ROYAL RUBY 2-stroke, 1915, recently overhauled, new tyres; £37.—T. Giliatt, Wainfleet, Lincolnshire. [2355

BRAND New 1919 8h.p. Royal Ruby Combination, with lamps and horn.—Clarke Bros., Queen St., Louth. 'Phone 64. [2788

2½h.p. Royal Ruby, very late model, ride away, sporty; £42.—159, Market St., Hollingworth (Hadfield), Manchester. [X0461

JONES' Garage, special agents for Royal Rubys, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2925

ROYAL RUBY 1915 2½h.p., in good running order, recently overhauled, complete with lamps, horn, etc.; £37/10.—Brown, Woodeaton, Islip, Oxford. [2010

8h.p. Royal Ruby Combination, delivery promised this month from makers; £20 deposit paid, what offers? Hampshire district.—Box L3,695, c/o *The Motor Cycle*. [2726

Rudge.

RUDGE Multi Combination, stored during war; £95.—Capt. Forster, Brackley. [X0284

RUDGE Multi 5-6h.p., C.B. sidecar, complete; £85.—Ramsay, Beachcote, Dunbar. [X0161

3½h.p. Rudge, clutch, new Binks, horn; £45.—Oakley, Oopthorne Drive, Shrewsbury. [X0501

1915 Rudge Multi 3½h.p., excellent condition; 58 gns.—James, Milford Station, Surrey. [2025

1914 3½h.p. T.T. Rudge, excellent condition; £43.—275, Shobnall St., Burton-on-Trent. [X0309

RUDGE Multi, Brooks saddle, P. and H. head light, fast machine; £46.—Crips Bros., Sidcup. [2617

RUDGE Motor Cycle, Mabon gear, 3h.p.; £38; in running order.—A. Spence, Wilsill, Pateley Bridge. [2338

RUDGE Multi 3½h.p., excellent order; £44.—A. J. Sproston, Ltd., 198, Great Portland St., W.1. [2777

1914-15 Rudge, 3½h.p., free engine, good order; £55, or nearest.—Dawes, 213, Kingsland Rd., E.2. [2137

RUDGE 3½h.p., in excellent running order; £37/10.—Stevens, 184, Pentonville Rd., King's Cross, N. [2631

1918 Rudge Multi, 3½h.p., semi-T.T., condition as new; £80.—Southern 59, Wainalong Rd., Salisbury. [X0420

RUDGE, 1914, 2 speeds and free; £45; good condition; call any time.—32, Eglinton Rd., Bow, E.3. [2522

RUDGE, 1913, 3½h.p., clutch, good running order; S.W. district; £30.—Box 215, c/o *The Motor Cycle*. [X0545

RUDGE Multi, late 1916, as new, lamps, horn, speedometer, perfect everywhere.—George Hinton, Leominster. [X0213

RUDGE 3½h.p., clutch, good running order; £42/10.—Stevens, 184, Pentonville Rd., King's Cross, N. [2630

MOTOR CYCLES FOR SALE.

Rudge.

RUDGE 3½h.p., 2-speed, good condition, very fast; £52; call after 7 p.m.—11, Chardmore Rd., Stoke Newington. [2474

RUDGE Multi, 1914, T.T. bars, 650×65 wheels; £55; after 6.30.—Rainer, 17, Heather Rd., Grove Park, S.E.12. [1952

1919 Rudge Multi, done 500 miles; £90, no offers; Saturdays only.—Wing, Red Lion Hotel, Dunstable, Beds. [2202

1919 3½h.p. Rudge Multi Combination, as delivered; £125.—Feetham, 18, Albion Terrace, Gaywood Rd., King's Lynn. [1907

RUDGE Multi 1919, 3½h.p., brand new, not ridden, just arrived; what offers?—Box L3,679, c/o *The Motor Cycle*. [2273

JONES' Garage, special agents for Rudge, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2926

RUDGE Multi 3½h.p., 1914, perfect condition; 60 gns., no offers; after 7 p.m.—Abbey, 20, Cleveland Rd., Barnes, S.W. [2058

3½h.p. Rudge-Multi, good condition, property of a client; £70.—Clapham (Motor) Co., 119, King George's St., Greenwich. [1183

BRAND New 1919 3½h.p. Rudge Multi, just delivered; £110.—Wallis, 49, High St., Saffron Walden, Essex. 'Phone 45. [X0342

1914 Rudge Multi 3½h.p., perfect condition, lamps, horn, etc.; £57.—Fife, 16, Douglas Rd., Willesden Lane, Kilburn, N.W.6. [2049

RUDGE Multi, 3½h.p., clutch model, perfect running order, tyres, belt, tube new, ride away; £40.—Skipworth, Maresfield, Sussex. [2595

RUDGE, 3½h.p., 2-speed and clutch, guaranteed fast and easy starting; £46; or exchange considered.—H.H., 12, Fordwych Rd., Kilburn. [2129

1914 T.T. Rudge, good order, C.A.V., Senspray, large Miller lamp, overhauled, re-enamelled; £40.—Smith, Queen's Rd., Faversham. [X0551

1917 3½h.p. Rudge Multi, clutch, lamps, horn, knee grips, spares, etc.; in perfect condition; after 5; best over £63.—40, Birbeck Rd., Acton. [2505

RUDGE Multi 1915 3½h.p., overhauled and in perfect running order; £48.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1773

RUDGE Multi, 1.O.M., believed 1916, new tyres and tubes, new lamps, horn, etc., splendid condition; £80.—28, Grove Park Gardens, Chiswick, W.4. [2107

1919 5-6h.p. Rudge Multi, new June, complete with lamps, horn, tools, etc., perfect; £95, or nearest offer.—Hunt, Imperial Chambers, Albert St., Derby. [X0480

1917 3½h.p. Rudge Multi, in new condition throughout, mechanically perfect, electric light; trial by any expert; £85.—Hill Cottage, Farnborough, Kent. [2578

RUDGE 3½h.p. Multi, gear, clutch, T.T., C.A.V., Senspray, tyres, belt, enamel as new, splendid order; 46 gns.; bargain.—21, Newton Av., Acton. [2758

RUDGE Multi, 1919, 3½h.p., just delivered this month, Lucas horn and lamps, perfect condition; £106.—Wilkes, Little Alne, Wootton Wawen, Birmingham. [X0450

RUDGE Multi 1919 3½h.p. Touring Model, indistinguishable from new, run 100 miles only.—Parker's, Bradshawgate, Bolton; Deansgate, Manchester. [X0521

1919 Rudge Multi 3½h.p., complete lamps, horn, delivered June, as new; £85, or with Henderson Model A. sidecar, quite new, £100.—Hesketh, Pleasington, Blackburn. [2366

1919 1.O.M. T.T. Rudge Multi, all accessories, knee grips, delivered June, mileage 200, I.T. No.—Offers over 100 gns., by letter, to Stevens, Lyndhurst, High St., Slough. [2527

3½h.p. T.T. Rudge, used racing, hill-climbs, etc.; a bargain for anyone wanting a special engine, perfect, accessories; owner giving up; £65.—36, St. Stephen's Rd., Leicester. [X0446

3h.p. Rudge Multi, 1915-16, engine thoroughly overhauled, excellent condition, very powerful, 650×65 Dunlop tyres and belt, looks like new; £75.—54, Connop Rd., Enfield Wash. [2182

1919 3½h.p. Rudge Multi, delivered June, complete with lamps, horn, speedometer, spare belt, not done 1,000 miles; £98, or offers.—Johnston, Hague Fold Farm, Strines, near Stockport. [X0599

RUDGE Multi 5-6h.p. C.B. Combination, Mills-Fulford sidecar, wind screen, speedometer, lamps, etc., complete; price, 79 gns.; seen after 6 p.m.—16, Sternhold Av., Streatham Hill, S.W. [2308

RUDGE, 1914 clutch model, B.S.A. carburetter, C.A.V. mag., good heavy tyres and tubes, lamps, horn, etc.; any trial here, new condition; £48.—Edwards, Vineyard, Saundersfoot, Pem. [X0736

1913 Rudge Combination, 3½h.p., N.S.U. 2-speed gear, pedal start, very powerful, 65 m.p.h. solo, Senspray, lamps, speedometer, splendid condition; £65.—Crowns, Broadway, Walton-on-Thames. [2205

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RUDGE Multi, 1919, 3½h.p., brand new, run 100 miles only; with coachbuilt sidecar, full lamp set; a really magnificent turnout; very fast; £115.—Watson, 132, High St., Aldeburgh, Suffolk. [2717

RUDGE, 3½h.p., 1913-14 model, hand clutch, pedal start, Dunlop belt new, belt and tube case, lamps, horn, engine in perfect condition; any trial; £40.—Harbour View, Fair View, Wyke, Weymouth. [2163

1919 Rudge Multi, complete with Miller head light, generator, rear lamp, horn, Watford speedometer, tools; £125; seen any time.—81, Fitzjohn's Av., Hampstead. 'Phone: 99 Hampstead. [2685

3½h.p. Rudge Multi, late 1914, nearly new C.B. sidecar, all accessories, good conidtion; obliged to sell; best offer over £60; write for appointment.—Caplin, 16, Rutland Park Gardens, Willesden Green, N.W.2 [2585

RUDGE, 1913, Brooklands model, very fast, £40; also F.N., sporting, all red finish, taper tank, T.T. bars, large exhaust pipe, B. and L. drip, Amac; only wants seeing; £45.—Brown, 39, Balham New Rd., Balham. [2239

1919 1.O.M. Rudge Multi, delivered June 26th, sporting Canoelet sidecar, Lucas electric lighting all round, wind screen, horn, spare valve, tube, etc., absolutely as new, done 500 miles; 118 gns.; will deliver within 100 miles.—9, Eaton Rd., Coventry. [X0437

1915 1.O.M. Rudge Multi and Sporting Canolet Minor Sidecar, just been re-enamelled Rudge service green, speedometer, lamps, horn, tyres, etc.; as new; a real sporting outfit for a knut; £90.—Walters, 20, Park Rd., Enfield Wash, Middlesex. [2088

RUDGE, 1913, 3½h.p., Mabon variable gear, C.A.V., watertight B. and B. pilot jet, just overhauled and rebushed, new cylinder, piston, gudgeon and rings, tyres good, electric light, tools; 55 m.p.h.; no dealers; £50, or near.—Lt. Longstaff, Lulworth Camp, Dorset. Deposit if desired. [X0423

1919 Rudge Multi, 5-6h.p., and Millford C.B. sidecar, delivered Aug., run under 600 miles, Cowey speedometer, 3-lamp set, mechanical horn, all spares, guaranteed perfect and as new; owner impecunious; any trial; £130.—Dickson-Hill, Lammermoor, East Cliff, Bournemouth (D) [X0466

1919 5-6h.p. Rudge Multi, Millford sidecar, complete with speedometer, P. and H. lamp, horn, spare belt, etc., purchased July 8th, perfect condition; best offer over £120, or take good 2-stroke in part exchange; seen by appointment.—W. Bagott, 1, Commeercial Rd., Burgess Hill, Sussex. [X0275

1919 Rudge Multi 1.O.M. T.T. 3½h.p., complete with lamps, speedometer, horn, tube, and belt carrier, tools, etc., new spare inner tube, new spare inlet and exhaust valves, Dunlop heavy tyres, spare belt, only done 1,000 miles, excellent condition and very fast; £100; seen any time.—Brigden, 20a, Newington Green, Middmay Park, N.16. [2054

Ruffells.

RUFFELLS 2-speed Lightweight; delivery from stock; the smartest and fastest lightweight; £60.—W. H. Grimes and Co., 18, Bruton Place, Bond St., W.1. Mayfair 4792. [2358

Scott.

SCOTT, 3½h.p., 1913, wants assembling; what offers?—Williams, Bakers, Shortlands. [2626

1915 Scott, 2 speeds, K.S., as new; nearest £60.—Langley House, Langley Av., Surbiton. [2427

SCOTT 3¾h.p., 2-speed, clutch needs attention; £50, or exchange lightweight.—57, Kenbury St., Camberwell, S.E. [2611

1915 Scott, long exhaust, T.T. bars, lamps and mechanical horn; £67, lowest; after 8 p.m.—86, Foxley Lane, Purley, Surrey. [2345

1913 Scott Combination, hood, screen, speedometer, new cylinders pistons, etc.; price £65. Trial, no offers.—H.E., 59, Eden St., Kingston-on-Thames. [2496

SCOTT Combination, 1915, 2-speed, kick start, Binks, Bosch lamps, Lucas horn, date and condition guaranteed; £86.—55, Beckenham Lane, Shortlands, Kent. [2625

SCOTT Coachbuilt Combination, perfect going order; can be seen any time; £60, or nearest offer.—Sutton Motor and Engineering Works, Carshalton Rd., Sutton, Surrey. [1900

SCOTT, 1915, 2 speeds, kick start, Bosch magneto, B. and B. carburetter, new sidecar and 2 new tyres, horn, tools, very fast; ready to ride away; £85.—Tooley, 21, Dartford Rd., Whitehill Estate, Crayford, Kent. (Near Dartford S.E.A.C.R.) [2127

Singer.

SINGER 3½h.p., clutch model, speedometer, very fast; first £40; ride away.—Platts, 602, King's Rd., Fulham, London, S.W.6. [2548a

1914 4½h.p. Singer Combination, new condition, sidecar wants varnishing; £100, first cheque secures.—H., 2, Oakend Way, Gerrard's Cross. [2257

SINGER 4½h.p. C.B. Combination, 2 speeds, countershaft, clutch; now being overhauled; to be seen in London; £70.—C. Jackson, Dedworth Manor, Windsor. [2103

MOTOR CYCLES FOR SALE.

Singer.

3½h.p. Singer, 1914, Sturmey 3-speed, clutch, Bosch, perfect, stored 3 years; 50 gns.; consider exchange Douglas.—Lyndhurst, Wootton Grove, Sherborne, Dorset. [X0338

SINGER 3½h.p., Bosch, clutch, 3 speeds, footboards, new handle-bars, Brooks saddle, practically new tyres, perfect condition throughout, fast and reliable, stored during war, newly enamelled beautiful nut brown, lamps, horn, a gentleman's mount, 50 gns.; also sidecar if required.—Norman, 32, Floyd Rd., Charlton. [2354

Sun.

SUN, 1918, 2¾h.p. Villers engine, good condition; £36/10.—51, Etchingham Park Rd., Church End, Finchley. [X0416

1915 Sun-Villiers 2¾h.p., 2-speed, countershaft, in splendid condition, any trial; £40, or offer.—637, Lea Bridge Rd., Leyton. [2153

SUN-VITESSE, 2¾h.p., 2-speed, stored 2 years, good condition, lamps, horn, tools, etc.; £45.—Wilson, Dover Cottage, Royston, Herts. [2604

SUN-VILLIERS, 2¾h.p., 1915-16, new tyres, all accessories, perfect running order, as new; £35.—14-16, Rye Lane, Peckham, London. New Cross 1126. [2168

Sunbeam.

SUNBEAM, 2¾h.p., 1914, in splendid condition; £75, or near.—15, Radnor Av., Harrow. [2719

SUNBEAM.—All models; to ensure 1919-20 deliveries order now.—Parker's, Bradshawgate, Bolton. [X0527

1917 Sunbeam Combination, 3½h.p., splendid condition; trial; £115; no offers.— 90, Beaver Rd., Ashford. [2531

1916 (July) 3½h.p. Sunbeam, green, enamel rough, but in first-class order; £95, no offers.—1, Ferry Hinksey Rd., Oxford. [X0311

SUNBEAM 8h.p. Combination, 1914, black and gold, Lucas lamps, been stored, fine condition; £125.—E. Ash, Nurseryman, Slough. [2593

SUNBEAM Combination, 3½h.p., 1919, only ridden few miles, complete Lucas lamps and horn.—Wright's Garage, Saffron Walden. [1958

SUNBEAM.—One only, 1919 3½h.p. model, condition and appearance like new, any trial or examination.—Parker's Bradshawgate, Bolton. [X0533

1914 Sunbeam Combination, 3½h.p., 3-speed countershaft, excellent condition; best offer.—Mountford, Park House Farm, Haughton, Stafford. [X0436

1914 Sunbeam, with Gloria sidecar, first-class order, except enamel, new tyres, leg shields; best offer; seen by appointment.—Barlow, 209, Bond St., Macclesfield. [X0370

SUNBEAM Combination, 8h.p., 1916-17, spare wheel, hood, screen, full equipment, Lucas lamps, as new; any expert examination; £200.—Cooper, Box 27, Middlesbrough. [X0554

1916 Sunbeam, 3½h.p., coachbuilt sidecar, black and gold, leg guards, speedometer, lamps, horn, tools, spare valve, tube, mileage only 2,100; after 7; £130.—Hawley, 20, Airthrie Rd., Goodmayes, Essex. [2506

1919 (June) 8h.p. Black and Gold Sunbeam Combination, No. 2 sidecar, hood, screen, apron, lamps, spare wheel and valve, insurance, perfect condition; nearest £210 secures.—Berrydene, Ormonde Rd., Chester. [X0286

1919 (July) Black and Gold Sunbeam, 3½h.p., with Henderson sidecar (new), Lucas head lamp, generator, rear lamp, electric sidecar lamp, appearance and condition as new, insured; £156.—Penlee, Palmer's Av., Grays, Essex. [2408

3½h.p. Sunbeam Combination, 1915-16, just overhauled by makers, costing £65, indistinguishable from new, better than present new machines; £150.—Further particulars from Dr. Pitt, Platt Bridge, Wigan. [X0746

SUNBEAM 1919 3½h.p. Combination, fitted with lamps, Klaxon horn, speedometer, and complete with tool kit, spare tube, etc., 500 miles on the road; £145.—Apply by letter, Lieut. Lancaster, Authors' Club, 2, Whitehall Court, S.W.1. [X0482

SUNBEAM 2¾h.p., 2-speed, kick start, hand clutch, new Dunlops and lamps, Senspray, Cowey, XPall, Terry's links, unused Lodge, etc., excellent mechanical condition and appearance; Birmingham; £70.—Box 207, c/o *The Motor Cycle*. [X0356

1919 3½h.p. Sunbeam, 3-speed, clutch and K.S., tuned up engine, Lucas lamp sets and horn, aluminium disc wheels, mileage under 200, a very fast and sporty machine, absolutely perfect; £140, or nearest offer; appointment after 6.—113, Cornwall Rd., Brixton, S.W. [2324

SUNBEAM 3½h.p. Combination, 1915, 3-speed, clutch, kick start, 3 Lucas lamps and horn, in perfect new-like condition; any offer over £125; will consider offers for motor cycle separately; any trial.—Woodhouse, Tram Terminus, King's Norton, Birmingham. [2536

1914 3½h.p. Sunbeam, 3-speed countershaft, hand clutch, K.S., new Amac, Bosch, new tyres complete, Klaxon (large), speedometer, spare valve, tappet, and piston ring, acetylene and small electric lights, all-chain drive, insured £4/14 A.A., condition perfect, gold line on tank slightly erased; letters or appointment; 110 gns.—Gates, 20, Cumberland Place, Scrubb's Lane, Willesden. [2583

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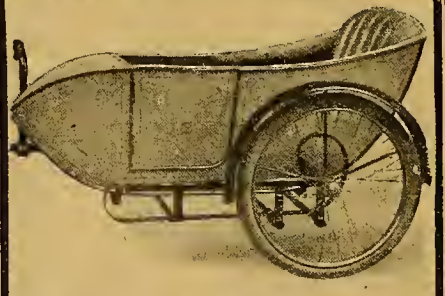

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T.D.C.

T.D.C. de Luxe, 1917, 2¾h.p., Amac, Druids, Dixie, foot plates, good condition and appearance; £30.—27, Balvernie Grove, Southfields, S.W.18. [2409

Torpedo

TORPEDO-PRECISION, 3-speed, clutch, kick starter, good running order; £60.—Pike and Co., Alphington St., Exeter. [1990

3½h.p. Torpedo, with sidecar, Bosch mag., B. and B. carburetter, good condition; £65.—Uplands, Cheshunt, Herts. [1948

TORPEDO 1915 2½h.p. 2-stroke, single gear, new tyre and belt, nice condition throughout; £26.—Butler, Bootmaker, Bracknell. [2616

REAL Bargain, 1914-15 4¼h.p. Torpedo-Precision, Sturmey, 3-speed, clutch, K.S., new tyres, Bosch, Senspray drip feed, new coachbuilt sidecar; first-class order; £75; exchange lightweight or separate.—Whitehead, 18, Lark St., Burnley. [2292

Triumph.

1912 Triumph, single gear, clutch model; £55.—Woolleys, Windermere. [2019

3½h.p. Triumph, Bosch, good condition; £32.—16, Vernon Rd., Bushey, Herts. [2217

1914 4h.p. Triumph, 3-speed, perfect order; £63.—53, Brownhill Rd., Catford. [2466

TRIUMPH 3½h.p., single speed, running order; £35.—Underhill and Young, Berkhamsted. [2371

3½h.p. Triumph, 2-speed, good running order; £32.—Brotherton, Oxford St., Chorley. [X0514

TRIUMPH, 4h.p., countershaft, ride away; also tanks and spares.—King's Garage, Sudbury, Middx. [1134

TRIUMPH 3½h.p., single speed, 1911, splendid condition; £33.—97, Murchison Rd., Leyton. [2614

TRIUMPH, 1913, 3-speed, clutch, good running order; £48.—King, Egrove Farm, Oxford. [X0479

IMPERIAL-TRIUMPH, 2h.p. Minerva, single speed, coil ignition; £17.—33, Redhill St., N.W.1. [2681

TRIUMPH 3½h.p., clutch, little wear; best offer over £40; ride away.—329, Old Ford Rd., E.3. [2067

4h.p. countershaft Triumph, little wear, late model; bargain.—18, Wix's Lane, Lavender Hill, S.W. [2773

1912 Triumph, clutch, lamp, good tyres, excellent condition; £42.—King, Egrove Farm, Oxford. [X0479a

TRIUMPH, clutch model, first-class condition, complete; £47.—Tamplin, King St., Twickenham. [2108

TRIUMPH.—For earliest possible delivery, secure your order now.—Parker's, Bradshawgate, Bolton. [X0528

TRIUMPH 3½h.p., clutch model, good condition; £38, or nearest.—118, Swingate Lane, Plumstead, S.E. [2633

TRIUMPH 4h.p., countershaft, new tyres and tubes, nearly new; £30, or near offer.—274, High Rd., Balham. [2710

TRIUMPH, 1914, 4h.p., 3-speed, Dunlops; £54; faultless.—Stocker, 49, Riverside, Kingston-on-Thames. [X0350

1917 Countershaft Triumph, exceptionally good machine; £85.—17, Gordondale Rd., Wimbledon Park. [2428

1912 3½h.p. 2-speed Clutch Triumph, engine overhauled; £58.—Pike and Co., Alphington St., Exeter. [1988

TRIUMPH, 1915, 4h.p., 3-speed, countershaft; £75; after 5.—Coronation Cottage, Longfield Rd., Tring. [2389

TRIUMPH, 1911-12, and Mabon gear (not fitted), imperfect; £30.—Letters, 22, Manor Rd., Brockley, S.E.4. [2375

TRIUMPH 3½h.p., clutch, 2-speed, wicker boat sidecar, accessories, good tyres; £58.—52, Craven Rd., Rugby. [X0469

TRIUMPH, 3½h.p., single speed, perfect condition throughout; £39.—8, Ashley Park, Chesterfield Rd., Bristol. [X0507

3½h.p. Triumph, in very fine condition, tyres as new; £32.—49, Althorpe Rd., Wandsworth Common, S.W.17. [2784

JONES' Garage, special agents for Triumphs, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2927

1919 T.T. Triumph, mileage 150, perfect; £82, nearest offer.—Write appointment, 38, Newstead Rd., Lee, S.E. [2061

4h.p. Triumph, J.A.P. fixed engine, some speed iron; £42, no offers.—17, Wilcox Rd., South Lambeth, London, S.W.8. [2659

1919 Countershaft Triumph, done about 100 miles, perfect condition; best offer over £100.—Hughes, Plasynddol, Bala. [X9903

MOTOR CYCLES FOR SALE.

Triumph.

3½h.p. Triumph Combination, 2-speed, torpedo, just renovated at works; £65, complete.—2, Windsor St., Leamington Spa. [X0492

TRIUMPH 3½h.p., fixed engine, good condition; £28, or nearest offer.—Back, 275, Stoney Stanton Rd., Coventry. [X0749

1919 4h.p. Triumph, 3-speed, with Canoelet sidecar, not done 500 miles, absolutely as new.—Box 219, c/o *The Motor Cycle*. [X0417

3½h.p. Triumph, 1912, good condition, new Palmer tyres; price £35.—P. Smith, 1, Bartons Lane, Old Basing, Hants. [2582

1914 Triumph Coach Combination, thoroughly overhauled; 82 gns. Watford district.—Box L3,678, c/o *The Motor Cycle*. [2271

TRIUMPH. 1919, unused, 3-speed, and fully equipped.—Grimes, 18, Bruton Place, Bond St., W.1. Mayfair 4792. [2357

TRIUMPH, 4h.p., 1915, 3-speed, countershaft gear, new tyres; in excellent condition; £75.—200, High St., Tooting, S.W. [2297

TRIUMPH 3½h.p., 3-speed, clutch, new tyres, just overhauled; will accept £55.—Bennett, 318, King St., Hammersmith. [2036

TRIUMPH T.T. Model, 1912, good running order and appearance, very fast; £36.—6, Deyne Av., Rusholme, Manchester. [X0561

TRIUMPH 3½h.p., clutch, Gradua gear, and wicker sidecar, good condition; £50, or near offer.—Millfields, Prestcign, Radnorshire. [X0225

TRIUMPH, 1913, T.T., dropped frame, excellent condition; 38 gns.—Homewood, 26, Granville Gardens, Shepherd's Bush, W.12. [2221

TRIUMPH 1919 4h.p., 3-speed countershaft, delivered June, complete with P. and H., little used; £105. —Bodkin, Castle St., Farnham. [2199

TRIUMPH Combination, C.B., 1914, 4h.p., 3-speed, fast; 75 gns.—Wilde, Willesborough, Ashford, Kent. Tel.: Willesborough 4. [2456

3½h.p. Triumph, Bosch, Sensspray, new tyres, recently overhauled, engine rebushed, and wicker sidecar; £25.—118, Herbert Rd., Woolwich. [X0287

TRIUMPH, 1914, 3-speed, coachbuilt sidecar, engine practically new, all good condition, for best cash offer.—F. Everitt, Welburton, Ely. [X0443

TRIUMPH and Sidecar, free engine, clutch, kick start, lamps, spare belt, perfect order; trial; £48.—76, Boleyn Rd., Forest Gate, E.7. [2628

1916 Triumph 4h.p., countershaft 3-speed, clutch, torpedo sidecar, new tyres, horn, lamps; £110.—Virgo, 156, High St., Hounslow, W. [X0235

1919 (August) Baby Triumph, unridden, just received from agents; owner purchased car; offers over £70.—Box 206, c/o *The Motor Cycle*. [X0369

4h.p. Countershaft Triumph, 3-speed, clutch, new tyres, belt, perfect condition and running order; £85.—148, High Rd., East Finchley. [2090

TRIUMPH 1914 4h.p., 3-speed, excellent condition, with practically new Millford C.B. sidecar; £90.—92, Loughboro' Park, S.W.9. [2117

1919 4h.p. Triumph Single-speed Racer, picked machine, unscratched, new 3 weeks ago; offers wanted.—Box 216, c/o *The Motor Cycle*. [X0493

TRIUMPH, 1914, 3-speed, clutch, 4h.p., Watsonian sidecar, lamps, horn, etc., in fine condition; £80. —69, School Rd., Moseley, Birmingham. [X0464

TRIUMPH, 4h.p., late 1914, 3 speeds, clutch, decompressor, lamps, perfect order; 55 gns.—Davidson, "Acacia," Centre Av., Acton Vale, W.3. [2447

TRIUMPH 4h.p., 1914, perfect condition, 3-speed, clutch, etc., any trial; £74 (seventy-four pounds). —Alcyone, Gloucester Rd., New Barnet. [2562

1919 Baby Triumph, as new, lamp set, horn, tools, spare tube, belt, etc., guaranteed perfect £70.—West, Popeswood, Binfield, Berks. [2243

TRIUMPH Junior, bought new middle July, done 300, fully equipped; highest offer over £60; Herts, district.—Box L3,655, c/o *The Motor Cycle*. [2120

BRAND New Baby Triumph, 2-speed, take 2 up any hill, best Lucas lamps and horn, toole, etc.; £75, or offers.—Allen, Ledhury, Herefordshire. [X0449

3½h.p. T.T. Triumph, about 1915, overhauled, condition as new, very fast; seen by appointment; £70.—Walters, 17, Abercorn Place, N.W. [X0426

TRIUMPH, late 1914, 3-speed, clutch, lamps, tools, etc, excellent condition; stored during war; £63.—Cask, 24, England's Lane, Hampstead. [2393

1914 Triumph Combination, 4h.p., 3-speed, clutch, lamps, beautiful outfit, running splendidly; any trial; 70 gns.—Newland Vicarage, Coleford, Glos. [X0339

1919 4h.p. Triumph and C.B. Sidecar, countershaft, 3-speed, horn, mileage 100; price £130; deposit; Somerset.—Box 200, c/o *The Motor Cycle*. [X9968

TRIUMPH 1911 3½h.p. Combination, coachbuilt, tyres new, Philipson's pulley, lamp, horn; £75, or nearest offer.—Fountain Rd. School, Tooting, S.W. [2550

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Triumph.

1919 Triumph, T.T., unscratched, late July, ridden 300 miles, large Lucas Cyclehorn, knee grips, valve, etc.; offers over £80.—9, Hawkins Rd., Bedford. [2434

TRIUMPH 3½h.p., late 1913, stored during war, clutch, Bosch, lamps, etc., splendid condition; £55.—Treasure, 1, Blenheim Rd., Bickley, Kent. [2157

1919 (May) Triumph, countershaft, 3-speed, 4h.p., spare extra heavy Dunlop, Lucas horn; £100, or nearest offer.—77, Preston Av., Newport, Mon. [X0212

1919 4h.p. Triumph, 3-speed, clutch, K.S., Cowey, Klaxon, Tan-Sad, all tools, new last month, mileage 400; £110.—89, Maxey Rd., Plumstead, S.E.18. [2068

TRIUMPH, 1914, semi-T.T., absolutely new condition; lamps, new belt, tuned up by expert; very fast; seen any time; £69.—Holloway, 35, Lynton Rd., Acton. [2390

TRIUMPH, 1912, 3½h.p., splendid condition, also wicker sidecar, in good condition, with apron and lamp; £45; after 7 p.m.—61, Marlborough Rd., Highgate, N. [2596

TRIUMPH 3½h.p., 1911, in excellent condition, mechanically sound, Lucas lamp and horn, new belt, tools, tyres good; £32.—50, Chester Rd., Northwood, Middlesex. [2655

TRIUMPH 3½h.p., free engine, Bosch mag., tyres excellent, lamps, horn, etc., just overhauled, fast machine; £38, or nearest.—Napier, 243, Main Rd., Sidcup. [2490

TRIUMPH 3½h.p., fixed, Bosch, B. and B., tyres, tubes, and belt, all in good order, ready to ride away; £40, or nearest.—Francis, Depot Rd., Cwmavon, Glam. [2247

TRIUMPH, 1919, countershaft, Canoelet sporting sidecar, Lucas lamps, Klaxon, T.T. bars, new Dunlops, perfect condition; £110, no offers.—Newsome, Belvedere Rd., Coventry. [X0215

1913 Triumph, 3½h.p., clutch model, fitted with N.S.U. 2-speed, lamps, speedometer, good tyres, pulls sidecar; £60, offers.—Knight, 4, Pavement, Coulsdon, Surrey. [2737

MAY, 1919.—4h.p. 3-speed Triumph combination, 3 lamp sets, pillion, under 500 miles; any reasonable trial; £140; owner giving up.—Rush, 12, Burnham Rd., Dartford, Kent. [2211

COUNTER-SHAFT Triumph, late model, 4h.p., 3-speeds, hand clutch, absolutely new condition throughout; bargain, £80.—Richards, 16, Manor Gardens, Richmond. [2250

1919 4h.p. countershaft Triumph, only ridden 300 miles, 3-speed, lamps, horn, tools, new July 21st; £105.—Reply by letter, Grubb, 220, Windmill Rd., Chatham, Kent. [X0695

1919 Triumph, 4h.p., 3-speed, countershaft; run only few miles, as new; with coach sidecar; £125; seen any time.—29, St. Leonard's St., Bromley by Bow. Exchanges. [2518

1912 3½h.p. Triumph, fixed engine, adjustable pulley, Bosch, new piston rings, powerful, good tyres, belt, spares; ride away; £35, or nearest.—Abbott, Millwood House, Todmorden. [X0380

£56.—Triumph, 1913, and magnificent C.B. sidecar, all lamps, tools, spares, stored 3 years, condition and appearance as new.—Harris, 7, St. Luke's Rd., Westbourne Park. [2152

TRIUMPH 3½h.p., Grado gears, Lucas lighting, Klaxon horn, mirror, speedometer, back rest, new back tyre, belt, wicker sidecar; £55, or nearest.—4, Gaywood Rd., Walthamstow. [2180

TRIUMPH 3½h.p., clutch model, 1911, just had complete overhaul, new tyres, belt, lamps, etc., £48; also 920×120 tube, 14/-; B.B. carburetter, 10/-.—4, Jubilee Crescent, Thrupp, Stroud. [X0219

TRIUMPH, very late model, practically new condition, 3-speed countershaft, hand-operated clutch, kick-starter, new covers and tubes; 72 gns.—10, Hatchmere Rd., Kingston-on-Thames [2795

1915 Triumph, 3-speed countershaft, kick starter, handle-bar clutch, new Dunlop tyres, new lamps and horn, splendid condition; 65 gns.—Creswell, Chesterfield Rd., Ashford, Middlesex. [2415

TRIUMPH 1915 4h.p. C.B. Combination, 3-speed, lamps, speedometer, wind screen, etc.; ridden 400 and stored since; unsoiled; nearest £115; S.W. district. —Box L3,674, c/o *The Motor Cycle*. [2267

TRIUMPH 4h.p., late 1914, 3-speed, clutch, lamp, horn, speedometer, head and rear lamps, etc., almost like new; £60, or nearest.—5, St. Oswald's Studios, Sedlescombe Rd., W. Brompton. [2310

1919 August Triumph, ridden twice only by expert, knee grips, P. and H. lamps, Klaxon, tools, innumerable speres, registered, insured, unscratched; £116.—Box L3,709, c/o *The Motor Cycle*. [2784

TRIUMPH 1919 Model 4h.p., new April, only ridden 300 to 400 miles, in perfect running order; £95; seen in N.E. London district by appointment.—W.C.O., c/o Lea Valley Works, Upper Clapton, E.5. [X0327

1914 4h.p. Triumph Wicker Combination, 3 speeds, free engine, clutch, nearly new Dunlops, all accessories, stored 2 years, recently overhauled; £65; after 6 p.m.—157, Inderwick Rd., Hornsey. [2320

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH 1911 3½h.p., engine and Bosch just overhauled, new piston, new Lucas horn, new tyres, fast, reliable; £41; first cheque secures.—Flemming, Fir Cottage, Prestwood, Gt. Missenden, Bucks. [X0301

3-SPEED C.B. Triumph 1913 Combination, £85; Lugton combination, 4h.p., Brampton gear, £65; lady's lightweight Motosacoche, £20; J.E.S. lightweight, £18.—Goodgame, St. Bride's, Bearton Rd., Hitchin. [X0371

4h.p. Triumph, May, 1919, Sturmey-Archer 3-speed, clutch, kick start, Lucas lamps, horn, many spares, guaranteed perfect, mileage 500; £100, or best offer over.—Millett, 20, Park St., Devonport. [X0541

TRIUMPH 3½h.p., engine perfect, new mag. and B.B. carburetter, belt new, overhauled and in good working order, with lamp, generator, and horn complete; £35.—A. Walker, West Bradenham, Thetford, Norfolk. [2564

LATE 1914 4h.p. Triumph, clutch model, Triumph adjustable and Philipson pulleys, low frame, new Dunlop heavy tyres, spare plug, valves, etc.; £55; meet by appointment; good mechanical order.—Beech, Darnhall, Winsford. [X0313

1919 Triumph 4h.p. Combination, 3-speed, countershaft, with C.B. sidecar, head lamp, electric side and tail lamps, wind screen, spare belt and tube, exceptional condition; lowest, £125.—Schofield, 13, Colne Rd., Burnley. [X0467

TRIUMPH 1919 C.B. Combination, 3-speed countershaft, lamps, horn, speedometer, Cameo screen, apron, full tools, spares, excellent condition, like new; £140, or highest offer; trial by appointment.—Box L3,692, c/o *The Motor Cycle*. [2749

1911 Clutch Model Triumph, engine just rebushed, clutch overhauled and rear wheel rebuilt, new Dunlop rear tyre and belt, new Watford speedometer, and electric horn; £43, cash; no offers; ride away.—Wallis, Hillside, London Rd., Maidstone. [2146

TRIUMPH 4h.p., late 1914 T.T., enamel and plating as new, stored during war, lamps, generator, horn, pump, tools, spare belt and tube case, footboards, extra petrol tank, complete valve; any trial; only wants seeing; 68 gns.—Fisher, Water Lane, Watford. [2418

TRIUMPH, 1919 (June 28th), 4h.p. countershaft, with Gloria sidecar, lamps, Klaxon, speedometer, Tansad, spare chain; as new; take 3 up anywhere on second; owner going to India; £145, no offers; Salisbury Plain.—Box 198, c/o *The Motor Cycle*. [X0166

TRIUMPH, 1915, 4h.p., coachbuilt combination, 3-speed Sturmey-Archer gear, top feed carburetter, Splitdorf magneto, decompressor, lamps and horn; has had very little use, also is in splendid condition throughout; £85.—Watson, 132, High St., Aldeburgh, Suffolk. [2716

TRIUMPH Combination, 3-speed, clutch, splendid puller, invariably holds road, Phœnix coachbuilt sidecar, beautifully upholstered in red, extra heavy new Dunlops, whole looks like new, stored 4½ years, unscratched and no rust, lamps, horn, etc.; 80 gns; seen after 6.—English, 50, Parliament Hill, Hampstead, N.W.3. [2533

TRIUMPHS, 4h.p. countershaft models, kick starters, hand clutch, etc.; 4 only for sale; ready immediately; come and inspect; perfect condition; Triumph repairs a speciality; no waiting; 4 machines started on same day as brought; first-class fitting only.—Beaumont and Gamlin, 6, Williams Mews, Devonshire St., off St. Portland St., W. [2057

Velocette.

VELOCETTE, 2-stroke 2½h.p., good condition, new tyres; running order; first £30.—Box L3672, c/o *The Motor Cycle*. [2265

VELOCETTE, 2-speed, all chain cush drive, internal expanding Ferodo-lined brake, automatic lubrication, 140 m.p.g., small mileage, brand new condition; £48.—Hamilton, Burton Rd., Kennington, Ashford, Kent. [2530

VELOCETTE, 1919, just delivered, absolutely new, 2-speed, all chain drive, automatic lubrication, all black finish, complete with Lucas lamp and horn; immediate possession; £70; Midlands.—Box 214, c/o *The Motor Cycle*. [X0557

VELOCETTE 2½h.p., 2-stroke, 2-speed, automatic lubrication, Stewart speedometer, electric lamps, Voltalite generator, horn, tools, excellent climber, 140 m.p.g., good condition; 35 gns.; evenings.—134, Tufnell Park Rd., N. [2417

VELOCE 1914 4-stroke 2½h.p., 2-speed, clutch, mechanical lubrication, rebushed throughout, re-enamelled, new Dunlop belt and heavy back tyre, aluminium footboards, big lamp set, Terry links, Pedley grips, very full tool kit, spares; £52.—23, Hamilton Rd., Reading. [2690

Villiers.

VILLIERS 2-speed 2-stroke, new June, 1919, small mileage; £55; lamps, Klaxon, extra.—84, High St., Mortlake, S.W.14. [X0738

Vindec.

6h.p. Vindec Special, single-speed, good running order; been overhauled.—2, Gloster Rd., Coleford, Glos. [2512

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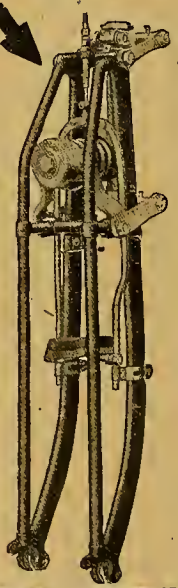

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1919 2¾h.p. 2-stroke Vindec, new; and 4¼h.p. James combination, perfect condition; £185.—Key, Hall Lane, Upminster. [2225

1916 Vindec Combination, 6h.p. J.A.P. engine, 3-speed Sturmey-Archer gear box, lamps, mechanical horn, speedometer, 3 new tyres, splendid condition and powerful; £95.—6, Horsa Rd., Erith, Kent. [2220

Werner.

2¾h.p. Werner, running order, wants adjusting; £8 offer.—147, Southampton St., Camberwell. [2340

White and Poppe.

4h.p., White and Poppe engine, 2-speed and free engine, Bosch waterproof mag., B.S.A. carburetter (110 m.p.g.), new Dunlop belt, new Moseley and Avon covers and tubes, and cane sidecar, with adjustable fittings, will pull anywhere; ride away £45.—Write first to J.M.C., 9b, Church Rd., Upper Norwood, S.E. [2140

Williamson.

WILLIAMSON 8h.p., W.C., trial, 2-seater sidecar £100.—14, Barnehurst Av., North Heath, Erith The Heath, Crayford, Kent. [2540

8h.p. Williamson A.C. Combination, tyres new; and trial; £110, or near offer.—To be seen at Bell Bros., 250, Gt. Western Rd., Glasgow. [X0470

WILLIAMSON 8h.p. Combination, water-cooled, 3-speed, kick start, electric lighting, luggage grid £105; solo wanted.—40, Fauconberg Rd., Chiswick. [1960

WILLIAMSON Combination, 8h.p., water-cooled double sidecar, hood, 2 screens, spares, perfect order; £130, or near offer.—131, Mautilia Rd., Tooting, S.W. [2640

WILLIAMSON 8h.p. Water-cooled Combination very fine turnout; 105 gns.; would accept light weight part payment.—Whitehead, 4, Montague Mews Crawford St., Baker St., W.1. [2380

1914 8h.p. Williamson Water-cooled 2-speed Combination, just back from makers, and now in perfect condition after an expenditure of £52; any test given; owner getting car; first £115 secures.—Brown Cromwell House, Penrith, Cumberland. [X0340

WILLIAMSON 1914 Combination, 8-10h.p., water-cooled Douglas engine, just been completely overhauled and fitted with new crankshaft, pistons, connecting rod, etc.; complete with special coachbuilt sidecar, newly painted royal blue, hood, screen, lamps, etc., 700×80 tyres almost new; very smart turnout £125, or near offer.—158b, Norwood Rd., West Norwood, S.E.26. [2240

Wolf.

WOLF 2½h.p., 1915, 2-speed, free engine, ready to ride away; £36.—232, Victoria Rd., Romford. [2220

WOLF 1916 2-stroke, 2¾h.p., 2-speed, clutch, kick starter, lamps, and horn, nearly new; £50.—4 Seward Rd., Hauwell. After 7. [1980

Wooler.

JONES' Garage, special agents for Woolers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2500

Zedel.

ZEDEL 2¾h.p., minus accumulator; £7/10, offer; after 7.15.—94, Tollington Park, Finsbury Park, N.4. [2000

Zenith.

6h.p. Zenith-Gradua Combination, lamps, spares; £ —25, Gatefield Rd., Abbeydale, Sheffield. [2

1919 8-10h.p. Zenith and Sidecar, ride away; £1 Hitchcock, 23, Windsor Rd., Willesden, N.W. [X0

ZENITH-GRADUA-J.A.P. Chater Combinat Bosch, B.B.; £60, near offer.—122, Gipsy H S.E.19. [2

1913 Zenith-Gradua, 4h.p. J.A.P. (splendid co tion); £50, or near offer.—Millfields, Preste Radnorshire. [X0

5-6h.p. Zenith Combination, in excellent conditi 100 gns., or close offer.—H. Durtnall, Sundri near Sevenoaks. [2

ZENITH-GRADUA, 4h.p. J.A.P., T.T., Bosch, fast and sporty; £30.—M. Symington, 28, Wynd, Dundee, Scotland. [

ZENITH 4-5h.p. Twin Combination, counters clutch, kick starter, in excellent condition; £11 bargain.—New Haw P.O., Addlestone. [

3½h.p. Zenith, 1919 model; £75; lamp, Kla spares, splendid order; owner returning to tralia.—Box L3,677 c/o *The Motor Cycle*. [

ZENITH-GRADUA 1917 8h.p., 500 miles; first over £85 secures.—'Phone: Avenue 6868 write, Box L3,508, c/o *The Motor Cycle*. [

1919 Zenith 8h.p. Twin, graduated gear, sidecar tern; too powerful for owner; highest bid Apply, Hewett, 57, Harrow View, Harrow. [X

1919 Zenith, 5h.p. twin J.A.P., Gradua gear, A Lucas lamps and horn, perfect condition; —76, Salisbury Rd., Moseley, Birmingham. [X

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The Six Days Trials Route.

IN three outstanding respects this month's Six Days Reliability Trials differ from previous events of the kind. In the first place, any hill is likely to be observed, *i.e.*, the A.C.U. will not notify competitors of the actual test hills as in former years. Secondly, a lamp test is included on the first day to prove the serviceability of the lighting equipment with which each machine must be provided. One wishes that the lamp test could be repeated on the last day. Thirdly, a consistent driving test, so successfully applied to the Arbuthnot Trophy Trial, will take place on the third and last days on the steep hill approaching Garth. It is an ascent of two miles, averaging 1 in 12. For the first mile competitors may average but 10 m.p.h., thereafter the speeds are set according to the power of the engine. As regards the route generally, most of the important centres are embraced, luncheon stops having been arranged at Abergavenny (Monday), Newcastle Emlyn (Tuesday), Bala (Wednesday), Devil's Bridge, Aberystwyth (Thursday), and Swansea (Friday). The route is severe, but the hills not so much characterised by steepness as by the rough surfaces which will be encountered. The notorious stretch from Lake Vyrnwy to Bala, a wild but beautiful district, which we first traversed in 1911, will give the competitors much to think about, for deep gulleys crossing the road diagonally will test frames to the limit. Hills there are in abundance, and there might have been more had certain cross-country routes been possible of inclusion; unfortunately, deep water courses ruled some of these roads out of court. An old favourite in Bwlch-y-Groes (Dinas Mawddwy to Bala) constitutes probably the most difficult climb of the week, and it must be agreed that this long and tiring climb is a fair test, for sheer gradient alone will weed out the competitors.

The A.C.U. is noted for its well organised events, and as a result a splendid and representative entry has been received.

Standardisation of Controls.

A LADY recently borrowed a motor cycle, and when about to dismount opened the throttle instead of closing it, with the result that she swerved on to the pavement and crashed through a shop window. This accident, which caused serious injury, again brings to the front a point upon which we have had much to say in the past, and which has been lately discussed by one of our contributors, viz., the great desirability of standardising the controls of a motor cycle. It may be admitted that to standardise all the controls, including brake and clutch pedals, is not the most simple matter in the world, for a great deal of difference exists in the opinions both of manufacturers and riders as to what arrangement is the best. Some prefer to operate the brake with the heel, others with the toe. In either case, operation should be possible with the other end of the foot still upon the footboard or footrest.

Even if complete standardisation cannot be at present achieved, it should not be beyond the ingenuity of the carburetter makers to come to some agreement in the matter of throttle control. Most controls open inwards, and we can see no reason why all should not do so. When there is a real difference in the method of operation, as, for instance, when the American twist grip is used, no confusion is likely to result, but when levers are similarly placed and alike in appearance, although a rider may be able to operate them satisfactorily as a general thing, in a sudden emergency the difference is forgotten, and the lever moved in the direction to which the rider is accustomed, and sometimes with the most unfortunate results, for the machine, instead of slowing down, dashes forward, and, before this can be corrected, an accident may have happened, the results of which may be serious.

We have urged continually that manufacturers should look upon this matter in a more serious manner than they appear to do. It is high time some definite steps were taken.

An Index to the advertisements in this issue will be found on the page facing the back cover.

IS PILLION RIDING DANGEROUS?

A Selection of Letters from Readers who say "No."

THIS is a question which is agitating the minds of many individuals, and legislation may be introduced to prohibit the use of the carrier for passenger carrying. We have never recommended the practice, but we realise that more is being made of the so-called dangers of pillion riding than is justifiable, and also that there is a vast coterie of our readers who find the single track machine suitable for two persons. The following are a selection of the letters we have received this week from such riders, and we invite those having the opposite views to express them in order that the motor cycle world shall judge whether pillion riding is so dangerous to render legislation necessary.

A skilled driver and experienced passenger can go safely wherever the solo rider can, as shown by riders who are negotiating a fairly deep water splash.

Sir,—I would like to add my quota to the series of letters brought into being in answer to Mr. A. C. Robbins's indictment of pillion riding. My mount is primarily solo, being but 2¾ h.p., but the majority of my riding, both town and country, is with a passenger. My usual passengers, namely, my mother and sister, prefer the "flapper bracket" of my machine to the sidecar attached to a 4 h.p. of the same make, which we also own.

I have just returned from a run to Dawlish, roughly ninety miles either way, on the outward journey of which I took a pal on the carrier, doing the journey in four hours, including seven stops, none of which was involuntary. My riding includes many runs of thirty or forty miles, most week-ends, in fact, nearly always two up, and also London and provincial traffic. My monthly average riding is 1,000 miles, over half of which is with a passenger. Incidentally, I prefer riding solo, two up, to driving the sidecar outfit, as there is less strain.

OLD CATHEDRALIAN.

Bristol.

Sir,—"Ixion's" article calls for some comment, as it savours of exaggeration. He may have seen some serious accidents to pillion riders; but the safety of riding like this depends so much on both the driver and passenger that a sweeping statement as to its danger or otherwise is impossible. I have not often taken passengers; but in some cases I refuse to proceed after a hundred yards' trial. With others it is easy to forget that they are there, except for their touch.

With machines whose saddle position is well forward (most new machines have a forward position) the centre of gravity is scarcely altered. Sidecarring is certainly more dangerous. I agree with every word of "Reasonable" and "Live and Let Live."

R.E.C.

Ilfracombe.

Sir,—There have been some very interesting letters in recent numbers on the dangers of taking a passenger on the pillion. While agreeing with much that has been said against the practice, I have never yet seen any attempt to explain any suggestions to eliminate any possible danger. I have done a good deal of pillion riding with my brother, and we are both agreed that, in many respects, it is far preferable to sidecar work. I give here what I consider to be the most important points to render this practice less dangerous:—

1. Brakes in the best possible working order.
2. A spring seat which is laterally rigid.
3. Foothoards sufficiently long for the passenger to use.
4. Never take anyone side saddle.
5. If the passenger requires to hold on, some convenient device can be secured to the saddle-pillar, but on no account must the passenger obstruct the free movement of the driver's arms.

When I am riding with my brother on the back we conform to all the above details, except that we are so accustomed to this mode of travelling that we do not require to hold on. In the event of a temporarily tight corner a grip with the knees on the rider's saddle is sufficient. We have done 220 miles in a day in this way without discomfort.

The following are the advantages to be gained by pillion riding:

1. It is easier to communicate with the passenger.
2. It is cheaper in every way.
3. It is far easier to store a solo mount.
4. There is no strain on the hands as with a combination.
5. When riding on a bumpy surface the tendency for the back wheel to bounce is reduced very appreciably.

My machine was a standard Lea-Francis, two speeds, clutch, and kick-starter. I have only had two sideslips on this machine, and both of them were when going slowly. In one case I was riding alone, and finished up gracefully with the machine on top of me. The other time I had my brother on the back, and, although we turned right round in the road our combined efforts succeeded in keeping the machine from falling. I may state that we are both careful riders, but all the same an occasional dust up is enjoyed.

I have gone into the subject at length, and if you can print this, I think we may hear the unbiased opinions of many who can speak from practical experience.

L. ELLIS.

Sir,—Being a motor cyclist of twelve years' standing, I feel I cannot keep out of this discussion.

My contention is that with an experienced rider, a suitable machine, and a passenger who is not nervous, pillion riding is far safer than a sidecar in the hands of a comparative novice. I have done a good many thousands of miles in this fashion, and though I have been in some tight corners I have never had a smash yet; and some of those incidents would inevitably have resulted in a smash if a sidecar had been attached, owing to its greater width. The points I would emphasise are:

1. Do not try to average more than about 18 m.p.h.; at every corner and cross road always be expecting to meet that other fellow on the wrong side.
2. Do not be content with the rear brake unless it skids the back wheel even with two up. Remember that brake blocks of different compositions have widely varying coefficients of friction. In my experience, a good rear brake will pull up more quickly with a passenger than when solo. *Keep* the brake in that state of efficiency.
3. Nervous motor cyclists or nervous passengers, stay at home and play croquet.
4. A heavy machine is much better for this purpose than a light one. I ride a 6 h.p. twin. It climbs hills nearly as well with a passenger as when solo, and I ask nothing better than its steering qualities.

Finally, I would ask those people who have tried and are frightened of it, or who have not tried and consequently know nothing about it, to keep their opinions to themselves. I am sorry to see Mr. Karslake voicing the opinions of the lay press: I am afraid that he is not so young as he was.

GRADUATE.

High Wycombe.

OCCASIONAL COMMENTS

BY "IXION"

Engines that do not Knock.

IT may be news to readers that there are now engines on the road which *never* knock. I rode a sample last week-end. It was very badly carboned, and had a high top gear. Its owner instructed me to try and make it knock. I tried every trick I could think of, but neither by letting it run itself to a standstill up steep gradients, nor asking it to accomplish impossible pick-ups round sharp corners, could I extract even the mildest pinking sound from the engine, much less the good old hammer and anvil concussion with which we were all so familiar a few years ago. Is there a secret underlying this phenomenon? If not, why are some engines still liable to this excruciating sin? The test engine mentioned above will peter out without any audible symptoms of distress, though the snatch of its dying impluses is, of course, perceptible.

Rained Out.

ON the day when the heat wave broke, I had to leave my machine in the open in what a native described as a "lil' lew spot," by which he apparently meant a sheltered corner. When I wanted to return home, the engine quite pardonably refused to start. I am not ashamed to confess that I hate being "rained out." Most motor cycles will stand twenty-four hours of continuous rain without a misfire, provided they are kept on the move, for the heat of the engine and the wind of motion combine to save any sensitive items from getting drowned. But they all dislike being left standing in a downpour, and my faithful old 'bus is no exception. The chief disagreeableness of the position is that you cannot be quite sure what is the matter. Probably the sparking plugs are wet, and the current is shorting down the outside of the damp insulation, but it is conceivable that the magneto is wet internally, that the contact breaker arm is stuck up, or even that the carburetter is half full of water. Worst of all, there may be no shelter handy in which to conduct research work, and the rider is probably sopped through, so that he makes everything still wetter in his attempts to effect a cure. My pet engine starts from cold at the first kick when all is well. I gave it three kicks for luck, and then cautiously unearthed my dry handkerchief, and mopped down the sparking plug insulators. Another kick. Nothing doing. I inspected the exterior of the magneto—nothing to indicate that its alleged waterproofness was mere camouflage. Another minute sufficed to verify the freedom of the contact breaker rocker, turn off the petrol tap, drain the float chamber, and refill with petrol. Another kick. Still a heavy silence. Removed both sparking plugs, retired under a bush, and dried them very thoroughly. Dried the high-tension cables, and saw that they were not fouling any metal. Replaced everything. Another kick. Still no signs of life.

I began to feel rather puzzled. Decided to test the plugs, and found neither of them were sparking, though I got a satisfactory shock from both cable ends. Inserted the spare plug in one cylinder, started on that cylinder, and ran it hot. Then changed the dry plug over to the other cylinder, and ran that hot too. Finally took the road on one cylinder, trusting to the engine to dry one of the wet plugs. After a mile I changed the plugs round again, and within a hundred yards the second plug ceased shorting, and all was well. Moral: Carry two spare plugs in wet weather, even if you use Lodge racers.

Some Insurance Extras and Economies.

NOW that the cost of repairs has increased in proportion to the rise in prime costs, it doubly behoves all motor cyclists to insure. The abominable condition of so many roads and the letting loose of thousands of inexperienced riders on our highways afford additional arguments in favour of taking out a policy. The average rider is apt to chance his luck and is grossly ignorant of the details of insurance, so a few notes on the subject may set some of the careless ones thinking it over. The average premium for full protection of a 3½ h.p. machine is about £3. Typical extras include 30s. for pillion riding (significant, this!); 24s. extra if the machine is regularly used for business purposes; 10s. extra if the owner allows other people to ride it, or if it is listed at over £100. On the other hand, companies allow generous reductions in the premium if the insured person bears the small claims himself. Thus full cover costs but 30s. per annum if the owner bears the first £10 of all claims; should he make no claim in the first year, the second year's premium is reduced to 27s., and so on. Full cover includes legal expenses under a variety of conditions, and, of course, unlimited indemnity in respect of claims by the public, which might conceivably reach £1,000 in a single collision. No man of small means should ride uninsured.

Tandems, Pillions, and Luggage.

A CORRESPONDENT raises the question as to whether there is any difference in principle between the steering of (*a*) a tandem push bicycle, (*b*) a motor bicycle with a flapper on the bracket, and (*c*) a motor bicycle with heavy luggage on the carrier. The answers are surely obvious. With a tandem bicycle both passengers are well inside the wheelbase. Should a violent alteration in the steering direction (deliberate or involuntary) cause the machine to pivot on the point where the back tyre makes contact with the road, there is no weight behind this point to add extra leverage. But with a pair of motor cycling pillion riders under similar conditions, there is this extra leverage behind the pivoting point; and, unless the flapper has a cool head and knows

Occasional Comments.—

her job, the extra weight will also wobble about, and not exert a definite or continuous leverage. So far as luggage is concerned, the question is purely one of weight. Quite an ordinary flapper will weigh 120 lb., but he is "some" tourist who carries 120 lb. of luggage on the carrier. In any case, the luggage is safer, because it cannot clutch, scream, or wobble when an awkward situation develops.

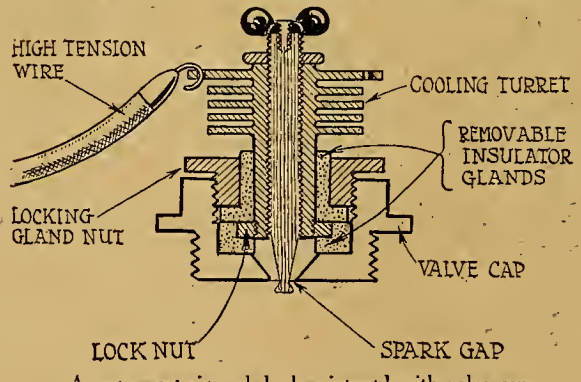
Pillions—the Point at Issue.

I THINK many of our correspondents have missed the real point at issue in this heated controversy. There is absolutely no question but that many fine riders can cover 10,000 miles per annum for many years with a heavy passenger on the carrier and never encounter a smash. On the other hand, the presence of the passenger unquestionably renders a machine more difficult to control, especially in emergencies; and the proof is that the resultant fatalities are attracting the notice of the authorities. We British believe in freedom, and the community does not put its members under restrictions without urgent cause. When due cause is shown, we establish embargos. For example, we forbid stout, short-sighted old women to become pilots. Surely the point now at issue is whether the risks of pillion riding for novices and for the average rider who never emerges from the "half-skilled" stage are so great that experts should be forbidden to carry passengers on their brackets. This issue will not be settled by so many dashing youngsters stating their pillion mileage without accident, or so many middle-aged fogeys telling lurid yarns of how they fractured Aunt Susan's skull. It is useless to burk facts. If the Government notice that accidents are becoming very common, the dashing youngster will have to bear the loss of part of his liberty with a good grace. Some of our younger riders fail to realise what duffers many motor cyclists are. Last week, for example, two solo riders were killed as the direct result of punctures. Some of us have sustained literally hundreds of punctures at express train speeds; but we were never in any danger of killing ourselves through them. This illustration indicates how the personal skill of a rider affects the whole natter. In any case the agitation is inspired by solicitude for the "dud" riders; and the "dud" riders, be it remembered, are the backbone of the industry.

Permanent Plug Design.

A Suggested Design for Permanency and Perfection.

WITH an ordinary low compression touring engine, sparking plug troubles are of comparatively rare occurrence; but, on the other hand, many high-speed modern engines, and indeed many small two-strokes, are positive gluttons as regards their plug consumption. I have in my possession a wonderful assortment of practically new plugs, all of them quite sound, so far as outward appearances go: relics of a somewhat oily two-stroke and of a modern flat twin, which no longer grace the garage. All these plugs, however—probably three or four pounds' worth—are useless. Some leak slightly, with the result that an overdose of oil leads to their immediately sooting up, the oil following the leak; others are broken down as regards their insulation: a condition which is very easily reached when a plug is used in an oily engine. Still others are unreliable or will not spark, the secret of their failure being securely welded up in the inaccessible recesses of their interiors. What I have long yearned for is a plug that will come adrift: a plug with accessible and renewable members: a plug with gap adjustable from without while the engine is running, for the purpose of obtaining the best gap and for freeing the points of soot, etc.: a plug that will not pre-ignite: and withal a plug offering some degree of permanency. The plug is the only component which is not made as a permanency. Why? We are given little hot knobbly bits, bought, to be sure, at a reasonable figure; but why have to scrap the whole plug and buy a new one simply because so minute a defect has rendered it inoperative? Moreover, a properly designed plug should act as a heat dissipater, rather than a heat retainer.



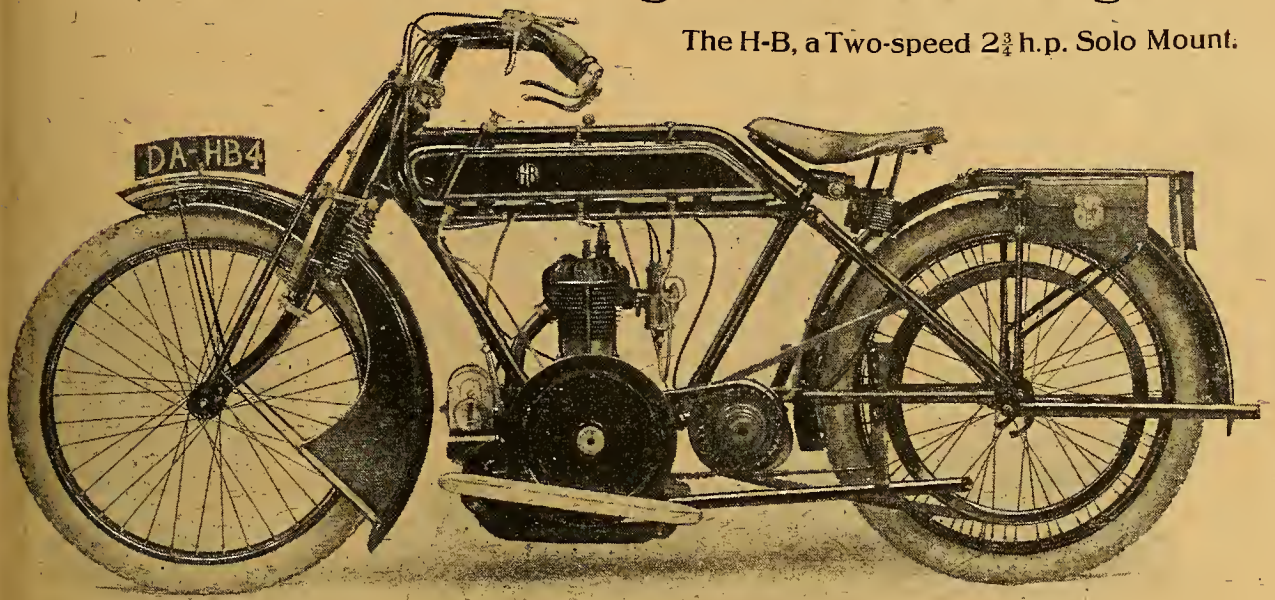
A permanent air-cooled plug, integral with valve cap. It is suggested that a plug on these lines would give more permanent wear and cooler running, besides being adjustable from without, easily accessible, and its components easily renewable.

The accompanying suggested design, which may serve to convey the general basis of the idea, offers, it is claimed, several desired features. Detail design may be poor: that only the plug manufacturers know, but the general principle of the idea is workable. All the parts are solidly constructed. The whole thing could be taken to bits in a few seconds, cleaned, and, if necessary, the insulators renewed. The central electrode is provided with adequate cooling provision, thus defeating pre-ignition, the gap is adjustable, and the simplicity of design renders such a component easily adaptable to quantity production. The valve cap would, of course, go with the plug, being, as it were, the same unit. Tough insulating materials, possessing slight yield, would be used; and, in my opinion, such a plug would, with cheap renewals, last a very considerable time, and give immunity from the majority of the plug troubles experienced with many engines to-day.

CHINOOK.

A New Blackburne-engined Medium Weight.

The H-B, a Two-speed 2¾ h.p. Solo Mount.



The 2¾ h.p. H-B motor cycle fitted with a Blackburne engine, the bore and stroke of which are 71 × 88 mm. = 350 c.c.

A NEW medium-weight machine has made its appearance in the 2¾ h.p. H-B, which two letters may be taken to mean either Hill-Blackburne or Hill Bros., the makers of the machine, whose address is Walsall Street, Wolverhampton—a town already famous for motor cycles of the first water. With the idea that there is a large market for a machine of medium weight, and constructed more sturdily than the average lightweight, and yet not so heavy as the 3½ h.p. single, the makers have set out to design the H-B.

The power unit is the well-known 2¾ h.p. Blackburne engine, 71×88 mm., giving a capacity of 350 c.c., the chief points of interest of which being, of course, the outside flywheel and the detachable head. We were particularly impressed by the smooth exterior finish of the cylinder casting and crank case, the engine as a whole presenting the most compact and neat appearance.

The design of the silencer, etc., is somewhat unusual, in that it is carried, together with the tail pipe, within a neat sub-frame composed of the footboards attached to curved struts, as shown in the accompanying photograph. In future models we understand an undershield will be incorporated with this frame.

The two-speed gear box is neatly housed below the bottom bracket, and is of well-known make, the change speed lever being mounted on a lug on the frame tube below the tank, and fitted with a patent spring selector device concealed in the end of this lug. The drive is conveyed by ¼in. Coventry chain from the engine to the gear box, which is fitted with a very substantial kick starter and hand-operated Ferodo-lined clutch. From this point the transmission is effected by ¾in. Dunlop belt over a 7in. pulley to the rear wheels. Great care has been taken to build the two chain sprockets in line with the rear hub, which gives the whole machine a very symmetrical appearance.

Frame and Fittings.

The frame is of conventional design, considerably reinforced in the front down tube, into which two D tubes have been pressed. The head itself is lined with heavy gauge tube, while the rear stays are straight throughout their length.

The rear wheel is easily detachable by reason of the slots in the fork ends, which slope downwards and thus facilitate the dropping out of the wheel. The rear brake acts on the front side of the belt rim, and is therefore not disturbed when removing the back wheel.

The tank has a capacity of one and a half gallons of petrol and one quart of oil, and is of attractive design, being wedge-shaped and finished black with a broad gold line.

A Brooks saddle is fitted, and toolbags by the same maker are attached to the carrier in neat metal cases.

The mudguards are wider than those usually found on mediumweight machines, and are almost flat in section, the front guard being fitted with a wide mud flap to prevent splash off the road reaching the rider.

During a visit to the works we had a short trial run on the machine, which was found to be very handy in traffic and remarkably quiet, and at the same time speedy on the level.

BORES AND STROKES.

THAT a few millimetres on the bore more greatly increases the capacity of a cylinder than the same extra millimetres on the stroke is not realised by many novices, who would make rapid guesswork calculations regarding the respective capacities of several engines. Frequently we have heard these newcomers to the pastime argue that there is very little difference between 85 mm. bore × 88 mm. stroke and 88 mm. bore × 85 mm. stroke. The difference is 18 c.c. in favour of the latter, as the respective capacities are as follow (bore mentioned first in each case) :

85×88 mm.=499 c.c.
88×85 mm.=517 c.c.

The differences are more noticeable, however, when the bore-stroke ratios are narrower or wider. For example, a cylinder 50 mm. × 60 mm. bore and stroke has a capacity of 141 c.c., while one 60 mm. × 50 mm. gives 170 c.c.

If we take another example, with 50 and 90 as the figures, we obtain the figures given below :

Bore and stroke.	Capacity.
50×90 mm.	=177 c.c.
90×50 mm.	=318 c.c.

When one looks at a millimetre on a rule, it seems incredible that such a small increase or decrease should make so appreciable a difference.

Even in small cylinders, one millimetre in the bore makes a marked difference, as the following figures show :

Bore and stroke.	Capacity.
50×50 mm.	= 98 c.c.
51×50 mm.	=102 c.c.
52×50 mm.	=106 c.c.
53×50 mm.	=110 c.c.
54×50 mm.	=114 c.c.

From the above, it will be seen that every millimetre added to the bore increases the capacity by 4 c.c., but as the increase is continued the capacity increases in ever growing proportions.

It may be taken as a general rule that one millimetre on the bore is approximately equal to two on the stroke.

How to Win Gold Medals in Reliability Trials.

The following hints have been prepared by an experienced rider, who has won innumerable medals in all the first-class competitions.

Know your machine.
Study the regulations.
Arrowing is never flawless, therefore study the route thoroughly.
Practise lightning gear-changing and re-starting on stiff gradients.
Have confidence.

THE novice is apt to imagine that a Six Days gold medal is merely a matter of entering a standard machine, and enjoying the same freedom from stoppages to which he has grown accustomed in his ordinary riding. No greater blunder can be imagined. For one thing, a Six Days route and time schedule are severe enough to rank as equal to 5,000 miles of ordinary touring. It follows that some small trouble is more than likely to occur. In ordinary touring, a rider will generally look over his machine at a stop, and may often find some nut which has worked a trifle loose. He tightens it up, and no harm is done. In a Six Days he has no such opportunities. The nut, if it shakes loose, drops off, and consequential damages occur. He is not allowed to purchase a spare, and the loss of a tiny part may render the machine difficult to handle, cause a tumble in a tight corner, and cost him "condition marks" at the finish. For these and other reasons, the winning of a gold medal in any first-class reliability trial is a serious undertaking, and will mean real hard work. Considerations of space limit the advice which I am able to offer, but all the main points will be covered in outline.

Know your Machine.

1. Enter a machine which is not too new and not too old. You will be hard pressed to keep inside maximum time on the more difficult sections, and must be able to make lightning repairs and adjustments if the need arises. Previous experience in changing a valve spring, adjusting a chain, replacing a twin-cylinder inlet pipe, and other routine jobs, may make all the difference between a special prize and an "also ran." Deftness in tyre repairs is a *sine qua non*. The covers should be as heavy as possible, and should have been run 250 miles: far enough to make the beads supple without wearing down the tread. A spare inner tube, preferably butt-ended, should be carried, together with a gaiter for the repair of bad gashes in the cover. Carry but few spare parts; do not forget a small assortment of nuts and bolts, and pack the tool-bags very carefully.

Study the Regulations.

2. In every trial a number of failings are due to sheer ignorance of the regulations. The beginner usually contrives to misunderstand the schedule time clauses. The secretary will send you an advance copy of the rules, and you should have them at your fingers' ends before the start.

Study the Route.

3. Timekeeping is quite the toughest part of the modern trial. You see from the rules that you are required to average a set speed, say 18 m.p.h., and you jump to the foolish conclusion that this will be easy. Along certain sections of the route it will be absurdly easy; along other sections it can only be done by facing quite unaccustomed risks. The trials routes of to-day follow the most forbidding tracks, where few riders bent on pleasure would dream of venturing. It is not easy to average 18 m.p.h. along such tracks under any conditions, since stiff gradients, crowded with other riders, slow you down to a trifling speed for considerable distances, whilst successions of bad

How to Win Gold Medals in Reliability Trials.—

corners and continuous rough going render speed equally unpleasant on the level and downhill pieces. If grease and a puncture are added to these handicaps, it may take a very good man indeed to finish a section inside maximum time. On the other hand, high speed over bad going racks the machine very severely, and also rattles the nerves of an inexpert driver, so that he either takes a toss, or muddles a hill-climb, or fumbles the repair of a tyre. Preliminary study of a half-inch map is invaluable. First mark out the route with red ink, and then indicate the controls in black ink. Where a section includes plenty of main roads in flattish country, there will be no need to "blind," and along such sections the machine can be driven with restraint and confidence. When a section consists exclusively of narrow, third-class roads threading up and down mountains, timekeeping will evidently be a problem. There will probably be at least one such section per day.

On these stretches every second should be treasured as if it were minted gold. Avoid absurd risks, but keep going as fast as possible, opening the throttle wide up straight gradients, and generally cutting matters much finer than is done in touring. Carry the map sheet for each day's route with you: it may prove very handy in refreshing your memory as to where the danger points occur, and will come to your aid if an arrow is missing or overlooked. The marshals' arrowing of the route is very seldom absolutely flawless; and nothing is more harrowing than to arrive at an unmarked road junction with no time to spare, for you cannot tell whether you have over-ridden an arrow, or whether the marshals have failed to mark the turn.

The cautious cornerist approaches the hairpin wide and slowly on low gear, sums its dangers in a thought, and then opens out.

Some Riding Hints.

4. After such a trial the average tourist will find that his driving has become far more dexterous than it used to be. In particular he will have learnt to handle his clutch and gears more skilfully, to take grease fast without coming over, and to keep up his pace over stony tracks along which he formerly crawled. A little preliminary practice in each of these stunts will improve his prospects of a special prize and of securing his gold. Many touring amateurs prefer to time their gear changes for straight, smooth pieces of road, and perform them in very leisurely fashion, looking down at the parts concerned like a beginner learning the typewriter. When the trial gets amongst the freak hills, there is no hope for a gear changer of this type. The surface is probably unspeakable, the corners are atrocious, and a patch of road no larger than an ordinary bedroom floor may contain four machines, all of which are skidding and plunging. Lightning gear changes and delicate clutch work are essential. Clumsiness in this respect can not only forfeit a gold on non-stop sections, but the observers will note it against a man who is in the running for the special prizes, and, in any case, it loses valuable time. The beginner should therefore practise lightning gear changing, restarting on fierce gradients, and fast travelling over rough tracks.

Confidence Essential.

So far as speed over grease and stone is concerned, confidence is the main essential. Ferocious as the advice may sound, 25 m.p.h. is a far safer speed on almost any kind of bad going than 8 m.p.h. I admit that if the machine comes over, the rider may sustain more hurt at the higher speed, but this penalty is by no means certain; the more suddenly a man falls, the less chance he has to stiffen his body: I have been more injured in a side-slip with a push-bicycle than in a 25 m.p.h. tumble from a motor bicycle. But, in any case, it is impossible to steer with perfect steadiness at low speeds on either rough or greasy surfaces, whereas at upwards of 25 m.p.h. the machine has considerable forward momentum, and ploughs masterfully through the slime or the loose metal.

There are two exceptions to this rule of maintaining speed on bad going. Ruts are an obvious exception. No man can drive fast along a deep rut without coming off; and speed along a narrow crown between deepish ruts is dangerous, since a small stone or a moment's inattention may divert the machine into the rut, where the front wheel must presently jam. Rutted sections never last long, and are generally due to timber haulage: they should be taken anyhow—I know nobody who can negotiate them really neatly; a scrambling sort of progress with the feet spread out at low speed is quite common amongst crack riders. The other exception is presented by hairpins on hills. Rain-storms wash the road surface away and gnaw out channels: then the farmer tips a load of broken stone to give his horses footgrip. You cannot take such places fast, even if the radius of the corner permits a fair speed. Your back wheel will tend to spin round on the stones and mud: your steering will be diverted by the stones, and you may skid mildly on the soft bits. The only possible expedient is to change right down on to bottom gear, keep the throttle nearly shut, hold the steering as steady as possible, and hope for the best. Have no anxiety about power; your engine will take any gradient with lots of throttle in reserve, unless you are straddling an over-geared "baby." Keep the pace low, so that your driving tyre has a good chance to grip, and that the plunges of the front wheel do not head you into the hedge. If the surface is of the very worst, the machine will never take the ideal line round the hairpin which you have

How to Win Gold Medals in Reliability Trials.—

picked out with your eye: but since the speed is low, the plunges will not take you into the hedge, and you can straighten out masterfully after each plunge. Have your wrists well inside the handle-bar grips, not above or outside them, and press your wrists down towards the ground as far as possible, so that they tend to resist the plunges of the front wheel. Do not lose your head if the riders in front baulk you—shouting, swearing, and ramming do nobody any good; if the road is absolutely blocked, declutch, throttle down, secure a witness of the baulk (there are sure to be officials about), and restart on the clutch as soon as the road is cleared. It is best to restart exactly where you were stalled, supposing the surface permits; but if the surface is impossible, ask the nearest marshal if you may restart from the nearest patch of hard stuff in sight.

Keep an Eye on the Nuts.

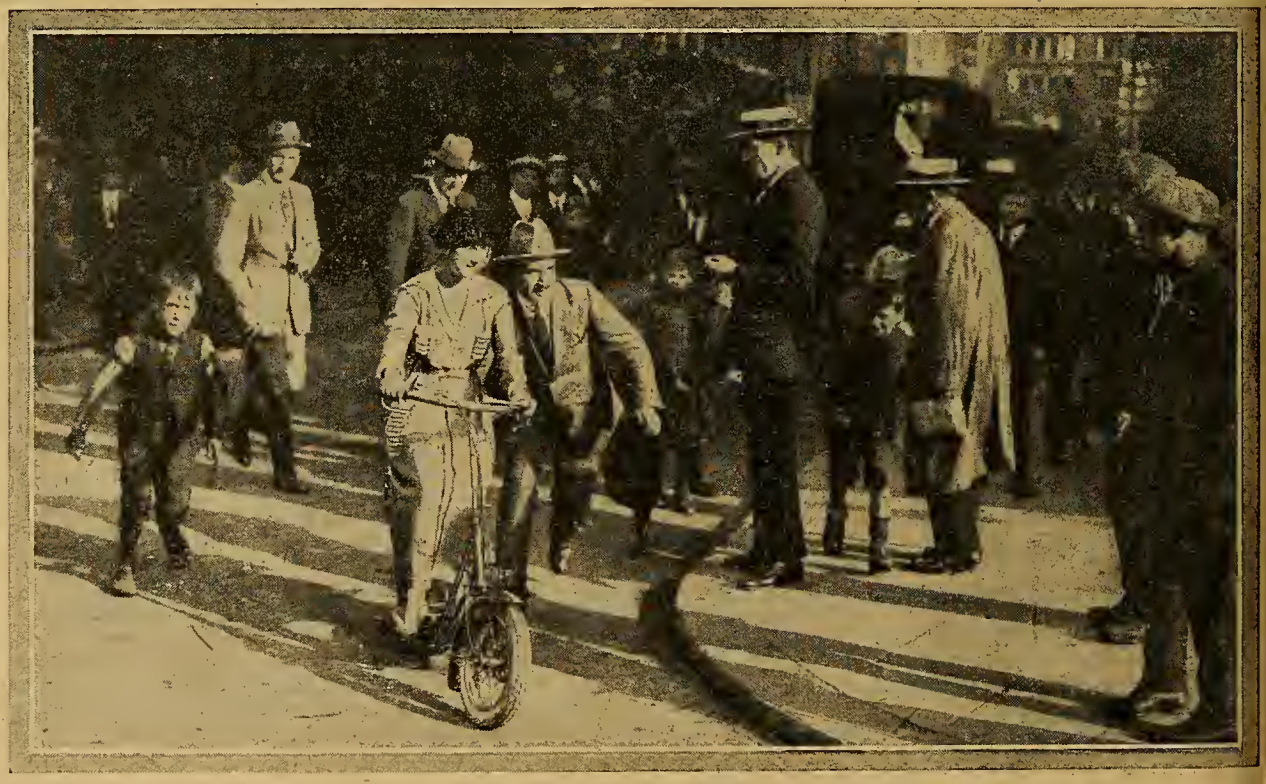
5. During the trial you will occasionally have a few minutes to spare at the side of your machine. Some of the sections are easy, and are included simply to make up the conventional mileage. Some silly riders use such stretches for crawls to an inn or impromptu T.T. work. But these sections furnish the canny rider with golden opportunities to check over the condition of his machine.

6. More gold medals have been lost through tyre troubles than any other cause. The ordinary tourist is fairly competent at tyre repairs so long as he is not hurried. When he is set to mend a tyre feverishly against time, he usually does something foolish. It is very nice when your tyres go through 1,000 miles without smelling the pump, but it is always on the cards that you may gash a cover clean across in these events. More probably you will get a decent sized puncture towards the end of a difficult section, when every moment is vital for timekeeping. A cool head is the great requisite. Stop immediately, for fear of the valve getting pulled out. Get the machine off the road and on its stand as quickly as possible. Turn the wheel and spot the location of the nail. Free as little of the tube as possible. Mend the hole *slowly* and with the utmost care. Let the solution dry right up before applying the patch. Refit the tyre, and roll the bead back before fully inflating, to *see* that the tube is not nipped. In the event of a tube receiving disastrous damage, do not take the wheel out—there are few machines sufficiently well designed for this job to be practicable if a gold medal is to be won. Cut the gashed tube right out, and insert a butt-ender; the tyre makers will rejoin the severed tube for half a crown, and the regulations probably allow you to obtain a second butt-ender as a reserve for the rest of the ride.

ROAD RIDER.

Awards in the Circuit de l'Eure.

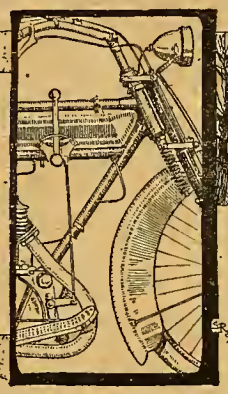
IT is interesting to British motor cyclists and manufacturers to know the value of the prizes won in the important French race Le Circuit de l'Eure. Louis, winner of the 250 c.c. class, takes altogether in money £15, and the M.C.F. gold medal, and a silver medal presented by "Motocyclisme." Milland, first in the 350 c.c. class, takes £11 and gold and silver medals. Péan, who won the 500 c.c. class, gains £17, two gold, and one silver medal. Huret, winner of the sidecar 750 c.c. class, gains £25, one gold, and one silver medal. Houel (Morgan), £25, and gold medal.



The scooter in London traffic. After a few minutes' tuition Miss Lillie, the actress, piloted her scooter through Leicester Square

THE M.C.C. TEAM TRIAL.

List of Competing Teams and the Riders nominated by the Clubs.



AFTER a lapse of five years, the Motor Cycling Club Team Trial for *The Motor Cycle* Cup will take place once more. In the old days it was an event that attracted almost all the clubs of a sporting nature, and this year's revival will no doubt be eagerly anticipated by new riders and also by old hands who have competed every year since the trial was inaugurated in 1904. This year the teams which have entered comprise 90 competitors and 45 passengers. There will be more than 30 reserve riders.

The Motor Cycle challenge cup.

The trial is to be held from Potter's Bar on Saturday next, starting at 1 p.m.

Each rider of the winning team will be presented with a gold medal by the M.C.C., and the members of teams making full scores will be the recipients of silver medals.

Full rules and regulations for the trial were published in *The Motor Cycle* for August 7th, but the following condensation may be of assistance to those who do not happen to be conversant with them.

The cup is to be awarded in competition between teams of riders, members of, and nominated by, recognised automobile and motor cycle clubs.

If the cup be won three times, not necessarily in succession, by the team representing any one club, it shall become the absolute property of that club.

Each team shall consist of six riders, three of whom shall drive solo and the remaining three passenger machines. Lady competitors will not be permitted.

The competition shall consist of a non-stop course, to be covered three times; total distance, 100 miles. The competitor covering each of the three circuits at 20 m.p.h. will gain the maximum number of marks.

Sufficient fuel and oil must be carried for the whole of the trial.

The number of miles accomplished by each rider of each team, without stoppage other than stoppage due to existing traffic, will be added together, and the team scoring the highest mileage that is arrived at shall be the winner, but in the event of more than one team making a full score in mileage the award will be given to the team making the best performance in the consistent driving test.

Unavoidable stoppages due to traffic must be reported, but will not count against the rider. A consistent driving test will be held on the hill which will be ascended on each circuit during the trial.

The following teams will compete:

M.C.C.

Starting Time. H. M. S.	No.	Rider and Machine.
1 0 0 ..	1.	L. A. Baddeley (2¾ Douglas)
1 0 30 ..	2.	E. A. Bridgman (7 Indian sc.)
1 1 0 ..	3.	P. W. Moffat (4 Douglas)
1 1 30 ..	4.	B. A. Hill (8 Morgan)
1 2 0 ..	5.	R. B. Clark (2¾ Douglas)
1 2 30 ..	6.	A. J. Watson (6 Ariel sc.)

CAMBERLEY AND DISTRICT M.C.C.

1 3 0 ..	11.	W. K. Alfold (3½ Ariel)
1 3 30 ..	12.	W. T. Whitty (6 Ariel sc.)
1 4 0 ..	13.	H. F. Owen Evans (3½ Rover)
1 4 30 ..	14.	F. Baker (8 Matchless sc.)
1 5 0 ..	15.	H. J. Clarke (3½ Triumph)
1 5 30 ..	16.	S. Pimm (4 B.S.A.)

Reserves: A. Golder (3½ Ariel) and J. Stocker (3½ Ariel sc.).

EALING AND DISTRICT M.C.C.

1 6 0 ..	21.	K. V. Chidley (2¾ Wooler)
1 6 30 ..	22.	F. H. Douglass (3½ Sunbeam sc.)
1 7 0 ..	23.	L. Pulham (3½ Ariel)
1 7 30 ..	24.	F. A. Longman (7 Harley sc.)
1 8 0 ..	25.	S. A. Lees (8 Zenith)
1 8 30 ..	26.	S. E. Longman (4 Triumph)

Reserves: W. G. Boyer (4 Triumph) and J. J. Hillyer (8 Matchless sc.).

WOOLWICH, PLUMSTEAD AND DISTRICT M.C.

1 9 0 ..	31.	T. J. Ross (4 Triumph)
1 9 30 ..	32.	G. D. Hardee (8 Matchless sc.)
1 10 0 ..	33.	R. Boner (4 Triumph)
1 10 30 ..	34.	F. J. Ellis (8 Matchless sc.)
1 11 0 ..	35.	B. J. Sims (4 Triumph)
1 11 30 ..	36.	C. R. Collier (8 Matchless)

Reserve: S. A. Ive (4 Trinmph).

MIDDLESEX M.C.C.

1 12 0 ..	41.	J. Hillyer (3½ Rover)
1 12 30 ..	42.	E. Pittock (6 James sc.)
1 13 0 ..	43.	D. H. Noble (3½ Rover)
1 13 30 ..	44.	S. A. McCarthy (8 Morgan)
1 14 0 ..	45.	A. C. Robbins (2¾ Wooler)
1 14 30 ..	46.	G. L. Fletcher (4 Douglas sc.)

Reserve: H. Boocock (4 Triumph sc.).

BIRMINGHAM M.C.C.

1 15 0 ..	51.	Bob Duke (3½ Triumph)
1 15 30 ..	52.	H. B. Denley (10 Morgan)
1 16 0 ..	53.	E. Kibble (3½ Triumph)
1 16 30 ..	54.	T. Stevens (4 James sc.)
1 17 0 ..	55.	G. Kuhn (2½ Levis)
1 17 30 ..	56.	T. Silver (3½ Quadrant sc.)

Reserves: G. A. Strange (4 or 6 James), T. H. Pattman (4 Norton), and H. G. S. Ward (4 Triumph).

ESSEX M.C.

1 18 0 ..	61.	F. A. Applebee (4 Blackburne)
1 18 30 ..	62.	E. A. Colliver (7 Indian sc.)
1 19 0 ..	63.	C. Pearson (2¾ Douglas)
1 19 30 ..	64.	S. R. Axford (8 Sunbeam sc.)
1 20 0 ..	65.	F. W. Applehee (4¼ B.S.A.)
1 20 30 ..	66.	C. F. Michel (8 Morgan)

Reserves: W. C. Hemy (2¾ Metro-Tyler) and E. H. Bax (7 Indian).

SHEFFIELD AND HALLAMSHIRE M.C.C.

Starting Time. H. M. S.	No.	Rider and Machine.
1 21 0 ..	71.	B. A. Chapman (3½ Brough)
1 21 30 ..	72.	J. Haslam (4 Douglas sc.)
1 22 0 ..	73.	D. Kaye (4 Triumph)
1 22 30 ..	74.	S. Raynes (6 A.J.S. sc.)
1 23 0 ..	75.	H. Reynolds (4¼ B.S.A.)
1 23 30 ..	76.	S. Sawer (4 Norton sc.)

Reserves: R. Flint (4 Douglas), A. Parker (2¾ Douglas), A. C. Roberts (7 Indian sc.), and J. A. Stacey (8 Matchless sc.).

SOUTH BIRMINGHAM M.C.C.

1 24 0 ..	81.	B. Kershaw (2½ Verus)
1 24 30 ..	82.	G. Dalby (4 Triumph sc.)
1 25 0 ..	83.	A. H. Johnson (2½ Allon)
1 25 30 ..	84.	T. H. Weaver (7 Harley sc.)
1 26 0 ..	85.	L. E. Clulee (2½ Allon)
1 26 30 ..	86.	H. H. Saddington (6 James sc.)

Reserves: E. Boydell (2¼ Velocette) and T. F. Blumfield (6 Ariel sc.).

EASTBOURNE AND DISTRICT M.C.C.

1 27 0 ..	91.	J. Blakemarsh (3½ Norton)
1 27 30 ..	92.	D. Ratcliffe (8 Enfield sc.)
1 28 0 ..	93.	J. Bowles (3½ Zenith)
1 28 30 ..	94.	L. G. Freeland (4 B.S.A. sc.)
1 29 0 ..	95	J. Wratten (4 B.S.A.)
1 29 30 ..	96.	G. Salmon (6 Enfield sc.)

Reserves: —. Pocock (7 Indian), N. C. Goddard (3½ B.S.A.), R. A. Niedermayer (6 Matchless sc.), and C. B. Blackie (——).

PUBLIC SCHOOLS M.C.C.

1 30 0 ..	101.	P. Davey (3½ Norton)
1 30 30 ..	102.	C. D. Wright (7 Harley sc.)
1 31 0 ..	103.	D. W. Bonham-Carter (2¾ Coulson B.)
1 31 30 ..	104.	E. M. P. Boileau (——)
1 32 0 ..	105.	J. A Watson Bourne (4 Blackburne)
1 32 30 ..	106.	R. C. Charlesworth (5 Zenith sc.)

Reserves: V. Dreschfield (4 Triumph) and B. J. Reeves (6 Clyno sc.).

OXFORD M.C.

1 33 0 ..	111.	F. L. K. Loxley (4 Douglas)
1 33 30 ..	112.	C. J. V. Bellamy (4 Douglas sc.)
1 34 0 ..	113.	H. F. Burge (4 Douglas)
1 34 30 ..	114.	H. W. Smith (4 Triumph sc.)
1 35 0 ..	115.	H. G. Watson (4 Triumph)
1 35 30 ..	116.	R. C. Davis (8 Chater-Lea sc.)

Reserve: C. B. C. Loxley (3½ Triumph).

ILKLEY M.C. AND L.C.C.

1 36 0 ..	121.	J. E. Walker (3¾ Scott)
1 36 30 ..	122.	W. R. Haggas (3¾ Scott sc.)
1 37 0 ..	123.	W. Moore (3¾ Scott)
1 37 30 ..	124.	W. L. Guy (3¾ Scott sc.)
1 38 0 ..	125.	H. W. Sellers (3¾ Scott)
1 38 30 ..	126.	W. F. Scott (3¾ Scott sc.)

Reserve: N. O. Vinter (3¾ Scott).

LIVERPOOL M.C.

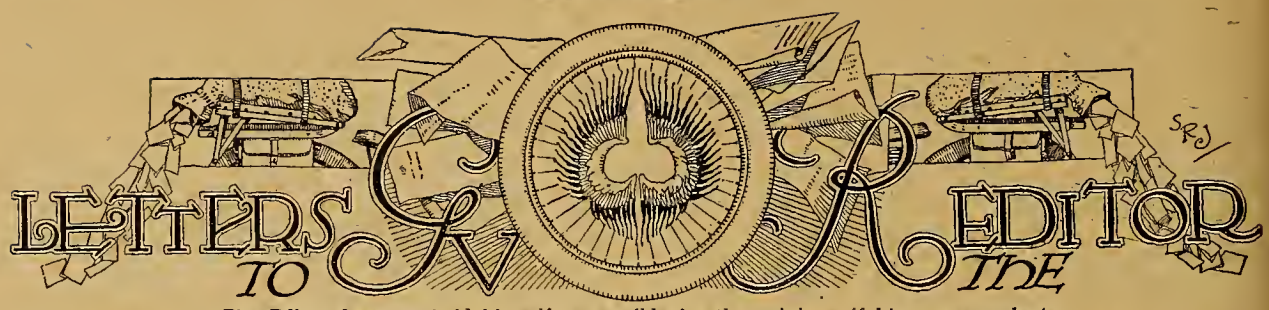
1 39 0 ..	131.	Jack Fox (4¼ B.S.A.)
1 39 30 ..	132.	R. J. Mundy (8 Matchless sc.)
1 40 0 ..	133.	V. E. Horsman (4 Norton)
1 40 30 ..	134.	S. W. Philpott (5 Brough sc.)
1 41 0 ..	135.	S. Parker (——)
1 41 30 ..	136.	Noel H. Brown (7 Indian sc.)

Reserves: F. A. P. Zacharias (4 Triumph), F. Hatton (2¾ Douglas), and O. Wade (6 A.J.S. sc.).

COVENTRY AND WARWICKSHIRE M.C.C.

1 42 0 ..	141.	Sam Wright (3½ Humber)
1 42 30 ..	142.	R. B. Ewens (3½ Rudge Multi)
1 43 0 ..	143.	W. Brandish, jun. (5-6 Rover)
1 43 30 ..	144.	F. G. Edmond (4 Triumph sc.)
1 44 0 ..	145.	H. Finch (4 Triumph sc.)
1 44 30 ..	146.	S. Crawley (4 Triumph sc.)

Reserves: R. B. Bicknell (——), H. Whittem (3½ Humber), B. Ryecroft (4 Triumph sc.), and T. R. Gibbins (4 Rex sc.).



The Editor does not hold himself responsible for the opinions of his correspondents.
All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

FREQUENT PUNCTURES.

Sir,—I was cycling from Darlington to Richmond (Yorks) on August 13th, and between Barton and Richmond, which is six miles, I got no fewer than six punctures in my back tyre—a brand new heavy Dunlop. They were received at regular intervals of about half a mile. I should be pleased if you will publish this in *The Motor Cycle*, as I should like to see if it has ever occurred in such a short distance with any of your readers. NORMAN B. SHALDERS.

PASSAGE TO THE ISLE OF WIGHT.

Sir,—Noticing your correspondent's letter with reference to the above in your issue of the 31st ult., I feel sure it may interest many of your readers to know that by using the Southampton-Cowes route one is not required to empty the petrol tank. Moreover, as the landing at both ends is on to a pontoon pier, there are no awkward inclines to negotiate, and access to the road is quite easy. The crossing takes about fifty minutes. The charges are: Motor cycle, 2s. 6d.; sidecar combination, 5s.; pier toll (Southampton only), 4d. J. L. HEWITT.

SCOOTERS.

Sir,—"T.H.C.'s" excellent letter in your issue of July 10th raises an interesting query.

Is America responsible for the introduction of this type of machine?

At the Stanley show some ten years or so ago a machine was exhibited which was on the lines of the scooter, but of infinitely cleaner design than many of the models illustrated nowadays. This machine—I believe it was called the Max—was illustrated in your journal on more than one occasion, and had, as far as my memory serves me, a single-cylinder engine of 2½ h.p. and a simple form of countershaft drive; the road wheels were very small, and no saddle was fitted.

A reproduction of the illustration would, I think, be of interest. T.R.H.

Grays.

[The illustration of the 2½ h.p. Max—the original scooter—was repeated on page 293, March 27th, 1919.—Ed.]

FUEL CONSUMPTION.

Sir,—Seeing in a recent issue a letter of a rider who got the "astounding" result of 160 miles to the gallon, may I give my experiences.

I have a lightweight Premier, bought about three and a half years ago for £9, date of make unknown. Carburetter, Brown and Barlow original type. Running one day I noticed the petrol being blown back through the air port and wasted, also petrol dripping from the screw plug which holds the jet up. Later I proceeded to make this as near petrol-tight as possible, also put a hot air intake on to trap the "blow back."

Noticing recently that the consumption of petrol seemed low, I emptied the tank and bought a gallon of benzole and used it nearly out. On totting up the mileage, it gave 170, and there was sufficient left for another ten miles. The machine is single-speed, fixed gear, and it has never let me down through engine or other trouble but once (a matter of a few yards).

A man with a small powered motor bicycle has to keep it in tune to get good results, but those with four or five horse-power to throw away do not know when their engines are in tune. Usual disclaimer. R.H.

Birmingham.

AMATEURS IN COMPETITION.

Sir,—I read with much satisfaction the comments of "C.L.W." in your issue of August 7th, with regard to the competition on an equal footing between amateur and professional.

Should it not rather be said an "unequal footing." On the very face of it the procedure may appear to be fair, but surely one has not to look far to perceive the manifest unfairness of mingling promiscuously amateur and professional in one class at club hill-climbs.

Let nothing be done to discourage the professional rider, for he is indispensable to the success of the pastime. Moreover, he will leave no stone unturned to render his machine more efficient, so that the name of the make he represents may be known as the epitome of all that is best in motor cycle construction.

The continuance, however, of the present practice, which I have striven to deprecate, can only result in the gradual disappearance of the real amateur from open competition, and the retention only of the "shamateur"—the exponent, to use the popular phraseology of club reports.

Let us have, therefore, separate classes for amateurs and professionals, if only to popularise the pastime and to admit the real sportsman into open competition, if only *pour encourager les autres*. COUNTERSHAFT.

Malvern.

FACTS CONCERNING THE RECENT WOOLER RECORD.

Sir,—Readers of *The Motor Cycle* may be interested to know, if they have not seen for themselves, that several gross misstatements regarding the achievement of the 2¾ h.p. flat twin Wooler motor cycle in the recent Petrol Consumption Test held by the Ealing and District Motor Cycle Club, have appeared in the press. Other articles, apart from this test, have appeared in well-known papers, which, to put it mildly, are incorrect.

On August 26th an evening paper published the astounding fact (?) that "The induction system on the Wooler machine has nothing to do with the design of the Wooler engine, but is combined with an apparatus for measuring the amount of petrol used on such tests." Ye gods! This is certainly "some" invention (of the journalists).

My motto is, "Give credit where it is due," and I should therefore like it known that the apparatus for measuring the petrol is a thing apart, and not combined in any way with the induction system, which is solely the design and invention of Mr. John Wooler, who designed the entire unit, and it was this unique induction system which proved such a large factor in obtaining the marvellous consumption of 311 m.p.g.

On August 27th further valuable mis-information was given to the public through the medium of a weekly paper, namely, that a system of cantilever frame springing had been invented somewhere in the "Stone age," and that an imitation of this system was now being used on the Wooler machine.

Let me point out as gently as I can that the Wooler springing is not, and never has been, on the cantilever system, so that whoever wrote this interesting piece of news was obviously talking through his hat. What I want to know is, "How long will these inspired writers of fiction be allowed to trouble us?" Their efforts have left me quite weak and

Harrow. PUZZLED (NOT MUZZLED!)

HONOUR TO WHOM HONOUR.

Sir,—I should like to draw the attention of readers of *The Motor Cycle* to the Capacity Tool Co., whose advertisement is to be found in the Miscellaneous Section.

I had tried every likely firm for two exhaust valves for my American Excelsior, receiving the usual reply that none were obtainable, whereupon I sent an old valve to this firm, and received within two days of despatch the articles I required, which were an absolutely perfect fit.

I think this information may be of some use to readers in a like position to myself. I, of course, make the usual disclaimer. S. DALE.

Sir,—In these days of profiteering and bad service it is both surprising and extremely pleasant to find a garage whose owners keep their promises. Some two weeks ago I became in need of some important spare parts. I wrote the makers of my engine, who promised them in four weeks. I then telephoned to Messrs. Young, of Kilburn, who informed me that they would let me have the parts in eight days. I took it for granted that I should be lucky if I got them in a fortnight. Imagine my surprise to find my spares awaiting me at the station within five days of the order being given. Usual disclaimer. S.

Nutfield, Surrey.

Sir,—Some time ago I had an unavoidable smash. I broke my front forks (all the lot), the carburetter control on the handle-bars, the connection to the oil feed, smashed the front mudguard, broke five spokes, and buckled the front wheel. This happened on a Thursday midday. The agent had no stock, so he made a journey to Birmingham the next day (Friday). He had good luck, and started on the job on Saturday morning. The machine was ready for the road the same evening. My machine was a 4¼ h.p. B.S.A.

All this is an appreciation of Mr. J. Bassett, Shelton. Can any reader beat this? CONTENT.

Hanley.

DELIVERY.

Sir,—Being a regular reader of *The Motor Cycle*, I have noticed a good many complaints *re* delivery of new motor cycles, etc., and should be much obliged if you would spare a small space in your valuable paper for this letter, as I think that it is only right that firms who deliver machines quickly should be brought to the public notice.

On August 7th I ordered a new 1919 2¾ h.p. Douglas from the London office in Newman Street, and they told me the delivery would be about three weeks, but exactly eight days from the date of order I received a notice from the railway station that the motor bicycle was ready for collection.

Norbury. L.C.W.

A WARNING.

Sir,—A few weeks ago I motored with my wife to Fleetwood from Lincoln, and after arrival at Fleetwood the inspector examined my motor and sidecar to see if I had any petrol. All being in order, he issued me tickets for the motor and sidecar, costing 8s. 9d. each, total 17s. 6d. He then supervised the loading of the machine. When I reached Belfast the inspector there demanded an extra charge of £1 7s. 6d., although I had my ticket for 17s. 6d., the reason being given that the motor and sidecar should have been detached the one from the other for the 17s. 6d. rate. Another motor cyclist who was bringing his combination in the same boat had to pay the extra also. If the other motor cyclist or myself had known, we should have detached the sidecars from the motor, but there is no way for the public to know this but experience with the company's steamers.

R. MARTIN.

PRICES.

Sir,—I am another reader of *The Motor Cycle* who would like to see greater clarity in makers' advertisements, particularly as to prices.

There is a growing suspicion on the part of many riders that there is some motive in leaving out prices from the advertisements, and the general thought is that it is to give agents and dealers an opportunity to indulge in a little profiteering.

Although I have given up the idea of getting a new combination as hopeless, I am always meeting the agent who has a "practically new 1919 machine—only done 300 miles"—that he can sell at £30 to £50 more than the makers' price, and one wonders sometimes if there is any collusion between the manufacturers and agents encouraging this turning of new into second-hand machines.

Now that it is intended to lift the import restrictions from motors I intend to get a friend in America to send me over an American machine, even if I have to pay the import duty of 33⅓%.

In case I might be called unpatriotic, I would like to mention that I have been recently demobilised after service in France. J. ABBOTT.

STEERING.

Sir,—Further to "Janey's" letter and "Chinook's" remarks on this subject.

For an extended period I rode a 1911 P. and M. solo, and found the steering excellent at all speeds, even with passenger on behind. I never was troubled with any front wheel lifting tendency.

A military Big Four-Norton, on which I rode an average of about fifty miles daily for five months, was exceedingly comfortable, so much so that "hands off" could be indulged in for long stretches

My present mount, a 1918 A.J.S. combination, presents no difficulties, and can be ridden comfortably with one hand.

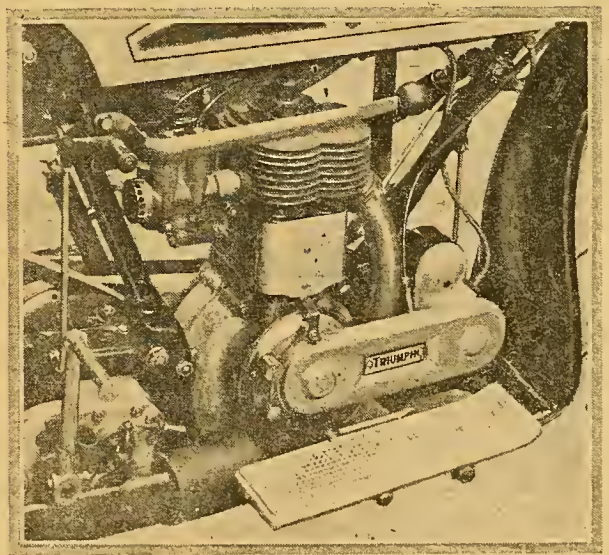
I have had little experience with a Scott, and therefore hesitate to express any opinion. E. OLIVER, Capt.

PRICES AND PRINCIPLE.

Sir,—May I be permitted to endorse the opinion of your contributor—Wm. Turner—on the subject of prices and principle. I, too, put on order an A.B.C. combination early in March at the provisional price of £75, and was told by the agent that deliveries would commence in May. When the price was eventually fixed at £85 I was told the same, that the advance would have to be paid, and even at this date (August 22nd), I have not got a definite price for the sidecar—how it will be upholstered or anything connected with it.

I certainly think it is time the Sopwith Company spoke out, and say if they intend delivery this year or not, as after all the months of waiting, and still no sign of delivery, it certainly makes one very dissatisfied, as I am sure there are plenty of people, like myself, who have no use for a combination in the middle of winter for pleasure.

Sheffield. STILL WAITING.



SPECIAL FITMENTS FOR TRIUMPHS.

These aluminium footboards and valve guards have been introduced by Mr. W. Brandish, Foleshill Road, Coventry, who is marketing them. The photograph also shows the new Sturmey-Archer gear control mounted on the seat tube, which we find from experience an improvement upon the previous design.

Competitors turning on to the road for Birdlip at Cross Hand Inn during the recent Reliability Trial held by the Redditch and District M.C.C., and described in last week's issue.

A WORN FIBRE BRUSH.

Sir,—Being the owner of a Matchless Victory model, I read your photographer's account of his experiences in the Scottish Six Days Trial with much interest.

He asks if any reader has had similar trouble with the magneto to that which he describes. Curiously enough, I had precisely the same thing happen to me last Easter.

The particular J.A.P. engine of my Matchless outfit, I find, is addicted to oil slinging, and I should be interested to know if this is a peculiarity of my engine. If so, what is the remedy? JAS. Q. MILLS.

SPEED WOBBLE.

Sir,—I was much interested in the experience of speed wobble related by "G.E.S." in your issue of August 21st. I notice he asks for a theory on the cause of this. Surely this cause is indicated by "Ixion's" experience with the steering of four different machines. The wobble at high speeds is due to the design of forks and front springing, and only occurs with certain machines. I should be glad to hear other opinions on this subject. C. DONTOCK.

Sir,—Your correspondent "G.E.S." in *The Motor Cycle* of August 21st asks for a good theory on the cause of his speed wobble whilst *doing 60 to 65 m.p.h. on a new Rudge-Multi which he had never ridden before*, and also for the best means to overcome it. I should think the portion in italics answered itself, and now for the best means to "overcome" it (I suppose he means to prevent it). A sure cure for speed wobble is to ride down High Holborn at 60 to 65 m.p.h., and keep straight on until you meet the cure, which is a dead cert for speed wobbles and all other ills.

It is people of the "G.E.S." type who get police traps sprinkled round to catch others doing 21 m.p.h., and I hope his speed wobble taught him a lesson. I sincerely hope he had no pillion passenger. DON PIP.

Beaufort.

OVERHEAD V. SIDE-BY-SIDE VALVES.

Sir,—I have noticed recently in both the technical and non-technical press many articles treating of the design of motor cycle engines, and apparently written, in most cases, by engineers. In the majority of these articles overhead valves are recommended as preferable to the side-by-side type where efficiency is desired, and the decline of the use of overhead valves is commented upon and deplored.

Now that sufficient of the 1919 and 1920 designs have appeared to enable us to judge the present trend of design, this falling off in the use of the overhead valve is certainly very noticeable, especially in view of the war-time experience gained in the manufacture of such valve systems for aero engines, and their undoubted advantages from a purely engineering standpoint. Up to the present the only designs I have seen incorporating both inlet and exhaust valves in the cylinder head are the A.B.C. and the Brough.

My purpose in bringing up this question is to suggest that some of the designers who have hitherto favoured the overhead system and now revert to the side-by-side should give us their reasons for doing so. It would be very interesting to know if the J.A.P. people have any mechanical reasons for discontinuing their famous sporting model, for instance, and why the Indian now appears with the inlet next to the exhaust instead of above it. Much has been said in favour of the overhead system, but I have never yet heard any conclusive arguments in favour of the side-by-side method from either a mechanical or thermal point of view. The old objection that overhead valves could not safely be entrusted to the rider who is not an engineer on account of the liability of the stems to fracture is surely long since out of date. Hence, I am sure that a justification of the side-by-side valve systems from any engineer who has reverted to them would be of great interest to many.

S. LALOUR HORDLE.

SUMMARY OF CORRESPONDENCE.

The motor cyclist who borrowed a plug between Malton and Scarborough on July 31st is anxious to obtain the address of the lender.

A correspondent took a wheel spindle to Reading to have cones fitted for a stranded motor cyclist, but when he returned the man had disappeared, leaving no address. Our correspondent would like to return the spindle.

BOOKS AND MAPS FOR MOTOR CYCLISTS.

Issued in conjunction with "*The Motor Cycle.*"

	Price net.	By post
"MOTOR CYCLES AND HOW TO MANAGE THEM." The standard handbook on the motor cycle, its care and management. Twentieth Edition. 286 pages. 400 illustrations	2/6	2/10
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"THE MOTOR CYCLE" ROAD MAPS. **England and Wales, Scotland, London** (showing roads into and out of London and avoiding London). Mounted on linen. Set of three, complete in case.	4/6	4/10

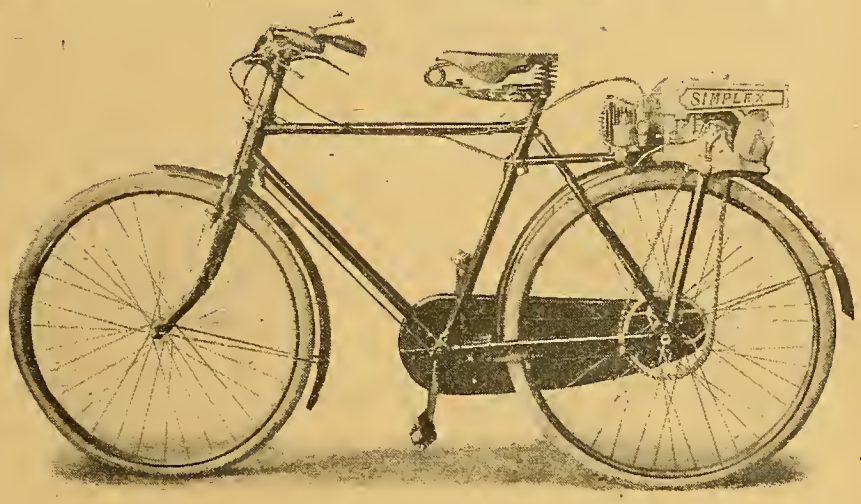
Obtainable by post (remittance with order) from ILIFFE & SONS Ltd. 20, Tudor Street London, E.C.4, or of leading Booksellers and Railway Bookstalls.

Mechanical Propulsion for Pedal Cycles.

The Simplex Auxiliary Motor—a 1 h.p. Unit with Clutch which weighs 20 lb. complete.

AT least three parts of the British public are interested in motors of one description or another. This is obvious in every city of the kingdom, and we have had the fact brought home to us almost every time we have taken a new machine on the road. Even pre-war models attract attention, while one is almost mobbed by the interested public when a stop is made with a scooter, or other miniature motor cycle of unconventional design.

There is no doubt that a vast number of potential motorists do not, as yet, know exactly what they require—excepting that it must be comparatively cheap. Probably the scooter—especially the type fitted with a seat—has a strong appeal to the man, or woman, who at present owns neither cycle nor motor; but one must admit that the demand at present is somewhat superficial, and many who think they will like scooters know nothing at all about them, and such probable buyers have yet to be educated as to their use, their limits, and their mechanical requirements.



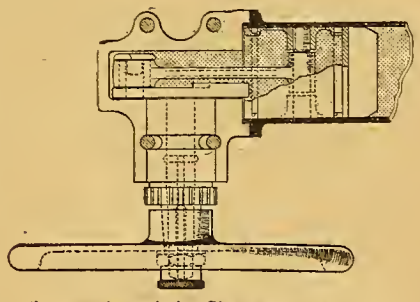
The Simplex auxiliary motor shown fitted to a 22in. frame pedal cycle.

A New Class of Buyer.

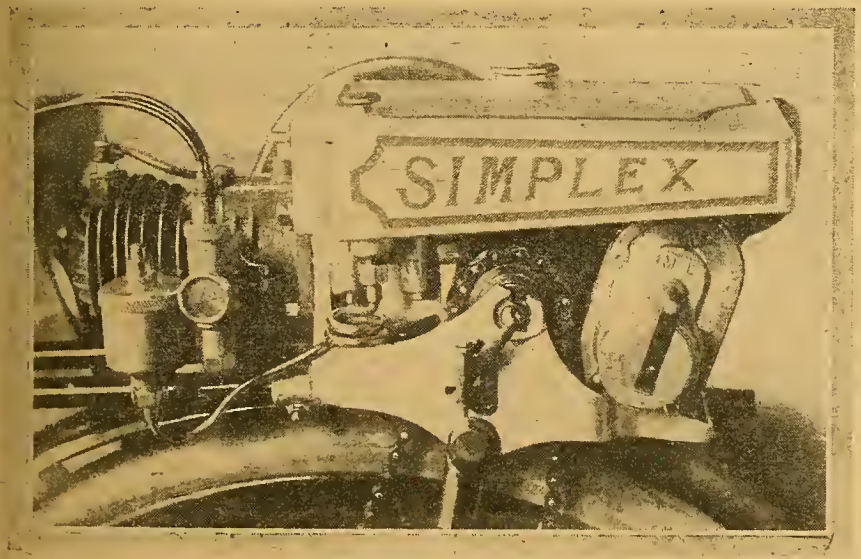
There is, however, a distinct class of potential motorist who does know what he requires. This class is made up of pedal cyclists, who desire some means of mechanical propulsion to enable them to use their existing machines without the fatigue of pedalling. This interest of cyclists in the auxiliary motor was exemplified last week by the crowds that gathered before the windows of Messrs. Henry Garner, Ltd., Hill Street, Birmingham, where the new model Simplex outfit was on view. There was a distinct difference between these crowds and those we have observed when curiosity only has impelled the passer-by to stop. It was obvious that the majority of those who lingered to discuss the proposition regarded the auxiliary motor as something above a novelty.

The Simplex power unit is by no means a new proposition; the designers and manufacturers—the Patrick Engineering Co., Ltd.—have been experimenting with it for the past five years. As far back as November 18th, 1915, page 489, we described it, but since that date many improvements have been made, and the production model now introduced is a thoroughly practical machine which will go a long way to introduce many hundreds of pedal cyclists to the petrol motor.

One feature of this power unit is its multiple-plate clutch, automatically operated in conjunction with the compression release. This is a point which makes for ease of control, as the cyclist has a single lever to stop and disengage his engine. The manner in which this is arranged is decidedly neat, the outer casing of a Bowden wire being connected to the compression release lever, and the inner cable to the clutch operating rod. By raising the lever on the handle-bar the compression release is first opened by the outer cable, taking up its bearing upon the mechanism of the release valve, and then the inner cable functions by pulling the lever pressing the clutch rod.



Plan section of the Simplex piston connecting rod and crankshaft.



The Simplex power unit, the engine of which is a 1 h.p. two-stroke of 104 c.c. This model is fitted with a countershaft clutch.

The only other controls are those of the Amac carburetter, but subsequently a new type of single lever Amac, specially made for the Simplex, will be fitted, thus reducing the entire control to two levers—(1) The compression and clutch releases, and (2) the carburetter. It would be difficult to imagine anything more simple for the most nervous novice in motor propulsion.

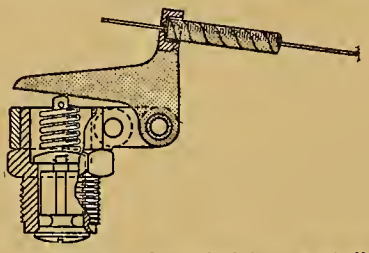
To Fit any Cycle.

Weighing about 20 lb., the Simplex outfit consists of a miniature two-stroke engine, a revolving countershaft clutch, and a Runbaken magneto mounted on an aluminium platform easily attached to any existing pedal cycle, lady's or gentleman's model. Above the unit is a half-gallon tank fixed to the engine at its fore end and to two small lugs on the

Mechanical Propulsion for Pedal Cycles.—

magneto side plates at the rear. By removing the front connection the tank may be swivelled around those on the magneto to afford accessibility for any adjustments which may be found necessary.

The engine is of the conventional three port type of two-stroke, and has a cylinder with a bore and stroke of 51 mm. (104 c.c. capacity). The piston has



The compression release which is automatically operated with the clutch.

two rings, one at the top and another at the bottom, the former being a larger ring than the latter.

The connecting rod is of phosphor bronze, and the crankshaft is of the single-sided variety carried in a long bearing. Outside the crank case, which is of aluminium, the shaft carries a spur gear wheel and flywheel. This spur wheel is the first of a train of three, the second of which drives the revolving clutch, and the third the magneto.

On the opposite end of the clutch member a sprocket or pulley is affixed (for chain or belt drives will be optional), from which the drive is taken down to a sprocket or pulley fixed to the hub of the cycle.

To fix the unit to any bicycle is quite a simple matter. The engine is carried on two longitudinal tubes, along which it may be slid and so adjusted. The two tubes are supported at their inner end by a split lug, which clips the saddle tube. Two stays are used to carry the weight of the unit on the hub spindle ends. These are pivoted at their tops on the aluminium baseplate, and at the lower ends adjusting slots are embodied to enable the driving chain to be adjusted.

Ignition is provided by a miniature Runbaken magneto designed specially for this unit, which was illustrated and described in our issue for June 3rd last. It is a splendidly made little unit of exceedingly low weight; in fact, all the separate parts of the Simplex are good, and it does not strike one that quality has been sacrificed for cheapness.

The Clutch.

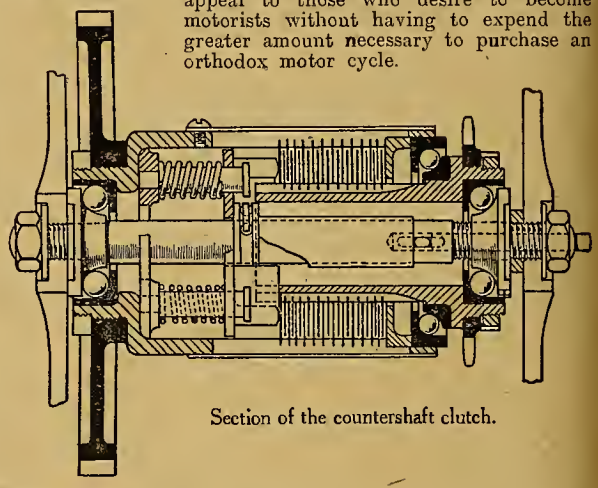
The clutch is a very neat little unit somewhat resembling a motor cycle wheel hub. It is mounted on a fixed spindle, and carried on ball bearings of the cup and cone type, which are adjustable from one end. Briefly, the clutch unit consists of a rotating outer shell carrying the spur wheel by which it is driven, and an inner sleeve embodying the sprocket or pulley for the final drive. The clutch plates are connected alternately to the inner and outer members and are pressed against each other by a number of coil springs. Disengagement is secured by a push rod passing through the centre of the spindle, which is slotted for a cross member operating against a sleeve which compresses the coil springs.

When in engagement the clutch unit revolves on the two main bearings, but when out of engagement the outer shell rotates on the inner member.

Lubrication is by means of the petroil system, a measure being supplied which holds the correct allowance of oil to be added to a tank of petrol. The capacity of the tank is half a gallon, which the makers state is sufficient for eighty miles; but even better results than this have been obtained, and the consumption may be said to be 200 m.p.g.

Interchangeability of Parts.

At present only the single-speed model will be marketed by Messrs. Henry Garner, Ltd., the sole distributers for the British Isles. This decision was reached partly on account of the fact that with the two-speed model which has been undergoing road tests it has not been found necessary to use the second ratio on any main road hill, the little engine being sufficiently powerful to negotiate such hills without pedalling assistance. The shelving of the two-speed unit, too, will facilitate production, and arrangements are well in hand for an output of one hundred per week. Deliveries will commence next month, and the parts of every machine turned out will be interchangeable. The price of the unit is £23, at which price it will make a strong appeal to those who desire to become motorists without having to expend the greater amount necessary to purchase an orthodox motor cycle.



Section of the countershaft clutch.

An Adjustable Sidecar Seat.

Coachbuilt Body with Ample Luggage Capacity; Designed for Occasional Use as Two-seater if required.

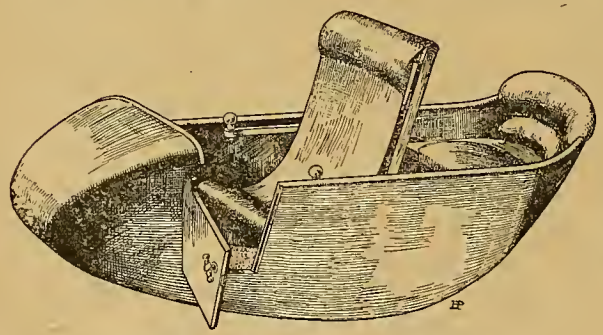
COMFORT for the sidecar passenger is not always so complete as showroom assurances would have us believe, and the fatigue experienced on long journeys may very largely be due to the impossibility of getting the necessary change of position in the usual sidecar seat.

To obviate this, and, further, to secure adequate luggage accommodation or to provide for an occasional extra passenger, a sidecar body with a patented form of movable seat has been designed by Mr. B. Graham Wood, of 44, Clive Place, Penarth, South Wales. The adjustability of the riding position is the chief point of the design, and this is achieved by adopting the hammock style of suspension on deck chair lines, incorporating a leather-cloth seat, partly cushioned and sprung at the top.

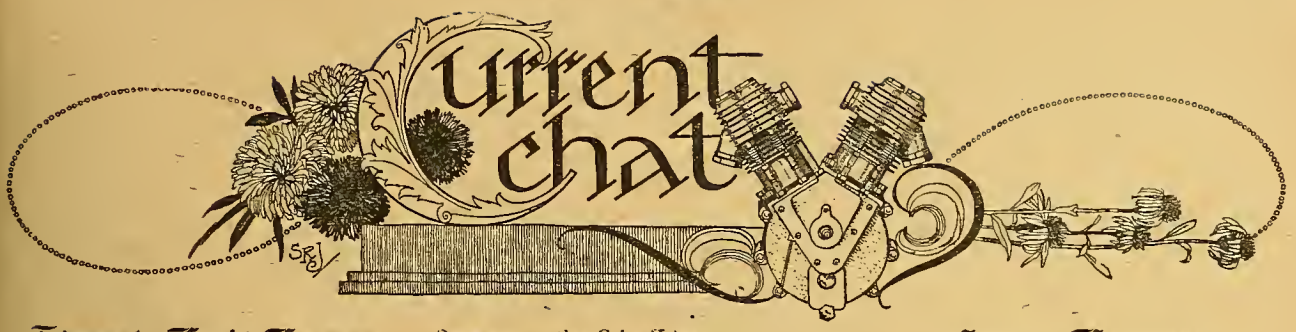
The angle of the seat is altered quite easily by the passenger without rising, the back being tilted by self-locking handles at the sides, working in racks. In the forward position an additional passenger can easily be accommodated in the rear of the body, while if the seat is lowered to get the full reclining attitude, a regulation suit case may still be carried at the rear without inconvenience.

The body is being made in one standardised model only, but a light single-seater may be introduced at a later date. The larger body is no heavier than that of the average touring sidecar, and a further desirable feature is that, owing to the adjustment of the seat, the centre of gravity of the body and passengers is kept in proper relation to the sidecar wheel, whether one person, one person with luggage, or two persons are carried.

In the illustration the back rest is shown in its most upright position, but it is usually lowered to a more luxurious angle.



Wood's patent sidecar body with adjustable seat.



Times to Light Lamps.

SUMMER TIME.

Sept.	4th	... ...	8.40 p.m.
,,	6th	... ...	8.35 ,,
,,	8th	... ...	8.31 ,,
,,	10th	... ...	8.26 ,,

The Club Championship.

On Saturday next the sporting clubs of Great Britain will decide the championship for 1919, by competing in the M.C.C. Team Trial for *The Motor Cycle* cup. The trial starts at 1 p.m. from Potters Bar.

Race for Pedal Cars.

L'Auto is organising a race for pedal-propelled cars—those American toys that encourage the youthful to take an interest in motor construction, and the first stepping-stone to a motor cycle or motor car. The race will take place on September 28th in Paris.

All Test Hills Sampled

Mr. T. W. Loughborough, secretary of the Auto Cycle Union, has returned to London after a month of hill-hunting in South Wales in anticipation of the Six Days Trial (September 15th to 20th, Llandrindod as the centre). He had with him a Morgan Runabout and a 3½ h.p. Sunbeam, with which he climbed every hill included in the course—not perhaps at the first time of asking. He was joined at one period by the Rev E. P. Greenhill, who, as an enthusiast, would no doubt delight in scaling single-figure gradients. The detail arrangements Mr. Loughborough made during his Welsh sojourn should ensure another highly successful event which will bring added credit to the governing body of the pastime.

Traffic Census.

During a recent Sunday an R.A.C. guide at Kenilworth took a census of motor vehicles passing through that town, and his figures show the popularity of the motor cycle over cars in a very marked manner.

	Buses.	Cars.	Motor Cycles. Solo.	Side-car.	Tota
From 10.30 to 1 p.m.	34	36	45	42	87
From 2 p.m. to 8 p.m.		108	97	115	212
Total	34	144	142	157	299

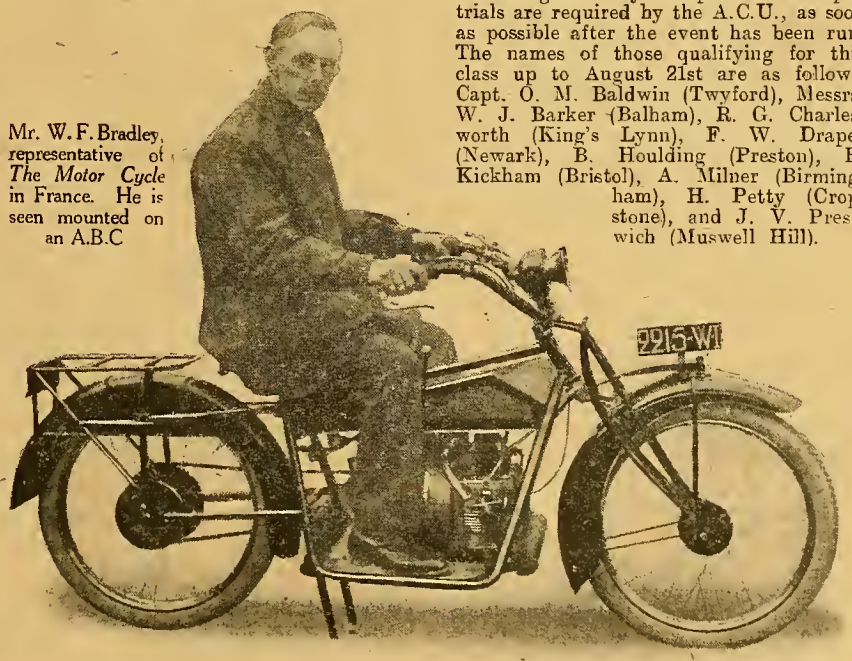
From the above it will be seen that motor cycles exceed the car traffic by over 100%, but the excess of sidecars over solo mounts is not so much as one would expect, considering the large numbers of sidecars on the road.

Designer of the G.L. Killed

We regret to announce that M. Maurice Le Pen, the designer and engineer of the G.L., a French sidecar combination that did so well in the Circuit de l'Eure (described on August 21st), is dead. He was killed in a motor car accident on the 18th inst., when returning to Paris from the sea. M. Le Pen was driving a car in which were his wife and two brothers. The lamps were burning badly, so he was following another car with good lights. Suddenly one of the tyres of the leading car burst, and the car was stopped. M. Le Pen drove his car into the ditch to avoid the preceding car, and overturned, breaking his neck.

Continental News and "The Motor Cycle."

We have pleasure in announcing that Mr. F. W. Bradley has been appointed Continental correspondent of *The Motor Cycle* and *The Autocar*. In 1914 Mr. Bradley was attached to the British Army as a voluntary motor driver, and also served as an ambulance driver on the Italian Front. Later he was put in charge of the American Air Service transportation, and remained in the American Flying Corps until the Armistice. Mr. Bradley is a car owner and a motor cyclist. He has ridden various makes of machines, including 7 h.p. American twins.



Mr. W. F. Bradley, representative of *The Motor Cycle* in France. He is seen mounted on an A.B.C

Special Features.

HOW TO WIN GOLD MEDALS IN RELIABILITY TRIALS

PILLION RIDING.

SIX DAYS TRIAL NOTES.

Hill-climb in Switzerland

The results of a hill-climb at Monte Bré, Lugano, on the frontiers of Switzerland and Italy, are as follow: Motor bicycles.—250 c.c. class, Alfter (Condor); 500 c.c. class, Rossi (Motosacoche). Sidecars.—500 c.c. Gex (Motosacoche). The climb was nearly five miles in length, and the fastest time was 9m. 5s.

Douglases in the Circuit des Quatre Departements.

A team of five Douglases has been entered for the Circuit des Quatre Departements to be held in the Loire district of France on September 1st. The rules, etc., of this competition are similar to those of the Paris-Rheims-Paris event, and the distance is 195 miles.

Experts.

During the war the publication of lists of riders coming under the expert class has of necessity been allowed to lapse. Club secretaries are reminded that, to bring this up to date, full details of the awards gained by competitors in open trials are required by the A.C.U., as soon as possible after the event has been run. The names of those qualifying for this class up to August 21st are as follow: Capt. O. M. Baldwin (Twyford), Messrs. W. J. Barker (Balham), R. G. Charlesworth (King's Lynn), F. W. Draper (Newark), B. Houlding (Preston), E. Kickham (Bristol), A. Milner (Birmingham), H. Petty (Cropstone), and J. V. Prestwich (Muswell Hill).

732 Miles in the Six Days Trials.

This year's Six Days trials of the A.C.U. are to be over a shorter distance than usual. The total week's mileage is 732½, whereas 1,000 miles have been covered in former trials. The Scottish trials in July slightly exceeded this figure.

W.D. Sale in Coventry.

Last week's sale of surplus W.D. 2¾ h.p. Douglas machines in Coventry, the city of motors, savoured of "shipping coals to Newcastle."

Forty-one Douglas lightweights in crates were sold by Messrs. Ashley and Pugh, auctioneers, on Thursday, the 28th ult.

Despite pouring rain, at least two hundred prospective bidders assembled in the sale yard, and the motor cycles were quickly disposed of singly. They were all unissued, overhauled machines, not in the best of condition, and largely minus contact breakers. The prices ranged up to £50 each, the average being £45.

Second-hand Machines.

This week further important provincial sales of motor cycles are to be held. The large number of machines released for auction have done much to relieve the shortage of motor cycles. Coupled with the announcement of the decision to permit imports of motor cycles without restriction (the tariff of 33⅓%, of course, remains for the time being), the auction sales have no doubt had a lot to do with the falling off in the demand for second-hand machines at fictitious values. In any case, high-priced second-hand mounts have had a wonderful run.

The Scott Trials.

In pre-war days, a little coterie of north-country riders of Scott machines made a certain tract of the wild West Yorkshire Moors, their happy (hill) hunting ground, and many unofficial little trials were held thereabouts. The Scott Motor Cycle Co., Ltd., has now organised an open reliability trial over a 100 mile course, having obtained the support of the Manufacturers' Union. It will be held on September 28th. No entry fees will be charged, and competitors will be provided with refreshments. The following cups, trophies, and medals will be awarded:

Amateur.—(a.) The Scott trophy and gold medals (presented by the directors) for the best team of three machines of the same make. (b.) The Kennington Cup (presented by Capt. F. R. Kennington, of London), for the best solo performance.

Trade.—(c.) The Myers Cup and gold medals (presented by E. S. Myers, Esq., Bradford), for the best trade team of three machines. (d.) The Scott Staff Cup (presented by members of the staff) for the best solo performance by a trade rider.

That the course is truly sporting is indicated by the fact that four observed hills, at least thirty miles of mountain road, and three watersplashes are included, and that an average speed of only 17 m.p.h. is expected. From personal knowledge of the course, a map of which will be supplied to entrants immediately, we should say it would require a very expert rider to finish in schedule time.

A.C.U. COMMITTEE'S TRIBUTE.

The members of the Management Committee of the Auto Cycle Union have learnt with feelings of inexpressible regret of the sudden death of their chairman and colleague, Mr. J. R. Nisbet, and in recording their acute sense of personal bereavement wish to testify on behalf of the great body of motor cyclists of the United Kingdom to the high esteem and regard in which he was held by all with whom he came in contact, and to their consciousness of the valuable services which he rendered both to cycling and motor cycling at many critical stages of development, and they now resolve to convey to the members of his family their sincere expressions of deep sympathy in the irreparable loss that has befallen them.

Footboards on Triumphs.

Footboards on Triumphs are not the general rule, and in rainy weather owners of such machines sometimes find that the standard footrests are not quite adequate to keep the feet tolerably dry when wet and mud are encountered. Suitable footboards are not always easy to obtain, and, realising the demand which exists, Mr. W. Brandish, the Triumph agent in Foleshill, near Coventry, has introduced aluminium footrests and a valve guard, which he is fitting to a large number of machines owned by motor cyclists in and around his locality. We illustrate the set on page 253.

New Manager for Harley-Davidsons.

Motor cyclists in general, but more especially those using Harley-Davidson products, will be interested to learn that Lt. Norman Mitchell, R.N.V.R., has been appointed general manager of the Harley-Davidson Motor Co., Ltd., in England. Like many other demobilised officers who have recently obtained appointments in the motor world, Lt. Mitchell has seen heavy fighting, having

Lt. Norman Mitchell, R.N.V.R., A.M.I.E.E.

his first experience in that direction in 1914 and later when he went to Gallipoli.

After being invalided from the latter place he took charge of all new petrol launch engines for some time, and also visited Canada, Australia, and New Zealand as examining engineer for the Colonial Recruiting Board.

Police Trap.

Motor cyclists are advised to exercise care when passing through Frodsham. Riders have recently been fined for not having two independent brakes in good order and for absence of rear lights.

Stile Cop Results.

The official results of the Stile Cop hill-climb held by the Birmingham M.C.C. are as published last week. Gold medals were awarded to G. Dance (3½ Sunbeam) for the acceleration test, fastest time of the day, and best performance on formula; and to H. Morgan (10 Morgan) for fastest time in passenger class.

Motor Cyclists and Benzole.

The arrangements for the A.C.U. Six Days trial, which is to begin on Monday, the 15th inst., include the provision for competitors, who so elect, to use home-produced benzole.

The National Benzole Association is offering a cash prize, in each of the ten classes, for the highest miles per gallon on N.B.A. specification benzole. This specification has the support of the recognised motor users' organisations. The official specification is as under:

1. Specific gravity: .870 to .885.
2. Distillation test (by flask). Benzole shall give a distillate of not less than 75% to 80% at 100° C., 90% at 120° C., and 100% at 125° C.
3. Sulphur: The total sulphur shall not exceed 0.40%.
4. The benzole shall be entirely free from water.
5. Colour: Water white.
6. Rectification test: 90 c.c. of the sample shaken with 10 c.c. of 90% sulphuric acid for five minutes should not give more than a light brown colour to the acid layer.
7. Benzole shall be entirely free from acids, alkalis, and sulphuretted hydrogen.
8. Benzole shall not freeze at 25° F. below the freezing point of water (*i.e.*, until it is subjected to a temperature of 7° or —14° C.).

For Immediate Delivery!

One of the scooters used in the first scooter race organised by *The Motor Cycle* last June is offered by its owner for sale at the modest figure of £85! That figure was paid for it at a time when daily paper enthusiasm for scooters caused many manufacturers to look into scooter claims and "test" the only available machines for themselves.

A 5,000 Mile Benzole Test for Motor Cycles.

Following on the regret we expressed at the omission of the motor cycle from the test of benzole suggested by *The Autocar*, and to be carried out by the Automobile Association, we now learn that an air-cooled motor cycle with sidecar will also be placed under observation, using benzole as a fuel. The machine, a new one, will be taken down at the works before the test, and a careful examination made by a competent authority.

After re-erection, the tour of 5,000 miles will be undertaken, and a careful record taken during the tour of consistency in running, and average fuel consumption per mile, etc.

At the end of the trial the engine will be dismantled and a thorough examination made, as to any deleterious effect on any part of the engine, tank, or carburetter.

The beginning of the test will be made from London, the date of which will be announced very shortly.

THE A.C.U. SIX DAYS' TRIAL.

A 732½ Mile Course. Time Table of First Competitors.

WE publish below the full route of the Six Days Trial, to be held from September 15th to 20th. This year the course selected passes through some of the most beautiful scenery in Great Britain. It includes hills, which, although familiar to many, will be of a sufficiently sporting nature to cut down riders' marks if judgment be lacking when these gradients are tackled.

The actual course occupies five days, the sixth day being devoted to examination of finishing condition of machines.

With the detailed route given below is the time-table of the first man, showing lunch stops, and other information essential for competitors.

MONDAY, SEPTEMBER 15th, 1919.

Time Due (Leader).	Place.	Daily Mileage. Inter.	Daily Mileage. Total.	Total Miles Run.
p.m.				
2.30	LLANDRINDOD	—	—	
2.38½	Howey	2½	2½	
2.56½	Builth	6	8½	
3.14½	Garth	6½	14⅝	
3.15 / 3.27	Consistent Driving Test, first ascent summit .	2½	17⅛	
4.11	Brecon	13⅞	31	
4.42	Llangynider	10⅜	41⅜	
5.2	Beaufort	6⅛	47½	
5.7	Bryonawr	1⅝	49½	
5.30	ABERGAVENNY	8½	57⅜	57⅜
	Tea at the Angel Hotel (1h. 30m.). Lamps must be lit at start after tea.			
7.0	ABERGAVENNY	—	—	57½
7.18	Crickhowell	6	6	
7.52	Talgarth	11½	17½	
8.4	Llyswen	4	21½	
8.18	Erwood	4½	26	
8.39	Builth	7	33	
9.3	LLANDRINDOD	7¾	40⅜	98½
	Total day's run		98½	

TUESDAY, SEPTEMBER 16th, 1919.

Time Due (Leader).	Place.	Daily Mileage. Inter.	Daily Mileage. Total.	Total Miles Run.
a.m.				
8.0	LLANDRINDOD	—	—	98½
8.6	Howey	2	2	
8.14	Newbridge-on-Wye ...	2¾	4¾	
8.25½	Llanafanfawr	4	8¾	
8.42	Garth	4½	13¼	
8.49	Llangammarch	2½	15¾	
9.20½	Llanfair-ar-y-bryn	9¾	25½	
9.33	Llandovery	4½	29¾	
9.46	Llanwrda	4½	34	
9.58	Brake Test (no check) .	3¾	37¾	
10.14	Llansawel	5	42¾	
10.40½	Llanbyther	8¾	51½	
11.23	Bromwydd Arms	15¼	66¾	
11.42	Conwil Elvet	5¼	72	
p.m.				
12.15	NEWCASTLE EMLYN	10¾	82¾	181
	Luoch at Emlyn Arms Hotel (1h. 15m.).			
1.30	NEWCASTLE EMLYN	—	—	181½
2.46	Cross Inn	25½	25½	
3.23½	Ystrad Meurig	12½	37¾	
3.34½	Yspytty-Ystwyth	3¼	41	
4.20½	Head of Elan Valley ..	13½	54½	
4.57	Rhayader	12½	66¾	
5.30	LLANDRINDOD	10¾	77½	258
	Total day's run ..		160½	

WEDNESDAY, SEPTEMBER 17th, 1919.

Time Due (Leader).	Place.	Daily Mileage. Inter.	Daily Mileage. Total.	Total Miles Run.
a.m.				
8.0	LLANDRINDOD	—	—	258½
8.28½	Rhayader	9½	9½	
8.38½	St. Harmon	3½	12¾	
8.56½	Tylwch	5½	18¼	
9.7	Llanidloes	3¼	21½	
9.37	Stay-a-little	9	30½	
9.58	Llanbrynmair	7½	37¾	
10.14	Cemmæs Road Station .	5½	43	
10.37	Dinas Mawddwy.....	7½	50½	
11.2	Bwlch-y-Groes (summit)	7½	58¼	
11.34	BALA	10½	68¾	327½
	Lunch (1h. 26m.).			

WEDNESDAY—continued.

Time Due (Leader).	Place.	Daily Mileage. Inter.	Daily Mileage. Total.	Total Miles Run.
p.m.				
1.0	BALA	—	—	327½
1.45½	Llanwddyn	14½	14½	
2.17	Cann Office	10½	25	
2.38	Llanfair Cæreinion	7	32	
5.12½	Newtown	11½	43½	
3.25½	Dolfor	3¾	47¼	
3.53	Beguildy	9	56¼	
4.17	Knighton	8	64¼	
4.38	Bleddfa	7	71¼	
5.15	LLANDRINDOD	12½	83½	411
	Total day's run ..		152½	

THURSDAY, SEPTEMBER 18th, 1919.

Time Due (Leader).	Place.	Daily Mileage. Inter.	Daily Mileage. Total.	Total Miles Run.
a.m.				
8.0	LLANDRINDOD	—	—	411
8.15	Newbridge-on-Wye ...	5	5	
8.52	Builth	5⅜	10⅜	
9.22½	Garth	14¾	25½	
9.28½	Llangammarch	2	27½	
9.41	Llanwrtyd	4½	31¾	
10.14	Llandovery	11	42¾	
10.48½	Pumpsaint	10½	53	
11.18	Lampeter	8½	61½	
11.52	Tregaron	11½	72¾	
12.18	Yspytty-Ystwyth	8½	81¼	
12.40	DEVIL'S BRIDGE ..	6¾	88	499
	Lunch at the Hafod Arms Hotel (1h. 20m.)			
p.m.				
2.0	DEVIL'S BRIDGE ...	—	—	499
2.35	Aberystwyth	11¾	11¾	
2.46½	Bow Street	3¾	15½	
3.29	Machynlleth	14¼	29¾	
4.10	Stay-a-little	11½	41¼	
4.39	Llanidloes	9	50¼	
4.49½	Tylwch	3¼	53½	
5.8	St. Harmon.....	5½	59	
5.17½	Rhayader	3½	62½	
5.47	LLANDRINDOD	9½	71¾	570½
	Total day's run ..		159¾	

FRIDAY, SEPTEMBER 19th, 1919.

Time Due (Leader).	Place.	Daily Mileage. Inter.	Daily Mileage. Total.	Total Miles Run.
a.m.				
8.0	LLANDRINDOD	—	—	570¾
8.24	Builth	8	8	
8.42	Garth	6	14	
8.49½	Beulah	2½	16½	
9.4	Llanwrtyd	4¾	21¼	
9.36	Llandovery	10¾	32	
9.53	Llangadock	5¾	37¾	
10.49½	Pontardawe.....	18⅝	56¼	
11.5	Neath	5¼	61½	
11.30	SWANSEA	8	69½	640½
	Lunch at the Royal Hotel (1h. 30m.).			
p.m.				
1.0	SWANSEA	—	—	640½
1.29	Pontardulais	9¾	9¾	
2.13½	Llanddarog	14¾	24½	
2.45	Llanfynydd	10½	35	
3.0½	Abergorlech	4¾	39¾	
3.9½	Llansawel	2¾	42½	
3.23	Caio	4½	47	
3.45½	Cilycwm	6¾	53¾	
4.2½	Llanfair-ar-y-bryn	3½	57¼	
4.34½	Llangammarch	10¼	67½	
4.40½	Garth	2	69½	
4.41 / 4.52	Consistent Driving Test, second ascent summit	2½	72	
5.28½	Builth	12¼	84¼	
5.52	LLANDRINDOD	7¾	92	732½
	Total day's run ..		161¼	

A SIX DAYS TIT-BIT.

On Bwlch-y-Groes. This hill rises 1,200 feet in less than two miles, and has a poor surface, with awkward gulleys cutting the road at right angles.

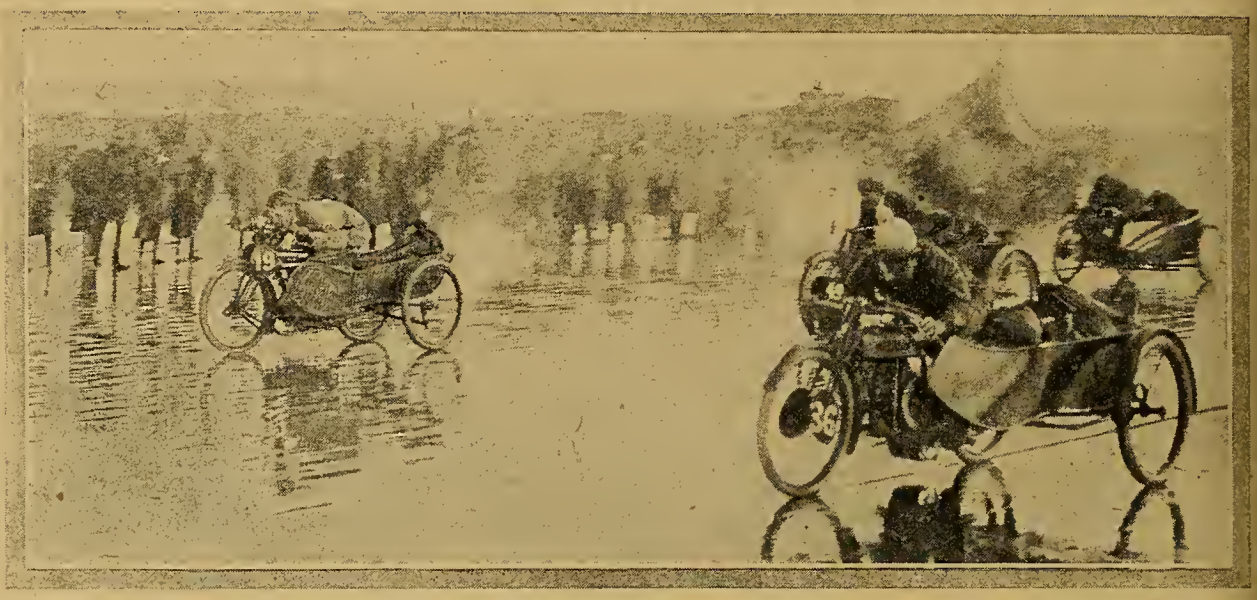
LATEST ENTRIES IN SIX DAYS.

IN addition to the entries named in last week's issue are the following, bringing up the entry to 112.

J. T. Lawler (3½ Sunbeam); R. Brown (3½ Sunbeam); W. R. Eadington (3½ Sunbeam); L. C. M. Davies (Velocette); E. Bottomley (7-9 Harley-Davidson); W. Edwards (4¼ B.S.A.); J. Edwards (3½ Humber); S. T. Ashby (Connaught); Lloyd Motor and Engineering Co., Ltd., L. A. Bees (L.M.C.); H. Peak (7-9 Harley-Davidson); Douglas Motors, Ltd., H. Sharpe (4 Douglas sc.), W. B. Gibb (2¾ Douglas), T. W. Moffatt (3½ Douglas), F. G. Ball (2¾ Douglas); M. Isaac (3¼ Rover); M. Davies (3½ Sunbeam); S. Parker (8 Enfield).

WESTON-SUPER-MARE SPEED TRIALS.

Motor Cycle Racing under Difficulties; Successful Meeting in Spite of Bad Weather.



The start of the sidecar class. The two foremost competitors are riders of an A.J.S. and a Douglas.

A DRIVING westerly wind and heavy rain marred to a great extent the speed trials organised by the Bristol M.C.C. at Weston-super-Mare on Saturday last. The trials were held over a one-mile stretch on the sands at this seaside resort, the course being marked off by flag posts and danger signs in the centre portion and held clear at the finishing and starting points by the local police with the help of railings of ropes and posts. Despite the bad weather conditions, however, the speed trials were attended by considerable crowds of people, and enthusiasm reached a high pitch at the conclusion of some of the events. Apart from the rain and wind, the only trouble experienced by the organisers was the partial over-running of the course by the crowd at the finishing line, due to the fact that the enclosure posts and ropes sunk over in the rain-sodden sand and made the work of the officials and police an additionally heavy one in avoiding accidents.

Success of the Lightweights.

The trials were run off in seventeen classes, with a total entry list of 137 competitors, of which 66% were entered by members of the Bristol M.C.C. Considering that, in practically every race, each competitor was riding all-out in the teeth of a head wind and heavy rain, the following results will be additionally interesting :

CLASS 1.—SOLO MACHINES NOT EXCEEDING 250 C.C.—W. A. Jacobs (1½ Singer, 248 c.c.), walk over.

CLASS 2.—SOLO MACHINES NOT EXCEEDING 275 C.C.—G. F. Tozer (2½ O.K., 275 c.c.), walk over.

CLASS 3.—SOLO MACHINES NOT EXCEEDING 350 C.C.—(1) S. L. Bailey (2¾ Douglas, 350 c.c.), time 1m. 3⅘s. =57.0 m.p.h.; (2) F. G. Ball (2¾ Douglas, 350 c.c.) (3) G. S. Boston (2¾ A.J.S., 349 c.c.).

CLASS 4.—SOLO MACHINES NOT EXCEEDING 500 C.C.—(1) G. Dance (3½ Sunbeam, 499 c.c.), time 1m. 4s.= 56.24 m.p.h.; (2) H. N. Walker (3½ Norton, 490 c.c.) (3) F. G. Ball (2¾ Douglas 350 c.c.).

CLASS 5.—SOLO MACHINES, UNLIMITED CAPACITY.—(1) G. Dance (3½ Sunbeam, 499 c.c.), time 57⅘s.= 62.94 m.p.h.; (2) J. Emerson (3 A.B.C., 398 c.c.) (3) S. L. Bailey (2¾ Douglas, 350 c.c.).

CLASS 6.—SIDECAR MACHINES NOT EXCEEDING 350 C.C.—(1) S. L. Bailey (2¾ Douglas, 350 c.c.), time 1m. 16⅘s.=46.9 m.p.h.; (2) F. P. Davies (2¾ Douglas 350 c.c.) (3) C. S. Boston (2¾ A.J.S., 349 c.c.).

CLASS 7.—SIDECAR MACHINES NOT EXCEEDING 500 C.C.—(1) S. L. Bailey (2¾ Douglas, 350 c.c.), time 1m. 15⅘s.=47.6 m.p.h.; (2) E. Kickham (3½ Sunbeam 500 c.c.) (3) F. P. Davies (2¾ Douglas, 350 c.c.).

CLASS 8.—SIDECAR MACHINES OF UNLIMITED CAPACITY.—(1) B. Houlding (7-9 Harley-Davidson, 989 c.c.), time 1m. 10⅘s.=51.3 m.p.h.; (2) V. H. Smith (4 Norton, 633 c.c.); (3) S. A. Marks (7-9 Harley Davidson, 989 c.c.).

CLASS 9.—CYCLECARS OR LIGHT CARS.—(1) T. Gilmore Ellis (10 G.N. Vitesse, 1,087 c.c.), time 1m. 25⅘s.=42.3 m.p.h. (2) H. F. S. Morgan (10 Morgan 980 c.c.).

CLASS 10.—WESTERN COUNTIES' SPEED CHAMPIONSHIP.—(No team entered).

CLASS 11.—SOLO MACHINES NOT EXCEEDING 350 C.C. (Club Class).—(1) S. L. Bailey (2¾ Douglas, 350 c.c.), time 1m. 5⅘s.=54.7 m.p.h.; (2) F. S. Ball (2¾ Douglas, 350 c.c.); (3) F. P. Davies (2¾ Douglas, 350 c.c.).

CLASS 12.—SOLO MACHINES NOT EXCEEDING 600 C.C.—(1) S. L. Bailey (2¾ Douglas, 350 c.c.), time 1m. 2⅘s. =57.3 m.p.h.; (2) C. Sgonina (3½ Norton, 490 c.c.); (3) G. H. Tucker (3½ Rudge-Multi, 499 c.c.).

CLASS 13.—PASSENGER MACHINE CHAMPIONSHIP.—(1) P. Whale (7-9 Harley-Davidson, 989 c.c.), time 1m. 14⅘s.=48.3 m.p.h.; (2) W. C. Parkes (2¾ Douglas 350 c.c.); (3) W. F. Baxter (4 Douglas, 600 c.c.).

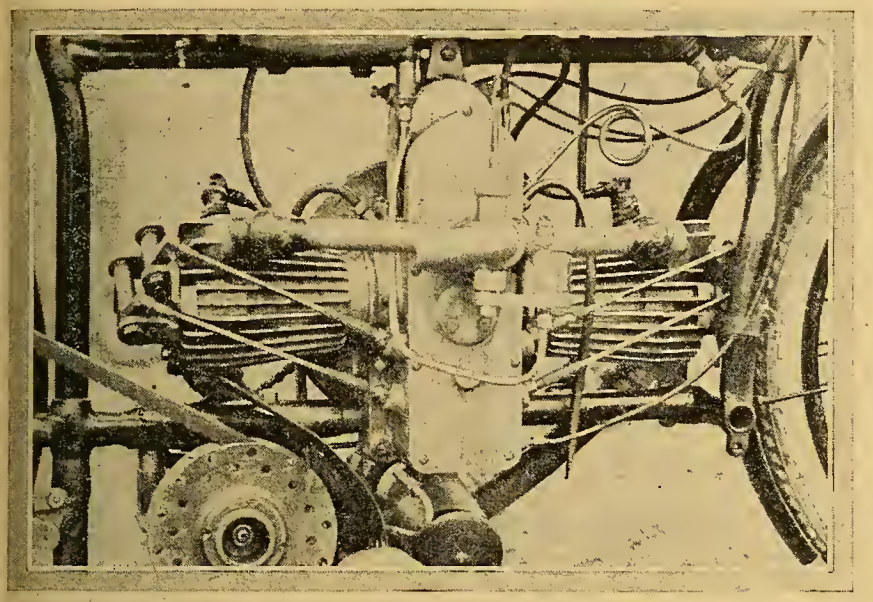
CLASS 14.—SOLO MACHINE NOT EXCEEDING 350 C.C. (CLUB NOVICES).—(1) T. Thompson (2¾ Douglas, 350 c.c.), time 1m. 17⅘s.=46.3 m.p.h.; (2) Capt. M. D. Marcs (2¾ Douglas, 350 c.c.); (3) R. Passey (2¾ Douglas 350 c.c.)

CLASS 15.—SOLO MACHINES NOT EXCEEDING 500 C.C. (CLUB NOVICES).—(1) C. Sgonina (3½ Norton, 490 c.c.), time 1m. 9⅘s.=51.8 m.p.h.; (2) H. W. Walker (3½ Norton, 490 c.c.); (3) Major C. F. Budd (3½ Rover 500 c.c.).

CLASS 16.—SIDECAR MACHINES NOT EXCEEDING 750 C.C. (CLUB NOVICES).—(1) W. F. Baxter (4 Douglas, 600 c.c.), time 1m. 37⅘s.=36.9 m.p.h.; (2) W. C. Parkes (2¾ Douglas, 350 c.c.).

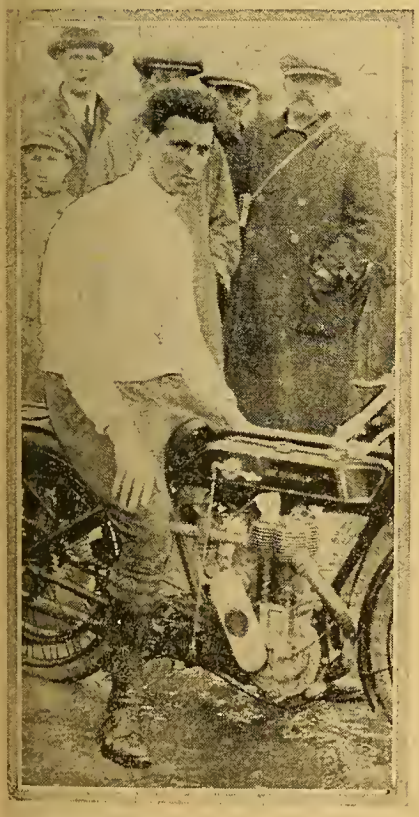
CLASS 17.—SIDECAR MACHINES NOT EXCEEDING 1,100 C.C. (CLUB NOVICES).—P. Whale (7-9 Harley-Davidson, 989 c.c.), time 1m. 54s.=31.6 m.p.h. (walk-over).

Competitors in the final race of Class 3, won by S. L. Bailey (2¾ Douglas)



The racing Douglas engine of F. G. Ball's machine; the special overhead valve gear being immediately noticeable

As will be seen from the above results, the fastest time was made by G. Dance, who rode so well at Stile Cop, on a 3½ Sunbeam in Class 5 at 57⅛s., while S. L. Bailey was the winner in five events on his overhead valve Douglas. The winners in Classes 1, 2, and 17 each had a walk-over, being the only riders to finish over the line. Much interest was aroused in the possibilities of the 3 h.p. A.B.C., and in the splendid acceleration capabilities of this machine ridden by J. Emerson during the preliminary canters prior to the races. Unfortunately, a defective magneto spoilt all chances of Emerson in the event, and practically all the running was done on one cylinder. This machine attained over 70 m.p.h. over the flying mile at Brooklands on the previous Thursday, and 58 m.p.h. at a standing start. A new racing Douglas, with F. G. Ball as the rider, had an engine with aluminium cylinders and four valves in each head—two inlet and two exhaust—each pair being operated by a single overhead rocker and oblique tappet rod from the timing case. This machine had evidently not been tuned to its fullest pitch, according to the results gained in the events. A T.T. Norton, ridden by a private competitor, was fitted with a steel cylinder and overhead valves operated by vertical push rods from the ordinary timing gear. The valve seatings were in one with the head of the cylinder, but the valve pockets are separate and held to the cylinder by an arm and two studs, the whole job being of very neat design.



G. Dance and his 3½ h.p. racing Sunbeam, on which he made a very fine performance, his speed working out at 62·94 m.p.h.

Car v. Motor Cycle.

An interesting feature scheduled in the official programme was the race between an Avro aeroplane, Straker-Squire car, and Douglas motor cycle. They had to make a standing start together from the starting line, the aeroplane having to get off the ground within 500 yards, and finish over the line at a height to clear the spectators' heads, timekeepers' tent, etc., with safety.

To the disappointment of everyone, the two Avros did not reach Weston, and the event was run off eventually between the Straker-Squire and the Douglas alone, the former being the winner of the prize—a silver cup presented by the Hutchinson Tyre Co.

Altogether, four gold, fifteen silver, and nine bronze medals were offered by the B.M.C.C. as prizes, in addition to a ten guinea cup for the best all-round performance on points. The B.M.C.C. and the organisers thereof are to be congratulated on running off a programme in a most satisfactory manner despite the bad weather conditions prevailing.

SPEED TRIAL AND HILL-CLIMB AT ILKLEY.

ON August 24th, the Ilkley M.C. and L.C.C. held their handicap speed trial and hill-climb for the Trade Cup and Dawson Trophy respectively. It was unanimously decided to utilise the system of handicapping in which every member of the club estimates the speed of the competing machines, full particulars as to weights and date of manufacture being supplied by each entrant. An average is taken from these estimates, and the number of the seconds start is arrived at.

The speed trial for the Trade Cup was run off in the morning in the neighbourhood of Blubberhouses, and provided some very exciting racing, every heat having a neck-to-neck finish. Stansfield's Douglas showed a fine turn of speed, just managing to win from Guy's Scott. The results are :

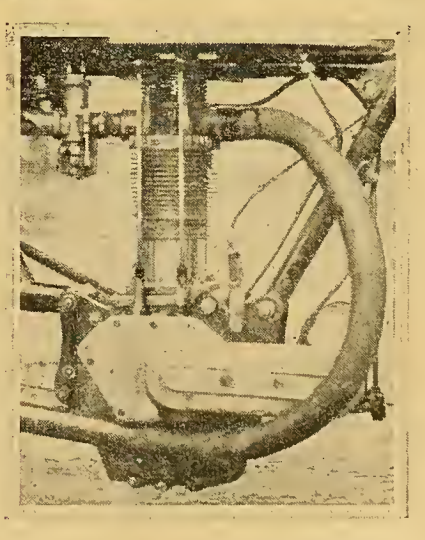
1. J. Stansfield (2¾ Douglas), 4s. start, Trade Cup and gold medal.
2. W. L. Guy (3¾ Scott), 1s. start, silver medal.
3. J. S. Duxbury (4 Triumph), scratch, bronze medal.

After lunch at the George Hotel, Harrogate, the competitors returned for the hill-climb for the Dawson Trophy.

The finishes were even closer than in the speed trial, there being one dead-heat and several wins by less than half a length. The results are :

1. J. S. Duxbury (4 Triumph), scratch, Dawson Cup and gold medal.
2. H. W. Sellers (3¾ Scott), 2s. start, silver medal.
3. F. Marshall (3½ Sunbeam), scratch, bronze medal.

There were only three passenger machines entered, and of these only the Morgan started.



The overhead valve Norton engine fitted to a private owner's machine at Weston.

Wolverhampton M.C.C. Half-day Trial.

100 Mile Inter-club Reliability Run in the Clee Hills and Kidderminster District.

THE Wolverhampton M.C.C. held a comparatively short trial on Saturday afternoon. This was open to members of the following clubs only: Wolverhampton, Birmingham, Coventry and Warwickshire, Sutton Coldfield, and Hereford, but the support which might have been expected was not forthcoming, and of the thirty-odd entrants only twenty-six faced the starter.

Competitors were timed away from West Park, the first man leaving at 1 p.m.

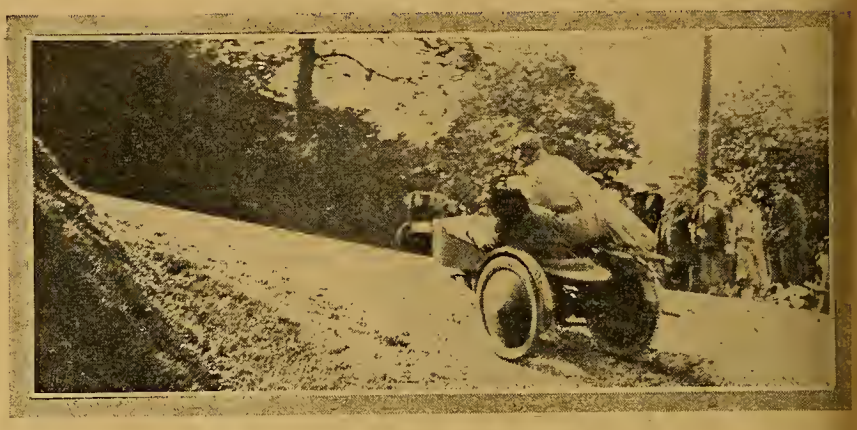
Following the main road through Bridgnorth as far as Burwarton, things appeared to be going very easily, but shortly after this a right turn into a lane took the men into Farlow, and another turn to the right in the village opened on to Farlow Bank. This hill, which is of some little fame, did not cause any particular trouble, and even the lightweights made good climbs. Only two men were penalised to the extent of ten marks, which failure to climb an observed hill entailed, these being T. Davies (2¼ Velocette), who bore the unfortunate number thirteen, and P. Kear, whose resplendent Triumph and aluminium Canoelet sporting sidecar stopped for some reason while going well.

A Combined Test.

A time check was made at the top of Farlow, and thereafter a circuitous course of about twenty miles was followed on the western slopes of Brown Clee Hill.

Near Cleobury Mortimer a combined acceleration and brake test was held. Competitors were stopped, and at the word "go" had to accelerate to a tape one hundred yards away, on crossing which they were to pull up as rapidly as possible. This is a very sound method of introducing a brake test.

The results being decided by formula, it is difficult to name the outstanding performances. Boynton (5-6 James sc.), H. Minton (4¼ Norton), and Brown, on the familiar yellow-disced Sunbeam, were excellent in acceleration and smart on the brakes.



B. Brown (3½ Sunbeam sidecar) taking Farlow Bank at speed.

A little easier going followed until the *pièce de resistance* of the afternoon was reached. This was Flagstaff Hill, near Great Witley, and the steepest part, about 1 in 6 or 7, is faced immediately after a right-angle bend at the foot.

The surface was very loose, and as no control was in operation at the foot, the competitors came up in batches, and some baulking resulted.

Only two sidecar drivers made clean ascents, these being F. W. Giles and E Williams, both on A.J.S. machines. The solo men had less difficulty, being untroubled by the severe wheel slip which stopped the passenger machines. Brown (3½ Sunbeam sc.) made a great attempt to keep going, and would have succeeded but for being badly baulked by Poole (6 A.J.S. sc.), whose wheel refused to grip.

A stopping and restarting test was held at the top of the hill, and most of those who reached it did well. Boynton (5-6 James sc.) was excellent, and Mrs. J. L. Wood (6 A.J.S. sc.), also handled her machine with confidence.

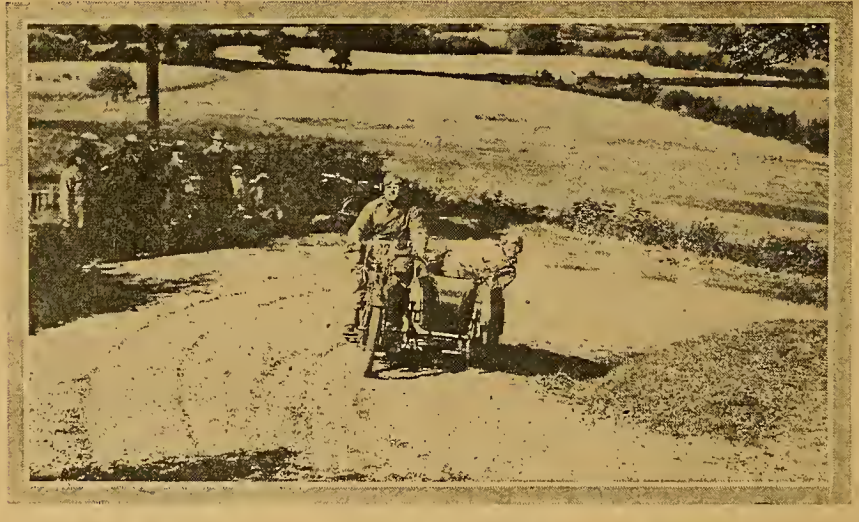
A. H. Mee (2¾ Diamond-Jap) gave up the struggle, his engine emitting terrible

A cinder spreading arrangement fitted on Eric Williams's A.J.S. to prevent wheel slip.

konks through lack of oil; while Edwards (3¼ Lea-Francis), misunderstanding the situation, stopped his engine, and having no kick-starter, was pushed off.

A stop of one and a half hours for tea was arranged at the Hundred House Hotel Great Witley, and there were several non-arrivals.

The homeward run was chiefly over main roads, Gatacre Hill, at Bridgnorth, being scarcely worthy of inclusion. Nineteen competitors checked in at the finish, but the number on time at the tea stop was very small. Owing to Mr. J. E. Greenwood, the trials secretary, not having recovered from his accident at Stile Cop, the results were not determined at once.



On Farlow Bank. H. Boynton (5-6 James sidecar), whose consistent performances and passenger's happy smile are well known in Midland trials.

Club News

Woolwich M.C.

The official results of the recent inter-club team trial are as follow: Cup winners, Streatham and District M.C.; special medal, A. Ilsley (8 Matchless sc.).

Langley Park and District M.C.C.

The hon. scc. of this newly-formed club desires to get into communication with local motor cyclists who are interested in club life. His name is Mr. J. T. Vickers, 15, Frederick Street, Meadowfield, Durham.

Luton and South Beds A.C.

Mr. J. Simpson, the hon. secretary of the above club, is prepared to accept late entries for the club's speed trials, on Saturday next, up to to-morrow, the 5th. His address is 440, Hitchin Road, Luton. The speed trials will be held on the 13th.

Warrington M.C.

The above-mentioned club recently held a non-stop trial over a 60-mile course. The prize winners were as follow:

	Total error.
1. S. W. Philpott (6 Brough sc.) ..	4s.
2. H. Aldred (3½ Norton)	18s.
3. W. N. Pearn (2¾ A.J.S.)	26s.

Bristol Speed Trials.

The winner of the silver cup given by the club for the best performance of the day in the open classes, based upon number of wins, allowing three points for the first, two for the second, and one for the third, is as under, with runners up shown:

	Points.
S. L. Bailey (2¾ Douglas), 3 firsts, 1 third..	10
G. Dance (3½ Sunbeam), 2 firsts	6
B. Hadding (Harley-Davidson), 1 first	3
W. A. Jacobs (1½ Singer), 1 first	3
G. F. Tozer (2½ O.K.), 1 first	3
T. Gilmore Ellis (10 G.N.), 1 first	3
F. P. Davies (2¾ Douglas), 1 second, 1 third..	3
F. G. Ball (2¾ Douglas), 1 second, 1 third ..	3

Oxford M.C.

The Oxford Motor Club recently held its first trial between Deddington and Aynho, the test being that of speed-judging. There were nine starters, and the best performance was that of Dr. H. C. Woodward, who was only 1s. fast over his course of eight miles. Mrs. Wootton was second with 16⅕s. fast, and Councillor E. B. Lewis third with 39s. fast. All the other competitors were slow.

Since the recent first general meeting, some thirty new members have been enrolled. The club, which hopes to be housed in Broad Street, proposes to run meetings every fortnight for the present. The officials are: honorary general secretary, Mr. H. Morton Bailey; honorary assistant general secretary, Mr. W. A. Mathews.

Future Events.

Sept. 4.—Carmarthen M.C. and C.C. Speed Trials at Pendine Sands.
Sept. 6.—Junior Car Club. General Efficiency Trial.
SEPT. 6.—M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.
SEPT. 6.—YORK AND DISTRICT M.C. OPEN HILL-CLIMB AT SUTTON BANK.
Sept. 7.—Widnes M.C.C. Run to Llangollen.
Sept. 13.—N.M.C.F.U. (Wolverhampton). Run to Rudyard Lake.
Sept. 13.—Lincolnshire A.C. Hill-climb.
Sept. 13.—Luton and S. Beds. A.C. Open Speed Trials at Luton Hoo.
Sept. 14.—Manchester M.C. Speed Trials.
SEPT. 15-20.—A.C.U. SIX DAYS RELIABILITY TRIALS.
Sept. 19.—Essex M.C. Gymkhana.
Sept. 20.—Blackburn and District M.C.C. Hill-climb on Waddington Fells.
Sept. 27.—Coventry and Warwickshire M.C. Hill-climb.
SEPT. 27.—WOLVERHAMPTON M.C.C. OPEN HILL-CLIMB.
Sept. 27.—Exeter M.C. and J.C.C. Trial.
Sept. 28.—The Scott Sporting Trial.
Sept. 28.—N.M.C.F.U. (Wolverhampton). Run to Crackley Bank, Wellington.
Sept. 28.—Manchester M.C. Closing Run.
Oct. 4.—Essex M.C. Hill-climb.

Widnes M.C.C.

This club is reported as being very satisfactorily supported since its inauguration this year. So far only social runs have been arranged.

Exeter M.C. and J.C.C.

This club recently held a six-hour reliability trial, which proved a most enjoyable and successful event. Out of thirty entries twenty-eight put in an appearance; twenty-six started, and, with but six exceptions, completed the course. The ontward route was *via* Okehampton and Tavistock to Two Bridges, near Princetown (forty-eight miles). This was the only engine stop allowed. The homeward trip was *via* Moretonhampstead, Bovey Tracey, Newton Abbot, Kingsteignton, over Little Haldon, and down Telegraph Hill to Exeter. The course, although not strenuous, was tricky, and included some fine moorland. The roads were in fair condition, except between Two Bridges and Moreton, along which several loose patches were encountered. The most interesting feature of the event was perhaps the variety of two-stroke lightweights in the list, the majority of which successfully completed the course. They included 2¼ h.p. and 2½ h.p. Levises, the former ridden by Mr. Phil Pike. A smart 2½ h.p. two-stroke Chater-Lea, ridden by Mr. T. J. Mooney, the club's secretary, was much admired, and a 2½ h.p. Metro-Tyler, with sidecar and passenger, driven by J. Wood, also completed the course to time without stopping the engine, except for the official stop allowed at Two Bridges. The total course was eighty-four miles, and the officials and committee are to be congratulated on the success of the event.

N.M.C.F.U. (Coventry).

A club rally will be held at Easenhall, near Brinklow, on September 7th. Meet Pool Meadow, 1.30 p.m. Luncheon baskets. Will all members intending to participate in the week-end run to Weston-super-Mare on the 20th and 21st inst. send their names and number in party as early as possible to the hon. sec., Mr. T. Mallalieu, 89, London Road, Coventry, to enable him to secure accommodation.

North Derbyshire M.C.C.

The results of the recent hill-climb at Stone Edge, near Chesterfield, are as follow:

CLASS A.—600 c.c. SOLO, ON TIME.

	Time.	Formula.
1. A. Clay (3½ Triumph) ..	42⅖s.	
2. J. Boult (3½ Norton)	45s.	

CLASS B.—350 c.c. SOLO, ON FORMULA.

1. E. Short (2¾ Douglas) ..	59⅘s. ..	271
2. E. Berresford (2½ J.A.P.) ..	68⅘s. ..	238

CLASS E.—SOLO, UNLIMITED, ON FORMULA, FLYING START.

1. J. Boult (3½ Norton)	36s. ..	561
2. A. Clay (3½ Triumph) ..	35⅘s. ..	526

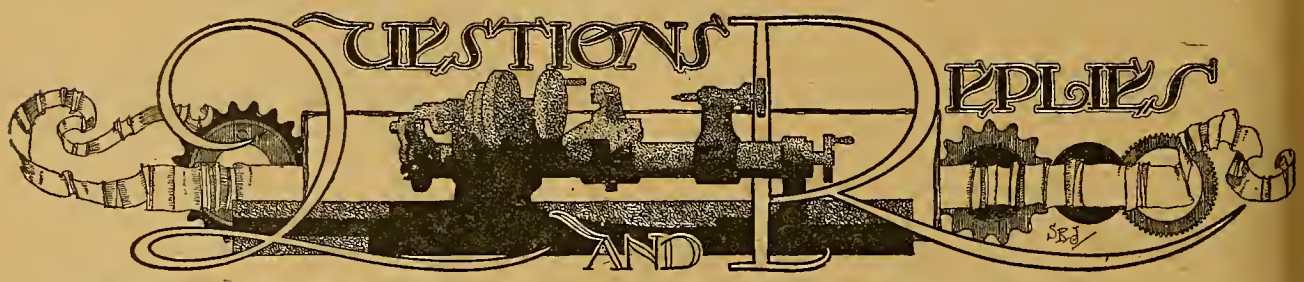
Fastest private owner and winner of Orr Cup. J. Ive (4 Triumph) .. .. 40s.

CLASS F.—UNLIMITED, PASSENGER, ON FORMULA.

1. B. R. Wilkinson (3½ Norton sc.)	67⅘s. ..	297
2. A. Stacey (6 Campion sc.) ..	60⅘s. ..	277

Public Schools M.C.C.

On Saturday afternoon, the members of the Public Schools M.C.C. indulged in a hill-hunting jaunt, during the course of which several stiff climbs were attempted. Leaving the rendezvous at Purley Corner, a pleasant run of eight miles brought the party to the first test, Succombe Hill. R. C. Charlesworth, leading, accomplished the climb with ease, the loose surface of the track, however, causing wheel spin. Davey (3½ Norton), climbing at speed, when within a few yards of the crest, had extraordinary bad luck with excessive belt slip, which eventually brought his machine to a standstill. D. W. Bonham Carter (2¾ Coulson B.) successfully ascended on the second attempt, his previous failure being due to a broken belt. R. Dallas Brown (3½ Rover) also climbed well on his second attempt. H. H. B. Beacon (3½ Zenith) fell a victim to the awkward hairpin bend followed by a severe gradient, which was next encountered; the remaining members, however, were more successful. The "star" hill (Salt Box) was then descended, its loose surface severely testing the braking power of the machines. Ascending this famous hill is an entirely different proposition. Nevertheless, the majority of the riders did well. Descending the hill once more, a pleasant run followed, concluding at Oxted.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle, 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of the envelope, and should be kept distinct from questions bearing on technical subjects.

Artificial Limbs and Motoring.

Is there any clause in the Motor Act to prevent one who has lost both legs above the knee from *(a)* purchasing, *(b)* registering, and *(c)* driving a motor cycle and sidecar? The machine I propose using is all hand-controlled, apart from the rear brake, which I intend having brought up to the near side of the tank and operated by lever.—F.J.G.

There are no qualifications whatever required of applicants for a motor driving licence, therefore you will be able to obtain one. We think, however, that you may find driving a motor cycle for any great distance almost impossible, as in all probability you would suffer very much from vibration.

Damage by Repairers.

I have a 1911 twin Rex with sidecar. I have recently had this down to clean the cylinders, etc., and the machine had been running well after this. One day the machine started running badly, and finally stopped. On trying to restart I could not turn the engine, as it had seized up. I put in some paraffin to free the pistons, but this only allowed them to move a little, so I pushed to the nearest garage. When I returned the machine was outside, and a young lad of about sixteen was shortening the belt. I asked him if it was ready, and he said if I called back in about half an hour it would be, and that he could only get it to fire on one cylinder, and that it had seized up in the back one. As I could not get home that evening I called the next day. The man in charge then showed me the machine with the piston smashed and the cylinder broken. (1.) Do you think I shall be able to compel them to make this good? I know they had freed the piston as I had turned the pulley by hand. (2.) If they refuse, can I sue them in the county court for the damage?—S.G.Y.

In all probability the cause of the engine stoppage was not due to seizure, but to one of the gudgeon pin set screws dropping out and jamming between the connecting rod and flywheels. In the efforts to turn the engine this would no doubt loosen, and after starting up it most likely got beneath the piston, resulting in the breaking of the latter and also the cylinder. If this was the case, we do not think you can place the whole responsibility upon the repairers.

Crank Case Release

I should be extremely obliged if you could advise me on the following points. (1.) My bicycle is a 1919 3½ h.p. Rudge-Multi. When running, a powerful blast of air issues from the cap over the clutch gear. Sometimes this produces a decided whistle, especially when running fast. Should this be so in addition to the crank case air release? (2.) The carburetter (Senspray) chokes the engine when the throttle is opened more than half-way, although it seems to run satisfactorily if the air lever is closed. I have the smallest jet possible for easy starting, viz., thirty-eight jet. Yet the engine runs perfectly, provided the air lever is fully open and throttle less than half-way open.—T.W.B.

(1.) The blast of air which you notice issuing from the clutch is not abnormal, as a certain amount of crank case pressure is released through the hollow shaft in order to permit lubrication of the clutch parts. (2.) The carburetter trouble is rather obscure. We would suggest, however, that you try a larger jet, after fitting which you may find it necessary to lower the petrol level.

Twin Magneto on Single.

I have a Bosch magneto which came off a twin motor cycle. I have a 4¼ h.p. single engine to which I want to fit magneto if possible. (1.) If I use only one carbon brush and remove the other, would this harm the magneto? (2.) Shall I have to remove one of the cams in contact breaker cover? (3.) Will the magneto be powerful enough for a big single? It will throw a spark about ¼in. with turning it by hand and holding the high-tension wire about ¼in. away from magnets. (4.) What alteration is necessary to make a good job?—G.L.P.

(1 and 2.) In using a twin-cylinder magneto on a single-cylinder engine, if you desire to remove one carbon brush completely you must also remove the corresponding cam. (3.) The magneto should be quite satisfactory on the engine you mention.

A scene in a recent open reliability trial held by the Redditch M.C.C. Interested spectators at the hairpin bend on Nap Hill, near Stroud

Contingent Liability.

Will you kindly give me your opinion of the following: I was eighty miles from home recently, and just starting back when I met with a slight accident and had to put the motor cycle into a garage for repairs. I am fully insured against all accidents, but my wife and I had to come home by train. Can I claim my railway expenses from the insurance company, as it is paying for all the damage to the motor cycle?—F.W.W.

The insurance company would not be liable to pay the railway fare of either the insured or his wife as a result of their having to travel home by rail on account of their machine being damaged. No company provides for this contingency in its policies, as presumably it would be open to considerable abuse.

An Old Type Engine.

I have just purchased a Chater-Lea 2½ h.p. J.A.P. engine, B. and B. carburetter, and Bosch magneto. As far as I can gather, the whole thing is dated 1910, or nearly ten years old. The difficulty I am in is to know when to lubricate and the quantity of oil to give. When the tap is turned one way the glass cylinder nearly fills with oil; if turned at a right angle to this position, the oil runs, I presume, to the cylinder. (1.) Is this the way to lubricate? In one position of the tap, when the engine is working, the pump also works, but no oil appears to leave the tank. (2.) Should the tap be turned the other way when running? The man who overhauled the engine calls it a two-stroke, but Messrs. J. A. Prestwich tell me it is a four-stroke. (3.) As the latter is obviously correct, should the magneto be timed to spark at the beginning of the compression stroke and not 10 mm. to 12 mm. in advance? (4.) At the commencement of the compression stroke both valves should be closed. As I can only see the exhaust valve, how can I tell if the inlet valve is closed? (5.) Screwed on the top of the induction pipe is what appears to be a small valve. What is its function?—J.P.J.

(1. and 2.) The oil pump on your machine is evidently one of the old type fitted with a two-way tap. We cannot tell you the exact positions of this tap, as the practice of different makers varies. However, you will find that in one position, on drawing up the pump plunger, oil will enter the barrel. On turning the tap into the second position and depressing the plunger, the oil will be forced through to the crank case. Normally, the tap should be left in this latter position. One pumpful of oil should be given every eight or ten miles, oftener at high speeds. (3.) The engine you describe is apparently the 2½ h.p. four-stroke automatic inlet valve model, and the spark timing will be about correct with the piston 8 mm. from the top of the compression stroke, and the spark fully advanced. (4.) Being an automatic inlet valve engine, you are unable to see the inlet valve because it is contained in the dome above the exhaust valve. However, as the inlet valve works automatically, *i.e.*, without any mechanical operation from the timing gear, you have no need to worry about its timing, as it is always closed except actually during the suction stroke of the engine. (5.) The small valve which you describe as being screwed on the top of the induction pipe is probably to facilitate petrol injection for starting purposes.

Fitting Hub Cups.

Would you kindly favour me with your advice on the following: (1.) I have a 1914 3½ h.p. B.S.A., and am getting a lot of trouble with the back wheel, as the hub cups are badly worn. Would you recommend fitting new hub cups or a new hub? (2.) How are the hub cups fixed in the hub? (3.) Would you give me a few hints on building a new hub into the wheel.—R.H.L.

(1.) It will scarcely be necessary for you to fit a new hub in your B.S.A. back wheel, as the cups are detachable. (2.) The hub cups are pressed into the hub shell, and must be driven out by means of a suitable punch. It is very difficult to remove these, and unless you can place the wheel in the hands of a competent local repairer we would advise you to return it to the makers. (3.) Fitting a new hub would necessitate the entire rebuilding of the wheel, and we do not think you could satisfactorily undertake this yourself.

Enamelling, Gear Changing, etc.

(1.) I have an Indian bicycle and cane torpedo sidecar, which I want to paint red to match. What is the best way of doing this? Would it be better to use red enamel or red paint? Any special dressing first? (2.) Which dressing is better for the paper washer for the crank case joint, gold size or linseed oil? (3.) When using the 1914 Indian two-speed dog clutch gear, is it correct that one can change gear by slamming the lever over without declutching or valve lifting? (4.) What could cause an unsteady acetylene head light? Could lighting the rear light from the same generator cause or affect this?—F.C.F.

(1.) The best thing to use for re-enamelling your Indian and sidecar we think will be Robbialac. Write to Jenson and Nicholson, Robbialac Works, Stratford, London, E.15, for particulars of the various materials they supply for this purpose. (2.) Either gold size or boiled linseed oil is satisfactory as a crank case jointing material. (3.) Your method of gear changing is certainly incorrect. It is absolutely necessary with the Indian two-speed gear that you should declutch when changing, or you may use the valve lifter; but with the Indian type of control it is not exactly a convenient arrangement. (4.) Probably the cause of your unsteady head light is due to the generator not being perfectly clean. We do not think that running the rear light from the same generator would be the cause of the trouble. If necessary, renew the filtering pad immediately beneath the water chamber of the generator, and also examine the connecting tubes to the lamps, as it is quite possible that the flickering is caused by condensed moisture in these.

Carburation.

My 2½ h.p. two-stroke machine normally ran exceedingly well with full air, having a 26 jet (Amac carburetter). After being laid up for four years I recommenced using it again, and as it seemed more powerful I fitted a 25 jet to effect an economy. Recently, after doing a journey, it suddenly refused to take full air, but would run well with the air lever partly open. The carburetter showed signs of flooding, so I cleaned the float chamber and jet, but it still refuses to take full air. Can you explain this?—E.R.W.

The fact that your machine runs perfectly, although you have to keep the air lever closed somewhat, would suggest that there is either some form of stoppage in the petrol supply, or else more air is being admitted in some other way than through the carburetter. Examine carefully the carburetter connections for air leaks; also notice if the drain tap in the crank chamber is open. Although you have cleaned the carburetter, you do not say whether you have cleaned the five spraying jets, which you will find in the carburetter body immediately above the main jet.

READER'S REPLY.

An Early Scott.

Regarding "S.A.R.'s" trouble with the Scott referred to in your issue of the 21st ult., I think he has got the cranks in the wrong crank cases. The one with the left-hand screw should go in the right crank case and the one with the right-hand screw in the left.—EF 343.

RECOMMENDED ROUTES.

DERBY TO CLECKHEATON.—J.H.V.

Derby, Chesterfield, Sheffield, Barnsley, Wakefield, Batley, Birstall, Cleckheaton. Approximately seventy-five miles.

WOLVERHAMPTON TO HERTFORD.—H.G.C.

Wolverhampton, Stourbridge, Bromsgrove, Headless Cross, Alcester, Stratford-on-Avon, Banbury, Buckingham, Winslow, Leighton Buzzard, Dunstable, St. Albans, Hatfield, Hertford.

LONDON TO NEATH.—V.E.J.

London, Ealing, Uxbridge, Beaconsfield, High Wycombe, West Wycombe, Stokenchurch, Oxford, Witney, Northleach, Cheltenham, Gloucester, Newnham, Lydney, Chepstow, Cardiff, Cowbridge, Bridgend, Neath.

NEATH TO BOURNEMOUTH.—V.E.J.

Neath, Bridgend, Cowbridge, Cardiff, Chepstow, Lydney, Newnham, Gloucester, Cirencester, Cricklade, Wootton Bassett, Broad Hinton, Avebury, Upavon, Amesbury, Salisbury, Fordingbridge, Ringwood, Christchurch, Bournemouth.

READING TO LIFTON.—J.W.

Reading, Midgham, Newbury, Hungerford, Marlborough, Beckhampton, Devizes, Seend, Trowbridge, Southwick, Beckington, Frome, Shepton Mallet, Glastonbury, Walton, Greenton, Othery, Durston, Taunton, Wellington, Cullompton, Exeter, Okehampton, Bridestowe, Lifton.

Windscreens while you Wait.

Easting Windscreens, Ltd., will have a representative at Mr. Tom Norton's garage, Llandrindod Wells, during the A.C.U. trials to assist in the expeditious fitting of the Easting windscreen.

An Olympia Show Appointment.

We learn that Mr. C. D. Clayton, the advertisement contractor, has again been appointed as the publicity steward in connection with the forthcoming Olympia Cycle and Motor Cycle Show.

Triumph Specialist.

Mr. H. Stretton Ward, the competition rider, has opened a garage in Leamington under the name of Forfield Motors, where he is specialising in Triumph repairs and spare parts. He was several years with the Triumph Co., and is thoroughly conversant with this well-known machine.

The Rudge Record.

The latest number of the Rudge-Whitworth house journal is to hand, and is a very bright little issue. Therein attention is given to all the organised activities in which Rudge employees may join in their leisure moments. The latest of these is a photographic society, which already has a membership exceeding thirty.

Tan-Sad Extensions.

Owing to the large demand for Tan-Sad pillion seats, the Tan-Sad works have now been moved into larger premises at 9, Freeman Street, Birmingham. The makers wish to emphasise the fact that pillion riding is not nearly so dangerous as it is said to be if the passenger is comfortably mounted on a properly constructed seat, as there is no longer the likelihood of moving the position unexpectedly owing to the discomfort of excessive vibration.

Lightweight in Long-distance Trial.

It is sometimes urged that tiny two-strokes are not capable of maintaining high average speeds when touring.

The performance of Major A. Waters on a Baby Triumph in the recent Irish End-to-end trial is a contradiction of this idea.

Including mileage to and from starting point, his distance was 689¾ miles, covered in running time of 29h. 12m., equalling 23 m.p.h. No troubles were experienced, and the tool-bags remained locked throughout. Petrol consumption was 87 m.p.g.

The Scott Sociable Booklet.

We are in receipt of the Scott Sociable booklet, published by the Scott Autocar Co., Ltd., Clayton Road, Lidget Green, Bradford. In it is to be found a description and technical details of the Scott two-stroke three-wheeled sociable. The first particulars given are quite useful to the reader, as they mention that the vehicle will run on a minimum ground track of 44in., pass through a gateway 55in. wide, will turn in a roadway 13ft. wide, and will pass under headway 52in. high. It seems a pity that the booklet does not include any illustrations. In sending this publication, the Scott Autocar Co. state that they will not be able to give delivery for some considerable time.

A New Lubricating Oil.

Messrs. Blackwell, Victoria Oil Works, Aston, Birmingham, are putting a new lubricating oil on the market. The makers actually claim that this oil will cause no carbon deposit on cylinders or valves. It is made for all classes of engine.

K.L.G. Plugs.

We are informed by Messrs. S. Smith and Sons, Ltd., 175-189, Great Portland Street, London, W.1, that K.L.G. plugs were fitted on the Sunbeam-Coatalen engines of the British airship R34 in her flight across the Atlantic, and that the plugs gave every satisfaction.

The New London Headquarters o Clincher Tyres.

The North British Rubber Co., Ltd., are shortly to move into the extensive premises in Tottenham Court Road, lately occupied by the British Lighting and Ignition Co., who have now moved to Aston, Birmingham. The existing building will be very much extended, and repairs to tyres will be undertaken on the premises.

Booking New Machines.

Maude's Motor Mart, Great Portland Street, London, W.1, are accepting orders for new machines, to be delivered in strict rotation, the number on the waiting list being stated on the receipt for the deposit, which will be returned and the order cancelled at any time should the prospective purchaser desire it. The place cannot be passed on to another, for every machine is booked in the name of the rider who orders it.

Ball Bearings.

Messrs. Rudge-Whitworth, Ltd., Bearing Works, Reddings Lane, Sparkhill, Birmingham, inform us that they are able to supply from stock nearly every standard size of ball bearing and steel balls. These bearings are the product of the plant which the firm established at the urgent request of the Ministry of Munitions. When ordering, the outside and inside diameters and width in inches or millimetres should be given.

The Supply of Piston Rings.

The ordinary garage cannot profitably undertake the tiresome job of making a few odd-sized piston rings in competition with a firm specialising in such machining operations, therefore many repair shop proprietors will be glad to hear that the British Piston Ring Co., Ltd., Holbrook Lane, Coventry, now maintain a stock of rings for immediate delivery in all sizes between 60 to 110 millimetres diameter, graded in ½ mm. steps. The trade mark of this company has been changed from "British-Coventry" to "Brico," and all rings manufactured in future will bear the latter. Special size rings can be made to order in three to six days.

Chater-Lea Spares in Sussex.

Riders of the Chater-Lea No. 7 sidecar machines will be interested to learn that the Endrick Engineering Co., of Crawley, Sussex, are carrying a stock of spares for these machines, as complete as possible under existing circumstances.

Moto-Reve Spare Parts.

We have had several enquiries for Moto-Rêve spare parts recently, and those of our readers who are unable to obtain replacements for these machines will be glad to know that they can get them from the Motor Supply Co., automobile engineers, 223a, High Street, Lewisham, London, S.E.13.

The Rigby Gear.

We are informed that the Rigby gear, which was described in *The Motor Cycle* of May 22nd, 1919, page 512, is now being manufactured by Messrs. Newcombe Brothers, automobile engineers, 10, Zetland Road, Stockton-on-Tees, and is in future to be known as the Simplex.

Fastest Time on Old Tyres.

The majority of competition riders fit new covers before entering a speed event or any other strenuous form of trial, and it is therefore interesting to learn that Mr. Remington, who made fastest time of the day at the recent Southend Speed Trials, used Hutchinson tyres supplied from ordinary stock in 1914, when they were used in several Brooklands events, and have subsequently remained standing idle during the war period.

Sign, or—!

Messrs. Brown Brothers, Ltd., the well-known accessory dealers, inform us that Mr. Arnold, their Australasian representative, took a trade visitor from New Zealand for an aeroplane flight while in this country, and claims to be the first airman to secure an order actually in the air. Whilst at an altitude of between 3,000 and 4,000 feet over London, and travelling at over 100 miles an hour, the passenger signed a substantial order for motor accessories. We sincerely hope Mr. Arnold did not bring intimidation to bear upon his passenger.

Locknuts.

We have received a brochure which ably puts forward the utility of Vislok lock nuts, made by Vislok, Ltd., 3, St. Bride Street, London, E.C.4. Considering that the nuts on motor cycles are liable to vibration, it is often advisable to make use of a suitable lock nut. The Vislok device is most effective in practice, and the nuts are made in all sizes from ¼in. to 4in. in diameter.

British Magneto Developments.

We learn that the M-L Magneto Syndicate, Ltd., and Messrs. S. Smith and Sons (M.A.), Ltd., have entered into an arrangement whereby the latter acquire controlling interests in the former. The manufacture of these well-known British magnetos will still be carried on at Coventry, while the distribution, both to the trade and for export, will be handled solely by S. Smith and Sons. Mr. G. A. Lister, general manager, Mr. A. E. Watson, technical manager, and Dr. Morris, consulting engineer, who have been associated with the M-L since its inception, will continue as members of the Board.

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd Bath Rd., Exeter, and 28, Tavistock Rd., Ply mouth. Sole agents. Now booking for earliest de veries [000

LATE 1915 2¾h.p. A.J.S., 3-speed, accessories, ex cellent appearance and running condition, little sed; trial by appointment; £70.—E. Bygott, Wem, hropshire. [2956

1919 A.J.S. (July) Combination, complete spare wheel, etc.; £180, or best offer over; write for ppointment.—T.L., R.A. Mess, Warren Heath Camp, pswich. [X1230

1916 A.J.S. 6h.p. Combination, in perfect condition. little used, complete with luggage grid, hood, reen, speedometer, 3 lamps, horn.—11, Howard Rd., outhampton. [X1299

1916 4h.p. A.J.S. C.B. Combination, excellent con dition, new gear box, spare wheel and tyre; 120; seen by appointment.—P., Lilburn, Plough ane, Purley. [3551

A.J.S. 1915 5-6h.p. Combination, complete with speed ometer, lighting set, and spare wheel, A.J.S. out t; £125.—Elce and Co., 15-16, Bishopsgate Av., Camo ile St., E.C.3. [0552

A.J.S. 1916 4h.p. Combination, lamps, and horn, all in excellent condition; £120; seen at Swan arage, Golders Green, after 6.—Woodward, 77, The rive, Goldera Green, N.W.4. [3561

1919 A.J.S. Combination, spare wheel, wind screen, waterproof apron, Lucas lamps and horn, as ood as new; what offers over £185; West Riding.— ox 240, c/o *The Motor Cycle.* [X1114

A.J.S. 1914 Coachbuilt Combination, 6h.p., 2-speed countershaft, hand clutch, fully equipped, perfect ondition; any trial; £118, or nearest offer.—Tong, 6, rancis St., Bracebridge, Lincoln. [X0866

1919 A.J.S. Combination, 6h.p., delivered this month. 4 interchangeable wheels, screen, 3 Lucas lamps, orn, etc., as brand new, unscratched; £185.—Clapham, 19, King George St., Greenwich, S.E. [3742

A.J.S. 6h.p. Combination, 1916, interchangeable wheels, 3 speeds (new gears), kick starter, hand lutch, wind screen, horn, and lamps, mechanically ound; £135.—6, Oakfield St., Cardiff. [X1542

A.J.S., 6h.p., 1915, 3-speed, mechanical horn, 2 lamp sets, roomy coachbuilt sidecar, in ex ellent condition; £120, near offer.—Chidley, 50, Grove nd House, St. John's Wood Rd. [3280

A.J.S. 6h.p. Combination, left works July, 1916, 3 speed, interchangeable wheels, lamps, tyres per ect, Stewart's patent horn; private owner; best offer ver 110 gns.—Box 272, c/o *The Motor Cycle.* [X1344

A.J.S. 4h.p., 1916, 3-speed, K. start, re-enamelled and replated and thoroughly overhauled by makers, peedometer, good as new; £100, or nearest offer.— pply, E. Harding, Springhead, Shottermill. [X1362

1919 A.J.S. Combination, delivered June, spare wheels, wind screen, storm apron, Lucas elec ric head, side, and tail lamps, Lucas horn; best ffer over £185.—Box 275, c/o *The Motor Cycle.* [X1384

A.J.S. Combination, 1916, spare wheel, hood, side cur tains, screen, horn, speedometer, stored over 2 ears, in grand condition, new tyres on, ready for any our; best cash offer.—Pearce, 31a, Newarke St., Leicester. [X0865

A.J.S., 6h.p., late 1914, underslung wicker sidecar (cence shaped), 3 speeds, Lucas lamps, new spare over, tube, excellent condition; £98; exchange solo or Morgan.—Wilcox, 118, Hamstead Rd., Handsworth, Bir mingham. [X1481

1919 A.J.S. 5-6h.p. Combination, fitted with screen, spare wheel and tyre, big Lucas head lamp, Lucas idecar lamp, Lucas tail lamp, mechanical horn, un cratched, and as new; £185.—Pearcey, Grocer, West ham, Weymouth. [X0879

A.J.S., late 1918, 6h.p., B.S.A. sidecar, hood, screen, spare wheel, tyre unused, horn, 2 spare valves complete, F.R.S.—electric lighting, 3 lamps, mileage 2,500, perfect condition; 170 gns; after 6.30.—Revesby, Bramber Rd., N. Finchley. [3283

A.J.S. 1916 2¾h.p., 2-speed, kick-start, hand clutch, engine just overhauled and found perfect, enamel ood, good set tools, spare valve, tube, plug, lamps, orn Claxton, speedometer, and watch.—Apply, Brom ey 1052 (Tel.) after 6p.m., or Birches, Durham Rd., Bromley, Kent. [3262

Alldays

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [001?

ALLON.—Earliest possible delivery, 2-speed clutch models.—Inquire, Parker's Bradshawgate, Bolton. [X1442

1916 Alldays Allon, lamp set, Klaxon horn, etc., as new; bargain, £45.—64, York St., Twickenham. [3581

ALLDAYS Allon, 2-speed, 2¾h.p., red tank, all accessories; £53.—262, Blackhorse Lane, Waltham stow. [2841

ALLON 1919 2¾h.p., special model, accessories complete; 65 gns.—Fairhaven, Wavertree Rd., South Woodford. [3543

1917 2¾h.p. 2-speed Alldays Allon, all accessories, nearly new; £55; combination wanted.—21, Brent St., Hendon, N.W.4. [X1397

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MOTOR CYCLES FOR SALE.

Alldays.

JONES' Garage, special agents for Alldays Allon Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [293]

ALLDAYS Allon and Lightweight Sidecar, 2-speed clutch model, as new, accessories, sidecar not been used; £70.—55, Landcroft Rd., E. Dulwich. [3357

ALLDAYS Matchless 2¾h.p. 2-stroke, 1919 Villiers engine, new tyres, all accessories, in perfect order and condition; £37/10.—115, Hazelbury Rd., Silver St., Edmonton, N. [3717

1919 Alldays Allon, 2¾h.p., 2-speed, clutch model, lamps never been lit, new horn, and tools, only done 30 miles; bargain for quick buyer, 60 gns.—Harvey, New Rd., Eythorne, Dover. [3501

1915 2¾h.p. Alldays Allon 2-stroke, single-speed, lamps, horn, splendid condition, engineer owner; buying 1919 machine; £46, or nearest.—Boult, Glen Bank, Macclesfield. [X1405

ALLDAYS and Onions 1918 Allon 2-stroke, excellent condition, little used, all accessories, chain cum-belt drive, single gear.—Can be seen at 20, Cross field Rd., Swiss Cottage, N.W.3. [3119

ALLDAYS Twin, 2-stroke, 6h.p., 1918, 3 speeds, kick starter, dynamo lighting, 2 horns, low canoe let sidecar, disc wheels, detachable and spare, luggage grid, painted dark red; a very smart outfit; price 140 gns.—Red Deer Garage, South Croydon. [2703

ALLDAYS Matchless 1913 4h.p., single, 3-speed Starmey-Archer hub and clutch, handle start, gears just overhauled, thorough order throughout, lamps, horn, tools, accumulator box, sprung pillion seat, ideal side car or solo machine; £55.—Longhurst, 8, High St., Ascot. [3695

Antolne.

3½h.p. Antoine, new Senspray carburetter, Bosch mag., Roc free engine, handle starter, good tubes and tyres, low, sporting mount, good running order; must sell; first £28 secures. Also N.S.U. 2-speed gear, 70/-. —6, The Arcade, Newark, Notts. [X1100

Ariel.

ARIEL, 1914, 3-speed; £45.—272, Green St., Forest Gate. [2917

ARIEL 1914, 3-speed, less mag. and carburetter; £18.—272, Green St., Forest Gate. [2918

CROW Bros., High St., Guildford.—Ariel agents since 1913. 1919 deliveries have began. [5299

FIRST £29.—Ariel 3½h.p., perfect condition; ride away; no offers.—8, Kingston Rd., Southampton. [3093

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

ARIEL, C.B. sidecar, beautiful finish, just in, unpacked; price £30/10.—Apply, Box L3,842, c/o *The Motor Cycle.* [3035

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey Manchester. [5269

ARIEL Combination, 1914, sidecar de luxe, 3 speeds, guaranteed perfect running order, lighting set, smart turnout; £68.—592, Holloway Rd., London, N. [3731

ARIEL 1916 3½h.p. Coachbuilt Combination, 3-speed countershaft, kick start, Dunlop tyres, condition like new; £85.—S. Taylor, 37, Derby St., Leek, Staffs. [X1291

8h.p. 1914 Ariel Combination, Enfield gears, splendid condition, ride away; £75; exchange medium weight solo, or sidecar.—11, Crowa St., Sutton-in-Ashfield, Notts. (D) [X1155

3½h.p. Ariel Combination, 3-speed, clutch, kick starter, lamps, horn, new speedometer, special carburetter, almost new; 95 gns.—Driscoll, 58, Woodfield Rd., Ealing. [3326

ARIEL, 1919, 3½h.p., 3 speeds, countershaft, clutch and kick starter, lamps, horn, speedometer, etc.; lovely machine and perfect; best offer over £85.—Homestead, Birchington. [3029

1919 Ariel 3½h.p., 3-speed, K.S., clutch, delivered 23-8-19; price, including £2 Klaxon horn, full insurance policy, and A.A. membership, £110, or offers; money needed.—East End Farm, Moss Lane, Pinner. [3206

1919 Ariel, 3½h.p., 3-speed, clutch, kick starter, delivered late June, mileage about 600, condition perfect, £90; or with new Rennoc C.B. sidecar now attached, £110.—Knight, Chemist, Totland Bay, I.O.W. [3212

ARIEL, late model, 3½h.p. countershaft, Mills-Fulford sidecar with apron and luggage carrier, Lucas accessories, speedometer, new tyres, in excellent condition; £95.—Chinery, 1, Hammersmith Rd., W. 'Phone: Western 4140. [2887

3½h.p. Ariel, late 1914, N.S.U. 2-speed; free engine, Bosch, Senspray, splendid condition, stored 3 years, new belt, spare new tyre, pulley, 2 valves complete, and tools; any trial; cash £70.—G. Hirst, 35, High St., Shaftesbury, Dorset. [X0878

1915 5-6h.p. Ariel Combination, fully equipped, lamps, horn, speedometer, wind screen, and apron, recently overhauled, in perfect condition; any trial any time by appointment; £95.—Prentice, Builder, New Barnet. 'Phone: Barnet 8 [3346

MOTOR CYCLES FOR SALE.

Arno.

ARNO, racing model, nice order throughout; a snip, £40.—Kimber, 108, Elm Grove, Brighton. [3591

FOR Sale, 4h.p. Arno combination, 3-speed gear, lamp, horn, generator; complete, ready for road; appearance good; £55.—7, Cornwall Terrace Mews, Upper Baker St., London, N.W. [2900

ARNO 1916 3½h.p., Smith's speedometer, lamps, separate generators, horn, thoroughly overhauled, fast and powerful; 48 gns., or offer; any trial; after 6 p.m.—Dairy, Mornington Crescent, opposite Tube Station, N.W. [3448

MOTOR Bike and Coachbuilt Sidecar, Arno, in excellent condition, 3½h.p., 3-speed, all accessories, lamps, speedometer, just been overhauled, ready for road; price £100; seen any time after 7 p.m.—5, Kenmare Mansions, Gondar Gardens, West Hampstead. [X0230

Auto-Wheels

AUTO-WHEEL, in good condition; £9.—Elliman, Bartestree. [3143

WALL Model de Luxe, ridden twice; £18, or offer.—385, Green St., Upton Park. [3018

WALL Auto-Wheel for sale, good tyre; price £11.—8, Netherton Grove, Fulham Rd., S.W.10. [3072

AUTO-WHEEL, good order, good tyre; £10.—Whitehand, Thrift Nursery, Hoddesdon, Hrets. [3050

AUTO-WHEEL for cash and photographic goods to value.—Miles, Ribbesford House, Leominster. [X1225

AUTO-WHEEL, splendid condition, like new; £12/10.—Mitry, 172a, Lavender Hill, S.W.11. [X1536

WALL Auto-Wheel, quite new, absolutely perfect condition; £17.—10, Church Rd., Shortlands, Kent. [X0966

WALL Auto-Wheel, variable ignition, overhauled, excellent condition, new tyre; £12, on rail.—Homewood, Frittenden, Kent. [2998

AUTO-WHEEL, 1914, stored 3 years, new tyre, tube, £12; with cycle or tandem, £20, offers.—Harris, 7, St. Luke's Rd., Whitbourne Park. [3433

AUTO-WHEEL, 1915, done 200 miles, easy starter, tyre new, complete fittings; 14 gns.—Bate, Croftside, Knutsford Rd., Grappenhall, Warrington. [X1217

Bat.

FIRST CLAIM.—8h.p. Bat-Jap combination, in perfect condition; any trial.—Cockwell Bros., Coach Builders, Aberavon, Glam. [X0857

4½h.p. Bat-Jap, overhead valves, spring frame, Druids, reliable machine; £35.—Barry, 21, Boston Rd., Walthamstow, E.17. [3571

B.A.T.-J.A.P. 1914-15 6-8h.p. Twin Combination, 3-speed, clutch, starter, Amac, Bosch, accessories, cane torpedo sidecar, excellent condition; 85 gns.—89, Ashburnham Rd., Luton. [X1086

6h.p. Bat-Jap Combination, Montgomery sidecar, 2-speed free engine, kick start, all-chain drive, new tyres, fast, good condition; ride away; 60 gns. (reason for selling, too high power).—Barton, 26, Union St., Deal, Kent. [3634

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and can give early deliveries. [5300

BLACKBURNE.—Sole agents. Book now for early delivery.—Chandler, Reyre and Williams, Sun St., Hitchin. [0999

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

1919 Blackburnes, the super motor cycles; early deliveries.—Full particulars, sole Hampshire agents, The Fareham Motor Cycle and Engineering Works, 2, High St., Fareham. Tel. 91. [3389

Bradbury.

1919 Brand New Bradburys from stock.—Wauchope's, 9, Shoe Lane, London. [2895

BRADBURY.—Agents, Bright and Hayles, 78, Church St., Camberwell. [3194

BRADBURY 4h.p., 1913, T.T., Bosch, ride away; 37 gns.—195, Romford Rd., Stratford. [3239

BRADBURY 4h.p., mechanically perfect; bargain, £38.—Hove Engineering Works, Davigdor Rd., Hove. [1968

1919 6h.p. Bradbury Combination, black and gold finish, brand new.—Parker's, Bradshawgate, Bolton. [X1454

BRADBURY, 4½h.p., 2-speed, F.E., Dunlops, new condition; any trial.—66, Mackenzie Rd., Beckenham, Kent. [3436

BRADBURY 4h.p., thoroughly overhauled, good condition; £30. After 6 p.m.—Cricketer's, 317, Battersea Park Rd.—Battersea. [3471

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall Tel.: 444. [5606

BRADBURY 4h.p., 2-speed, free engine, new cylinder, tyres, and belt, take sidecar easy; £38.—Campbell, Garrison, Purfleet, Essex [X1327

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BRADBURY 4h.p., Philipson, tyres and belt very good, lamps, tools; ride away; £45.—197, Hampstead Way, Golder's Green, N.W. [2934

BRADBURY Combination, 4h.p., 2 speeds, kick starter, lamps, horn, speedometer; £55, or offer.—32, Brettenham Rd., Walthamstow. [3505

BRADBURY 1913 4h.p. Combination, 2 speeds, free; first cheque £53 secures; genuine bargain, climb any hill.—Dee, 1, Victoria Rd., Brighton. [3390

1913 Bradbury, 4h.p., 2-speed, N.S.U., in very good condition, powerful, footrests need slight attention; nearest £40.—Hobbs, Shepton Mallet. X1544

BRADBURY, 4h.p., 1914 clutch model, Bosch mag., B. and B., lamps, horn, tools, spare tyre and tube; £45.—16, Upper Long Leys Rd., Lincoln. [X1204

4h.p. Bradbury, 1914, 3-speed, kick start, speedometer, Klaxon, Dunlop heavy, splendid condition; £62, or near offer.—23, Seaton Rd., Yeovil. [3339

1913 Bradbury Combination, 2-speed, countershaft gear, kick start, lamps, speedometer; any trial; £60; overhauled.—R., 25, Henry Rd., Chelmsford. [3230

BRADBURY, 1914, 4h.p., 2-speed countershaft, K.S., C.B. sidecar, engine as new, good appearance; 65 gns.—Insley, 21, Caulfield Rd., Nunhead, S.E. [3422

BRADBURY 1914 4h.p., 3-speed, coachbuilt sidecar, lamps, horn, splendid turn-out; £68, or exchange lightweight, cash adjustment.—171, Gulson Rd., Coventry. [X1538a

BRADBURY Combination, countershaft gears, kick start, coachbuilt sidecar, ride away; £65, or nearest; no agents.—290, York Rd., Wandsworth, S.W.18. [3493

BRADBURY 1914 4¼h.p., coachbuilt sidecar, 3 speeds, fully equipped; £60, good push bike considered part exchange.—Johns, 27, St. Gabriel's Rd., Cricklewood, N.W. [3353

BRADBURY 4h.p. Combination, new 1919 engine fitted by Bradburys 6 weeks ago and enamelled, tyres excellent, 2 new tubes, belts, lamps, and horn; £60, or close offer.—Ludwick, Luston, Leominster. [X1375

BRADBURY, 4h.p., grand solo mount, fast and reliable, complete with lamps and horn, only wants seeing; £48.—McDonald and Windsor, Victory Garage, Coldharbour Place, Camberwell, London, S.E.5. [3130

BRADBURY, 1913-14, 4h.p., Brompton multi-gear, 7-speed, Dunlop studded tyres, Bosch mag., complete with wicker sidecar, excellent condition throughout, overhauled; £48; exchanges.—R. D. Varty, Thundersley, Essex. [3618

BRADBURY, 4h.p., 3-speed, countershaft gear, clutch and kick starter, aluminium footboards, enamel and plate in good condition, mechanically perfect; £58.—Viggers, Rose Cottage, Boughton, Monchelsea, nr. Maidstone. [X1238

Brough.

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., Official Dealers, Liverpool and Manchester. [7039

5h.p. Brough and Millford Corvette Sidecar, about 3 months old, excellent condition, lamps, etc.; best offer over £130.—Box 287, c/o *The Motor Cycle*. [X1552

Brown.

BROWN, 3h.p., 1911, Bosch mag., good running condition; £15.—Collis, 98, Adelaide Rd., N.W.3. [3401

BROWN Motor Cycle, 3½h.p., and coachbuilt sidecar, 2 speeds; any trial; £49.—Fuller, 1, Victoria Rd., Brighton. [3341

BROWN 3½h.p., free engine, Bosch mag., in good running order; £40; seen after 6 p.m.—G. Fougeret, 12, Mattock Lane, Ealing, W.5. [3318

B.S.A.

B.S.A. 1913 2-speed, kick starter, less engine; £15.—272, Green St., Forest Gate. [2919

B.S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5602

B.S.A., 1913, 3½h.p., free engine, good condition; £45.—40, Nelson St., Parade, Birmingham. [X1464

B.S.A. 4¼h.p. 1914 Combination, all-chain 3-speed, K.S., coach; £80.—48, Prince George Rd., Dalston, N. [3733

B.S.A. C.B. Combination, 1914, 4¼h.p., 2-speed, F.E., chain, perfect; £100.—320, High St., Poplar. [3278

B.S.A. 3½h.p., 2 speeds, free engine, about 1913, condition new, not ridden for 4 years.—Chapple, Odiham, Hants. [2336

B.S.A., 1914, 3½h.p., clutch, kick start, Philipson's pulley, Bosch mag.; £55.—30, Anson Rd., Cricklewood, N.W. [X1459

B.S.A.—Prospects of early delivery, solo or combination.—Inquire, Parker's, Deansgate, Manchester. [X1451

B.S.A., 4¼h.p., in good going order, lamps and spare tyre; £40.—Stratford, 91, Bellenden Rd., East Dulwich, S.E.15. [2908

MOTOR CYCLES FOR SALE.

Connaught.

LOVE Engineering Works, Davigdor Rd.—Sole district Connaught agents; deliveries in rotation; all accessories and repairs. [3183

CONNAUGHT 2¾h.p. 2-stroke, 3-speed Sturmey-Archer gear, free engine, clutch, fine condition; £9; after 6.—R., 55, Thornton Av., Streatham Hill. W. [9696

CONNAUGHT 1914 2-stroke, 2½h.p., U.H., Sturmey 3-speed hub, lamps, Brooks pan seat, spanner; condition almost equal to new; £43.—Farrall, 6, St. Julian's Friars, Shrewsbury. [X1477

Coulson.

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

NEW COULSON-B., just delivered, Blackburne engine, spring frame, etc.; best offer over £75; seen Saturday and Sunday only.—Box Cottage, Winslow, Bucks. [2915

Coventry Eagle.

COVENTRY Eagle 2-stroke, Bosch, Senspray, take 2 anywhere; 38 gns.—5, Park St., Slough. [X0847

Dalm.

1916 Dalm 3h.p. 2-speed 2-stroke, take two up any hill; £45.—Furniture Shop, 54, Pritchard's Rd., Hackney Rd., London. [3211

DALM 3½h.p. Solo, 2-stroke, 2-speed, E.I.C. mag., Amac carburetter, strong frame, excellent condition; £45.—Sanders, 45, Newcastle St., Cubitt Town, [3008

3h.p. Dalm, 2-speed, bought June, 1917, accessories, spares, as new; seen in London by arrangement; £40.—Richards, Northgate House, Northgate, Lincoln. [3303

Daw.

DAW 2½h.p., B. and B. carburetter, U.H. mag., 100 mile gallon, good running order, horn, pump, etc.; £2.—Hillbrow, Hemel Hempstead. [X1358

Dayton.

DAYTON 2¼h.p. 2-stroke, new mag., Amac, Druids, 26in. wheels, Clincher tyres, complete with P. and H. lamps, horn, pump, and all accessories, as new; seen any time; £37, or near offer; buying combination.—40, Chardmore Rd., Stamford Hill. [2882

De Dion.

DE DION, 3½h.p., new Dunlop tyres, B. and B., horn, lamp; £39; after 6.—71, Pelham Rd., Wimbledon. [3081

3h.p. De Dion, B. and B., Bosch, new belt, just 2 finished vacation; ride away; £30, offers.—19, St. Anne's Rd., Harrow. [X1341

Diamond.

SALE, Diamond 2-stroke, 1917, good condition and fine running order; £38.—Edge Cottage, Endon, Staffs. [X1202

DIAMOND, 1919, 2½h.p., lamps, all accessories, done 500 miles; trial; £50.—Johnson, 206, Newton Rd., Burton-on-Trent. [1471

1919 (April) 2¾h.p. Diamond-Jap, 2-speed Enfield gear, Amac, G.A.V., P. and H. lighting set, horn, Autoplops, tool kit, spares (including belt); 60 gns., or nearest.—Foster, Rosebank, Winchester Rd., Basingstoke. [2920

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'OU Won't Beat This.

'S Brand New. 2¾h.p. Douglas, W.D. type, 1919, complete with dispatch case fitted to carrier; £78. Seen at Hyde Park Garage, Lancaster Gate. 'Phone Paddington 1024. [3413

DOUGLAS, 1913, 2-speed, spare belt; 50 gns.—Saunder, Chemist, Worcester. [3418

DOUGLAS 2¾h.p., excellent running order; £33.—Apply, 11, Lancaster Rd., S.E.25. [X1377

DOUGLAS 1911, good order, fast; £25.—Wooten, 23, North Rd., Richmond, Surrey. [X1297

1919 Douglas 2¾h.p., bought August, perfect; offers. —Oddy, 53, St. Clement's, Oxford. [X1050

DOUGLAS 2¾h.p., 1915, 2 speeds, very nice mount; £50.—Hole, 129, Park Lane, Carshalton. [3450

DOUGLAS.—Now delivering new 1919 model 4h.p. combination; £123.—Moffat, Yeovil. 'Phone: 50. [1103

DOUGLAS 4h.p. Combination, nearly new; £112.—Stevens, 184, Pentonville Rd., King's Cross. [3217

DOUGLAS 2¾h.p. W.D. Model, just uncrated; 74 gns., or best offer.—Gamble, Clapham, Lancaster. [X1087

DOUGLAS 2¾h.p., 2-speed, new condition; sell or exchange combination.—82, Caledonian Rd., N.1. [373

DOUGLAS W.D. Model 2¾h.p., 2-speed, absolutely perfect.—16, Southdean Gardens, Southfield. [3536

4h.p. Douglas Combination, 1915, overhauled, nice condition; £105.—Cable Motor Co., George St., Halifax. [2361

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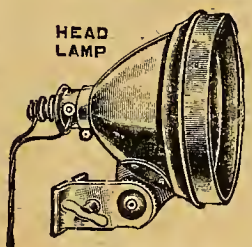

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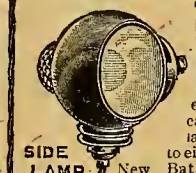

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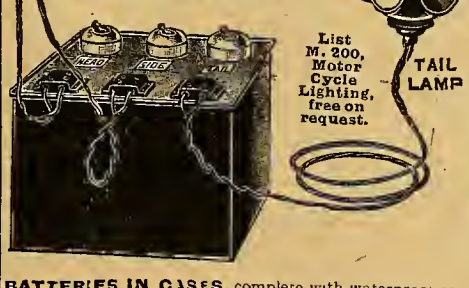

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MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS, 1914, 2-speed, excellent appearance; any examination; £50.—25, Water St., Blackburn. [X1402

DOUGLAS 1912 2¾h.p., single speed, good running order; £30.—52, Stanbury Rd., Peckham, London, S.E. [3295

DOUGLAS, all models; several excellent second-hand mounts in stock.—Parker's, Bradshawgate, Bolton. [X1443

1915-1916 4h.p. Douglas, 3-speed countershaft, beautiful condition; cheap.—15, Bristol Mews, Maida Vale, W. [3739

1914 2-speed Douglas, £50; also Auto Wheel, £12; both in first-class order.—51, Church St., Wolverton. [3707

DOUGLAS 1915 2¾h.p., Amac, overhauled, any trial; £53.—40, Replingham Rd., Southfields, S.W.18. [3265

4h.p. Douglas, 3-speed, kick start, about 1918, almost new condition; £78.—29, St. Leonard's St., Bromley-by-Bow. [3606

DOUGLAS 4h.p., 1917, 3 speeds, clutch, kick start, lamps and tools; £72.—Hole, 129, Park Lane, Carshalton. [3451

DOUGLAS, 1914, 2¾h.p., 2-speed, good running order; first £44 secures.—Box L3,916, c/o *The Motor Cycle.* [3761

DOUGLAS 2¾h.p., 1911. single speed, footboards, good condition, ready immediate use; £20.—Dowse, Tidworth, Hants. [X0877

DOUGLAS, 2¾h.p., W.D. model, splendid condition, good running order; £69.—Eayrs, 11, Chichester Terrace, Brighton. [X1432

DOUGLAS, late 1914, 2¾h.p., 2-speed, free engine, perfect condition; £48.—Lambton, Fern House, Corley, near Coventry. [X1565

DOUGLAS 4h.p. Combination, Klaxon, new Avons, little used; £85.—Davison, 12, Castelnau Mansions, Barnes, S.W. [3674

DOUGLAS 2¾h.p., excellent condition, fast, 2-speed; £60.—Lieut. Dubois, Dispersal Unit, Fovant, Salisbury. [X1426

1919 Douglas 2¾h.p., well equipped with electric lights, etc.; £85, or offers.—2, Wolverton Av., Kingston Hill, S.W. [3146

1915 2¾h.p. Douglas, 2-speed, long exhaust pipe, very sporty, new condition; cash wanted; £55. —35, Mile End Rd., E.1. [3635

DOUGLAS, 1914, enamelled Indian red, disc wheels, very fast; 55 gns.—4, Montague Mews, Crawford St., Baker St., W.1. [3224

1916 4h.p. Douglas, 3-speed, kick starter, and O.B. sidecar, all fitments, nice condition; £110.—54, Coval Rd., Mortlake. [X1415

DOUGLAS, 1916, 2¾h.p., 2-speed, very fast, first-rate running order; bargain, £50.—Box L3,917, c/o *The Motor Cycle.* [3762

DOUGLAS 4h.p. Unit, frame, gear box (3-speed), and sidecar to suit, slightly deficient; £33, close offer. —17, Park Rd., Harringay. [3589

4h.p. Douglas Combination, 3-speed, overhauled and re-enamelled at cost £20, about 1918; £110.—7, Gibson Sq., N.1. [2492

DOUGLAS 1915 2¾h.p., in excellent order; £55.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1771

DOUGLAS 2¾h.p., 1912, 2-speed, good tyres, condition, stored during war; £45.—Keene, Jordan's Farm, Crawley, Sussex. [3160

DOUGLAS, 1915, late model, 2-speed, excellent condition, stored 2 years; ride away; £60.—114, Drakefield Rd., Balham. [3648

1915 Douglas, 2 speeds, sound condition and running order; £56.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X1250

BRAND New W.D. Douglas, 2¾h.p., 2-speed, never been on road; £73/10; first cheque has it.—Pollard, Wragby, Lincs. [X1205

DOUGLAS 1914 2¾h.p., 2-speed, lamps, speedometer, fine condition; £50, or nearest.—Winfenny, Lindley St., Longwood, Huddersfield. [X1367

DOUGLAS, 2¾h.p., 2-speed, with Watsonian sidecar; £67/10.—223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [3174

DOUGLAS, 2¾h.p., 1911, Bosch mag., B. and B. carburetter, ready to ride; £28.—Wilson, 769, Harrow Rd., Willesden, N.W.10. [2889

1915 2¾h.p. Douglas, Colonial model. lamps, horn, and accessories, in good running order; £55.—Lloyd, 16, Whitefriars, Chester. [X1085

DOUGLAS 1913, 2-speed, just overhauled, new tyre and belt; £43, gift.—Ballard, Belmont, Fairfax Rd., Hampton Wick, Middlesex. [X1126

DOUGLAS, 2¾h.p., stored during war, excellent condition, lamp, horn, spares; ride away; £45. —35, Carlton Grove, Peckham, S.E.15. [3068

DOUGLAS, 1914, 2-speed, kick starter, unused 3 years, Lucas set, as new throughout; £56/10.—Ball, 49, High St., Kingston-on-Thames. [X1256

MOTOR CYCLES FOR SALE.

Douglas.

2¾h.p. Douglas, 1915, 2-speed, mechanical horn, lamps, speedometer, spare belt and case, in perfect running order; £65.—105, Usher Rd., Bow, E. [3293

DOUGLAS 2¾h.p., 1915, 2-speed, patent buffer springs, knee grips, Klaxon, very fast; £60; after 5.30.—17, Woodfield Av., Ealing. [X1547

2¾h.p. Douglas, W.D., delivered last March, accessories, and spare belt; trial; as new; £85.—105, Balham Park Rd., Wandsworth Common. [X1364

DOUGLAS 1915 2¾h.p., 2-speed, mechanically perfect, re-enamelled, and is absolutely as new; £63. —Cliffe, 22, Princess Rd., Finsbury Park, N.4. [3473

DOUGLAS 4h.p., about 1917, combination, lamps, etc., engine very little used; £100.—Jackson, 348, City Rd., London, E.C.1. 'Phone 1609. [3208

GIBB, Douglas specialist, Gloucester, solicits your enquiries for anything concerning Douglases; try him for the part you require. 'Phone: 852. [6340

SEVERAL Douglas 1914 and 1915 2¾h.p., from £50; call and inspect stock.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [3709

DOUGLAS T.T., 2¾h.p., late 1914, exceptionally fine condition; any examination; highest offer over £50.—D. F. Heybourn, 7, East Rd., Maidenhead. [3480

1916 4h.p. Douglas Combination, Watsonian sidecar, 3-speed, kick start, new condition, stored 2 years, perfect; any trial; £110.—Hirst, Bream, Glos. [2881

DOUGLAS, 1914, 3½h.p., 2 speeds, clutch and kick starter, tyres as new, lamps and tools; recently overhauled; no offers, £70.—Dennis, Woburn Sands. [X0383

1913 Douglas, 2¾h.p., 2-speed, free engine, kick starter, splendid condition, including lamps, horn, etc.; £60.—Richardson, 380, Kingsland Rd., E.8. [3431

DOUGLAS 2¾h.p., 2-speed, T.T., excellent, fast, long exhaust; 49 gns.; exchange powerful combination. —106, Bramfield Rd., Wandsworth Common, S.W.11. [X1098

2¾h.p. T.T. Douglas, 1915, 2-speed, Bosch mag., footboards, as new; can be seen any day; £65. —Capt. Walmsby, Officers' Mess, R.A.F. Station, Kenley. [X1051

BRAND New 2¾h.p. Douglas, just delivered, in crate; bargain, offers.—Wandsworth Motor Exchange, Ebner St., Wandsworth. 'Phone: Battersea 327. [3612

4h.p. Douglasses, solos, combination; 2¾h.p. Douglasses, 1914, 1915, 1916 models; call early to secure.—Clapham (Motors), King George St., Greenwich. [3656

4h.p. Douglas Combination, 1919, new July, lamps, Klaxon, speedometer, wind screen, spare belt and valve; £135, or highest offer.—Harding, 48, Wood St., Chatham. [X1054

1919 4h.p. Douglas Combination, delivered June, electric lighting, accessories, excellent condition; best offer over £140.—Edward Pool, 56, Abel St., Burnley. [3135

DOUGLAS 1916 4h.p. Coachbuilt Combination, overhauled and in fine running order; £100.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1772

1913 Douglas, 2¾h.p., with torpedo wicker sidecar, in fine order; a bargain, £65.—St. George's Motor and Engineering Co., Ipswich. Tel.: 566 Ipswich. [3179

1919 4h.p. Douglas Combination, brand new, just delivered from works, with new type clutch, perfect; offers over £140.—General Stores, Parkshot, Richmond, S.W. [X1422

1919 4h.p. Douglas Combination, just delivered from makers, not done 10 miles; owner going abroad; nearest £155; Dore, Sheffield.—Box 271, c/o *The Motor Cycle*. [X1113

DOUGLAS 1919 (Aug.) 4h.p. Combination, not run 400 miles, fast machine, lamps, Klaxon, etc.; best offer over £135.—13, Claremont Gardens, Surbiton, Surrey. [X1338

1919 4h.p. Douglas Combination, 3 speeds, clutch, kick start, speedometer, lamps, excellent condition; £135.—Bennett, 75, Rippingham Rd., Withington, Manchester. [X1120

2¾h.p. 2-speed Late Model W.D. Douglas, recently purchased unissued, complete with usual accessories, a splendid machine; £65.—5, Upper Richmond Rd., Wandsworth. [3444

1918 4h.p. Douglas Combination, new, 3-speed, kick starter, accessories, lamps, and horn; best offer, £100; a bargain.—2a, Sistova Rd., Bedford Hill, Balham, S.W. [3019

DOUGLAS 1916-17 4h.p. Combination, 2-speed, clutch, coachbuilt sidecar, kick starter, little used, splendid condition; £110.—P., 25, Fairholme Rd., West Kensington, W. [2988

DOUGLAS, 2¾h.p., practically new, bought July 2nd, 1919, horn, pump, etc., very fast and excellent running order; £70, or near offer.—16, Crescent Rd., Beckenham, Kent. [2161

DOUGLAS, 1914, 2¾h.p., just overhauled, very good condition, new back tyre, 2 pair handlebars, Bosch, B. and B.; £55, or near.—S., 29, Belsize Crescent (Swiss Cottage), N.3. [3255

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DOUGLAS, 2¾h.p., 2-speed, believed 1912, just overhauled, new pistons and heavy Dunlop tyres, splendid condition; bargain, £39.—Storr, Town Hall House, Wellingborough. [3697

SHOP-SOILED, but equal to new, three 2¾h.p. Douglases, W.D. type, 2 speeds and free engine; no waiting; to clear; £67.—Cordingley and Sons, Haslingden. Tel.: 102. [3643

BRAND New 2¾h.p. Douglas, W.D. type, just purchased from W.O., 2-speed and free engine; ready to drive away; to clear; £79.—Cordingley and Sons, Haslingden. Tel.: 102. [3642

LATE 1915 Douglas, 2-speed, etc., fitted with 2 sets of lamps and Lucas horn, condition as new, in splendid running order; £55 for quick sale.—L. Bull, 44, Hills Rd., Cambridge. [3506

1916 4h.p. Douglas and Sidecar, mileage 2,000, lamps, speedometer, spares, stored 2 years; £112/10, or exchange 7h.p. F.N.—B. Taylor, Lodge Farm, Grimston, Lynn, Norfolk. [X8784

DOUGLAS 2¾h.p., new August, 1917, W.D. special fork crown, large lamps, horn, numerous spares, absolutely perfect; 55 gns.—Andrews, Station, Rd. Higher Openshaw, Manchester. [X1393

1919 Douglas 2¾h.p., W.D., 2-speed, complete with new acetylene lamps, horn, speedometer, etc.; not ridden 200 miles; best offer over £80.—15, Cartwright St., Audenshaw, Manchester. [X1497

DOUGLAS 2¾h.p., 1915, kick start, free engine, 2-speed, clutch, Bosch mag., lamps, horn, and necessary tools, perfect condition; 60 gns.; Manchester district.—Box 234, c/o *The Motor Cycle*. [X0985

2¾h.p. W.D. Douglas, brand new, one or two early deliveries at £72, plus carriage; pamphlets with particulars.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [3711

DOUGLAS, 3½h.p., 1915, 3 speeds, clutch, 2 lamps, horn, pump, kit of tools and spares, tyres good, in excellent order, condition guaranteed; £75.—Oxborrow Farnborough House, Hound Rd., Netley, Hants. [3596

1919 Douglas and Sidecar, had very little use, engine, gears, tyres, etc., in excellent condition, 3 Lucas lamps, wind screen, storm apron; any trial; £140, or near offer.—Jeffery, Westexe, Tiverton, Devon. [X1293

DOUGLAS 2¾h.p., late 1914; Colonial model, 2-speed, stored greater part war, condition excellent, new Palmer cord back, new belt, complete accessories, including new spares; £63.—24, St. Alban's Rd., Watford. [X1324

DOUGLAS, 1914, 2-speed, very good exera heavy Dunlops, large Miller head lamp, rear, separate generators, Cowey speedometer, tools, etc., little used, perfect condition; £55; after 7.—52, Taunton Rd., Lee, S.E. [3595

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0966

DOUGLAS 4h.p. and Burberry C.B. sidecar, recently completely overhauled, in excellent condition; what offers over £100; seen by appointment after September 13th; ride away.—B. Bradnack, The School, Windlesham, Camberley. [3091

DOUGLAS, 2¾h.p., believed 1914, 2-speed, clutch, kick start, footboards, side valances, Bosch lamps, horn, tools, hardly scratched, little used, ready to ride away; £60; perfect; a bargain.—Payne, Bryn Hafod, Llandudno. [X1157

1915 2¾h.p. Douglas, 2-speed, fitted for clutch and kick start, very fast model, new Dunlop heavy, speedometer, recently overhauled by agents, in splendid condition; £49; after 6 p.m.—Lieut. Reader, 92, Church Lane, Charlton, S.E. [3161

4h.p. Douglas Combination, one of the first genuine 1919 models, with improved clutch, etc., to be delivered 4th September; owner suddenly ordered to India; first offer over £130 wired to Gilbert, Milton Hotel, New Milton, Hants. [3461

DOUGLAS 1914 2¾h.p., 2 speeds, mechanical horn, speedometer, long exhaust, spring footboards, splendid climber; any trial; good running order; £50; minute from Met. and Gt. Central Station.—Mead, Osborne House, Amersham, Bucks. [3202

1919 4h.p. Douglas Combination, delivered brand new recently, electric lighting, disc wheels, hand and knee grips, Klaxon, complete spares and accessories, very fast; any trial; £150, or near offer.—386, Barking Rd., Plaistow. [2048

DOUGLAS 1919 4h.p. Combination, with 3 lamps, tools, spares, unused tyre and tube, cost £150 without spares in June; owner returning abroad, accept £130 or nearest.—Seen after 28th at Garage, 197, London Rd., W. Croydon. [3008

4h.p. Douglas, brand new 1919 post-war combination, delivered August, mileage 300, blue Douglas sidecar, aluminium disc wheels, 3 lamps, Klaxon, apron, all tools, spares, exceptional outfit; 150 gns.—Captain, 34, Sydney St., South Kensington. [3731

DOUGLAS 1919 4h.p. Semi-T.T. Combination, delivered second week August, special sidecar, new type clutch, P. and H. lamp set, tools, carefully run in, low mileage; seen London shortly; £150, or best offer.—Box 281, c/o *The Motor Cycle*. [X1491

Douglas.

4h.p. 1919 Type Douglas Combination, with improved type of clutch; one or two early deliveries at £123, plus cost of crate and carriage; pamphlets with specification.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [3712

DOUGLAS, 2¾h.p. Model W de luxe, clutch, kick start, 2-speed new tyres, tubes, P. and H. head light, rear light, generator, Lucas horn, new spare belt, tool kit, £5 engine spares, unused 4 years, like new; property of naval officer; £55.—12, Victoria Rd., Dharitoo, S.E.7. [3696

DOUGLAS 1916 4h.p., 2-speed countershaft, kick start, clutch, new back tyre, front good, spare belt, chain, rear lamp, tube, outer cover, horn, lamps, tools, etc., other spares excellent condition; £80.—31, Railway Approach, East Grinstead. [3296

DOUGLAS, 1914, 2-speed, recently overhauled by us regardless of cost, guaranteed mechanically sound, tyres, etc., perfect condition, £60; similar model, 1913, likewise in real good order, £55; not brocks.—Approval, deposit, or better still, call Gibb, Douglas Expert, Gloucester. [X1537

DOUGLAS, Douglas.—Our experience and advice are at the disposal of all Douglas owners. 2¾h.p. solo, price £72; 4h.p. combination, with new type clutch, price £123. If you are interested call and see us.—Vivian Hardie and Lane, Ltd., 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [0025

1919 Douglas, 4h.p., delivered May, with Canoelet sidecar, aluminium wind screen, torpedo lamps, Lucas horn, speedometer, complete tool kit, many spares; a very sporting outfit, and greatly admired; absolutely perfect, little and carefully used; trial by arrangement; distance no object; price £155, or reasonable offer; owner buying car.—Soams, 286, Christchurch Rd., Bournemouth. Hants. [3502

Eagle.

EAGLE Sporting Combination, special 8h.p. engine, extra fast, new tyre, tube, and belt; any trial.—Blake, Royal Oak, Biggleswade. [3189

Edmund.

EDMUND, 1918, spring frame, 2¾h.p. J.A.P., Enfield gear, disc wheels, lamp, horn, tools.—169a, Stockport Rd., Levenshulme, Manchester. [X1245

Enfield.

1919 Enfield 2-stroke, 2-speed, just delivered; 55 gns.—Grace, Garage, Tring. [3577

ENFIELD Combination, 8h.p., hood, screen, as new; £165.—272, Green St., Forest Gate. [2916

1914 Royal Enfield Combination, excellent order; 100 gns.—Alletson, Northop, Flintshire. [3158

1919 Enfield Lightweight, 2¼h.p., 2-speed model, new condition.—Parker's, Bradshawgate, Bolton. [X1456

ENFIELD 6h.p. Combination, 1918, nearly new, all accessories; £155.—73, Victoria Rd., Stroud Green, N.4. [3457

ENFIELD, 2¾h.p., 2-speed, excellent condition; 38 gns.—Apply, A. E. Lee, 28, High St., Kempston, Bedford. [2859

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2926

ENFIELD 6-8h.p. Combination, 3h.p. solo, 2¼h.p. lightweight models.—Inquire, Parker's, Bradshawgate, Bolton [X1444

1916 3h.p. Enfield, T.T. model, very fast, tyres and enamelling like new.—Stedman, Sugden Nurseries, Worthing. [2997

ROYAL Enfield 3h.p. Twin, 2-speed; £50.—To be seen at Scoones's Garage, 9, West St., Sittingbourne, Kent. [3659

ENFIELD 6h.p. Combination, late 1918, all accessories, perfect running order; £120.—W., 3, Clivedon Rd., Wimbledon. [X1374

ENFIELD Combination, 6h.p., about 1914 model, in excellent condition, ready for immediate use; £80.—Fryer, Leominster. [2950

ENFIELD 2¾h.p., splendid running order, stored 4 years, just overhauled; £35.—Lavender, French Drive, near Wisbech. [3209

ENFIELD 2-stroke, 2-speed, 7 weeks old, unscratched; £55; exchange Triumph or I.O.M. Rudge.—Stratton, Evesham St., Redditch. [3692

1919 Enfield 8h.p. Combination, mileage 900, carefully used; best offer over £135.—Holmes, Boot Stores, Clay Cross, Chesterfield. [3335

ENFIELD 6h.p. Combination, 1915-16, Klaxon horn, extra chain and spares, just overhauled; £100.—Dance, Outfitter, Trowbridge. [X1545

ENFIELD Twin, 2-speed, K.S., new 1914, stored during war, just overhauled and renovated; £40.—25, Water St., Blackburn. [X1403

ENFIELD, 2¾h.p., 2-speed, fast, good climber, condition good; £45, or nearest offer.—F. Rogers, 20, Tudor Rd., Newton Abbot, Devon. [3439

8h.p. Royal Enfield Combination, delivered last May, done 1,500, lamps, horn, Tan-Sad pillion seat; what offer?—18, Summerhill Av., Newport, Mon. [X1136

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ENFIELD 6h.p. 1910 Combination, fine condition; £120; any time.—C.S., 14, Swaton Rd., Bow, E3. Tel., E.3155 before 12 and after 4. [3382

1915 6h.p. Enfield Combination, lamps, horn, screen, speedometer, good condition; £110; seen any time.—Drew, Margery Wood, Reigate. [X1094

ENFIELD, 6h.p., Burbury sidecar, 650×65 tyres, all perfect, Miller Lucas, etc.; £95, or close offer.—Sutton, Royal Garage, Sutton Coldfield. [X1458

ENFIELD, 6h.p., 1914, coach sidecar, screen, speedometer, lamps, spares, tools, splendid condition; £100.—134, Boundary Rd., Wood Green. [X0965

1912 Enfield 2¾h.p. Twin Lightweight, Enfield 2 speeds, free engine, ready to ride away; 29 gns.—Jackson's Garage, High St., Guildford. [2898

1914 Enfield 6h.p. Coachbuilt Combination, Dunlops, hood, screen; only wants seeing; £120; ride away.—32, Monega Rd., Forest Gate. [3362

ENFIELD, sidecar, latest model, 3 lamps, oversize tyres, mat, apron, perfect order; 135 gns.—Edwards, 7, Exhibition Rd., South Kensington. [3751

ENFIELD 1915 3h.p. Twin, 2 speeds, kick start, lamps, horn, tyres excellent, and appearance like new; £50.—76, Warwick Rd., Bowes Park. [3302

1914 2¾h.p. Enfield, No. 16246, chain drive, countershaft, overhauled and re-enamelled; £29, no offers.—Clifton, Engineer, 62, Wells Rd., Bristol. [X0880

6h.p. Enfield Coachbuilt Combination, lamps, etc., fine condition; £85, quick sale. 2-seater car wanted.—436, Whitehorse Rd., Thornton Heath, S.E. [3373

3h.p. Enfield Twin, 2-speed, fine condition, tyres as new, complete with lamps, etc.; £63.—J. Hebden and Son, 149, St. James St., Burnley. Tel.: 488. [3414

ENFIELD, 1916, 2¼h.p., 2-stroke, 2-speed, lamps, horn, complete, excellent condition throughout; 45 gns.—Townley, Bank House, York Town, Camberley. [3604

ENFIELD Combination, 6h.p., nearly new, 3 lamps, hood and screen, handsome turnout; no reasonable offer refused.—64, Church St., Edgware Rd., W. [3255

1916 Royal Enfield 3½h.p. Twin, 2 speeds, good tyres, lamps, horn, speedometer, good condition, but mag. wants overhaul.—Apply, 34, Babington Rd., Headon. [3288

ENFIELD Combination, 1914, 6h.p., exceptional condition, and running order, wind screen, lamps, etc.; bargain.—64, Loughborough Park, Brixton, S.W.9. [3084

ENFIELD 1916 Combination, 6h.p. J.A.P., speedometer, Lucas lamps, hood, screen, tools, running order; £125; seen Cornwall.—Box 283, c/o *The Motor Cycle*. [X1489

ROYAL ENFIELD Combination, condition as new, 3 lamps, horn, spares, 2 new tyres; £115, no offers.—Viccars, 35, Stroud Rd., Woodside, South Norwood. [3350

1915 Enfield 3h.p. Twin, 2-speed, electric lighting, Lucas horn, splendid condition, stored 2 years, seen any time; offers.—Sutton, Harrietsham, Kent. [X1556

6h.p. Enfield Combination, lamps, spare tyres, valves, tools, etc., just overhauled; any trial.—J.M., Glenmore, Broads Green, Great Waltham, Chelmsford. [3307

2¾h.p. Twin Enfield, 2-speed, racing handle-bars, accessories, splendid condition, very fast; bargain, £40; owner bought combination.—Brownell, Fore St., Warminster. [3492

ENFIELD Combination, 6h.p., 1914, Binks carburetter, hood, screen, accessories, good condition; trial; £100.—119, Dogpool Lane, Stirchley, Birmingham. [X1404

ENFIELD Combination, 6h.p., 1915, in splendid condition; £110, no offers; exchange lower power and cash.—24, Silchester Rd., North Kensington, W.10. [3082

1916 6h.p. Royal Enfield Combination, J.A.P. engine, all lamps, luggage carrier, in splendid condition; £135.—Scholes, Burnside, Lightwood Rd., Buxton. [X1376

1915 Royal Enfield, 2-speed, K.S., excellent condition, thoroughly overhauled recently, inspection invited; price £65.—Box L3,868, c/o *The Motor Cycle*. [3167

1914-15 6h.p. Enfield Combination, in absolutely first-class condition in every way, been carefully and little used; £120, or near offer.—Jeffery, Westexe, Tiverton, Devon. [X1295

1915 Enfield Combination, 6h.p., spring bars, lamps, Stewart, hood, new Palmer, good condition; trial; dealers ignored; nearest 115 gns.—31, Silverdale, Sydenham, S.E.26. [3381

1914 2¾h.p. Enfield, stored during war, engine not done 1,000 miles, new tyres and tubes; beautiful condition throughout; £60.—Seen at Eborn's Garage, Aylesbury. [3075

6h.p. Enfield Combination, Lucas dynamo lighting, splendid condition; £150; exchange for solo machine and cash.—223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [3171

MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD, 2¾h.p. twin, 2-speed, chain drive, 1918 B. and B., lamps, etc., recently overhauled, tyres, enamel, plating excellent; £35; after 7.—Ellis, Clovelly, Bury St., Lower Edmonton, N.9. [X1437

1919 Enfield 2-stroke, 2-speed. £55, speedy, 130 m.p.g., climb anything, purchased new June, 1919; owner bought combination.—Call any time, or write, Figg, 615, High Rd., Tottenham. [3298

ENFIELD 6h.p. Combination, Bosch, Senspray, lamps, horn, perfect condition; trial; £95, or near offer; before 6 p.m. or appointment.—Garaged, Dewick's, 200a, Blackstock Rd., N.5. [3117

1915 Enfield Combination, all in perfect condition, new chains and sprockets, speedometer, large horn and lamps, hood, screen, luggage grid, tyres all good; £125.—Walbro, Lynn Rd., Ely, Cambs. [X1209

1918 Royal Enfield, 2¼h.p., 2-speed, chain drive, aluminium footboards perfect condition, tools, black horn, Garnier exhaust whistle, economical, climb anything; 54 gns.—6, Fitzroy St., W. [3252

ENFIELD, August, 1915, T.T., 3h.p., 2-speed, clutch, horn, tyres as new, in sound mechanical condition, 95 m.p.g., fast, runs well; 63 gns.; photo.—The Croft, Great Horkesley, Colchester, Essex. [3547

1915 Royal Enfield, 6-8h.p., with coachbuilt sidecar, Jones' speedometer, lamps, horn, first-class condition; price £140.—St. George's Motor and Engineering Co., Ipswich. Tel.: 566 Ipswich. [3176

1916 Royal Enfield Combination, 6h.p., hood, wind screen, mechanical horn, best speedometer, 3 lamps, sets tools, etc., all in beautiful condition; £135.—38, Ufton Rd., Downham Rd., Dalston, London, N.1. [3737

1915 Enfield 3h.p., 2-speed, kick starter, Lucas lamp set, mechanical horn, Watford speedometer, pillion seat, perfect; £56; Saturdays 1 o'clock to 5 o'clock.—James, 49, Conway Rd., S. Tottenham, N.15. [2913

2¼h.p. Twin Enfield, splendid condition, light, easy running, engine thoroughly overhauled, rebushed entirely, lamps, and generator; bargain, £30.—Williams, Boot Shop, Barnard's Green, Malvern. [X1461

1913 Enfield Combination, 6h.p., new sidecar body, coachbuilt, just been, beautifully sprung, lamps, horn, speedometer, engine just overhauled, in first-class condition; any trial; £85.—Wadlow, Orpington, Kent. [3424

ENFIELD 6h.p. Combination, like new, underslung coach Enfield sidecar, lamps, speedometer, adjustable wind screen, spare tyre, tools, etc.; £120, bargain; exchange considered.—29, St. Leonard's St., Bromley-by-Bow. [3608

1919 Royal Enfield 6h.p. Combination, Lucas electric lamps, Cameo wind screen, Tan-Sad seat, spare chain, tools, luggage grid, Klaxon horn, in beautiful condition; £170.—Apply, Treliever, Quinton Rd., Coventry. [X1566

1917 6h.p. Royal Enfield Combination, as new, owned by engineer, gas lamps, electric lighting, all accessories, spares, guaranteed perfect; £145; seen by appointment.—W.T.J., 77, Howarth Rd., Plumstead, S.E.18. [X1266

ENFIELD 6h.p. 1916 Combination, 1919 hood and screen, tyres recently new, speedometer, luggage carrier, reflector, tools, etc., Lucas lighting and horn, excellent condition; £130.—T., 139, Barcombe Av., Streatham Hill, S.W. [X1326

LATE 1916 6-8h.p. Enfield Combination, stored 2 years, as new, unscratched, King of the Road lamps, adjustable screen, Tan-Sad, car tyre back, luggage carrier, tools; any trial; nearest £125, bargain.—Pearse, Nursery Walk, Worcester. [X1466

ENFIELD 6h.p. 1917 Combination, in really fine condition throughout, tyres nearly new, full set P. and H. lamps, and horn, a magnificent outfit, very easy to start, date guaranteed accurate; £125.—Watson, 132, High St., Aldeburgh, Suffolk. [3529

ENFIELD Combination, 1916, fitted with 1919 8h.p. J.A.P., large hood, screen, pillion seat, luggage grid, 700×80 tyres, speedometer, Lucas horn, electrically equipped, accessories, whole outfit in beautiful condition; £140.—35, Bramblebury Rd., Plumstead, S.E.18. [X1117

6h.p. Enfield Combination, late 1914 model (stored during war), complete with Cape hood, screen, Tan-sad pillion seat, luggage carrier, and special trunk for clothes, and a quantity of spares, the whole a first-class outfit; price £120.—Apply after 5.30 p.m. at 14, St. Andrew's Rd., Willesden Green, N.W. [2958

ENFIELD, October, 1916, luxurious, powerful combination, everything perfect, hood, screen, side curtains, accumulator lighting set, Lucas horn, mirror, speedometer, luggage carrier, etc., etc.; climbed Dunkery Beacon (1,708ft.) on the 7th; engineer owned; 145 gns.—Hammond, Heathside (top of Station Rd.), The Heath, Crayford, Kent. [2541

Excelsior.

EXCELSIOR (British), 1919, as new; £68/10.—4, Upper Wimpole Mews, Devonshire St., W.1. [3322

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

8h.p. 1916 Excelsior Combination, 3 speeds, hand and foot clutch, kick start, enamelled and lined as new, good tyres, perfect condition; £115.—Payne, Bristol Rd., Keynsham, Som. [X0864

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(Smaller size for lighting, one low current bulb).
Fig. 376 Leather Case, with straps ... 3/6

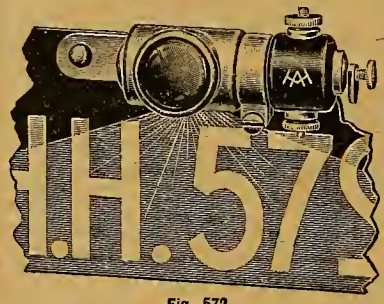

Fig. 572.
Complete with fixing bolts, inspection lamp, switch and bulb—totally insulated. The latest and best rear lamp obtainable.
NICKEL OR BLACK PLATED ..... 18/6 each

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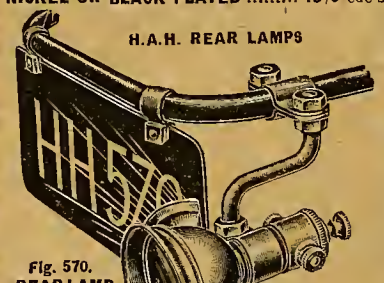

Fig. 570.
REAR LAMP.
Complete with insulated holder, switch, bulb, clip and wiring. 14/6 each.

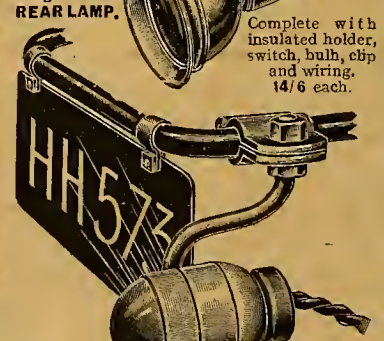

Fig. 573.
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AMERICAN-EXCELSIOR, orders now booking for early delivery; enquiries invited from Warwicks., Worcs., Staffs., Salop, and Leics. only.—The Premier Motor Co., Aston Rd., Birmingham. [3032

AMERICAN Excelsior Combination, 7-9h.p. latest, splendid condition, dynamo lighting, 3 speeds, Stewart speedometer, horn, tools; best offer over £120; seen appointment.—Chagnot, 85, Gracechurch St., E.C.3. [3118

4½h.p. British Excelsior Coachbuilt Combination, Armstrong 3-speed, 3 new tyres and tubes, extra heavy Dunlops, spare tyre and tube, lamps, horn, etc.; trial given; £58.—Killick, 4, Cossack St., Rochester, Kent. [3437

AMERICAN Excelsior, 1916, 7-9h.p. twin, 3-speed, K.S. electric lamps, Coronet sidecar, not done 1,500 miles, exceptionally fast and powerful; best offer over £110.—Morris, 18, Fairholme Rd., West Kensington, W.14. [3284

1917 American Excelsior Combination, 7-9h.p., very fast and powerful, perfect running order, and excellent condition, large Cooper sidecar, not done 3,000 miles; £140, would sell solo.—Everitt, 51, Spring Terrace Rd., Burton-on-Trent. [X0868

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3½h.p. Fafnir, U.H. mag., B.B., spring forks, mechanical valves, new tyres, belt, just overhauled; £28, cash.—Lothian Lodge, Uxbridge Rd., Hampton Hill. [3065

4h.p. Fafnir, e.i.c., mag., B.B. carburetter, new tyres and belt, engine just overhauled, smart appearance and good running order; £30.—150 Camberwell Grove, Camberwell, S.E.5. [3074

F.N.

F.N., genuine 5-6h.p., 4-cyl., Bosch, shaft drive, enamelled red; only 42 gns.—Below.

F.N. (late) 5-6h.p., 4-cyl., enclosed Bosch, multi clutch, fine machine; 50 gns.—Below.

F.N. (late) 5-6h.p., 4-cyl., enclosed Bosch, multi disc clutch, overhauled, very fast; first cheque 55 gns.—Wandsworth Motor Exchange, Ebner St., Wandsworth. 'Phone: Battersea 327. [3611

2¾h.p. F.N. Lightweight, perfect, very fast; £30.—F.B., 125, Harvist Rd., Kilburn. [2837

F.N. 2¾h.p., 2-speed, clutch, Bosch, Amac, in splendid order.—44, Lea Rd., Southall, Middlesex. [3207

F.N. Lightweight, 2-speed, clutch, large footboards, all accessories, going well; £30.—B., 112, Castlenau, Barnes. [2958

F.N. 4-cyl. Bosch, new Amac, hand clutch, tyres good; £40.—D. Myles, Preston Park, North Shields. [X0996

F.N. 4-cyl., 5-6h.p., overhauled by F.N., receipt shown, very fast; £30.—Dellow, 36, St. Donnet Rd., New Cross. [3744

F.N. 5-6h.p., 2-speed, easy starter, powerful, tyres excellent, horn, spare cover, tube, and plugs, £42; coach sidecar, five connections, £8.—5, Red Hill, Chislehurst, Kent. [X1413

F.N., 2¼h.p., shaft drive, 2 speeds and clutch, Bosch mag., machine just had complete overhaul; £25.—SX Motor Co., Ltd., High St., Horn church, Essex. [3627

F.N., 4-cyl., clutch, waterproof Bosch, footboards, J. and B., new Dunlop back, less horn, lamp; requires tuning; bargain, £25, first.—Taylor, 19, Kirchener St., St. Helens. [X1223

F.N., late model, C.B. sidecar, 5-6h.p., 2-speed, 4-cyl. H.B. multi disc clutch, 2 brand new heavy Dunlops, perfect mechanical condition; any trial; 60 gns. —Particulars from X.Y.Z., Richmond Lodge, Richmond Rd., Worthing. [2937

Grandex.

GRANDEX Combination, 3¾h.p. Precision engine, 2-speed gear, coachbuilt sidecar; 65 gns.—Garrett Halt, Robin Rd., Belvedere. [3067

GRANDEX-VILLIERS, 3h.p., 2-speed, F.E., clutch, running order; £47, or offer.—Morton, 54, Woodlands Av., Wanstead, London. (D) [3111

Harley-Davidson.

HARLEY Combination, 1916 electric model, perfect order; £135.—Fernee, 16, Longmead Rd., Tooting. [3577

HARLEY-DAVIDSON.—Delivery of latest model now expected.—Inquire, Parker's, Bradshawgate, Bolton. [X1412

1917 Harley-Davidson 8h.p., perfect condition, all accessories; 110 gns.—Carey, Ash Lea, Rock Pa., Rock Ferry, Cheshire. [X1353

1919 Harley-Davidson, electric model, delivered weeks, as new; £165; Lancashire.—Box L3,81 c/o *The Motor Cycle*. [3666

HARLEY-DAVIDSON Combination, 1915, new hood etc; £110, or near offer.—Lambert, Goose Yard St. John St., Angel, E.C. [3211

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Harley-Davidson.

HARLEY-DAVIDSON Solo, 1915, clutch model; a splendid, powerful machine; £90, no offers.—29, unningham Park, Harrow. [X1601

PLACE your orders now for Harley-Davidsons.—Horswill, Castra Motor Cycle Garage, 42, Bridge t., Chester. 'Phone: 943. [2143

1917-18 Herley-Davidson Combination, wind screen, enemel, tyres excellent, lamps; £155, or offers.—Hlaxland, Abbey, Shrewsbury. [3089

HARLEY-DAVIDSON 1915 Combination, guaranteed perfect throughout, lampe, etc.; 124 gns.—reiglais, Duke's Av., New Malden, Surrey. [3273

HARLEY-DAVIDSON, 1915, magneto model, Mills-Fulford coachbuilt sidecar; 110 gns.—Whiteead, 4, Montague Mews, Crawford St., Baker St., V.1. [3221

1918 Harley-Davidson, mag. ignition, date guaranteed, perfect condition, sidecar fitted on off ide; price £160, or near offer.—P. Collyer, Peppering, rundel, Sussex. [3004

1914 Harley-Davidson Combination. luxurious sidecar, machine just overhauled by makers; guaranteed good running order; £110.—Sharman, H.M.S Erin," Portland. [2983

HARLEY-DAVIDSON, 7-9h.p., 1916, thoroughly serviceable condition, engine overhauled, lamps, echanical hooter, wicker car; seen after 6; £90.—12, mpthill St., Norwich. [X1431

HARLEY-DAVIDSON 7h.p., C. sidecar, 1915, splendid running order, needs new back tyre; trial, ppointment, mornings; £120, no offers.—F. Craven, . Albian's House, Newmarket. [2862

1915 7-9h.p. Harley-Davidson, electric model, 3-speed, coachbuilt combination, fully equipped, spare re, 3 tubes, first-class condition; price £135.—92, loucester Rd., S.W. Kens. 6312. [3599

HARLEY-DAVIDSON Combination, late 1915, electric model, splendid running order, handsome illford sidecar; 120 gns.; after 6.—Lyons, 99, Willield Way, Golders Green, London. [3065

HARLEY-DAVIDSON Combination, 7-9h.p., 1916, new tyres and chain, Klaxon, lamps, etc., spare ew tyre and tube, Cameo wind screen, in splendid conition; £135.—9, Albert St., Belper, Derbyshire. [2907

HARLEY-DAVIDSON 1916 7-9h.p. Combination, sidecar with large locker in rear, Dunhill wind reen, Corbin speedometer, Stewart horn, tools, splend condition; £150.—3, Woodland Place, Penarth. [X1535

HARLEY-DAVIDSON Combination, just thoroughly overhauled, reupholstered, painted, and varnished, p-top order throughout, 1916 model, Festing wind reen; £145.—Tyrrell, c/o 74, Portchester Rd., Bournemouth. [3691

1915 Late Harley-Davidson, 7-9h.p., electric model, 3 speeds, with Mills-Fulford tandem 2-seater idecar; the whole lot recently re-enamelled by Harleys, sound order, all spares; £140.—Dennis, Woburn nds [X0384

1915 5-6h.p. Harley-Davidson, 2-speed, hand and foot clutch, too fast for owner, recently overhauled; ready to ride away; nearest offer to £75 cures.—Flight-Sgt. Longstaff, Sgts.' Mess, Royal Air orce, Netheravers, Wilts. [3140

HARLEY-DAVIDSON 1915-16 7-9h.p., 3-speed, Gloria sidecar, hood, wind screen, luggage grid, trol carrier, horn, lamps, tyres, all good, spares, etc., lendid turnout; £165.—L.S.T. Engineering Co., Ltd., edway St., Chatham. [2961

HARLEY-DAVIDSON Combination, 1915, in good condition, very fast or slow as required, plating ightly soiled, but appearance good, 3 lamps, Klaxon, amp, new spare tube, 3 good tyres; £120 for quick le.—Goldings, Commercial St., Hereford. [X0972

HARLEY-DAVIDSON, Model 11J, 7-9h.p., 3-speed dynamo, electric lighting outfit, Manual ignition itch, spring wheel, Gloria sidecar; recently overhauled, mechanical condition perfect; £120.—The Prelier Motor Co., Aston Rd., Birmingham. [3033

HARLEY-DAVIDSON Combination, 1917, electric model, electric horn and lamps, wind screen, disc heels, tools, spares, exceptionally large sidecar, absolutely perfect, practically unscratched; £165, no offers. Brockbank's, 58, Lord St., Southport. [X1518

HARLEY-DAVIDSON, 1915, magneto, 7-9h.p., sidecar, excellent condition, 2 new tyres, 1 new be, since May, spare tyre retreaded, spare tube, new nd screen, head, side, rear lamps, no generator; rgain; £105, quick sale.—Limmer, Heatherview, ellington, Som. [2984

1919 Harley-Davidson Combination, electric model, perfect condition, luxurious sidecar unscratched, th extra child's seat and back locker, 500 miles, res perfect, Tan-Sad, etc.; owner taking delivery r; N.W. London; any trial; best offer.—Box 273, o *The Motor Cycle*. [X1343

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Hazlewood.

5-6h.p. Hazlewood-Jap, 1916, 3-speed, K.S., coachbuilt sidecar, lamps, and speedometer, ready to ride away; £125.—Green Nook, Rodborough Av., Stroud. [2835

HAZELWOOD-J.A.P., 2¾h.p., 3-speed, clutch, sloping top tube, drip feed lubrication, good order, take 2 anywhere, any trial; 38 gns.—Box L3876, c/o *The Motor Cycle*. [3670

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HENDERSON Combination, 1918, 8-10h.p., 4-cyl., 2 speeds, clutch, accessories; 130 gns; exchange entertained.—S, Victoria Av., Surbiton. [3531

HENDERSON Combination, C.B., 10h.p., late 1915, engine No. 4074, perfect condition; £130, or near offer.—M., 1, Ravenstone St., Bulham. [X1363

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

1919 Henderson, 4-cyl.; early deliveries.—Full particulars sole Hampshire agents, The Fareham Motor Cycle and Engineering Works, 2, High St., Fareham. Tel. 91. [3388

4-CYL. Henderson, plate clutch, new tyres, re-enamelled and plated, overhauled by Robertsons, guaranteed perfect; any trial; £100.—P. and A. Edwards, 25 and 27, The Burroughs, Station Rd., Hendon, N.W.4. [2820

Hobart.

1914 Hobart, 2½h.p., 3-speed, excellent order; £35. —41, Cleveland Rd., New Malden, Surrey. [2874

HOBART 2¾h.p. Lightweight, Bosch, B.B., new tyre, belt, running order; £26.—72, Penton St., N.1. [2995

HOBART 4-stroke, pedal start, Bosch mag., 2¾h.p., good tyres, good condition; £20.—Chetwood, Ellesmere, Salop. [X1348

HOBART-VILLIERS, 1917, new condition, lamps, horn, complete; 42 gns., bargain.—Postlethwaite, Chemist, Hoddesdon, Herts. [X1396

Humber.

HUMBER Lightweight, as new; £28.—Boot Stores, 121, Acton Lane, Chiswick. [3700

3½h.p. Humber Engine, frame, and tank; £5 lot.—Bell, Photographer, 49, Riverside, Kingston-on-Thames. [X1125

2¾h.p. Twin Humber, 3-speed, clutch, lamps, horn, tools; any trial; £40.—Brockbank's, 68, Lord St., Southport. [X1321

3½h.p. Humber, 1914, 3-speed, kick start, clutch, in perfect condition; £48; evenings.—Kenilworth, Newburgh Rd., Acton. [3142

HUMBER Lightweight, as new, 3-speed; a bargain, £37/10; wanted, combination; private owner.—Seen 130, High St., Harlesden. [3101

HUMBER Combination, 3½h.p., handle start, 2-speed, roomy wicker sidecar, 3 lamps, good running order; £50.—Kirk, Fox Inn, Oadby, Leicester. [X0978

HUMBER Lightweight, 2½h.p., good condition, stored 2½ years, reliable machine; £25; seen and tried any time.—SX Motor Co., Ltd., High St., Hornchurch, Essex. [3626

1915 Humber, 4h.p., with coachbuilt sidecar, 3-speed, kick starter, completely equipped, in perfect order; price £75, cash.—St. George's Motor and Engineering Co., Ipswich. Tel.: 566 Ipswich. [3177

HUMBER, 1914, specially built 4¼h.p. track racing engine, Bosch, B. and B. semi-automatic T.T., long exhaust, knee grips, very fast and powerful machine; what offers?—Gem, Old Radford Vicarage, Nottingham. [X1030

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HUMBER, 3½h.p., 2 speeds, free engine, handle start, Bosch mag., good tyres, lamps, etc., complete with handsome wicker sidecar, good running order; £65; appointment.—Norfolk Villa, Chesfield Rd., Kingston. [3406

1914 Humber, 3½h.p., 3-speed Sturmey, B. and B., lamps, speedometer, mirror, spare tyre, tools, £60; or with very fine Bramble sidecar, spare spring, outer cover, £80; after 6 p.m., or 1 Saturday.—Belle Vue, Ruskin Av., Waltham Abbey, Essex. [2802

Indian.

7-9h.p. Indian, 2-speed, clutch; £60; seen any time.—Vicarage, Wantage, Berks. [X1214

INDIAN.—Deliveries expected, latest 1919-20 Powerplus models; secure your order.—Parker's, Bolton. [X1452

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INDIAN, 7-9h.p., 2 speeds, in good order, Premier quick detachable sidecar; £90.—King, Brook St., Basingstoke. [3558

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INDIAN, T.T. Sporting Model, 5-6h.p., free engine; £50.—Wall, Kingsley House, Drayton Green, West Ealing, W.13. [2971

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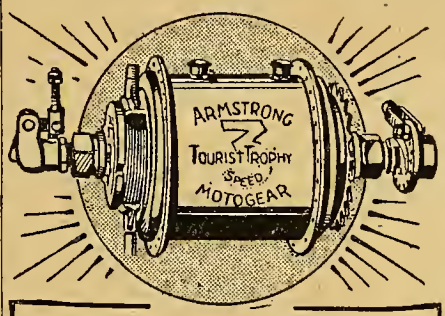

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1915 Levis Popular, just overhauled and repainted, hand Klaxon and usual accessories, tyres and machine in first-class condition; £40; can be seen by appointment.—C. Tilbury, Hat Hill, Waterbeach, near Chichester. [X1558

Lincoln-Elk.

LINCOLN-ELK Combination, 4¼h.p., 2 speeds, kick starter, Bosch mag., tyres and appearance as new; £75.—Gilling, Riverside, Cheddar, Somerset. [2890

1914 4¼h.p. Lincoln-Elk, 2-speed, free engine, kick starter, very powerful, in splendid condition; £52, or nearest offer.—H. Deerin, Forrestfield, by Airdrie. [3459

LINCOLN-ELK, 4-speed Osborn gear, spring pillar, footboards, drop back, believed about 1913; £25.—Apply, Geary, 156, Uxbridge St., Burton-on-Trent. [X1055

L.M.C.

£22.—L.M.C. 3½h.p. motor cycle, Bosch mag.—Speechley, 1, Gunnersbury Lane, Acton Hill. [3490

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MARTIN, red, 8h.p., special racing engine, T.T. bars, disc wheels, long exhaust, very fast and sporty, easy starting and control, appearance, Dunlop tyres and belt as new; sure sale if seen; £55.—Gurry, Ditton, Cambs. [3092

Matchless.

1914 Matchless, clutch, 8h.p., mechanically perfect, as new; £77.—Homestead, Hayes, Middlesex. [3207

MATCHLESS.—New 1919-20 models; to ensure delivery, order now.—Parker's Bradshawgate, Bolton. [X1450

MATCHLESS Combination, 8h.p., 1918 model, condition as new; £145.—Howell, Wokingham Rd., Reading. [3017

CROW Bros., High St., Guildford, West Surrey, agents for the new Matchless.—Order now for early delivery. [4085

JONES' Garage, special agents for Matchless, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2921

MATCHLESS C.B. Combination, 8h.p., K.S., good condition; £80, offers.—Millard, 41, Grosvenor Rd., Belvedere, Kent. [3542

MATCHLESS, 1915, 8h.p., 3-speed, T.T., thoroughly reliable and fast; £70, or offer.—72, Woodside Park Rd., N. Finchley, N.12. [3000

MATCHLESS, 1913-14, wicker sidecar, 8h.p., hai gears, kick start, thoroughly overhauled, tyres new; £80.—Higgins, Moorfield Rd., Orpington. [3229

FOR Sale, 8h.p. Matchless-J.A.P., all chain drive coachbuilt sidecar, accessories, and splendid running order; £110.—52, New King's Rd., Fulham. [3726

MATCHLESS 8h.p. J.A.P. C.B. Combination, 1914 2-speed, clutch, K.S., fast, powerful, excellen condition; £110.—Hammond, Millgreen, Spalding. [X102

MATCHLESS, 8h.p., coachbuilt combination, 2 speed wind screen, speedometer, lamps, etc.; 8 gns; evening.—8, Queen's Row, Camberwell Gate, S.E [307

MATCHLESS C.B. Combination, 2-speed, reliable lamps, wind screen, privately owned; £82 cash or nearest offer.—Harrison, High St., Brentwood. [X124

MATCHLESS 6h.p. Combination, C.B., 2 speeds K.S., new tyres, lamps, accessories; best offer ove £70.—Lankaster House, Lankaster Gardens, E. Finch ley. [366

MATCHLESS Combination, 6h.p., Vindec 2-spee gear, coachbuilt sidecar, 3 lamps, speedometer spare belt; trial; £85.—Birch and Agar, Sutton-at-Hone Kent. [X109

8h.p. Matchless Combination, spare wheel, Palme Cord tyres, speedometer, acetylene lighting se in top-hole condition; £145.—Seen, 176, Lower Rd Rotherhithe. [288

MATCHLESS 8h.p. Victory Combination, 4 inte changeable wheels, Lucas lamps, speedometer hood, screen, horn; all complete; £165.—Lyons, 13 Lambeth Walk, S.E.11. [319

MATCHLESS Coachbuilt Combination, 1914, 8h. J.A.P., 2-speed, chain drive, Binks, tyres nearl new, lamps, horn, luggage grid, fine condition; 95 gn —24, Wydehurst Rd., Addiscombe. [312

MATCHLESS 8h.p., O.H.V., T.T. model, very fas large lamp, knee grips, single speed, tyre tubes, and belt all good, Amac, Bosch; £70.—Thoma 150, Merton Hall Rd., Wimbledon, S.W. [336

MATCHLESS Motor Cycle, 1913 pattern, 8h.p wicker sidecar, just thoroughly overhaule good condition, a splendid machine, will go anywhere £97/10.—Box L3,867, c/o *The Motor Cycle.* [31

MATCHLESS-J.A.P. 6h.p., fixed, little used, pe fect condition, lamps, speedometer; owner leavi country; no offers; £67, lowest.—Grisold, 148, Trini Rd., Wandsworth Common. (After 6 p.m.) [37

MATCHLESS-J.A.P., 8h.p., o.h.v., T.T. machin lamps, speedometer, new belt, tyres good; really fast machine.—Offers over £40, to Dix, o King and Harper. Bridge St., Cambridge. [30

MATCHLESS-J.A.P., 1914, 8h.p., sporting singl speed solo, Binks, Bosch, lamps, speedometer etc.; purrs like a dove, roars like a bull; 7 to m.p.h.; bargain, 70 gns.—Hellyer, Keble College, O ford. [36

MATCHLESS, 5-6h.p. J.A.P., kick start, free e gine, Canoelet touring sidecar, Bosch, speed meter, lamp, accessories, good condition; 70 gns.; vi evenings by appointment.—Bassett, 95, Talgarth R W.14. [34

MATCHLESS, 1914, 3½h.p. twin J.A.P. engi Armstrong 3-speed and clutch, Bosch mag., tyr as new, exceptional condition throughout, very lit used, overhauled; £60; exchanges.—R. D. Var Thundersley, Essex. [36

MATCHLESS 1919 Victory Model, delivered Ap hood, screen, Lucas lamps, Klaxon, speedomet watch, Tmsad, Enk easy starter, petrol 'economis perfect outfit; £185.—James, 6a, Cheapside, High R Wood Green. 'Phone 1615 Hornsey. [29

MOTOR CYCLES FOR SALE.

Matchless.

MATCHLESS 1915. M.A.G. 7-9h.p., Phœnix C.B. bulbous back sidecar, 3 speeds, Klaxon horn, 3 mps, al-chain drive, speedometer, very little used, solutely perfect and very smart; £135.—31, Raglan d., Whipps Cross, Walthamstow, E.17. [2928

MATCHLESS Combination (Alldays), 1915, 4h.p., 3-speed countershaft, clutch, kick start, lamp set, c., light torpedo coachbuilt sidecar, ready for the road, cellent condition, and perfect running order; £63. Martin, 8, Grenville St., W.C. (Near Russell Sq.). [3745

MATCHLESS New Model H, spring frame, 8h.p J.A.P. engine. Write at once and book for earliest elivery, Lucas dynamo outfit at option, 5% on ur deposit. Decide now and order the best com ination.—J Tassell. 1a Bloomfield Rd. Plumstead [4791

NOANS and Dunn, 93, Mason's Hill, Bromley, Kent, placed a good contract long ago for Matchless mbinations, and are now booking orders strictly in tation for earliest possible delivery; be early on our aiting list, satisfaction assured 'Phone: Bromley 50. [4068

MATCHLESS 7h.p. M.A.G. Combination, late 1914, 3-speed, countershaft, latest Claudel-Hobson tomatic carburetter, special Canoelet C.B. sidecar ith hinged cover and Triplex screen, completely uipped, been stored; any trial; £120.—Blencathra, aidstone Rd., Chatham. [3550

MATCHLESS 1919 Victory Model 8h.p. Combination, as new, 4 interchangeable wheels, light car re on driving wheel, 3 Lucas lamps and generators, asting wind screen, horn, Lucas pillion seat, tools, are inner tubes, and parts; £165, or offer.—E. King, Myra St., Plumstead, S.E.18. [2878

MATCHLESS-J.A.P. 1914 Combination, Bramble, fitted 3 lamps, new tyre and tube back, Klaxon nd Lucas horns, speedometer, screens, apron, pillion at, spares, new cover, 4 inner, 4 valves, springs, ugs, piston rings, etc., splendid condition; best over 5 gns.—13, Windsor Rd., Teddington. [3044

MATCHLESS-J.A.P. 8h.p. 1913-14 Coachbuilt Combination, 2-speed, clutch, kick start, Amac, osch waterproof, full set Lucas and P. and H. lamps, ind screen, handle-bar mirror, etc., enamel and ating indistinguishable from new, perfect condition echanically, been stored during war; a real bargain, 90.—Watson, 132, High St., Aldeburgh, Suffolk. [3528

Metro.

METRO-TYLER. — Sole agents for Hertfordshire. Chandler, Reyre and Williams, Sun St., Hitchin [0998

METRO-TYLER, 1919 (May), 2-speed, long exhaust; £58, or offers.—Massey, Market Sq., Rugeley, taffs. [X1105

METRO-J.A.P., 1919, few weeks old, red discs, plated exhaust, new lamps, horn, tools; best offer er £50.—Ellis, 70, Lewisham Park, S.E. [X1265

1919 Metro-Tyler, the sporting lightweight; early deliveries.—Full particulars, sole Hampshire agents, he Fareham Motor Cycle and Engineering Works, 2, igh St., Fareham. [3390

SPORTING Metro, 2¾h.p., 2-stroke, 2-speed, beautifully enamelled olive green, disc wheels, extended haust pipe, brand new, Miller lamp set, original res, almost new, 100 m.p.g.; a bargain, £55.—ichardson, 121, Bold St., Fleetwood, Lancs. [X1218

Minerva.

MINERVA, 2¾h.p., mag., low, ride away; £21.—54, Dundonald Rd., Wimbledon. [2848

3½h.p. Minerva, mag., B. and B., adjustable pulley, good tyres and tubes; £17, or offer.—10. Churchill d., Croydon. [3261

MINERVA 3½h.p., 2-speed, perfect, in splendid running order; a bargain, £29/10; private owner.—Seen 30, High St., Harlesden. [3103

MINERVA 2½b.p., low frame, Grado gear, lamp set, Klaxon, mechanical valves, ride away; £23. 141, Broadway, Cricklewood. [3356

MINERVA, Chater-Lea, drop frame, 2½h.p., m.o.v., U.H. mag., footboards, splendid running rder; £25.—151, Kingston Rd., Teddington. [3610

3½h.p. Minerva, reconstructed, re-enamelled, condition perfect, splendid hill-climber, lamp, toolbag, nd horn, new C.A.V. mag., B.B.; photo; £22.—22, eville Rd., Worthing. [1090

MINERVA, 3½ (?)h.p., Bosch mag., Chater-Lea frame, B. and B. carburetter, footboards, condiion as new, low built, very smart machine; ready to ide away; £27.—3, Foxley Rd., Kennington. [3121

Moto-Reve

MOTO-REVE, spring forks, like new in every way; £15.—Hichens, St. Ives, Cornwall. [X0977

MOTO-REVE 2¾h.p. Twin, excellent condition, except mag., which requires attention; £12.—43, ilmorie Rd., Forest Hill. [3574

MOTO-REVE Twin Lightweight, mag., B. and B. carburetter, spring fork, excellent condition; 15.—Bostock, Byron St., Ilkeston. [X1378

MOTO-REVE 2¾h.p. Twin, excellent condition, re-enamelled, engine and mag. overhauled; ride away; 22, or offer.—34, Millgrove St., Battersea, S.W.11. [3594

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MOTOSACOCHE 2¼h.p., mag., B. and B., spring forks, good tyres, overhauled throughout; £17/10, cheap lot, carriage paid.—Clifton, Engineer, 62, Wells Rd., Bristol. [X1560

MOTOSACOCHE.—We have one new 1919 3½h.p. Motosacoche machine, 2-speed, chain drive, M.A.C. engine; £96.—Motosacoche, Ltd., Kenmont Works, Willesden Junction, N.W.10. [X1369

New Hudson.

NEW HUDSON 3-speed and Sidecar, 1916; £80.—Seen at Taylor's Garage, Winster, Matlock. [X1342

NEW HUDSON Combination, Bosch, B.B.; £60; 3 speeds.—120, Fielding Rd., Bedford Park, Chiswick. [3568

NEW HUDSON, solo or combination; excellent delivery now assured.—Parker's, Bradshawgate, Bolton. [X1445

NEW HUDSON parts, except damaged frame and tank, 3½h.p.; best offers.—Box 286. c/o *The Motor Cycle.* [X1554

4h.p. New Hudson Combination, Bosch, 3 speeds, clutch, good condition; £75, offers.—42, West St., Bridport. [3601

NEW HUDSON 2-stroke, 1917, B. and B., very fast, splendid condition; 38 gns.—136, Lambeth Walk London. [3198

NEW HUDSON, 3½h.p. J.A.P. engine, 3-speed, free engine, tyres as new, complete for road; £38.—Small, 23, Church Rd., Erith, Kent. [3201

1913 New Hudson, 2¾h.p., 3-speed and clutch, in good order; £35, cash.—St. George's Motor and Engineering Co., Ipswich. Tel.: 566 Ipswich. [3182

NEW HUDSON, 2½h.p., 2-stroke, 1916 model, lamps, etc., perfect running order; £45; seen after 6 o'clock.—Southam, Blyth Rd., Bromley, Kent. [2999

1912 New Hudson, 3½h.p., with wicker sidecar, 3-speed, in splendid condition; £60.—St. George's Motor and Engineering Co., Ipswich. Tel.: 566 Ipswich. [3178

BRAND New 1919 New Hudson 2-stroke, 2-speed model de luxe, for immediate delivery; price £57/15.—Ballard's Motors, 92, Gloucester Rd., S.W. Kens. 6312. [3598

NEW HUDSON 4h.p., 1919 (July), 3-speed countershaft, lamps, horn, etc., all new, coachbuilt sidecar, a beauty; £130, or nearest.—Gaunt, Woolley, Darton, near Barnsley. [X1112a

1914 4h.p. New Hudson, 3-speed countershaft gear, Klaxon, spare belt and valve, mudshields, excellent condition; £85.—83, Litchfield Rd., Bloxwich, Walsall. [X0974

3½h.p. New Hudson, chain-cum-belt, Bosch magneto, 3 speeds, lamp, horn, tools, etc., absolutely as new; will take a sidecar anywhere; our price to clear, £62/10.—Cordingley, Haslingden. Tel.: 102. [3644

NEW HUDSON Combination, 1916, lamps, horn, tools, Jones speedometer, 3-speed, countershaft, 88 m.p.g., perfect condition, just toured Wales; sacrifice, £92 gns.—264, Stoney Stanton Rd., Coventry. [X1385

NEW HUDSON 6h.p. Coachbuilt Combination, kick start, new hood, screen, 2 new tyres, lamps, spare cover and tube, just overhauled, in perfect condition, take 3 anywhere; any trial by appointment.—'Phone: North 285. [3007

A BIG 6h.p. New Hudson, late 1914, C.B. combination, 3-speed, kick start, wind screen, luggage grid, lamp, accessories; price 80 gns.; good condition.—C. Kennett, Queen's Head Hotel, Duke St., Henley-on-Thames. [X1494

NEW HUDSON, 1916, 3½h.p., 3 speeds, clutch, K.S., decompressor, lamps, horn, new Dunlop tyres, recently overhauled, receipt shown, excellent order; £55, or nearest; owner going abroad.—Apply, 12, Constantine Rd., Hampstead, N.W.3. [3367

NEW HUDSON 2¾h.p., 3-speed Armstrong gear, clutch, kick-start, Senspray carburetter, Bosch mag., both tyres practically new, would take sidecar, lamp, generator, tools; £40; can ride away.—11, London Rd., Ashford, Middlesex. [3533

NEW HUDSON 2¾h.p. 2-stroke, as new, with head lamp, generator, Stewart speedometer, 2-speed countershaft gear, rear lamp and generator, in perfect order and tip-top condition; any trial given; £55, or near offer.—Burge, Leicester Rd., Ashby-de-la-Zouch, Leicestershire. [X1046

New Imperial.

NEW Imperial.—Caffyns, Ltd., Eastbourne, are booking orders for delivery shortly. [0018

NEW IMPERIAL-J.A.P., 1916, 2¾h.p., 2-speed, good tyres, lamps, spare belt; £45.—16, Blythe Hill, Catford, S.E. [3578

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, horn, lamps; ride away; £45; after 5.—6, Hemstal Rd., W. Hampstead. [3628

£35.—1914 New Imperial Jap, 2-speed, new cylinder and piston; fine condition.—Millard, Abbey Rd., Belvedere, Kent. [3083

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NEW IMPERIAL-J.A.P., 2¾h.p., 2 speeds, 1916, excellent condition.—Waddelow, Scotton, Gainsborough, Lincs. [X1416

NEW IMPERIALS. Call and inspect the latest models.—Sole London agents, Rey's, 173, Great Portland St. 'Phone: Mayfair 879. [9677

1917 New Imperial, 2-speed, clutch K.S., splendid condition; £45; all accessories; after 7.—52, Hazelleville Rd., Hornsey Rd., N. [2764

NEW IMPERIAL-J.A.P., 1916, 2¾h.p., 2-speed, just overhauled and rehnshed, receipt shown; £45.—25, Park Hill Rd., Sidcup, S.E.9. [3053

1916 J.A.P. New Imperial, ready to ride away, Klaxon, lamp, etc.; seen any time; £50.—28, Prince of Wales Rd., Kentish Town, N.W.5. [X1365

NEW IMPERIAL, 6-8h.p., 3-speed, all-chain drive, 28in. wheels, just delivered; £120.—223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [3172

1919 (July) New Imperial-Jap, mileage under 50, 2¾h.p., accessories, wicker pillion chair; any trial; £58.—32, Cyril Mansions, Battersea Park. [X1345

NEW IMPERIAL, 2¾h.p., 2-speed, long exhanst, new tyres, fine condition, smart, 47 gns; with accessories 50 gns.; after 5 p.m.—54, Cecil Av., Enfield. [2886

1919 New Imperial 8h.p. Combination, 3 speeds, clutch, Easting, spare tyre, tube, valve, links, lamps, Klaxon, as new; £165.—20, Redlam, Blackburn. X1388

NEW Imperial, J.A.P., 2¾h.p., 2-speed countershaft, horn, lamp set, tool bag, excellent running order, powerful; 48 gns.—37, Elm Park Rd., Church End, Finchley. [3076

NEW IMPERIAL-J.A.P., 1915-16, 2¾h.p., tyres and belt almost new, thoroughly overhauled, perfect condition; £52.—Apply by appointment, D. Davis, 61, Dartmouth Rd., Brondesbury, N.W. [2801

NEW IMPERIAL-J.A.P., 2¾h.p., new condition, 2-speed countershaft, complete with lamps and spare belt; £47, or exchange with cash for Rudge Multi, I.O.M.—151, Globe Rd., Bethnal Green. [3410

NEW IMPERIAL-J.A.P. 2¾h.p., 2-speed, countershaft, free engine, condition as new and faultless, easily paddles off and very fast; price, 44 gns.; guaranteed.—Barrington, 136, Harrington Rd., Norwood Junction. [3360

NEW IMPERIAL-J.A.P., 2¾h.p., late 1916, tyres, enamel, plating good, engine perfect, Bosch, B.B., electric horn, 2 lights, pump, 2-speed, free, spare belt, jet, tools, footboards, fast; first cheque £50 secures.—C. Head, Down Mill, Bexhill, Sussex. [2952

NEW IMPERIAL Combination, 1919, 6h.p. J.A.P., 3-speed, hand controlled clutch, luxurious Cooper bulbous back sidecar, 3 large lamp sets, 28×3 wheels; this machine is very fast and as new, having only done 500 miles; £150, or nearest offer, or exchange 1919 countershaft Triumph, Norton, Douglas, or similar solo machine.—43, Grove Rd., Sparkhill, Birmingham. [X1488

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed countershaft gear, smart looking and fast machine, only done about 1,500 miles, tyres good as new, complete with head light, generator, rear light, horn, pump, and useful spares for touring, over 100 miles to gallon petrol; 48 gns.; owner wants sidecar machine; after 6 p.m.—22, Vicars Hill, Lewisham. 2806

New Ryder.

NEW RYDER 2¾h.p., 2-stroke, late 1917, not run 400 miles, condition as new; £40.—H. Griffiths, Prestcott, Prestbnry, Cheltenham. [X1091

24 3h.p. New Ryder-Villiers, bought 1916, accessories, new belt, tyre, good running order; £35, or nearest offer.—Write, Box L3,819, c/o *The Motor Cycle.* [2901

1919 New Ryder-Villiers 2½h.p. 2-stroke, 2-speed, F.E. complete, with good insurance; £60; after 7.—179, Broomwood Rd., Clapham Common, S.W.11. [3526

Norton.

CROW Bros., High St., Guildford, Norton agents; let us reserve you one. [3301

NORTON.—Deliveries now commenced, all models. —Inquire approximate dates, Parker's, Bradshawgate, Bolton. [X1449

4h.p. Chain-cum-belt 3-speed Norton, special model; £100, or near offer; guaranteed in good running order.—Box L3,822, c/o *The Motor Cycle.* [2974

NORTON, 1918, Big Four, C.B.—sidecar, 3 lamps, Watford speedometer, mechanical horn; £130, no offers.—Budd, 34, Bellevne Rd., Wandsworth Common. [3624

LATE 1916 Norton Big Four, chain-cum-belt, Lucas lamps, horn, and tools complete, condition as new, very powerful machine; £95.—D. Mitchell, Lodge Rd. Extension, Rugby. [X1032

NORTONS.—We are now booking orders for the latest model Norton solo and sidecar outfits; £5 deposit; deliveries in strictest rotation.—Mondes', 100, Gt. Portland St., London, W.1. [5675

JONES' GARAGE.

Jones' Garage have in stock, for immediate delivery, a few brand new 5-6 h.p. Rover Combinations, fitted with lamps, horn, etc., ready for the road.

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New 1919 **NEW IMPERIAL,** 2-speed, K.S., H.B.C. clutch, complete with lamps, etc.
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1916 **LEVIS** 2-stroke.
1913 4 h.p. **BRADBURY,** 2-speed.
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Norton.

NORTON 1916 4h.p., 3-speed gear, kick starter, hand operated clutch, and sporting cancelet sidecar, fully equipped, lamps, horn, speedometer; stored 2 years; practically new: £125, or near offer.—168, Wandsworth Rd., S.W. (near Vauxhall). [X1643

N.S.U.

5-6h.p. N.S.U., Bosch, twin; £20; exchange 3½h.p.; offers.—Clarkson, Tailor, Ilkley. [3385

N.S.U., 3½h.p., 2 speeds, running order; £25.—255, Barcombe Av., Streatham Hill. [3049

N.S.U., 3½h.p., 2-speed, mog., good condition; £25.—Powell, Marefair, Northampton. [X1143

3h.p. N.S.U., single speed, 4-stroke; £25.—Parsons, Limes, Cowslip Rd., South Woodford. [X0870

N.S.U. 4½h.p. Twin, 2-speed, Bosch, sound running; £17.—Bradley, Coldwell Cottage, High Felling, Gateshead. [2946

N.S.U., 3½h.p., Bosch mag., inlet o.h.v., good running order; £27.—79, Plashet Lane, Upton Park, London, E. [2990

3½h.p. N.S.U., kick starter, 2-speed, front and rear sprung, good tyres; £42/10.—54, Dundonald Rd., Wimbledon. [2860

N.S.U. Twin, 2-speed, free, Bosch, B. and B., good running order; £30, or near offer.—P.O., Kingston, nr. Canterbury. [3371

5-6h.p. N.S.U. Combination, Bosch, Senspray; £40, or near offer, bargain.—Trengove, 23, Church St., Great Harwood. [X1395

6h.p. N.S.U. Motor Cycle and Sidecar, speedometer, 2 speeds, tyres splendid; £55.—Morley, 49, Narford Rd., Clapton, N.E. [3494

6h.p. N.S.U. (1914 engine, m.o.i.v.), in splendid condition, single geared T.T., good tyres, etc., less mag.; £30, or nearest offer.—29, Brudenell Rd., Leeds. [X1332

N.S.U. 6½h.p. Twin, Bosch, 2-speed, free, engine in good order, paint as new, Indian red; snap at £38.—Redshaw, Hollsannery Cottage, Bidfeord, North Devon. [2968

N.S.U. 5-6h.p. Twin, B. and B., Bosch, good tyres, 2-speed gear, lamps, horn, all in excellent condition; £35; ride away; after 6.—6, Coverton Rd., Tooting. [2807

N.S.U., 3½h.p., 2-speed gear, free, mag., B. and B. carburetter, new heavy back Dunlop, head lamp, generator, requires slight repair; bargain, £20.—Box L3,820, c/o *The Motor Cycle.* [2972

N.S.U. Combination, 6h.p. twin, 2 speeds and free, overhead inlets, kick start, Bosch, spring frams (fore and aft), tyres as new, tools, and spares, speedometer, 3 lamps, perfect order throughout; £55.—51, Gilpin Av., East Sheen, S.W.14. [3132

N.U.T.

N.U.T., 1915, T.T., 2¾h.p., overhead valve J.A.P. twin, 2-speed; £65, no offers.—Luton Tool Co., Crawley Rd., Luton. [3544

T.T. Twin N.U.T., single speed, new condition, new head lamp set, very fast, in perfect running order; £75; wanted, combination; private owner.—Seen 130, High St., Harlesden. [3099

N.U.T.—Sole agents for Staffordshire. For particulars of prices and deliveries, watch future announcements.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5605

N.U.T.-J.A.P. 4-5h.p. Twin C.B. Combination, N.S.U. gear and 3-speed hub, splendid condition, just overhauled, speedometer, spare tubes and cover, 3 lamps etc.; £80.—317, King St., Hammersmith. [3200

N.U.T.—We have been appointed district London agents for N.U.T. motor cycles. We hope shortly to be in a position to give full particulars of the new models and approximate dates of delivery.—Vivian Hardie and Lane, Ltd., 24, Woodstock St. (off Oxford St.), Bond St., London, W.1. 'Phone: Mayfair 6559. [0024

O.K.

O.K. 2½h.p., 2-stroke, splendid condition; £35.—66 Durban Rd., Grimsby. [X1085

2½h.p. 2-speed 2-stroke O.K. Junior, good going order; £40.—Mid. Parker, H.M.S. "Resolution," G.P.O. [X1083

JONES' Garage, special agents for O.K. machines Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2923

O.K. Juniors must be booked now if you really want to get there and back every time.—Young's, The Parade, Kilburn, N.W.6. [0963

O.K. 2¾h.p., 1917, smart appearance; genuine bargain going; going cheap; £32.—Ashford, 49, Dagmar Av., Wembley Hill, Middlesex. [2923

O.K. Lightweight, 2-speed, countershaft, late model, fine order, complete lamps, tools, etc., £38.—Woolley, Harbour St., Whitstable. [3300

O.K. Junior, 1916, countershaft 2-speed, complete with lamps, horn, pump, etc., new Dunlops, aluminium footboards, machine been stored, and in practically new condition and perfect; first £40.—6, St. Albans Av., Acton Green, W.3. [3735

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (nine lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
Telephone: 620 City.

Subscription Rates: Home, 17s. 4d.; all countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

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UNITED STATES—The International News Agency, New York. CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 152, Bay Street, Toronto.
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Importation of Motor Cycles into the British Isles.

AMERICA can now export into this country as many motor cycles as she cares to send, and, as it is not likely that incoming machines will be sold at a less price than that ruling in the country of their production, no question of dumping, with its consequential penalties, need be considered. It is certain too that there will be no big flood of machines—at present the very high cost of manufacture in America, together with the existing 33⅓% duty, would preclude any possibility of such a thing happening. Both buyers and British manufacturers have awaited this news with mixed feelings. Many makers have full order books, and have not viewed with the slightest apprehension this expected announcement. There are a few, however, who are uneasy, and scent a storm in the distance. Even now they are "tightening their grip," so to speak, knowing a fight is imminent sooner or later. These men saw that British manufacturers were coming to grips in 1914. Indications were very obvious then that American productions were appealing more and more to the British buyer. Neither was it salesmanship nor good service alone that sold these machines.

A few long-sighted men maintain that it is a fool's paradise in which makers are living to-day. Certain it is that never again will such a quantity of orders be obtained with such little effort; and to find difference of opinion or no opinion at all on such a vital subject as the importation of foreign motor cycles is ominous.

We know the British maker turns out the finest machines in the world, and that for the moment demand is much in excess of production; yet new models showing big improvements on 1914 designs are comparatively rare.

The present demand should not blind manufacturers to the fact that old designs will not do. At the moment, buyers will take almost anything, putting up with poor finish and bad detail work, knowing that general labour trouble is chiefly responsible.

The removal of import restrictions on motor cycles, so far as the quantity imported is considered, should be a stimulant, and not be treated with the indifference, which, after all, may be simply a pose on the part of many manufacturers we have met. The real tussle will come if, and when, the import duty is removed.

The A.C.U. Six Days Trials.

IN four days' time we shall see a renewal of the Six Days Trials, after an interval of five years. It will be the first great trade trial of motor cycles since the war, greatly surpassing the short distance events in importance and its far-reaching effects. In previous years, it was the one great event in which almost all manufacturers essayed to test publicly their new models, knowing full well that any motor cycle that came through the Trials with flying colours merited the praise received; conscious, too, that brilliant achievement would beget financial success.

As a test for sidecar outfits it is supreme. The Welsh byroads, with their water gulleys, water-splashes, and steep gradients, will eliminate any sidecars, of which the chassis are unsound. It is a sporting test, too, and this year everyone is anticipating it with more than usual eagerness. We reviewed the chief features of the trial on this page last week; there is nothing strikingly original in the programme; indeed, originality in trials in these days must of necessity border on the futile, for the most worthy innovations have already been tried. We have urged many times that still greater attention should be paid to the silencing of motor cycles, and this year marks will be deducted for excessive noise. To make the trials a great success and enjoyable, we must hope for fine weather; pouring rain will add to the difficulties of the rider, but, on the other hand, will provide an additional test for transmissions and electrical equipment.

An index to the advertisements in this issue will be found on the page facing the back cover.

OUR AMERICAN NEWS LETTER.

Sport and Business Phases of the Motor Cycle as they are Happening in the United States. A New Indian "Scout" Model.

WITH the late and highly successful war hull down on the horizon the pastime of motor cycling has again come into its own, and on a bigger, better, and busier level than ever. Possibly the most illuminating indication of this far greater popularity is the fact that, whereas only two large factories were keen for the racing game at the beginning of the season, the Harley-Davidson and Indian, who played a lone hand for several months and shared all honours between them, now as the season goes into the tail end, but with plenty of big races ahead, the Excelsior factory has had a hypodermic injection of pep, and they are hot after the first honours at the biggest race of the year—Marion-Indiana 200 mile road race—with eight motors that burn the wind. The Reading-Standard, too, have felt the urge, and as their stock motor rates well oversized, they are making a 61 cubic inch (1,000 c.c.) job to get back in the fold and line up with the rest of the field when the starter's flag drops. With four makes hot after the glory we may look forward to a busy season.

Records Across the States.

On the road we have had a revival of interest in the record-making and breaking rides. Over on the Pacific Coast four machines have looped it down the highway from Canada to Mexico, a matter of riding 1,714 miles and crossing five mountain ranges with plenty of smooth boulevards on the fag end of the trip to pull the m.p.h. up, and at the present time three records are on the book. H. C. Scherer, on a Sports Model Harley-Davidson, holds a medium-weight mark of 64h. 58m. This is for 36 cubic inch (590 c.c.) motors. E. G. Baker, driving an Indian and sidecar machine, rolls the distance in 65h. 53m. His motor capacity was 72.6 cubic inches (1,190 c.c.). Wells Bennett, astraddle of an Excelsior, is the solo record holder with a time of 53h. 28m. Incidentally, Baker had shot down the trail solo in 58h. 47m., but held the record less than two weeks.

Baker, who is also known as the "Cannonball," has made two attempts at the Trans-continental record made by the late Alan T. Bedell, on a Henderson. The Bedell-Henderson record of 7 days 16 hours 16 minutes was hung up in June, 1917. Baker has made three unsuccessful rides to lift this honour, but was jinxed each time, twice within 500 miles of his goal. He has left the Pacific Coast once again, and before this appears in print may have startled the motor cycling world with a coast-to-coast ride in a fraction over five days. At least, those are his plans. And rumour has it that Baker will attempt a Trans-continental sidecar record before snow flies. That would be making motor cycle history.

Sporting Competitions.

Hill-climbing has caught the fancy of the riders, and it is the most popular outdoor sport motor cyclists enjoy this season. The idea is to look for the most formidable slant possible that combines with it a treacherous surfaced grade, then to advertise the climb as impossible, after which it is, according to Hoyle, to make your programme and rules ready. But with this defect, a loophole in the rules that permits of wrangling over what is stock and non-stock. Believe me, that latter is the nemesis that has pursued all local hill-climbs around our section, and being referee is no sinecure. The Motor Cycle and Allied Trades' Association Competition Rules are just a bit too lax in defining stock, and the right of a promoter to bar or admit motors as he may see fit makes for more than the usual bit of chin music and word barrage. We are heartily in favour of 61 cubic (1,000 c.c.) inch and 74 cubic inch (1214 c.c.) open classes only in competition until a fair definition of the word stock motor is placed on the books.

The National Road Championship Race at Marion, Indiana, to be staged on September 1st, bids fair to rival Dodge City's famous 300 mile event of a few seasons back, and it is likely that teams of at least five fast men and motors from each factory will be in action on the road, and thousands of motor cycle enthusiasts will be on deck from all points of the compass.

The new Indian Scout model fitted with an engine of 574 c.c., rigid duplex frame, 26in. wheels. Its weight is 260 lb., gear wheels being used for the primary drive, the final chain drive being on the right of the machine and unenclosed.

New Models.

So much for the sporting phase of the pastime. Rumours are being whispered about that 1920 will see new models on the market. Here are a few caught at random. The Excelsior are ready with an L head four-cylinder motor and shaft-driven wheel. Then the next (whisper!) that the four-cylinder is fair dinkum, but the chain drive has not been abandoned.

The Harley-Davidson are reported to be marking time in basic design, but are refining their minor details a bit. Then in the next breath is the news they are ready to go over to separate lighting system—*à la* generator and battery.

The Cleveland, our best two-stroke motor cycle, is still sticking to the original power plant, but is going in for a stronger frame with less nick-knack on it.

The Indian Scout Model.

The Indian have in hand a medium weight, a miniature Powerplus motor of 35 cubic inches (574 c.c.), with a train of gears taking the place of short drive chain and a new three-speed gear. The whole power plant removable as a unit. It will be a 26in. wheel job, and a rigid frame of the duplex type, not unlike the rear end of a Henderson in general outline. The forks are husky young edition of the big twin model, and mudguards are supported by strap instead of rods. The kick-starter will be on the right which is opposite to American practice but almost universal with your machines I imagine. The chain drive is on the right side, and is not enclosed. It is a wonderful bit of work, the product of C. B. Franklin that well-known Irish road rider who gave a good account of himself on track and road competitions several seasons ago. The new motor will be known as the Scout model, and it is an advance in motor cycle construction that will make an instant appeal to riders, especially of the Clan Short-legged. The Scout Indian weighs 260 lb. and will hop over the road at the rate of 63 all out. In fact, testers have rolled the little one from Springfield to Boston, a matter of 100 miles, in 121 minutes. I had it out in deep sand and could ramble around in second gear and batter down 4in. ruts in spite of my 195 lb. of bone and bone.

The big Indian is being gone over by Mr. Franklin and no longer will there be adjustable handle-bars and all the Swedish *bric-à-brac* cluttering the clean lines of the head and fork fastening as in the past. I saw a reverse gear working satisfactorily on the sidecar outfit.

I also hear that 27×3½in. tyres are being made for the market, and that 26in. wheels will be optional on some makes next year. Twenty-six inch wheels are stronger, give more mudguard clearance, and lower the saddle position. I am strongly in favour of them.

E. B. HOLTON.

A Cooling Test.

A SELANGOR correspondent appeals to British makers to lower the Scott time of 7½ hours for 100 ascents of Sutton Bank, suggesting that an engine which can keep cool throughout this test would be most suitable for the tropics. It would be a pity if any readers regarded the technical side of this suggestion seriously. The achievement was probably beyond the compass of many machines at the time when it was performed; but it constitutes no better test of cooling than a single ascent, for the simple reason that the engine has ample time to re-cool during the one-mile descent. In other words, the feat was a splendid demonstration of reliability and of brake power; but as a test of cooling it is not remarkable, and affords little criterion for tropical riders, who have to negotiate longer and steeper hills in higher temperatures. No modern machine, with the possible exception of some fifth-rate two-strokes, should overheat during the ascent of Sutton Bank.

Nearly up to £200.

I HAVE yet to see a motor cycle listed at £200 or over, but our recent issues have advertised machines at over £190. It remains to be seen whether some dozen cycle cars and light cars catalogued at a lower figure will share the universal rise in prices when they emerge from the teething stage into production. If not, we shall at last see the several types matched against each other without price handicaps. I have few doubts as to the issue of such a competition, but I am bound to say that the general running of some of the best 1919 sidecar outfits is a real eye-opener. They climb like cats, hold the road like postage stamps, start with consummate ease, and purr very prettily in neutral. Still, if designers eliminate every other imaginable weakness, they cannot offer the driver such comfort and protection as proper coachwork affords; exposure and the single driving wheel represent rather a high price to pay for the narrow turning circle, which would be the sole technical advantage of the sidecar if it ever loses its old price vantage.

Carrying Spare Tubes.

MY garage has a special corner consecrated to scrap accessories, and this dump contains a variety of cases intended for the carriage of spare tubes: some of these cases cost quite handsome sums. There are four ways of carrying a spare tube, only one of which is really good. They are as follows: Round your body (not at all bad, but unsightly); rolled up in a special cheese-shaped box (so awkward to pack the tube that riders always wear the damaged tube round their waists after a roadside change); furled round the handle-bars (at the mercy of thieves); and *my* way! Some years ago I bought a soft leather tube case, about 10in. long by 3in. wide, into which the tube is folded after all the air has been squeezed out. I think the vendors were the St. Edmund Motor Co., Northampton, if memory has not played me a trick; anyhow, I saw the case in a shop window when on tour and thought it looked good. When the tube has been packed, the case is fastened to the saddle pillar tube, and there is no possibility of damage. If a rider prefers to lap the tube round his handle-bar, he should secure it with a couple of rubber loops cut from an old tube, which will hold it firmly without chafing it. Similar fastenings are good for any tin boxes carried in the pannier bags, *e.g.*, tyre kits.

Standardised Controls.

I RECOUNTED the other day how, after two years on a clockwise throttle lever, I obtained a new mount with an anti-clockwise throttle and crashed on a vertical bank in consequence. This week I have to report a variant of the same nuisance. I was riding another strange machine, on which the positions of the brake and clutch pedals were the reverse of what I am accustomed to. Naturally enough, in the first emergency, I stood on the clutch pedal instead of braking hard, and escaped catastrophe by the width of a whisker. Somewhere in the back ground there is a trade society whose main activity of late has consisted in proclaiming trials. I suggest it would be quite as usefully employed in arranging for

(1.) All throttle levers to open in the same direction.

(2.) All brake pedals to be on the same side of the machine.

Starting with a Broken Valve-lifter.

FOR some inexplicable reason coincidences seem peculiarly common in motor cycling experience: at any rate, if I hear a yarn, or get my attention caught by a printed reference, a similar incident befalls me soon afterwards. The other day I saw a quotation of sundry ancient tips for starting an engine when its valve-lifter was broken, together with the addition of others which the critics considered more modern and efficient. I wondered idly which of the selection was the best, and the very next time out the eye in the steel lever of my own engine cracked across, and released the Bowden wire nipple. By the crankiness of fate, I was trying to run to earth an old friend who had changed his address several times during the war, and stoppages were very frequent. I tried every imaginable dodge. If the engine was really warm, I could just get her over compression on the kick-starter, though it was very tight, and of the hot-stuff kidney all round. When it was cool, no response to the starter was obtainable, and by far the simplest and least fatiguing method was to use the compression cock as a decompressor. Pushing off with the clutch out, and gradually releasing the handle-bar control was na poo, except down a steep gradient; I only secured one start by this method. Meditating upon what I could have done

Occasional Comments.—

if no compression tap had been fitted, I made various experiments, and was forced to conclude that some improvised method of valve-lifting was the only solution. Luckily, on the machine in question, it was not difficult to jam the crank case lever with a tool or bit of wood, and pluck it out when the run and push had got up speed. To-day I took it out still unrepaired, and learnt how invaluable rubbers on the boot soles are with the jump mount, as compared to plain leather soles; they give you a first-rate road grip. [Note for hill-climbing competitions.]

Combustion Chamber Design.

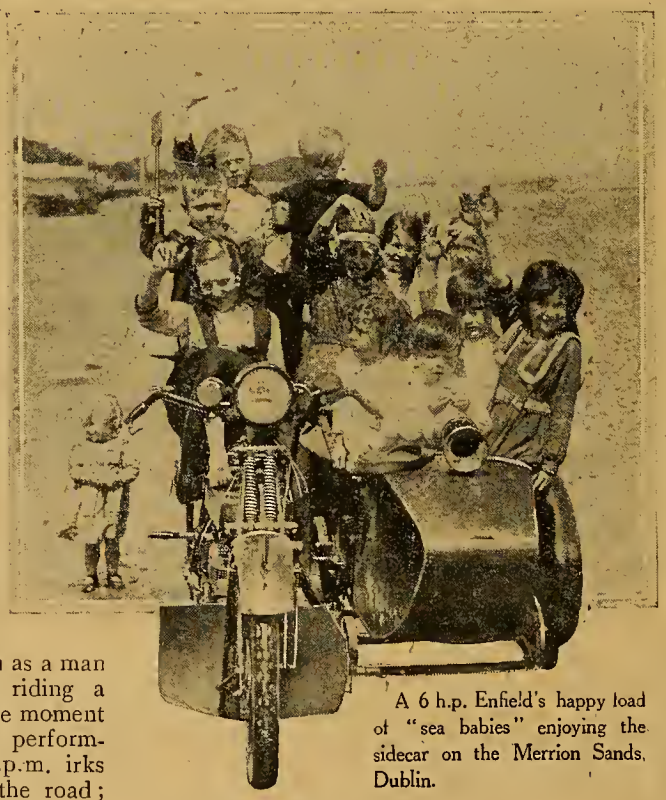
I QUOTE the following from a criticism of a certain combustion chamber, written by Mr. Ricardo: "Owing to the fact that unnecessarily large valves were employed, and that the distance from the valve centres to the cylinder centre was not reduced to the minimum, the combustion chamber was extraordinarily shallow, its depth tapering from about ½in. immediately over the valves to about ¼in., or even less, at the point most remote from the valves, while the sparking plug was placed almost directly over the inlet valve. Such a form of combustion chamber not only involves very serious heat loss to the walls, but is also the worst possible both from the point of view of maintaining turbulence, and, therefore, rapid burning, and also as regards its tendency to set up detonation." Mr. Ricardo designed and fitted a new head to the engine in question, and got an increase of 16% in the horse-power and about 18% in the fuel economy, although the new head entailed a higher compression ratio. The engine in question was an American light car engine, but the description fits not a few motor cycle combustion chambers pretty closely, and consequently suggests reasons why certain post-war engines show such manifest advances. The above quotation may interest some of our cycle car readers, who will remember the speed and fuel economy of the Baby Mathis engine, which had valve heads about the size of shillings.

Maintenance of Tune.

IT is becoming increasingly evident that the coping stone of quality in a flat twin is *maintenance of tune*. In the summer months few motor cyclists have much leisure for tinkering; and in proportion as a man is fastidious, he dislikes riding a machine which cannot at the moment produce its normal road performances. The loss of 500 r.p.m. irks him when he is alone on the road; and it irks him far more when another rider tries conclusions with him, especially if the challenger is straddling a duplicate machine in superior tune. It is a characteristic of all multi-cylinder motor cycle engines that they lose their finest veneer of tune faster than single-cylinders, and this applies to the V's as much as to the flat twins. But, on the whole, the flat twins are the worse offenders; they lose their tune, on an average, rather faster than the V's, and, as a rule, they are less accessible when retuning is taken in hand. Consequently, no manufacturer of flat twins can desire a better tribute than the following imaginary testimonial would represent: "I bought one of your machines last March, and, though I have covered 2,000 miles and done nothing whatever to the engine, it is running at least as well as when I bought it."

The Obverse of the Medal.

LET the trade understand that flat twins are booming in spite of the too prevalent shortcoming mentioned in the last paragraph. Flat twins are deliciously easy to start as compared with the ordinary single. They are free from the V's irritating fondness for starting on one cylinder, the other cylinder chipping in later on, when so disposed. They run slowly when declutched. They have a lovely balance. They rev. like a cream separator. All these merits are very attractive to riders who have suffered many things from the contrasted faults. But in the long run the public love the machine which will continue to run well with the minimum of tinkering; and on this point quite a number of flat twins are still below par. Accurate lubrication and durable valve gear are probably the main requisites, for I should hate to think that in these days any firm can be guilty of a rear cylinder which overheats.



A 6 h.p. Enfield's happy load of "sea babies" enjoying the sidecar on the Merrion Sands, Dublin.

Scooter Weight.

DO the A.C.U. really think that the average scooter weighs inside 60 lb.? I have tried two or three machines, and I seriously question whether the limit is not too low, even as things stand, while some of the machines I know are likely to be stiffened up and weigh even more in the near future. It is obviously desirable to keep these machines as light as possible; but for the time being I should have thought that manufacturers might have been given a more generous weight allowance. Nor must it be forgotten that the present designs do not necessarily represent finality.

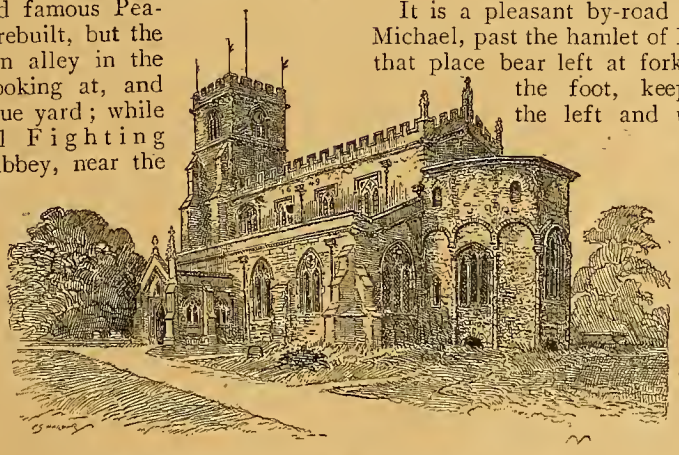
DAY RUNS AND WEEK-ENDS.

IV.
Hertford to St. Albans, Woburn, Ampthill, and Hitchin.

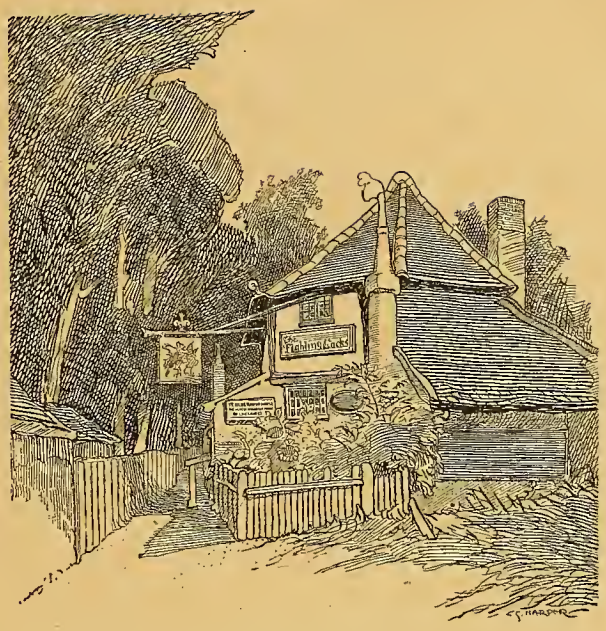
By CHARLES G. HARPER.

Previous instalments appeared in "The Motor Cycle" August 7th, 14th, and 28th.

THE twelve and a quarter miles from Hertford to St. Albans, by which we begin this circular tour of seventy-five miles, is a surprisingly pretty and little-used road for what we usually style the crowded Home Counties. Proceeding westward from Hertford, we are soon across that oddly-named stream among the several oddly-named rivers of Hertfordshire, the River Mimram, and into the pleasant village of Hertingfordbury: long name, small village—so small that there are possibly more letters to its name than houses in the place. Passing Cole Green, we come into Hatfield, and leave the town chiefly on the left, crossing the Great North Road. In a further four and a half miles we approach St. Albans, entering by way of the impressively broad main street in the suburb of St. Peter's. St. Albans, like Hatfield, is almost too familiar to need any remarks, but to some it may be not completely known. The great abbey, built with Roman bricks from the vanished city of Verulamium, is, of course, the chief feature. It stands on the site of the martyrdom of St. Alban, the proto-martyr of England. It is the second longest ecclesiastical building, 550ft. in length (Winchester Cathedral exceeding it by only some 5ft.), and it stands on a higher site than any other: only this elevated position can scarce be noticed, except from the village of St. Stephens, to the south, where it is indeed very striking. St. Albans is a wonderfully interesting and picturesque old place, and in nothing more so than its old inns. The old and famous Peahen has, unhappily, been rebuilt, but the quaint Fleur de Lis in an alley in the Market Place is worth looking at, and the George has a picturesque yard; while the pretty little octagonal Fighting Cocks, down below the Abbey, near the River Ver, is as old-world as one could wish to see. Not quite so old-world as the legend on it would seem to imply: "Rebuilt after the Flood." This, however, was a strictly local flood, and not the Deluge from which Noah and his family escaped in the Ark.



Wing Church, an example of Early Saxon architecture.



The Fighting Cocks Inn, St. Albans, one of the oldest inhabited houses in England.

For the rest, a walk on the street called Holywell Hill, or along that other known as "Romeland," will disclose to the knowing observer many old houses, not now inns, whose capacious archways and yards proclaim that once they were such.

Our way to Berkhampstead out of St. Albans lies through the charming old village of St. Michael's, at the gates of Gorhambury Park. In the old church, in its alcove in the north chancel wall, is the rather startling effigy of Francis Bacon, Baron Verulam and Viscount St. Albans, who died in 1626. Some people think he was the author of the Shakespeare plays. The heated controversies on this subject render the statue of more than common interest, but it is remarkable in itself, representing the philosopher seated, in his habit as he lived, and in a characteristic attitude, alluded to in the Latin phrase, *Sic sedebat:* "Thus he sat."

An Architectural Curiosity.

It is a pleasant by-road which leads up out of St. Michael, past the hamlet of Leverstock Green. Beyond that place bear left at fork, steeply descending. At the foot, keep right, then second to the left and under the railway, thus emerging at Boxmoor, upon the main road to Berkhampstead, three and threequarter miles distant. In the church is a curious feature: one wooden column among its stone brethren, and fashioned exactly like them, suggesting that the old builders had either miscalculated their requirements or else had exhausted the quarries

Day Runs and Week-ends.—

whence came the stone for the others. It is a problem not now to be solved. The east window is filled with stained glass to the memory of Dr. John Cowper, rector, and father of the poet Cowper, whose two tame hares, "Puss" and "Tiney," are stated by guide books to be figured in the window. They are, but so small and so obscured by the altar reredos that only a specialist could discover them.

Beyond Berkhampstead is Northchurch, with a curious brass in the church to "Peter the Wild Boy," found in the Forest of Hertswold in Hanover in 1725, who died here in 1785, still known at the date of his death as the "boy," although nearly seventy years of age. We now make for Tring, but turn off to the right, on approaching the town, for New Mill, reached in about one mile. Here the road crosses one of the two great reservoirs, and comes to the uninteresting but well-named Long Marston, about a mile in length. In midst of this long-drawn rustic place, turn right as for Cheddington railway station, but turning left before reaching it into a very fine—nay, noble—road commanding wonderful views of a stately mansion on a height. It looks lordly, and the road itself, crossed by a railway level crossing, is planted on either side with ornamental trees in clumps. It speaks of wealth and great expenditure, as well it may, for this is the domain of Mentmore Towers, which came to Lord Rosebery by his marriage with the daughter of Baron Meyer de Rothschild.

The Market Place, Woburn.

A Change of Name.

Bearing to the left past the Stag's Head Inn, and passing the church, the road steeply descends, and then winds away over level lands and commons with two gates, each one usually with the customary loafer awaiting the casual copper. Then we come into Wing, styled in charters of A.D. 957 "Weowungum." Fortunately that impossible name has long been discarded. The church is Early Saxon, and very remarkable, with a kind of crypt under the chancel. Note the odd brass to "honest old Thomas Cotes," 1648, porter at Ascott Hall, who, the inscription goes on to inform us, "hath now, alas! left his key, lodge, fyre, friends, and all, to have a room in Heaven."

The ruins of Houghton Mansion, near Ampthill.

To Leighton Buzzard is three miles: Leighton "Beaudesert" is its true name. In the market place there still remains the ornate fourteenth century cross. Here, at the fork of three roads, we take the left for the two conjoined villages, always referred to together, as though they were a firm, Heath and Reach. They live on sand, very fine and remarkable: red, white, and yellow sands, extensively dug. Beyond them, at Sheep Lane, the Holyhead Road is crossed, and we come into the decayed townlet of Woburn, adjoining Woburn Abbey, seat of the Duke of Bedford: decayed because the Duke will not allow building near the sanctities of Woburn Park.

And so we proceed six miles to Ampthill, by Husborne Crawley and Ridgmont. Ampthill is a little town not very much visited. In the church is a monument to the man who named New York: Richard Nicholls, born 1624, killed at the naval battle of Solebay, 28th May, 1672. He it was who captured the Dutch American colony of New Amsterdam in 1664, altering the name to "New York" in honour of his patron, the Duke of York, afterwards James II. The cannon-ball which killed him is exhibited on the monument.

A Deserted Mansion.

Outside Ampthill are the ruins of Houghton, a mansion built about 1610. From one of its windows in 1767 the young Marquis of Tavistock was seen by his wife to be thrown from his horse and killed. The house was never afterwards inhabited, and there it stands, on its terraced hill-top, a melancholy evidence of departed grandeur, with the once enclosed park long since dismantled, and open to all comers.

Due east from Ampthill the road runs to Shefford, past Maulden and Claphill. In Maulden churchyard note the mausoleum, built by an Earl of Elgin in 1656, containing a weird effigy in white marble of his second wife, Diana. A glimpse of it can be got through the barred window.

At Shefford turn to the right, along the main road to Hitchin, passing Henlow level crossing. Hitchin is one of the most charming old towns in the Home Counties, with many quaint houses and several stately mansions. The old coaching inn, the Sun, has a large and very beautiful garden at the back. Straight through the town, and uphill, taking fork to left, and leaving the main road—a branch of the Great North Road—Ippollitt's Church is on right. The oddly-named village takes its title from St. Hippolytus, the colt tamer, to whom the church is dedicated; but the letter "H" has been dropped. Soon we come to Little Wymondley and Stevenage, a long village with very broad street, at the further end of which are the "Six Hills." At next fork, bear left for Hertford, *via* Watton, Waterford, and the park of Goldings.

A Three-wheeler on Car Lines.

The 10 h.p. Merrall-Brown, fitted with Channel Steel Frame, Water-cooled Engine, Detachable Wheels, and Reverse Gear.

POSSIBLY the existing condition of prices accounts for the renewal of interest in the three-wheel runabout. The simplicity of the type, however, is more apparent than real, and in the case of the 10 h.p. Merrall-Brown the designer has not succumbed to the temptation of producing a cheap or scamped specification.

Since we described this machine in our issue for May 8th (page 472) the design has been refined at certain points, and the model now illustrated presents a very pleasing appearance, having a somewhat high honeycomb radiator and aluminium bonnet.

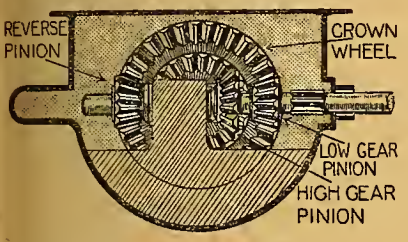
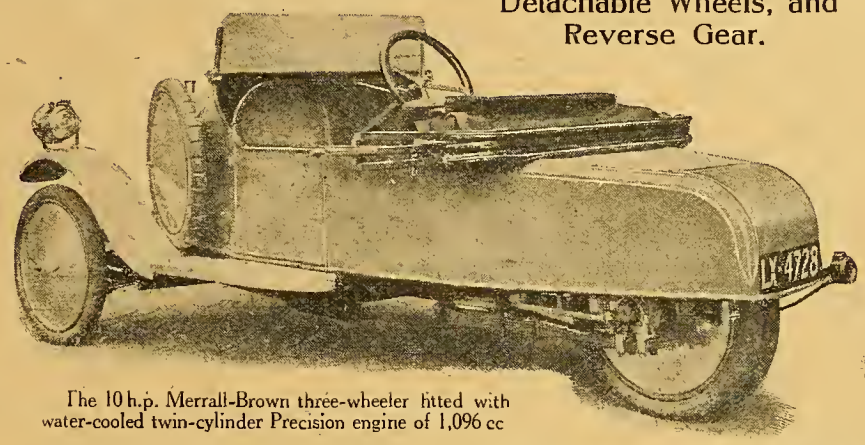


Diagram illustrating the action of the two-speed gear

A Precision V twin engine of 1,096 c.c. capacity (10 h.p.) has been selected, and water-cooling is employed on the thermo-syphon system. A Thomson-Bennett magneto is fitted.

Two speeds forward and reverse are fitted, the transmission from engine to gear box being through a single-plate Ferodo clutch and propeller-shaft. From the gear box to the back wheel the drive is by an unenclosed roller chain.

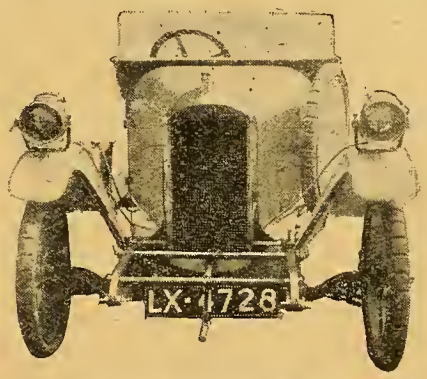


The 10 h.p. Merrall-Brown three-wheeler fitted with water-cooled twin-cylinder Precision engine of 1,096 cc

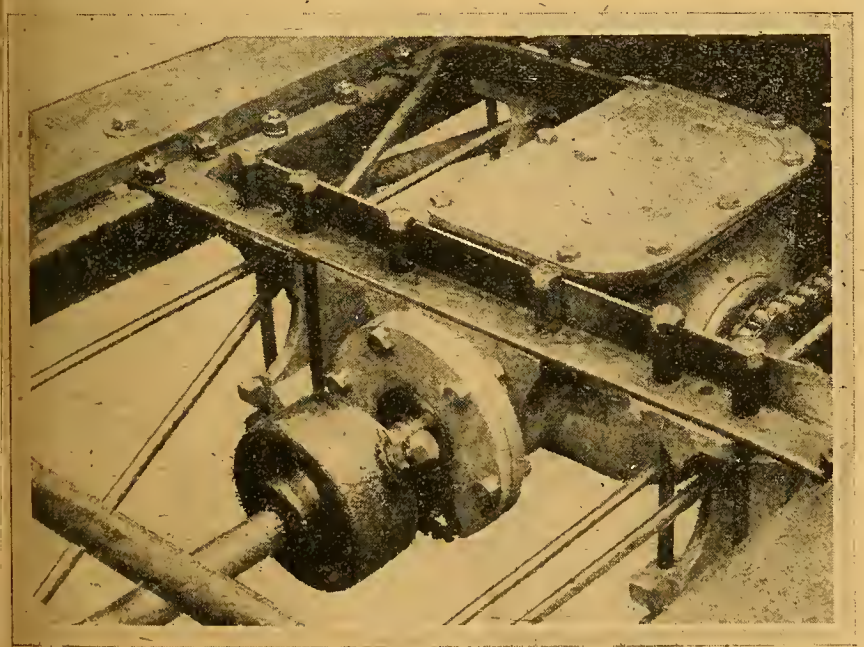
A channel steel frame with dumb-irons at the fore end is adopted, the cross members being tubular. The front axle is of I section, with steering heads following conventional car practice; in fact, the runabout closely resembles an orthodox light car when viewed from the front. The guards, semi-elliptic front springing, bonnet, and scuttle dash are all points accentuating this impression. The steering system, however, is by bobbin and double steel cables, which, perhaps, is somewhat surprising, in view of the abandonment of cable steering by its earlier advocates. In a £250 proposition the potential buyer may expect rack and pinion or irreversible steering equipment.

Chain tension is adjusted by the radius rods controlling the movements of the back wheel, which is carried by large quarter-elliptic springs, these being clamped underneath the cross members, which support the gear box at the rear of the frame.

The wheels are of the standard Dunlop detachable variety with discs fitted, and the rear wheel is composed of two of these, side by side.



Front view of the M.B. runabout. Note the unconventional position for carrying the spare wheel



Showing the propeller-shaft, two-speed and reverse gear box, and part of the roller chain that conveys the drive to the twin rear wheel

On each side of the back wheel are the hand and foot brake drums, but the detachability of the wheel in no way interferes with the adjustments of these.

The two-seater body is of quite a pleasing design, a streamline effect being obtained with approximately upright sides. In addition to the bonnet, the wings and wheel discs, too, are of polished aluminium. A door is fitted on each side, and the upholstering is of a character which should provide comfort for the driver and passenger.

The makers, the Premier Engineering Co., St. George's Road, Bolton, Lancs., intend to sell the car at an inclusive price of £250, the specification covering Dunlop 650 × 65 mm. tyres, spare wheel, two-seater body, hood, screen, acetylene head lamps, tail lamp, pump, jack, and tools.

The sale of the Merrall-Brown in London and district will be in the hands of Messrs. Mebes and Mebes, 144, Great Portland Street.

A DOUBLE PURPOSE BRUSH.

A USEFUL accessory, consisting of a metal handle provided at either extremity with a wire brush and a hair brush respectively, has been placed on the market by Messrs. S. Rutter and Co., 16a, Iliffe Yard, Amelia Street,

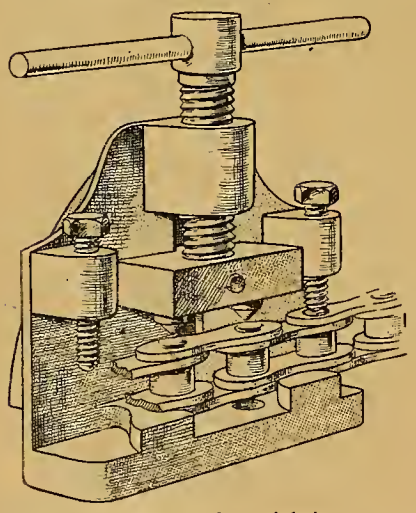
The double purpose brush useful to motor cyclists.

Walworth, London, S.E.17. A wire can be selected from the wire brush for the purpose of cleaning an acetylene lamp burner, whilst the hair brush can be used to remove oil from the sparking plug points.

A USEFUL RIVET EXTRACTOR.

TOOLS which have come into existence through experience on the road are usually of greater practical value than those designed by tool makers to perform some operation with which they have no direct experience. The rivet extractor illustrated is in the former class, and was designed, and made, by Mr. J. James, 53, High Street, Itchen, Southampton, after several unpleasant experiences in extracting rivets to effect chain repairs.

The device patented by Mr. James consists of a main member, the base of which is recessed to take the outside plates of a chain, leaving blocks for the



Rivet extractor of sound design.

inside plates to rest upon. Two set screws engage with rivets on each side of those to be extracted and lock the chain in position while a sliding block, operated by a screw and fitted with a crossbar, carries two pegs which press upon the rivets and so force them out of the chain links. Mr. James has found this tool most useful, and thinks other motor cyclists and garages would benefit by its manufacture as a commercial proposition. He would therefore like to get into communication with a manufacturer who would make it under licence or purchase outright.

SERVICEABLE OVERALLS FOR WINTER USE.

A SUIT of weatherproof motor cycle overalls, sold by Messrs. James Grose, has recently come before our notice. The double-breasted jacket is provided with two large outside pockets, straps for closing the ends of the sleeves round the wrists, and an inner sleeve held tightly to the wrist by an elastic band which prevents the air from passing up the rider's arms, ensures complete protection from the worst conditions of weather.

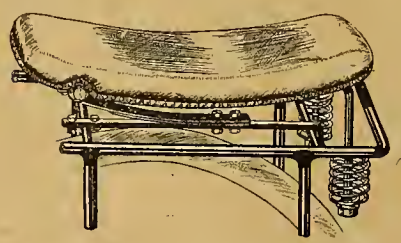
An overall suit of practical design.

The trousers, the tops of which are held well above the waist by means of an adjustable strap, are fastened round the ankles by means of a metal clip and an adjustable strap.

THE TERRY PILLION SEAT.

AN adequately sprung pillion seat, which is suitable for riding both side saddle or astride, is shown in the illustration. The seat, which consists of a metal pan covered with a thick felt pad upholstered in Rexine, is fitted to a strong steel undercarriage, which is made adjustable to suit all makes of carrier, and mounted on two laminated springs in front, whilst two coil springs, of a substantial nature, are employed in the rear. This suspension supplies a cushioning action by which the inequalities of the road are absorbed, and comfortable riding on a carrier in either position should result.

In view of the criticism now being urged against pillion riding, it may be noted that properly constructed seats giving the passenger a sense of security should be conducive to safety.



A pillion seat recently placed on the market by Messrs. Terry and Co.

THE VICTORY TYRE CLAMP.

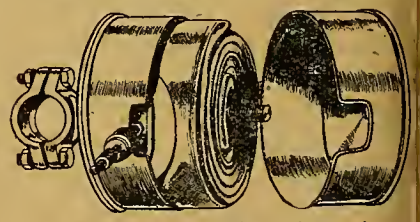
A SIMPLE tyre clamp, which considerably lessens the usual difficulties experienced when tyre trouble necessitates removal and replacing an outer cover, has been marketed by Messrs. Herbert Terry and Sons, Ltd., Redditch. This little device consists of a U-shaped

The Terry tyre lifter, a useful accessory when fitting new tyres.

clamp, the open ends of which are bent so as to fit over the rim of the wheel. One end, however, is provided with an extension in order to hold the cover in position. Having placed the clamp in the position shown in the illustration, the wing nut located on the end of the bolt which passes through the centre of the clamp is tightened to prevent the cover from creeping or slipping off the rim.

A USEFUL ACCESSORY.

MR. P. L. CEARNS, 8, Plaistow Park Road, Plaistow, London, E.13, has lately patented a simple and effective inner tube carrier. Since Mr. Cearns has had lengthy experience riding at the Front, it is only natural that his invention should be a thoroughly practical device. It consists of a round box in which the inner tube is rolled,



A practical device carrying an inner tube.

with slots provided in the top and bottom portion for the valve. Through the centre of the box is a hole, and through the hole runs a threaded spindle attached to a suitable clip for fixing the tube carrier to any convenient part of the machine. The whole is firmly secured by means of a wing nut.

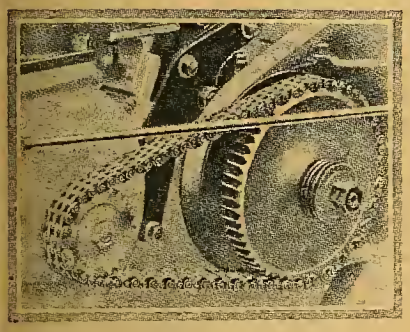
To insert the tube in the case it is only necessary to exclude the air in the usual way, and roll it on the loose metal sleeve through which the spindle passes.

Mr. Cearns finds that tubes never become unserviceable when carried thus

A NEW SILENT CHAIN.

The Hans Renold Segmental Bush Chain.

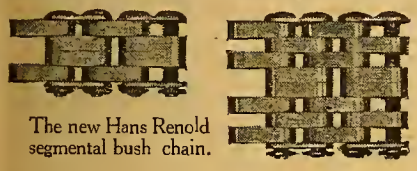
CONSIDERING that fully fifty per cent. of the noises of a motor cycle emanate from the timing gear and transmission primary drive it is perhaps somewhat surprising that so far few have adopted silent chains for one or the other or both.



A silent primary drive chain adapted to a chain-cum-belt driven machine.

One of the most silent single-cylinder motor cycles on the road to-day is the 3½ h.p. Rover, a feature which is contributed to by the fact that silent chains are used both for the transmission to the countershaft and also the magneto drive. On the Matchless, too, a silent chain has been for some time used between the engine and the countershaft; but, taken generally, the silent chain does not appear to have received the attention due to it by virtue of its many advantages.

In the car world silent chains have been and are to-day used quite extensively for camshaft, pump, and magneto drives, and for these purposes Messrs. Hans Renold, of Manchester, have recently introduced a new type of "noiseless" chain having segmental bushes, and as the wearing qualities of inverted tooth chains are greatly improved by their embodiment there is every reason to believe that the new chain widens the scope of the silent chain for motor cycles.



The new Hans Renold segmental bush chain.

Showing the relative size of stud that can be used with the segmental bush.

The advantages of the new Hans Renold chain are only apparent after a careful study of the construction. It will be seen from the first illustration that a complete bush is not fitted to take the load imposed upon the stud. Instead, a segment only is fitted, which permits the use of a larger stud without impairing the strength of the link.

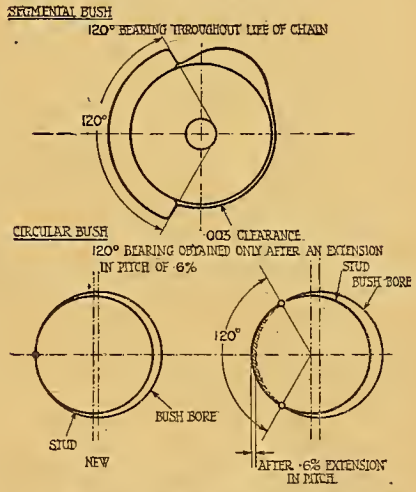
It is fairly obvious that if the hole be bushed only for 120° instead of the whole of its circumference, the stud may be increased by the thickness of the normal bush without reducing the thickness of the metal at the vital point.

A circular stud, since it is fractionally smaller than the bush into which it is inserted, can make only one line contact with the bush. In the new chain, however, the inner diameter of the segmental bush is exactly the same as the stud diameter, and this inner edge stands very slightly "proud" of the hole, so that a bearing surface of 120° is provided for each stud.

With a concentric bush chain having a bush diameter of .178in. and a stud diameter of .175 in., a bearing surface of 120° cannot be obtained until the chain has "stretched" to extend the pitch .003in. per pitch or an elongation of 6%. This figure is almost equal to the wear which will take place during the average working life of a chain used under good conditions.

From the illustrations it will be observed that the holes through which the studs pass are not circular, but each has a considerable recess at its highest point. In addition, there is a clearance all around the stud except for the 120° bearing surface. The indentations in each pair of plates form oil grooves leading to those recesses, and if, as is recommended, an oil feed is arranged to the inside of the chain close to the entering edge of a sprocket, the centrifugal action, which is very considerable on high speed driving chains, is sufficient to ensure thorough lubrication of the studs and bushes.

We understand that the new chain will be used on several first-class cars, including the Sunbeam and Austin.



The increased bearing area obtained by the use of the segmental bush shown diagrammatically.

THE O.K. FLAT TWIN.

Large Output Planned when Production Difficulties Overcome.

AS in the case of every other new design produced this year, Messrs. Humphries and Dawes have experienced considerable delay in connection with raw materials for, and experiments with, their new flat twin. Since we first reviewed this new design in our issue for Feb. 27th last, several alterations of a minor character have been made, but the main elements of the engine remain as described.

Recently we saw this little 347 c.c. engine on the test bench, where, by means of a Heenan and Froude apparatus, 5 h.p. at 2,600 r.p.m. was registered. The designers, however, expect to obtain 7 h.p. In the meantime arrangements are being made for a good output after the show, and experiments are being carried out with various types of frames and forks. One of the latter designs, which, in all probability, will be adopted, embodies laminated C springs. Two and three springs, placed side by side, have been tried with satisfactory results. The type illustrated has two springs, but one we examined had three springs, each with a single leaf excepting at the inner end where a short under-leaf gave support. This type of fork gives both a vertical and a longitudinal movement, and has the virtue that it can readily be adjusted by means of the shafts and locking device on the girder ends of the springs. Another point of interest is that the fork is built up of two sides and not as a complete unit, which is more usual. This method of construction undoubtedly facilitates manufacture, but only a prolonged test can prove whether it is entirely desirable.

The spring fork of the new O.K. flat twin machine.

A GUIDE TO THE SIX DAYS TRIALS.

A Description of the Route with Contours, and the first Competitor's Official Time at each point. Some Observations on Hills and Tests which will be Encountered.

September 15th to 20th, 1919. Total Mileage, 732½.

MONDAY'S MILEAGE	98½	THURSDAY'S MILEAGE	159¾
TUESDAY'S ,, ...	160¼	FRIDAY'S ,, ...	161¾
WEDNESDAY'S ,, ...	152½	SATURDAY.—FINAL EXAMINATION.	

SPECIAL TESTS! Monday and Friday, Consistent Driving; Monday evening, Lamp Test; Tuesday, Brakes; Saturday, Condition.

GREAT interest is naturally centred round the Auto Cycle Union Six Days Trials, which will be held from Llandrindod Wells beginning on Monday next. There are 114 entries in all, among which all the best-known makes will be represented. There are comparatively few completely new makes entered, with the exception of two 3 h.p. A.B.C.'s and a 5-6 h.p. G.L. (a French motor cycle lately referred to in these pages), the rest being well-tried models.

There will be some novelty attached to the trial in that the trial proper will not start until Monday afternoon, the examination of the machines will take place in the morning, and the first day's run starting in the afternoon and finishing after dark will enable lamps to be tested.

A Summary of the Final Regulations.

All competing motor cycles, accompanied by their drivers and passengers, must report to the Chief Marshal at the Drill Hall, Llandrindod Wells, between the hours of 9 and 10 a.m. on Monday, September 15th, 1919. Machines must be presented ready to start, *i.e.*, with petrol and oil tanks filled, number-plates securely fixed, sealing wire attached, and ballast, if necessary, to make up weight.

Engines may not be started at any time during the trial within the storage depots, nor may any replenishment of oil or petrol be made therein. Replenishments of petrol and oil must be made at the official refilling station at the conclusion of each day's run. Smoking within the depots is prohibited. Competitors are requested to take every possible precaution against damaging the floor of the depots either by leakage of oil or otherwise. The starting order has been balloted for, and will be the same each day.

A fast and slow hill-climb, known as the consistent driving test, will take place on Monday and again on Friday, and competitors' times for each of the two ascents will be compared. The hill selected is about two and a quarter miles in length, with an average gradient of 1 in 12. On each occasion the first mile is to be climbed at a speed not exceeding ten miles an hour, and the second mile at a speed of not less than from eleven to eighteen miles per hour, according to the particular class in which the machines are entered. A maximum of forty marks may be lost for the consistent driving test—(1) for exceeding the low speed limit, and—or—failing to reach the high speed, one mark for each mile or part of a mile per hour too slow or too fast. (2.) For failing to repeat on Friday the performance made on Monday—one mark for every second or part of a second in excess of a total of ten seconds' difference between the times for the two slow and two fast climbs.

Here is an example of what may happen: No. 120 in Class C on the Monday climbs the slow portion in 6m. 40s. (9 m.p.h.), and the fast part in 3m. 10s. (19 m.p.h.). On the Friday he climbs the slow portion in 6m. 39s. (9.09 m.p.h.), and the fast in 3m. 8s. (19.2 m.p.h.). All his speeds are within the limits stipulated, and the difference between his two slow climbs is 4s. and between his two fast climbs 2s.; the total difference therefore is 6s., and the result is the loss of no marks. On the other hand, suppose No. 130 in Class B takes on the Monday 6m. 30s. (9.2 m.p.h.) in the slow test, and 3m. 52s. in the fast section (15.5 m.p.h.); on the Friday he takes 6m. 38s. on the slow test (9.05 m.p.h.), and 4m. 14s. in the fast section 14.18 m.p.h.); the difference between his first and second ascents in the slow test is 6s. and 22s. in the fast test, a total of 28s., equivalent to a loss of eighteen marks, and on the Friday he is .95 m.p.h. too slow in the fast test, which costs him an additional mark; that is, a total loss on the test of nineteen marks.

At intervals of twenty miles throughout the route notices are erected stating the number of miles covered from the beginning of the trial, so that a glance at the route card will instantly tell the competitor exactly where he is. This is a most important feature, as much of the country traversed is sparsely populated, and such names as exist are exceedingly difficult to an Englishman.

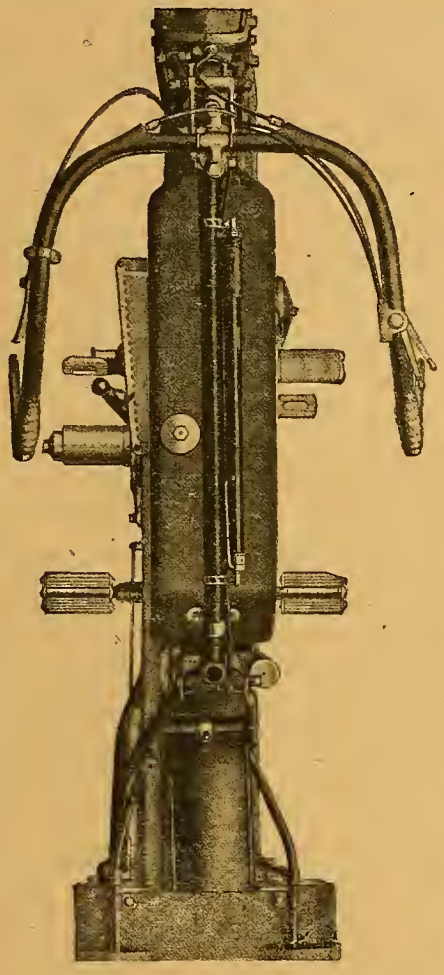
Route Notices.

Brakes will be tested on Fan Hill (on the second day), and marks will be deducted for any apparent lack of control.

Competitors will be carefully checked throughout the trial, and a competitor is liable to be checked at any point on the route. In actual practice, checks will not be taken at points where a competitor is likely temporarily to have lost time. The attention of competitors is drawn to the schedule rate of speed shown on the profile maps in the programme, the times on the daily route tables being calculated accordingly. There will be no non-stop sections, but certain hills, the position of which will not be published, will be observed each day, and a stop on any such hill will entail the loss of four marks. As the position of these

On the mountain road between Llanwddyn and Bala. This section is part of the third day's run after lunch.

Seen from above



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The Rudge Multi is in its tenth year.

Its popularity is owing in no small degree to simple control, accessibility, and proved reliability.

"The Times," on May 27th, writes about the Multi Gear:—

"It is almost needless to say that in view of the excellent reputation which this admirable machine enjoys, the variable gear works very well indeed from a practical point of view. This type of gear enables one to "Nurse" an engine, to "rest" it on easy road, and to work it at maximum efficiency on hills. To many riders the hill-climbing abilities of a well-tuned Rudge come as an absolute revelation."

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T. T. WINNER, 1914.
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As the D.R.'s come home, evidence accumulates of the value of the tried and tested friend of the Dispatch-riders on every front, the

STURMEY ARCHER
COUNTERSHAFT GEAR

"I have ridden a Triumph fitted with a Sturmey Archer gear box under the most trying and unfavourable conditions," writes D. R. Swift, of the 19th Corps, M.T., France, "and have never once been let down."

The Sturmey Archer will never let you down. Its reliability has been proved in the stern theatre of war; see that you get the full benefit of that by specifying it on your "civvy" machine.

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PULLEY

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The COST of MANUFACTURE of our PATENT PULLEYS, both as regards Material and Labour, has INCREASED 100% during the past five years, but we are NOT doubling the cost to our Patrons, preferring to bear part of the burden ourselves. For this reason, instead of charging £9, we will supply at the **provisional** price of:—

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plus 2/6 for packing and carriage.

N.B. Any further alterations in price will be made known in our forthcoming adverts.

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A GEAR WITH A WORLD-WIDE REPUTATION.

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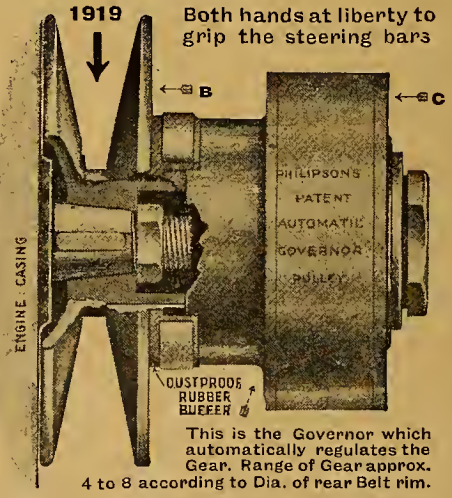
Can be obtained from leading Shippers, Factors, and Agents all over the world.



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This is the Governor which automatically regulates the Gear. Range of Gear approx. 4 to 8 according to Dia. of rear Belt rim.

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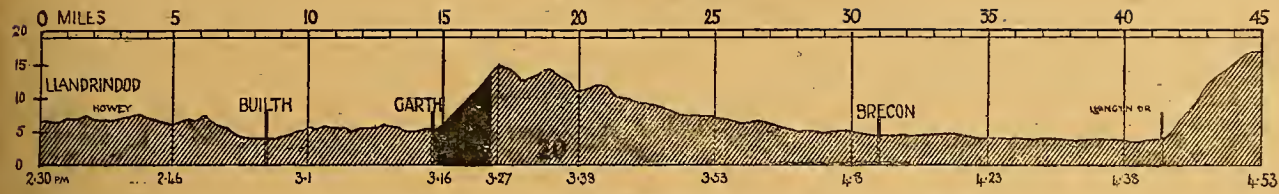
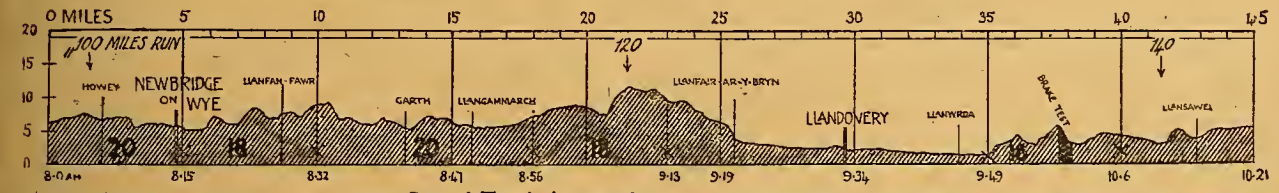
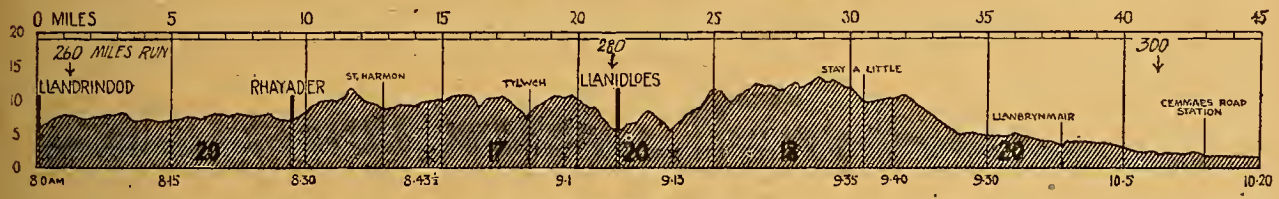


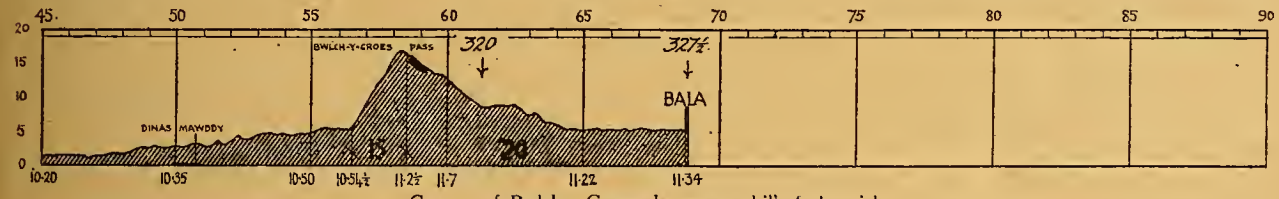
Part of Monday's route. The "consistent driving test" hill is shown. darker.



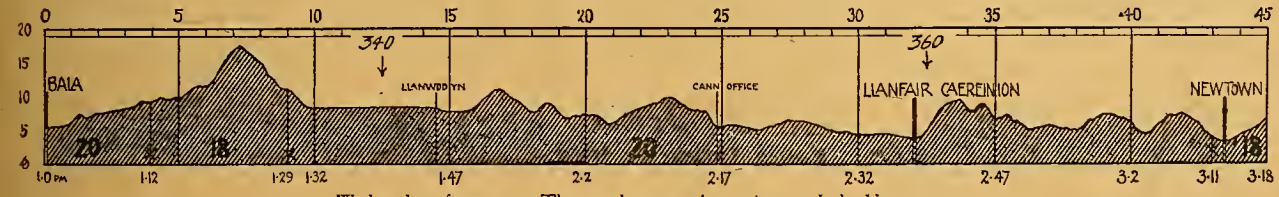
Start of Tuesday's run and location of the "brake test."



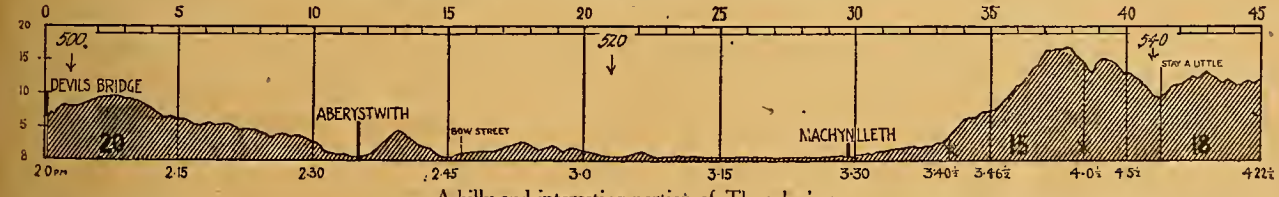
First part of Wednesday's route.



Contour of Bwlch-y-Groes, the severest hill of the trial.



Wednesday afternoon. The rough mountain roads near Lake Vyrnwy.



A hilly and interesting portion of Thursday's run.

hills will not be published, competitors are warned against stopping anywhere except on the level or on a down gradient.

Special prizes have been offered :

(A.) Team Prize. The Auto Cycle Union offers a gold medal for the best performance by a team of three motor cycles of the same make, such team to be nominated by the manufacturer or his duly accredited representative before the final closing of entries.

(B.) Fuel Prizes. A prize of £5 in each class of more than three entrants (£50 in all) is offered by the National Benzole Association for the best performance by a competitor using N.B.A. benzole throughout the trial. Entrants must give in their names before the start of the trial.

(C.) A cup value 15 guineas is offered by Messrs. Tom Norton, Ltd., Llandrindod Wells, for the best performance by a Welsh competitor. Entrants must give in their names before the start of the trial.

Best Performance.

The number of marks remaining to a team or competitor at the end of the trial shall decide what constitutes a best performance, and if such number shall be equal for two or more teams or competitors, then of those teams or competitors the one making the best performance in the consistent driving test will be judged to be the winner.

The programme this year will be exceedingly complete, and will contain a record of all the Six Days Trials held since 1903. There will be a complete index of the makers who have entered machines, and also of their riders, while the entry list gives not only the names of the entrants, their machines, and riders, but also the gear ratios and engine sizes. Moreover, this year the weights of the competing motor cycles are available to the public. In addition, the fullest possible details have been given concerning the trial, such as maps of the route, contours of the hills, and all the

A Guide to the Six Days Trials.—

necessary particulars. It will be obtainable from the Auto Cycle Union, price 6d.

The following is a list of officials :

STEWARDS.—Mr. A. W. Torkington, the Rev. E. P. Greenhill, and Mr. H. P. E. Harding.

JUDGES.—Lt.-Col. A. E. Davidson, D.S.O., Mr. Hugh H. Gregory, A.M.I.M.E., M.I.A.E., Maj. A. M Low, R.A.F., D.S.C., Lt.-Col. D. F. Nicholl, D.S.O.

CHIEF MARSHAL AND STARTERS.—At storage depot, Mr. S. W. Philpott; luncheon control, Mr. Alec Ross and Lt.-Commander G. H. Pierce, R.N.R.

CHIEF OBSERVER.—Maj. G. Dixon-Spain, O.B.E., M.C.

OFFICIAL OBSERVERS (blue armlet on left arm).—Messrs. F. W. Chapman, F. J. Ellis, W. G. Gabriel, T. A. Jones, C. Kitcat, Grenville G. O. Manton, Frank H. May, H. W. Pierce, H. Tomlinson, and C. I. Thornwill.

TIMEKEEPERS.—Messrs. A. V. Ebblewhite, A. G. Reynolds, and F. T. Bidlake.

ROUTE MARKERS AND VERIFIERS.—Messrs. G. E. Cuffe, E. B. Ware, and F. A. Hardy.

PRESS STEWARD.—Mr. Laurence H. Cade.

CLERK OF THE COURSE.—Mr. T. W. Loughborough, A.M.I.A.E.

Local office of the Auto Cycle Union.—Drill Hall, Llandrindod Wells.

BELOW a brief account of each day's run is given, the first man's time being backeted with the places mentioned on the official programme of the route. These notes will be useful to entrants and spectators alike. It should be remembered that allowing one minute intervals between the 114 competitors, almost two hours will be occupied by the trial in passing any one point.

First Day, Monday, September 15th, 98½ Miles.

As a kind of preliminary canter, the first day's route of the trial is comparatively short, and a start is not made until 2.30 p.m. Taking the main road to Builth (2.56 p.m. leader's time), the competitors head westward for Garth (3.15 p.m.), where, after a left turn, there is a long winding ascent. The consistent driving test is held here. Descending the valley of the Honddu to Brecon (4.11 p.m.), the course of the river Usk is followed on the right bank as far as Llangynidr (4.42 p.m.), where the eastern shoulder of the mountain of the same name is crossed by a series of bends and hills. Then to Brynmawr (5.7 p.m.), and so to Abergavenny, where tea will be in readiness at the Angel Hotel at 5.30 p.m. Lamps must be lit before restarting at 7 p.m., and the direct road for Talgarth (7.52 p.m.) is taken, which involves a stiff climb. From Talgarth to Llyswen (8.4 p.m.) the direction may be difficult to follow, but beyond the latter place the main road runs parallel with the railway and the river Wye to Builth (8.39 p.m.). The first man is due back in Llandrindod at nine o'clock.

Second Day, Tuesday, September 16th, 160¼ Miles.

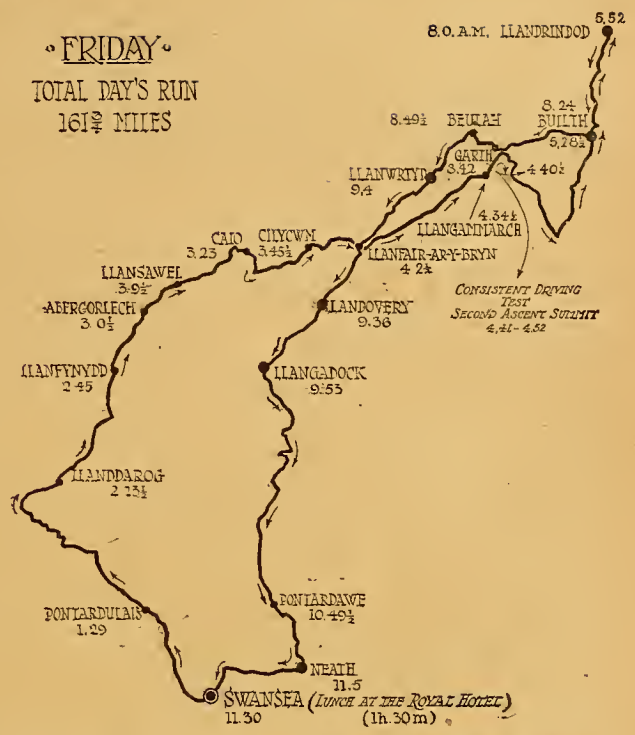
Having broken the ice, the competitors must rise betimes on Tuesday, for No. 1 will start down the Builth Road at 8 a.m., touching Newbridge-on-Wye at 8.14 a.m., Llanfanfawr 8.25 a.m., and Garth 8.42 a.m.

The main road is now taken through Llangammarch, a good run following through Llandovery (9.33 a.m.) and Llanwrda (9.46 a.m.), after which place, on a cross-country route, the brake test occurs. This part of the course and that through Llansawel (10.14 a.m.) to Llanbyther (10.40 a.m.) is not easy.

A stretch of the main road to Carmarthen ensues, but it is left after about fourteen miles for a cross-road to Bromwydd Arms (11.23 a.m.). Turning back on itself the route branches off again at Conwil Elvet (11.42 a.m.) over "uncharted courses." Newcastle Emlyn should be reached at 12.15 p.m., and after a lunch stop of an hour and a quarter a fairly easy run through Synod, Aberayron to Llansaintffraid follows. From this place past Cross Inn (2.46 p.m.), Ystrad Meurig (3.20 p.m.), Yspytty Ystwyth (3.35 p.m.), down the Elan Valley (4.20 p.m.) to Rhayader (4.57 p.m.) the road traverses the mountains of Central Wales, and if the competitors can spare an eye for the scenery this portion will seem impressive.

Third Day, Wednesday, September 17th, 152½ Miles.

The start from Llandrindod on Wednesday at 8 a.m. forms the commencement of one of the most difficult routes of the trial. Turning sharp right in Rhayader, a hilly stretch to Llanidloes is covered, after which a severe climb follows to Stay-a-little (9.37 a.m.).



Cemmaes Road Station brings another sharp turn, and the competitors head for Dinas Mawddwy (10.37 a.m.), after which comes the formidable Bwlch-y-Groes, at the top of which the first man, if he survives gradient and surface, is due at 11 o'clock. This point can easily be reached by spectators, as it is near Bala. Leaving Bala after lunch a mountainous cross-country road to Lake Vyrnwy is taken, Llanwddyn, at the southern extremity of the reservoir, being reached at 1.45 p.m., Llanfair Caereinion at 2.38 p.m., and Newtown at 3.12 p.m.

From Newtown *via* Dolfor to Beguildy a stiff climb with hairpin bends is encountered on the Kerry Hills, Knighton being reached at 4.17 p.m. The "main" road with some stiff gradients is followed to Llandrindod (5.15 p.m.).

Fourth Day. Thursday, September 18th, 159¾ Miles.

Leaving Llandrindod at the same hour, the leader crosses the railway and river and turns left for Newbridge-on-Wye. Passing straight through Builth some climbing is involved, and the route doubles back to Garth (9.22 a.m.). A few miles of by-road are traversed to Llanwrtyd (9.41 a.m.), after which the main road to Llandovery is used.

A tortuous stretch follows to Pumpsaint (10.48 a.m.), and a high range of hills is crossed in reaching Lampeter (11.18). An easier road by the railway is taken as far as Tregaron (11.52 a.m.), after which many hills and valleys are crossed in reaching Devil's Bridge (12.18 p.m.). Lunch is obtained there at the Hafod Arms Hotel, and a restart made at 2 p.m. Aberystwyth is entered at 2.35 and left *via* Bow Street (2.46 p.m.) for Machynlleth (3.29 p.m.). From here the mountain road over the northern flanks of Plinlimmon is taken, Stay-a-little, at the top of the climb, being reached at 4.10 p.m. A rough descent into Llanidloes follows (4.39 p.m.), and thence to Rhayader, by way of Tylwch, a road which crosses all the hills, is chosen. From Rhayader (5.17 p.m.) to Llandrindod (5.47 p.m.) is straightforward.

Fifth Day, Friday, September 19th, 161¾ Miles.

On this, the last day of the actual course, the route lies to the south of Llandrindod, the leader taking the main road for Builth at 8 a.m.

The lunch stop (1h. 30m.) is at the Royal Hotel, Swansea, where the first man should arrive at 11.30 a.m.

Moving off at 1 o'clock, the main road for Carmarthen is taken. After passing Llansawel (3.10 p.m.), the return route is a variant of the morning's troubles; beyond Caio (3.23 p.m.), Llanfair-ar-y-bryn (4 p.m.), and Garth (4.40 p.m.), being again touched. The Drum Ddu mountain road (leading to Brecon) is again the scene of the consistent driving test at 4.41 p.m., after which plain sailing ensues, through Builth (5.28 p.m.) to the finish at Llandrindod (5.52 p.m.).

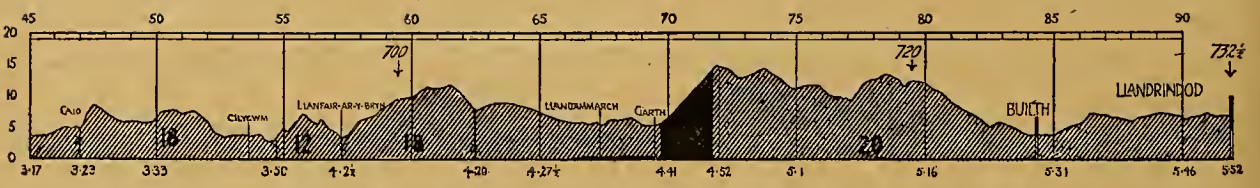
Order of Starting.

Competitors will be started each day in the following order, and at intervals of one minute. The one minute interval will be maintained as far as possible throughout the trial.

97	77	59	80	48	88
25	10	71	12	84	13
14	112	49	102	61	34
83	42	70	47	106	3
8	89	41	6	57	92
87	46	67	1	111	28
18	21	29	85	64	109
79	26	95	55	91	9
24	104	60	96	27	101
90	22	98	39	7	52
5	113	43	100	15	86
105	4	16	23	103	52
2	72	36	66	45	73
38	35	75	56	99	40
30	107	20	76	63	81
108	58	82	53	94	37
62	78	33	65	17	69
114	11	93	51	74	54
41	19	50	110	31	68

LIST OF ENTRIES FOR TEAM PRIZE.

Manufacturer.	Competing No.	Driver
Zenith Motors, Ltd. . .	—	H. Jepson. G. Brown. A. V. Sumner.
Ariel Works, Ltd.	G 1448	J. L. Stocks. Tom Peck. F. J. Watson
Phelon & Moore, Ltd. .	—	E. F. Chidley W. Drake. R. Levis.
James Cycle Co., Ltd..	G 1449	G. A. Strange. G. E. Stobart T. Stevens.
Morgan Motor Co., Ltd.	G 1301	H. F. S. Morgan F. W. Jones. H. Greaves.
Collier & Sons, Ltd. ..	G 1425	C. R. Collier G. Hardee. J. Hoult.
John Marston, Ltd. ..	G 1428	G. Dance. J. Dudley. T. C. De La Hay
A. J. Stevens & Co., Ld.	—	Eric Williams. Frank Giles. E. Cholderoft.
Scott Eng. Co., Ltd. ..	—	H. O. Wood. C. P. Wood. Leslie Guy. Reserve, A. B. Hill.
Triumph Cycle Co., Ld.	—	G. Shemans. N. Rycroft. F. Edmunds
Douglas Motor, Ltd. .	—	P. W. Moffat. W. B. Gibb. F. G. Ball.
Birmingham Small Arms Co., Ltd. .. (First team)	—	H. F. Edwards L. L. Scaley. F. Turvey.
Birmingham Small Arms Co., Ltd... (Second team	—	H. R. Lane. W. J. Chambers A. E. Wood.
Enfield Cycle Co. Ltd.	—	J. Dosher. D. C. Guise. Douglas Alexander.
New Rover Cycle Co. Ltd.	—	G. Featherstonhaugh D. H Noble. W. Deskin.



Contour of part of Friday's route. The consistent driving test is repeated on this day.

List of Entrants for the Six Days Trials.

DIVISION I.

CLASS A.—For Motor Bicycles, of which the Cylinder Capacity does not exceed 250 c.c.

No.	Entrant.	Make.	Driver.	Gear Ratios. Min.	Gear Ratios. Max.	No. of Cylinders.	Bore and Stroke.	Cubic Capacity.	No.
1	James Cycle Co., Ltd.	2¼ h.p. James	J. F. Lidstone	6	11	1	64×70	226	1
2	Pike, P.	2¼ h.p. Levis	Entrant	6.25	14	1	62×70	211	2
3	Baxter, R. H.	2¼ h.p. Radco	Entrant	5.5	9	1	62×70	211	3
4	Davies, L. C. M.	2¼ h.p. Velocette	Entrant	5.4	12	1	62×73	220	4
5	Veloce, Ltd.	2¼ h.p. Velocette	Goodman, E. F.	5.03	12.27	1	62×73	220	5

CLASS B.—For Motor Bicycles, of which the Cylinder Capacity does not exceed 350 c.c.

6	Stordy, Thos. J.	2¾ h.p. A.J.S.	Entrant	5.5	15	1	74 ×81	348	6
7	Ashby S. T.	2½ h.p. Connaught	Entrant	5.75	13	1	73 ×70	293	7
8	Douglas Motors, Ltd.	2½ h.p. Douglas	Ball, F. C.	6.25	15	2	60.9×60	350	8
9	Douglas Motors, Ltd.	2¾ h.p. Douglas	Gibb, W. B.	6.25	15	2	60.9×60	350	9
10	Vivian, Hardie, and Lane, Ltd.	2¾ h.p. Douglas	Lane, J. R.	5.25	8.25	2	60.9×60	350	10
11	New Imperial Cycles, Ltd.	2¾ h.p. New Imperial	Hartwright, Chas.	5.75	15	1	70 ×76	292.4	11
12	New Imperial Cycles, Ltd.	2¾ h.p. New Imperial	Kitcher, H. L.	5.75	15	1	70 ×76	292.4	12
13	Kershaw, B.	2½ h.p. Verus	Entrant	7	12	1	70 ×76	293	13

CLASS C.—For Motor Bicycles, of which the Cylinder Capacity does not exceed 500 c.c.

14	A.B.C. Motors, Ltd.	3 h.p. A.B.C.	Emerson J.	5.48	16.3	2	68.5×54	398	14
15	A.B.C. Motors, Ltd.	3 h.p. A.B.C.	Fairley, H.	5.48	16.3	2	68.5×54	398	15
16	Peck, Tom	3½ h.p. Ariel	Entrant.	5.3	16.5	1	86.4×85	498	16
17	Smith, C. W.	3½ h.p. Ariel	Entrant	5.3	16.5	1	86.4×85	498	17
18	Vale, T. B. C.	3½ h.p. Ariel	Entrant	5.3	16.5	1	86.4×85	498	18
19	Enticknapp, P. J.	4 h.p. Blackburne	Entrant	4.6	12.5	1	85 ×88	499	19
20	Watson-Bourne, J.	4 h.p. Blackburne	Entrant.	4.7	12.5	1	85 ×88	499	20
21	Douglas Motors, Ltd.	3½ h.p. Douglas	Moffatt, P. W.	5.5	12	2	68 ×68	494	21
22	Edwards, James	3½ h.p. Humber	Entrant	5	14	2	68 ×68.7	496	22
23	James Cycle Co., Ltd.	3½ h.p. James	Strange. G. A.	5	13.25	2	64 ×77	500	23
24	Phelon and Moore, Ltd.	3½ h.p. P. & M.	Chidley, E. F.	5.3	10.5	1	84.5×88.9	498	24
25	Phelon and Moore, Ltd.	3½ h.p. P. & M.	Drake, W.	5.3	10.5	1	84.5×88.9	498	25
26	Phelon and Moore, Ltd.	3½ h.p. P. & M.	Lewis, R.	5.3	10.5	1	84.5×88.9	498	26
27	New Rover Cycle Co., Ltd.	3½ h.p. Rover	Denskin, W.	5.3	16.75	1	85 ×88	499	27
28	New Rover Cycle Co., Ltd.	3½ h.p. Rover	Featherstonhaugh, G.	5.3	16.75	1	85 ×88	499	28
29	Isaac, Morris	3½ h.p. Rover	Entrant	4.75	14	1	85 ×88	499	29
30	Baker, Jesse	3¾ h.p. Scott	Entrant	5	9	2	70 ×65	486	30
31	Davies, Mansel	3½ h.p. Sunbeam	Entrant	4.65	12.67	1	85 ×88	499	31
32	Eadington, W. R.	3½ h.p. Sunbeam	Entrant	4.65	12.67	1	85 ×88	499	32
33	John Marston, Ltd.	3½ h.p. Sunbeam	Dance, G.	4.9	13.4	1	85 ×88	499	33
34	John Marston, Ltd.	3½ h.p. Sunbeam	Dudley, J.	4.9	13.4	1	85 ×88	499	34
35	John Marston, Ltd.	3½ h.p. Sunbeam	De La Hay, T. C.	4.9	13.4	1	85 ×88	499	35
36	Oliver, Capt.	3½ h.p. Sunbeam	Entrant	4.9	13.4	1	85 ×88	499	36
37	Newman, J. A.	3½ h.p. Sunbeam	Entrant	4.9	12.5	1	85 ×88	499	37
38	Rutherford, T.	3½ h.p. Sunbeam	Entrant	4.9	13.4	1	85 ×88	499	38
39	Shillito, J. T.	3½ h.p. Sunbeam	Entrant	4.9	13.4	1	85 ×88	499	39

CLASS D.—For Motor Bicycles, of which the Cylinder Capacity does not exceed 750 c.c.

40	Cholderoft, E. W.	4 h.p. A.J.S.	Entrant	5.08	14.9	2	65 ×83	550	40
41	B.S.A. Co., Ltd.	4½ h.p. B.S.A.	Applebee, F. W.	5.1	13.2	1	85 ×98	557	41
42	B.S.A. Co., Ltd.	4½ h.p. B.S.A.	Edwards, H. F.	5.1	13.2	1	85 ×98	557	42
43	B.S.A. Co., Ltd.	4½ h.p. B.S.A.	Sealey, L. L.	5.1	13.2	1	85 ×98	557	43
44	B.S.A. Co., Ltd.	4½ h.p. B.S.A.	Turvey, F., Junr.	5.1	13.2	1	85 ×98	557	44
45	B.S.A. Co., Ltd.	4½ h.p. B.S.A.	Wood, A. E.	5.5	14	1	85 ×98	557	45
46	Victor Horsman, Ltd.	4 h.p. Norton	Horsman, V. E.	4.67	12.42	1	82 ×120	633	46
47	Lindsay, Capt. Alexander	4 h.p. Norton	Entrant	5.12	14.5	1	82 ×120	633	47
48	New Rover Cycle Co., Ltd.	5 h.p. Rover	Noble, D. H.	5.3	16.75	2	70 ×85	654	48
49	Scott Motor Cycle Co., Ltd.	3¾ h.p. Scott	Guy, W. Leslie	4.93	9	2	73 ×63.5	532.5	49
50	Scott Motor Cycle Co., Ltd.	3¾ h.p. Scott	Wood, Capt. C. P., M.C.	4.93	9	2	73 ×63.5	532.5	50
51	Scott Motor Cycle Co., Ltd.	3¾ h.p. Scott	Wood, H. O.	4.93	9	2	73 ×63.5	532.5	51
52	Hill, Lieut. B. Alan	3¾ h.p. Scott	Entrant	4.93	9	2	73 ×63.5	532.5	52
53	Townshend, Capt. F. C.	4 h.p. Sunbeam	Entrant	5.25	14.25	1	85 ×98	556	53
54	Cather-Cooke, C.	4 h.p. Triumph	Entrant	5	13	1	85 ×97	550	54
55	Cross, Ernest	4 h.p. Triumph	Entrant	5	13	1	85 ×97	550	55
56	Pattinson, H.	4 h.p. Triumph	Entrant	5	14	1	85 ×97	550	56
57	Triumph Cycle Co., Ltd.	4 h.p. Triumph	Ryecroft, M.	5.25	14	1	85 ×97	550	57
58	Zenith Motors, Ltd.	5 h.p. Zenith	Elce, W.	4	8	2	70 ×85	654	58
59	Zenith Motors, Ltd.	5 h.p. Zenith	Sumner A. V.	4	12	2	70 ×85	654	59
60	Zenith Motors, Ltd.	5 h.p. Zenith	Browne, Gerald	4	8	2	70 ×85	654	60
61	Charlesworth, R.	5 h.p. Zenith	Entrant	4	8	2	76.25×82	742	61
62	Doo, Kaye	5 h.p. Zenith	Entrant	4	8	2	70 ×85	654	62

CLASS E.—For Motor Bicycles of which the Cylinder Capacity does not exceed 1,000 c.c.

63	Wills, J. W.	6-7 h.p. Ariel	Entrant	4.6	14.3	2	73 ×95	795	63
64	Bottomley, Edgar	7-9 h.p. Harley-Davidson	Entrant	4.12	9.25	2	84.1×88.9	988.83	64
65	de Aranjo, Lt. Lauro	7-9 h.p. Harley-Davidson	Entrant	4.9	10.1	2	84.1×88.9	988.83	65

DIVISION II.

CLASS G.—For Motor Bicycles with Sidecars, of which the Cylinder Capacity does not exceed 500 c.c.

No.	Entrant.	Make.	Driver.	Gear Ratios. Min.	Gear Ratios. Max.	No. of Cylinders.	Bore and Stroke.	Cubic Capacity.	No.
66	Jones, F. E	3½ h.p. Ariel	Entrant	5.3	16.5	1	86.4× 85	498	66
67	B.S.A. Co., Ltd.	3½ h.p. B.S.A.	Chambers, W. J.	5.1	21	1	85 × 88	499	67
68	Brown, Reg.	3½ h.p. Sunbeam	Entrant	5.75	15.75	1	85 × 88	499	68

CLASS H.—For Motor Bicycles with Sidecars, of which the Cylinder Capacity does not exceed 750 c.c.

69	Collins, C.	6 h.p. A.J.S.	Entrant	4.92	15.92	2	74 × 84	748	69
70	Williams, Eric	6 h.p. A.J.S.	Entrant	5.5	17.75	2	74 × 87	748	70
71	Wade, O.	6 h.p. A.J.S.	Entrant	5.5	17.75	2	74 × 87	748	71
72	A. J. Stevens and Co., Ltd.	6 h.p. A.J.S.	Giles, F. W.	5.5	17.75	2	74 × 87	748	72
73	A. J. Stevens and Co., Ltd.	6 h.p. A.J.S.	Jeath, H. C.	5.5	17.75	2	74 × 87	748	73
74	Edwards, W.	4¼ h.p. B.S.A.	Entrant	5.45	14	1	85 × 98	557	74
75	Lane, Howard R.	4¼ h.p. B.S.A.	Entrant	5.5	14	1	85 × 98	557	75
76	Douglas Motors, Ltd.	4 h.p. Douglas	Thorpe, H.	7.25	16	2	74.5× 68	593	76
77	Vivian, Hardie, and Lane, Ltd.	5-6 h.p. C.L.	Thorp, F.	4.8	13	2	70 × 85	635	77
78	James Cycle Co., Ltd.	4¼ h.p. James	Stevens, T.	5.5	14	1	86 ×103	600	78
79	James Cycle Co., Ltd.	5-6 h.p. James	Stohart, G. E.	5.5	14	2	70 × 86	662	79
80	Sawers, S.	4 h.p. Norton	Entrant	4.96	13.2	1	82 ×120	633	80
81	Triumph Cycle Co., Ltd.	4 h.p. Triumph	Edmond, F. G.	5.5	15.25	1	85 × 97	550	81
82	Triumph Cycle Co., Ltd.	4 h.p. Triumph	Shemans, G.	5.5	15.25	1	85 × 97	550	82

CLASS K.—For Motor Bicycles with Sidecars, of which the Cylinder Capacity does not exceed 1,000 c.c.

83	Watsoo, F. J.	6 h.p. Ariel	Entrant	4.6	14.3	2	73 × 95	790	83
84	Ariel Works, Ltd.	6 h.p. Ariel	Stocks, J. L.	4.6	13.3	2	73 × 95	795	84
85	Holroyd, J. S.	8 h.p. Blackburne	Entrant	4.58	12.58	2	85 × 88	998	85
86	Debenham, S. S.	6 h.p. Campion	Entrant	5.17	13.6	2	76 × 85	770	86
87	Davies, R. Creak	8 h.p. Chater-Lea	Entrant	4.8	14	2	85 × 85	964	87
88	Clyno Engineering Co., Ltd.	8 h.p. Clyno	Gibsoo, Hugh	5.1	17	2	76 ×102	925	88
89	Dot Motors, Ltd.	8 h.p. Dot	Reed, Harry	5	13.3	2	85 × 85	964	89
90	H.P.D. Motor Co.	8 h.p. Dot	Place, John H.	5	13.3	2	85.5× 85	976	90
91	Fell-Smith, W. A.	7-9 h.p. Harley-Davidson	Entrant	5.27	11.86	2	84.1× 88.9	988.8	91
92	Leak, H. A.	7-9 h.p. Harley-Davidson	Entrant	5.27	11.86	2	84.1× 84.9	988.8	92
93	Godfreys, Ltd.	7-9 h.p. Indian	Colliver, E. A.	5	13	2	79.3×100.8	997.6	93
94	Prytherch, J. D.	7-9 h.p. Indian	Entrant	5	13	2	79.3×100.8	997.6	94
95	Lloyd Motor Engineering Co., Ltd.	7-9 h.p. L.M.C.	Bees, L. A.	4.5	11.75	2	79 × 98	960	95
96	Collier, C. R.	8 h.p. Matchless	Entrant	5.15	16	2	85 × 85	964	96
97	Hardee, G. D.	8 h.p. Matchless	Entrant	5.25	15.5	2	85 × 85	964	97
98	Hoult, James A.	8 h.p. Matchless	Entrant	5.15	16	2	85.5× 85	976	98
99	McGlashan, G. C.	8 h.p. Matchless	Entrant	5	15.5	2	85 × 85	964	99
100	Jones, Fred. W.	8 h.p. Morgan	Entrant	5	11.13	2	85 × 85	964	100
101	Morgan, H. F. S.	8 h.p. Morgan	Entrant	4.5	14.5	2	85.5× 85.5	980	101
102	Svanoo, N.	8 h.p. Morgan	Entrant	5	11	2	85.5× 85	976	102
103	Haggas, W. R.	8 h.p. New Imperial	Entrant	4.5	13	2	85.5× 85	976	103
104	New Imperial Cycles, Ltd.	8 h.p. New Imperial	Drew, J.	4.5	17.1	2	85 × 85	964	104
105	Enfield Cycle Co., Ltd.	8 h.p. Royal Enfield	Alexander, D.	5	13	2	85.5× 85	976	105
106	Enfield Cycle Co., Ltd.	8 h.p. Royal Enfield	Dosher, J.	5	13	2	85.5× 85	976	106
107	Enfield Cycle Co., Ltd.	8 h.p. Royal Enfield	Guise, D. C.	5	13	2	85.5× 85	976	107
108	Parker, Stanley	8 h.p. Royal Enfield	Entrant	5	13	2	85.5× 85	976	108
109	Lowles, J. G.	8 h.p. Sunbeam	Entrant	4.65	12.67	2	82 × 94	996	109
110	Zenith Motors, Ltd.	8 h.p. Zenith	Jepson Harry	4.75	12.5	2	85.5× 85	976	110

CLASS L.—For Motor Bicycles with Sidecars, of which the Cylinder Capacity exceeds 1,000 c.c.

111	Barker, W. J.	10 h.p. Henderson	Entrant	5.4	13	4	69.85× 76.2	1168	111
112	Greaves, H.	10 h.p. Morgan	Entrant	4	12	2	85 × 96	1096	112
113	Hall, Sydney	10 h.p. Morgan	Entrant	5	11 12	2	85 × 96	1096	113
114	Hawkes, W. Douglas	10 h.p. Morgan	Entrant	5.2	11.25	2	85 × 96	1096	114

CLUB NEWS.

Redditch and District M.C.C.

The provisional awards in the recent successful one-day open trial, which we announced on page 235 of the issue of *The Motor Cycle* dated August 28th, have now been confirmed with the exception of the members' prize for solo machines over 350 c.c. H. Poole (4¼ B.S.A.) was stated to have gained this award, but we now learn that it is subject to decision on protest, still under consideration.

Wolverhampton Inter-club Trial.

The results of the trial which we reported and illustrated in our last issue, page 262, are as follow:

TEAM PRIZE.—Wolverhampton M.C.C., consisting of W. H. Bishop (3½ Sunbeam), F. W. Giles (6 A.J.S. sc.), and A. Milner (2½ Diamond).

STEVENS CUP AND GOLD MEDAL.—F. W. Giles (6 A.J.S. sc.).

BEST INDIVIDUAL PERFORMANCE IN EACH CLASS.—Class 1 (under 350 c.c.): Gold medal, A. Milner (2½ Diamond); bronze medal, C. W. Jobborn (2¾ Sunbeam). Class 2 (over 350 c.c.): Gold medal, W. H. Bishop (3½ Sunbeam); bronze medal, J. A. Newman (3½ Sunbeam). Class 3 (unlimited sidecars): Gold medal, F. W. Giles (6 A.J.S. sc.); bronze medal, E. Williams (6 A.J.S. sc.).

Future Events.

Sept. 13.—N.M.C.F.U. (Wolverhampton). Run to Rudyard Lake.
Sept. 13.—Lincolnshire A.C. Hill-climb.
SEPT. 13.—LUTON AND S. BEDS A.C. OPEN SPEED TRIALS AT LUTON HOO.
Sept. 14.—Rochester, Chatham, and District M.C. Hill-climb at Hawkhurst.
Sept. 14.—N.M.C.F.U. (Leeds).—Run to Fountain's Abbey.
Sept. 14.—Manchester M.C. Speed Trials.
SEPT. 15-20.—A.C.U. SIX DAYS RELIABILITY TRIALS.
Sept. 19.—Essex M C. Gymkhana.
Sept. 20.—Blackburn and District M.C.C. Hill-climb on Waddington Fells.
Sept. 21.—Rochester, Chatham, and District M.C. Treasurer's Surprise Run.
Sept. 21.—N.M C.F.U. (Leeds). Run to Boroughbridge.
Sept. 27.—Coventry and Warwickshire M.C. Hill-climb.
SEPT. 27.—WOLVERHAMPTON M.C.C. OPEN HILL-CLIMB.
SEPT. 27.—SCOTTISH A.C.U. SPEED CHAMPIONSHIPS AT ST. ANDREWS.
Sept. 27.—Exeter M.C. and J.C.C. Trial.
Sept. 28.—Rochester, Chatham, and District M.C. Consumption Test.
Sept. 28.—The Scott Sporting Trial.
Sept. 28.—N.M.C.F.U. (Leeds). Scott Trials (Charleston).
Sept. 28.—N.M.C.F.U. (Wolverhampton). Run to Crackley Bank, Wellington.
Sept. 28.—Manchester M.C. Closing Run
Oct. 4.—Essex M.C. Hill-climb.
Oct. 4.—Birmingham M.C.C. Captain's Day.

Bath and West of England.

The Bath and West of England Motor Club's hill-climb, to decide the holder of the Fuller Cup for this season, will be held at Weston Lane, Bath, to-day, at 6 p.m.

Ilkeston and District M.C.C.

A hill-climb was held last week at the Pig of Lead hill, near Matlock. Several members of the Nottingham M.C.C. acted as officials. The hill was extremely rough. Two classes were run to form a basis of handicapping in the final, which was won by W. B. Myhill (4¼ B.S.A. sc.) from A. Calder (4¼ Campion).

N.M.C.F.U. (Leeds).

Members of the Leeds branch of the National Fuel Union again organised an outing for limbless patients.

Over a hundred vehicles, chiefly sidecars, recently took a party of 160 to Knaresborough, and provided tea there. The expenses were borne by the members, more than £60 being raised by subscription.

A Sporting Hill-climb at Sutton Bank.

York and District M.C. Open Event.

SUTTON Bank, after a lapse of many years, has once again been the scene of an open hill-climb. The famous gradient, which occurs between Thirsk and Helmsley on the main road over the Hambleton Hills, has no doubt lost its terrors, and in these days is not such a suitable place of contest as it was in the days when the ability of the competing machines to reach the summit was largely a matter of doubt.

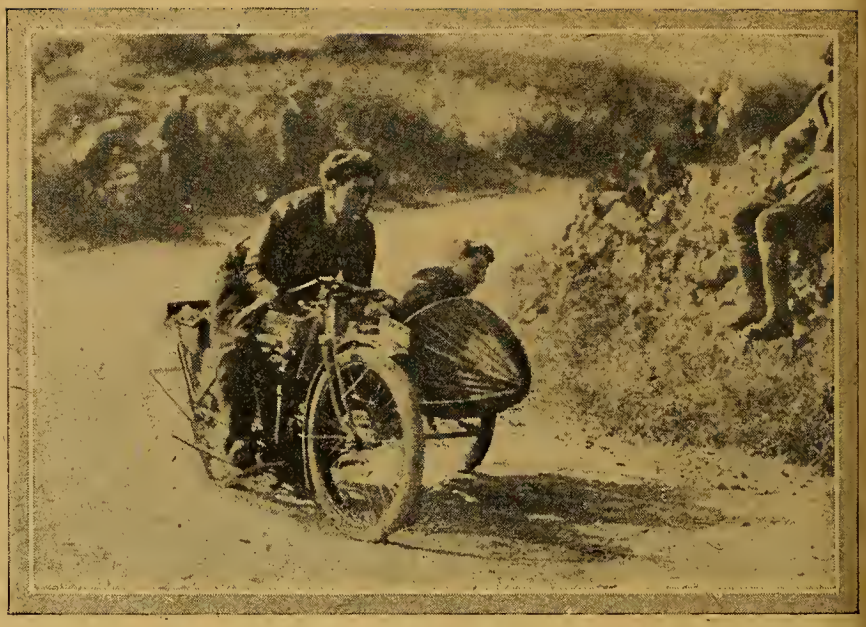
Indeed, when we now realise that even the lightweights are too fast for the hair-pin bend, a certain feeling of regret overcomes those of us who remember the days when ability to make an unassisted climb placed one in the position of the pioneer. However, *tempora mutantur sic breviora fiunt*, and the notorious hill parted with its one-time terrors on Saturday when O. G. Benson rode to the summit in under three minutes on a scooter. He was the sole entrant in his class, and so had a walk-over. His speed was quite good, and the stand-up position did not appear to be in any way detrimental to his cornering or steadiness on the rough patches.

Surface Improved.

The road condition, incidentally, was much better than of yore, as the timber waggons which cut up the surface a few years ago have now been supplanted by an aerial ropeway from the summit.

A start was made at 1.30 p.m. by the above-mentioned ascent of the Autoglider, followed by the 275 c.c. lightweight class, in which O. E. Carter, on a 198 c.c. Levis, successfully surmounted the hill, despite his single gear. He was well beaten, however, by A. Proctor, riding a Junior Triumph, which, stripped for the purpose, evinced a great turn of speed.

The left-hand hairpin on Sutton Bank worried the sidecarists. This is how G. Grinton's passenger assisted the Harley-Davidson around the bend.



A victor in the York M.C. open hill-climb at Sutton Bank. F. W. Dixon (7-9 Indian) who made fastest time in solo and sidecar classes

A Spectacular Performance.

In the 350 c.c. class there were only three starters, the fastest being G. S. Boston, who, despite a skid on the bend, which compelled him to turn completely round, ride down a little way, and turn again to complete the climb, was able to beat the next man by 26s. His 2¾ h.p. A.J.S. was clearly too fast for the part of the hill containing the hairpin.

The Advantage of Four Speeds.

Emerson on the A.B.C. now had his opportunity amongst the 500 c.c. entrants, and the penetrating crackle of the open exhaust as his mount screamed up the almost mile-long climb, was punctuated by the frequent changes of gear as he took advantage of his four speeds on every variation of gradient. Amongst the 750 c.c. entrants, the A.B.C. again was fastest, but Capt. Geo Walker (4 Triumph) rode well, taking the bend on middle gear with a roar. Two Brough 5 h.p. flat twins in this class were very slow and failed to pick up speed after rounding the hairpin.

The Star Performance.

It remained for F. W. Dixon (7-9 Indian) to put up the star performance of the day, both as regards fastest time and superb riding. His acceleration up the first steep climb was no less remarkable than his judgment in negotiating the hairpin, while the manner in which he shot up the final stretch called forth a spontaneous burst of applause. His average speed was 39.4 m.p.h., that of Emerson, on a machine of less than half the capacity, being over 37 m.p.h.

Only five sidecars started in the two classes, and their performance calls for little comment; the two A.J.S. machines simply toured up, but Dixon (7-9 Indian) again put up a beautiful climb.

Of the cycle cars, F. J. Willmott (Morgan) was quite slow. Capt. Nash (10 G.N.) was tremendously fast, equalling many of the solo motor cycle performances, while Cawthorne (9 Gillyard) was also very speedy, but, unfortunately, was not timed and did not elect to make a second attempt.

The Results.

Length of course, $\frac{9}{10}$ mile. Average gradient, 1 in 8

CLASS 1.—SCOOTERS

	Time. m.	s.
O. G. Benson (2¾ Autoglider)	2	51⅘

CLASS 2 AND 3.—UP TO 275 C.C. (AMATEUR AND OPEN).

A Proctor (2¼ Triumph Junior)	2	47
O. E. Carter (2¼ Levis)	3	4⅕

CLASS 4.—UP TO 350 C.C. (OPEN).

G. S. Boston (2¾ A.J.S.)	2	0⅕
E. Wasling (2¾ Coulson-B.)	2	26⅕
F. Reynard (2¾ Douglas)	2	58⅕

CLASS 5.—UP TO 500 C.C. (OPEN).

J. Emerson (3 A.B.C.)	1	27⅘
G. S. Boston (2¾ A.J.S.)	1	39⅕
B. W. Edmonson (3½ Chater-Jap)	1	50⅘

CLASS 6.—UP TO 600 C.C. (AMATEURS).

G S Boston (2¾ A.J.S.)	1	51⅕
B. W. Edmonson (3½ Chater-Jap)	1	52⅕
C. E Birdekin (4 A.J.S.)	2	17⅘

CLASS 7.—UP TO 750 C.C. (OPEN).

J. Emerson (3 A.B.C.)	1	27⅕
G. Walker (4 Triumph)	1	57⅕
J. R. H. Knight (5 Brough)	2	6⅘

CLASS 8.—UP TO 1,000 C.C. (OPEN).

*F. W. Dixon (7-9 Indian)	1	22⅕
J. Emerson (3 A.B.C.)	1	32
G. Grinton (7-9 Harley-Davidson)	1	45⅖

CLASS 9.—SIDECARS UP TO 500 C.C. (OPEN).

CLASS 10.—SIDECARS UP TO 750 C.C. (OPEN).

W. E. Grange (4½ B S A sc.)	2	33⅘
A. R. Crowe (5-6 A.J.S. sc.)	3	21
W. E. Haddon (5-6 A.J.S. sc.)	3	48

CLASS 11.—SIDECARS UP TO 1,000 C.C. (OPEN).

F. W. Dixon (7-9 Indian sc.)	1	41⅕
G. Grinton (7-9 Harley-Davidson sc.)	1	49

CLASS 12.—CYCLE CARS.

A. F. Nash (10 G.N.)	1	34⅖
F. J. Willmott (8 Morgan)	3	22⅕

* Fastest time of day, winning Triumph Cup.

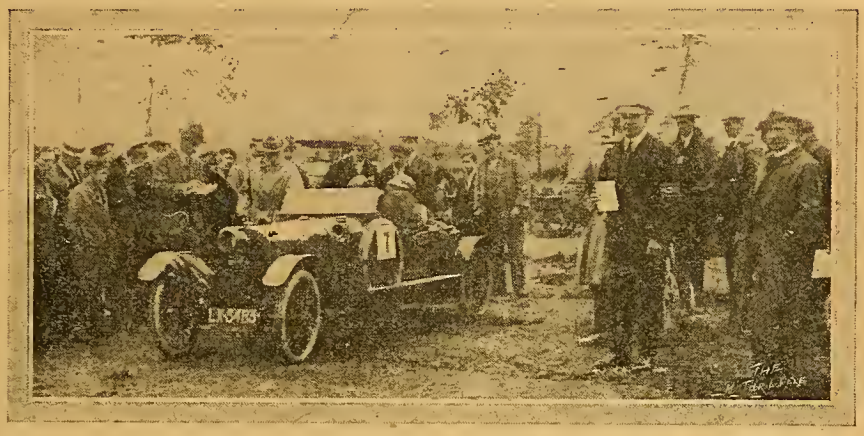
The Junior Car Club's General Efficiency Trial.

Thorough Series of Tests to find Weaknesses of Design and Performance.

WITH a total entry list of thirty light cars and cycle cars, a comprehensive one-day programme was carried out by the Junior Car Club in the general efficiency trial in the Haslemere and Liphook district on Saturday last, September 6th. In addition to a general reliability run over a circuitous route of some sixty miles (in which there were five hill-climbs), the competing cars were put through the following tests: Steering, petrol consumption, starting from cold, speed hill-climb, slow running, acceleration and brakes, restart on hill, and noise, while the programme was completed with an examination by the judges of the condition of each car after the trial and tests. Each event on the programme counted for so many marks, the total number obtainable being 100.

Cycle Cars Excel on Hills.

The cycle car class was represented by three 8 h.p. Gordons, two 10 h.p. G.N.'s, and one 8 h.p. Morgan, and, although the trial was severe in a number of respects, a good performance was put up by the cycle cars as a whole, particularly in regard to the hill-climbs included in the course.



A 10 h.p. G.N. at the start of the sixty miles road test in the Junior Car Trial last Saturday. Sir John Nixon and Col. C. Jarrott (judge) are seen on right of photograph.

The hills encountered on the reliability run were: Bowler's Green Hill, Blackdown Hill, Linchmere Hill, Pitfold Hill, and Hollycombe Hill, the restart test being held on the last-named in conjunction with the noise tests carried out by Dr. A. M. Low with his Audiometer.

Map showing the area covered by the Six Days Trials. Motor cyclists who desire to observe the competitors may see at a glance the point nearest their own home. Reference should be made to the detail maps for the actual course, as some of the route here shown in dotted line is covered twice.

5,000 MILES BENZOLE TEST.

TO-DAY at 3 p.m. a 4 h.p. chain-driven Triumph sidecar will start from the head offices of the Automobile Association for a 5,000 miles test, under ordinary touring conditions, to show that approved benzole is a satisfactory fuel for motor cycles, also for cars having air-cooled engines.

As in the case of the 16 h.p. Sunbeam car, which is now undergoing a similar road test of 10,000 miles, this test will be carried out under conditions which will preclude all possibility of doubt or criticism as to its genuineness and the finality of its results.

The machine is new and straight from the makers' works. The engine will be taken down at the works before the test, and examined by a competent authority.

At the suggestion of the Institute of Automobile Engineers, Mr. R. S. Fox has been appointed as official examiner, while the benzole used throughout the run of 5,000 miles will be N.B.A. brand of approved specification.

PROFITEERING.

WE understand that the question of profiteering in motor cycles and sidecars has for some long time been engaging the attention of motor cycle manufacturers, and the Cycle and Motor Cycle Manufacturers' and Traders' Union, Ltd., has been considering the various steps that can be taken to deal with this matter.

It is possible that there are at present a number of agreements between individual manufacturers and agents still in force dealing with this season's goods, but the Manufacturers' Union have recommended their members to adopt such wording in future agreements as will secure that the agent shall not profiteer when selling manufacturers' products to the public.

THE M.C.C.

A Successful Event. Keen C

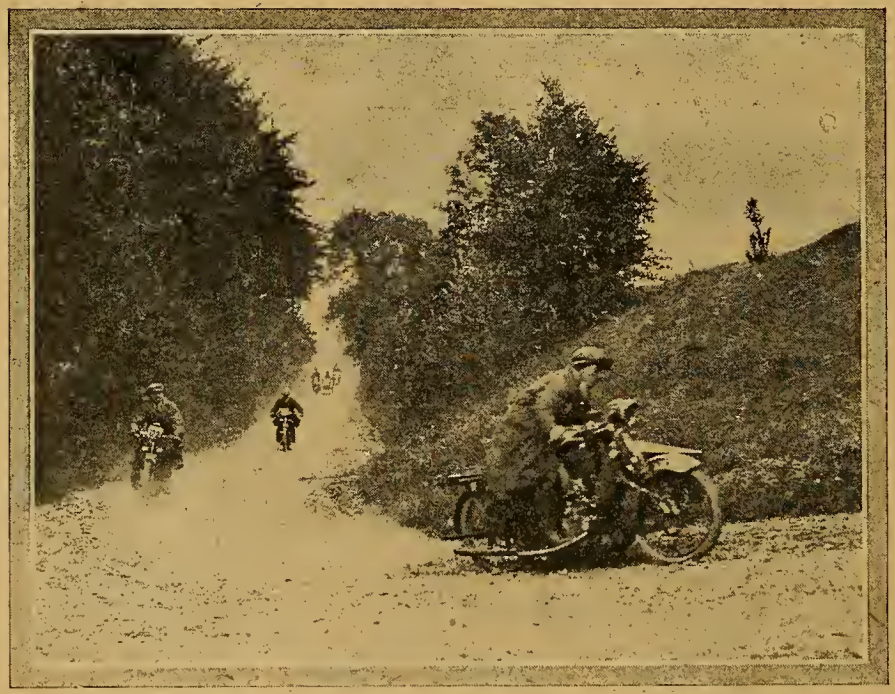
J. Haslam (Douglas), of the Sheffield and Hallamshire M.C.C., near Pink Hill.

BEAUTIFUL weather and a really sporting course helped to render the team trial on Saturday last a splendid success. Arriving at Tring at 11 a.m., we found the open space opposite the comfortable "Rose and Crown" Hotel thronged with competitors' machines, among which were several quite interesting mounts. There was a new 8-10 Henderson and sidecar, one of the most recent models, lately described in these pages. The six Scotts of the Ilkley M.C.C., all fitted with two-gallon petrol cans on the carriers connected up to the main tanks had twin lubricators to the separate halves of the crank case. Here we saw Longfield, the well-known pre-war Scott exponent, acting as observer, since wounds suffered in the war prevent him from handling a motor bicycle. There was also a handsome 4 Triumph outfit equipped with disc wheels. Major Chater-Lea, recently returned from the Balkans, was there as a spectator on a No. 7 sidecar outfit with spring frame, a model, by the way, which his firm is temporarily abandoning for the 1920 season.

There was only one unfortunate incident, and that was that in certain earlier copies of this journal, it was stated in error that the start was to have been at Potters Bar. Every possible effort was made to correct this unfortunate slip, but, so great is the influence of *The Motor Cycle*, that, despite advertisements inserted in two prominent daily papers, several riders went astray. Further, to help those who might have gone to Potters Bar, notices were sent to the R.A.C. and A.C.U. touring guides and to the A.A. scouts, and a representative of *The Motor Cycle* was sent to Potters Bar to direct any who might have gone astray at the point.

In practically every case the teams were most carefully selected and contained first-class riders, but, owing to the severity of the course, and the activity of the puncture fiend, casualties w exceedingly heavy.

W. G. Boyes (Triumph) and F. W. Douglass (Sunl



Some of the Ilkley team going well. All were mounted on Scotts, and, after a good performance, finished second.

A Sporting Course.

The course was of quite a differ nature from those previously selec for this event, being more of the nat of an A.C.U. one-day trial route. was a course which was ideal for find a winner, and Mr. F. T. Bidlake, doyen timekeeper, deserves our heart congratulations on choosing so suita a route. The Motor Cycling Club been too closely wedded to findin winner in the past by awarding lau to the teams who have been able to h to schedule time most closely—a mat which is unsatisfactory from many po of view, and chiefly because the elem of luck enters into it to a consider extent. This year, the M.C.C. wi adopted a different principle, which heartily appreciated by everybody; course was a stiff one, and a consis driving test, a very novel, interesting fascinating method of selection in of a dead-heat was adopted. This, h ever, was not required, as the co alone found the winning team. start was at 1 p.m. on a straight turning off from the Tring-London R The competitors were arranged acc ing to teams, and the marshalling most ably carried out by Major L. Baddeley, M.C., who saw that the teams were in their proper order and they moved up ready to depart as as the team in front had been despatc The timekeeping at the start and fi was carried out by Messrs. W. H. V and J. Ogilvie.

Soon after the start, the compet proceeded to New Mill, where a s

M TRIAL.

r "The Motor Cycle" Cup.

Trial for *The Motor Cycle* Cup last Saturday.

) the left was taken. This was :hed too fast by one competitor, :n into the bank, had a bad fall, oke his leg. The Icknield Way llowed to the top of Tring Hill, which the first turning to the left, to Halton, was taken and so to Hill, on which the consistent driv- t was held. This was quite interest- watch, but, as may be expected, were only one or two failures, G. Glashan, Woolwich Plumstead and t M.C.C., whose engine dried up hill, and S. W. Phillpott (Brough). or so further on a sharp turn to ght was followed by a precipitous t over a rough surface which ghly tested the brakes. At the the road was bumpy for about a out improved later. Then came a turning to the left, after which n were directed by a marshal over way bridge, up a long easy climb, nsmore. Then down another pre- a hill, on to a grassy lane in fairly nder, up an easy ascent, and then a fairly steep gradient past the entrance to Chequers Court, the ce recently presented to the Minister and his successors.

Punctures Plentiful.

a few miles the road was quite It turned left at Butlers Cross ed towards Princes Risborough, before which the marshal directed n up Whiteleaf Cross hill, the best of the day. All the rough, steep had flinty surfaces and caused ous tyre troubles. At the top of ll the course was directed over the to the right and led down Kop he scene of many famous competitions. Pink, Hill, with its severe hairpin bend, was then climbed, and the course lay through Hampden Park to Kemble. Just short of Missenden we turned to the left and followed the Wendover Road for about a mile. The starting point was finally reached *via* Lee, St. Leonards, Cholesbury, and Wigginton.

A Mischievous Trick.

The route was most efficiently arrowed, and all important turnings were guarded by marshals. Only at one point was there any difficulty, and this was a mile or two above the summit of Aston Hill, where an arrow had been turned, apparently by some evilly disposed small boy, on the second circuit. Those who were led astray (and they need not have been, because all *red* arrows showed turnings to the right) reached the rest of the course in two miles at St. Leonards, and so cut short their journey by less than a half.

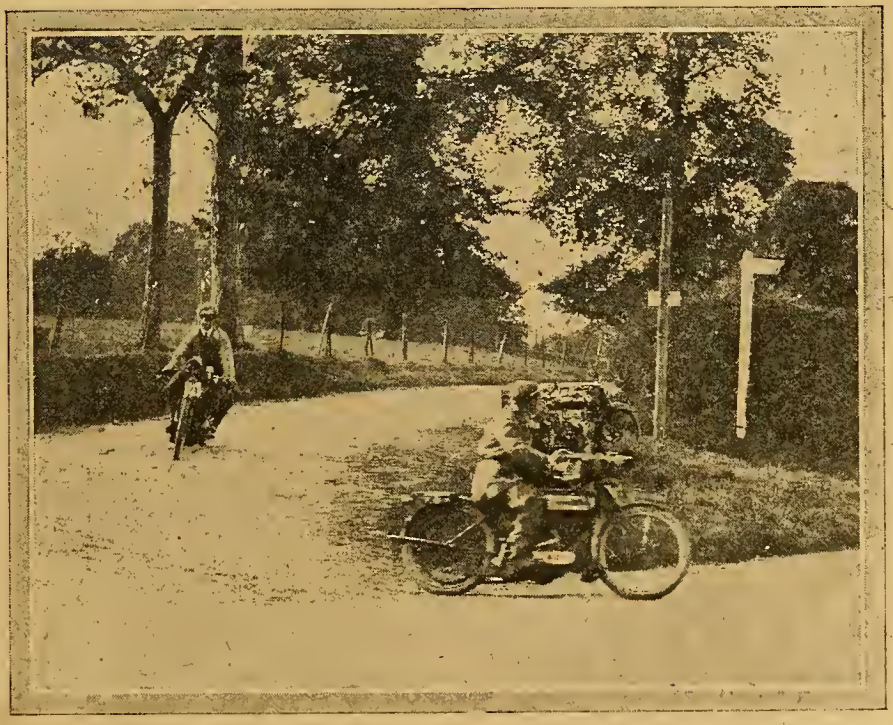
The circuit described was thirty-two and a half miles in length, which, covered three times, made a total of ninety-seven and a half miles. It traversed beautiful country, and was a most efficient test. There could be no better course than this covered in the reverse direction for next year's team trial, as the hills descended seemed worst than those ascended, and Kop Hill would serve admirably for the consistent driving test.

Two of the Essex sidecars near Tring.

Results.

Of the clubs entered the Coventry and Warwickshire M.C.C. was the only one to finish with a complete team. Both this club and the M.C.C. are now in the running for the winning of the cup outright, as both have now won the trophy on two occasions. The winning team was composed of the following riders :

S. Wright (3½ Humber).
R. B. Ewens (3½ Rudge Multi).
W. Brandish (5-6 Rover).
H. Finch (4 Triumph).
B. Ryecroft (4 Triumph sc.)
F. G. Edmond (4 Triumph sc.)



A Triumph rider taking a bend in good form on the Wendover road

The Coventry team, winners of *The Motor Cycle* Challenge Cup for the fifth time.

Edmond's Triumph was a chain-driven model with a brake shoe applied to a V drum on the front wheel. Next in order came the Ilkley M.C. and L.C.C. All were mounted on the same make of motor cycle.

J. E. Walker (3¾ Scott).
W. Haggas (3¾ Scott sc.)
W. Moore (3¾ Scott).
W. L. Guy (3¾ Scott sc.)
H. W. Sellers (3¾ Scott).
W. F. Scott (3¾ Scott sc.)

Haggas retired at thirty-seven miles. The organising club, the M.C.C., took third place.

V. Olsson (4 Douglas).
E. A. Bridgman (7 Indian sc.)
P. W. Moffat (4 Douglas).
B. A. Hill (8 Morgan).
S. J. Watson (6 Ariel sc.)
R. B. Clark (2¾ Douglas).

Among the unfortunates in this team Olsson punctured near Missenden.

The fourth team was the Woolwich, Plumstead, and District:

T. J. Ross (4 Triumph).
G. D. Hardee (8 Matchless sc.)
R. Boner (4 Triumph).
B. J. Sims (4 Triumph).
F. J. Ellis (8 Matchless sc.)
S. A. Ive (4 Triumph).

NOTES ON THE COURSE.

Of the Middlesex M.C.C., D. H. Noble arrived late, was heard of in Tring, and G. L. Fletcher went to find him. They arrived just after starting time; neither was allowed to depart, and the club did not compete. The Essex M.C. team, quite a strong one, suffered severely with tyre troubles, while the Sheffield and Hallamshire Club members were similarly unfortunate. Of the former club, Pearson (2¾ Douglas) punctured at the sixty-eighth mile, Bax at the third mile, and Leslie was another puncture victim, while of the latter club Raynes punctured at the twentieth mile. Of the South Birmingham M.C.C., Dalby (Triumph) and Clulee (Allon) were seen returning to the start during the third lap. The Public Schools M.C.C. started with a man short. Davey (Norton) had a fall near Lee, Wright (Harley-Davidson sc.) ran out of petrol almost in sight of home, Tweedie (Zenith) punctured after doing eight miles, leaving only Boileau (8-10 Henderson sc.) and Watson-Bourne (Blackburne) to make non-stop runs. The teams in the running at the end of the first lap were Coventry and Ilkley; at the end of the second and third laps the Coventry team was the only complete one left.

TEAM TRIALS TRIFLES.

Not quite so many teams put in an appearance this year, but next summer no douht club life will be in full swing.

The club champions of 1919—the Coventry and Warwickshire Motor Club—has been somewhat in the background since the war, as no open events have been organised, nor is the club affiliated to the A.C.U. this year.

Potters Bar! There was much good natured chaff at the real starting point, near Tring. Just five lines in *The Motor Cycle* were sufficient to send many riders to Potters Bar, and not even prominent announcements of the correct starting point in the leading London dailies, the programmes, coupled with the assistance of R.A.C. and A.A. road scouts, could stop them. If we were oblivions of the inconvenience caused, we might be tempted to instance the power of a brief announcement in *The Motor Cycle* against such an array!

The Ilkley riders, generally referred to as the Scott team, put up a fine show. Earnest preparations had been made for a win, and it was only a sooted plug which spoilt the team's 100% record. Second place is not to be despised, however.

Had the course been selected for a one-day trial by the A.C.U. no one would have been surprised at the hills included. The M.C.C. are to be congratulated upon stiffening the conditions for this club championship event. Weeding out the riders by a difficult course is far better and more sporting than timing to split seconds over an easy route.

When Mr. Head returned from arrowing the course in the morning, with Messrs. W. H. Wells and F. T. Bidlake, he remarked to us that the first round would settle the destination of the cup. He was not far wrong, for only two teams were complete at the end of the first circuit.

THINGS WE WANT TO KNOW

What *did* happen to Vivian Olsson in the first lap?

Why the "arranged" stop in the second lap never took place?

Why the M.C.C. officials scurried home immediately after the finish without announcing the results?

If the disc wheel Triumph was not really attractive?

If the Six Days trials riders will lower their emergency gears after Saturday's experience?

If Coventry does not deserve some handicap another year?

If the petrol tin shortage was not explained when the Scott team arrived each with a spare tin on the carrier?

Why the Scott lubrication system was different on each machine entered?

If the competitor who started with a loose gear box has tightened it yet?

If the flat twin Harley ridden by Lt. Norman Mitchell did not create a most favourable impression?

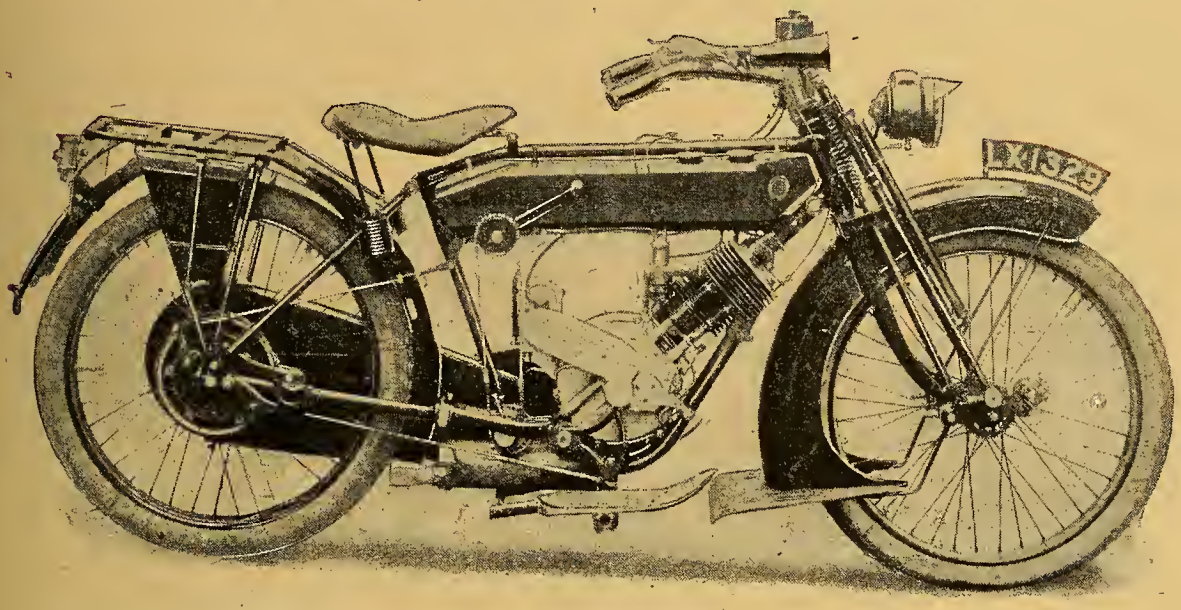
If the Coventry Club will "feast" their winning team?

If Phillpott's luck in finding a sharp flint within four miles after riding his Brough 200 miles to take part was not the limit?

If the culprit who turned the arrow on the second lap, and so led Birmingham and Oxford astray, will confess?

THE 1920 3½ h.p. P. & M.

Newly Designed Kick-starter. Mechanical Lubrication.



The 1920 P. and M., to which several improvements have been made. Entirely newly-designed forks and brakes are to be fitted on next year's model.

ONE of the most successful motor cycles with the British Army at the Front was the P. and M., which did wonderful service in the hands of the R.A.F. despatch riders from 1914 onwards. We have often spoken of the war as the most wonderful reliability trial which ever took place; in it the P. and M. was a prominent and successful competitor, and Messrs. Phelon and Moore have learned much that was of value to them in the five strenuous years during which it lasted.

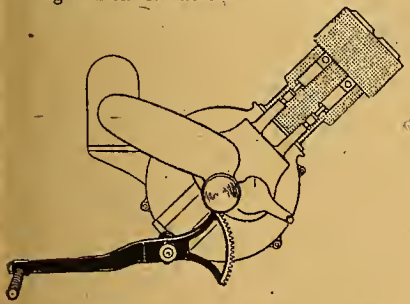
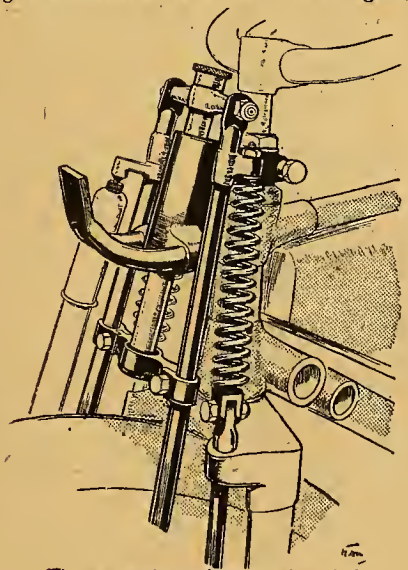


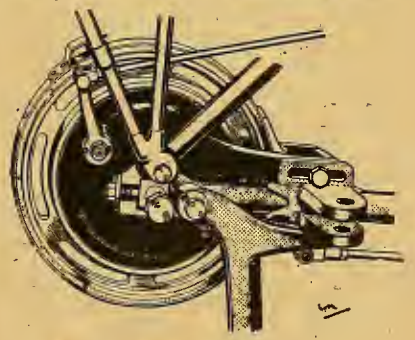
Diagram of the new kick-starter. The long leverage will be noted.

The new 3½ h.p. model has not undergone any startling alterations as regards design, but there are important detail improvements which will be heartily appreciated by the many enthusiastic riders of this famous machine. The latest model is fitted with larger tyres, and has wider and more efficient mudguards, while another innovation is to be found in the brakes. There are two brakes, one internal expanding, and the other external contracting, both in the rear wheel, and of these the external brake is fitted on to a short spoked drum, and is controlled by a pedal actuated by the rider's heel on the left side of the motor bicycle. The internal expanding brake is controlled by a hand lever working on a ratchet quadrant, also on the near side of the machine. This is a very valuable fitment, as when a sidecar is fitted it enables the driver to secure his machine, no matter how severe may be the gradient on which it is desired to stop. To release the hand brake it is only necessary to slide forward the aluminium handle. Machines which are not equipped in this manner when required to stop on a gradient have either to be left in low gear, or one of the wheels has to be run into the kerb or into the bank at the side of the road. With the P. and M. fitting, however, restarting or stopping on a hill is a simple matter.



The new spring fork suspension of the 1920 P and M

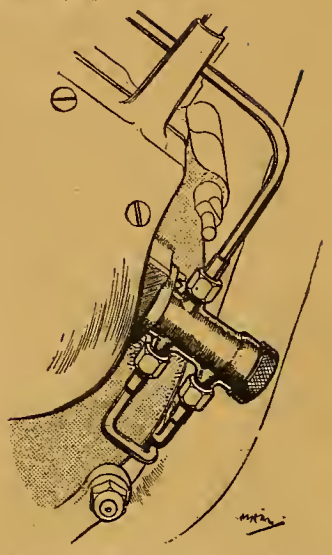
Shorter engine lugs are now provided, so as to allow of the cylinder being dropped more easily for purposes of dismounting it for decarbonisation. The compression tap is now far more accessible, being placed on the near side of the cylinder head, and not in the centre as previously, while a most important innovation is the fitting of a mechanical oil pump designed to draw its supply from the conventionally situated oil tank and maintain a constant level of oil in the crank case. This is provided with two leads, one of which introduces oil to the front of the cylinder, while the other introduces it to the near side main shaft bearing.



Internal expanding and external contracting brakes on the rear wheel.

As before, Messrs. Phelon and Moore, Ltd., favour the B. and B. carburetter. The silencer is of ample dimensions, and

The 1920 3½ h.p. P. & M.—



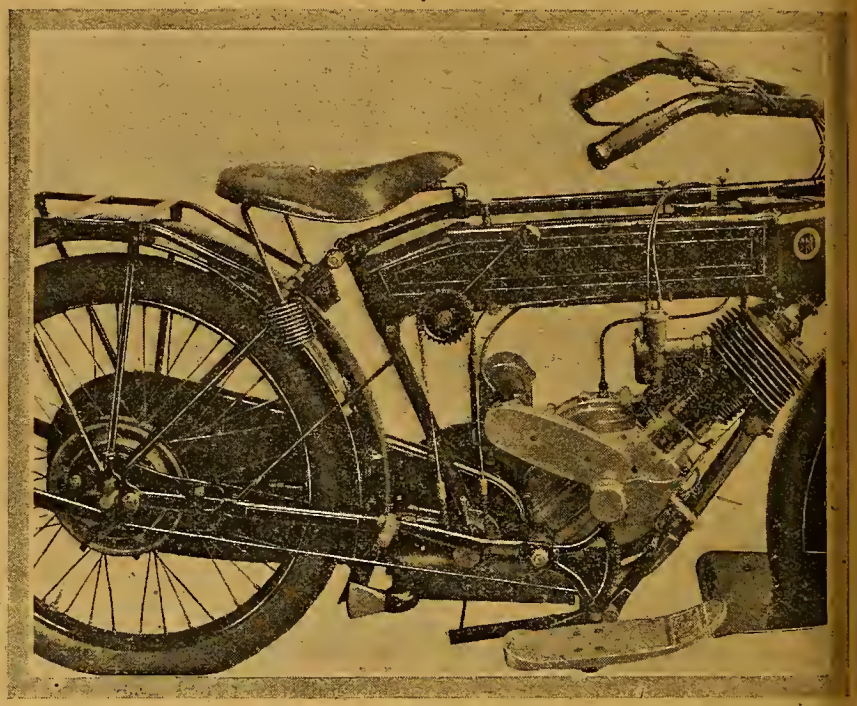
Position of oil pump on timing case of P. and M. engine. The pump forces oil to the big-end bearing and cylinder walls.

is provided with a short extension pipe.

The spring forks have been entirely redesigned, and, instead of the central enclosed springs in compression, two separate coil springs in tension are provided. The fork is also much stronger, and all moving parts are provided with grease cups of ample size.

The comfort of the rider has been well studied, and the machine is now fitted with a Brooks No. 175 saddle, which is sprung both at the back and at the peak, and supported on the machine in these two places instead of by the usual saddle-pillar in the centre. The sidecar lugs are built into the frame, and rear lugs are placed on both sides of the chain stays, so that the sidecar may be fitted on either side of the motor cycle. Yet another novelty is the kick starter, which has been entirely redesigned. It is now of the rack and pinion type, the latter being partially protected, while the lever to which the kick starter pedal is attached is long, and the whole mechanism is of very substantial construction.

Needless to say, the new model P. and M., both as regards external finish and cleanliness of crank case is quite up to its excellent predecessors. These machines will be used in the Six Days Trials, which begin on Monday next.



Alterations immediately noticeable on the new P. and M. are—(1) the tank, now slopes slightly at the rear; (2) the starter pedal, which can now truly be described as a "kick" starter, is placed further back; (3) a newly designed expanding brake has been added. A mechanical oil pump, too, will be noticeable on the timing gear case

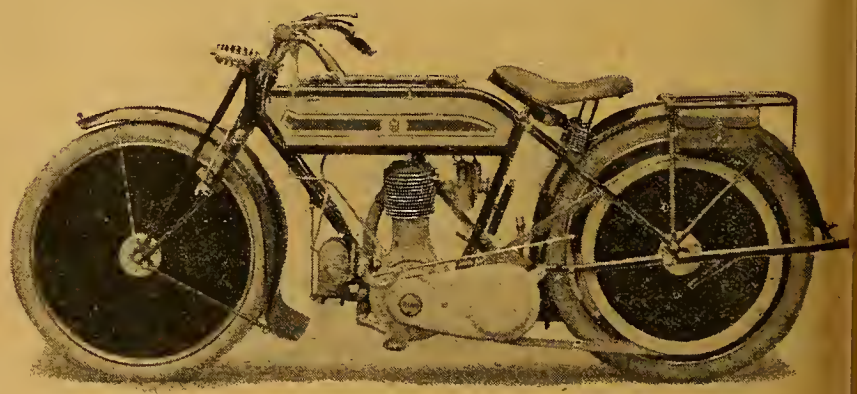
Disc Wheels on Solo Machines.

The Question of Convenience, Appearance, and Windage.

THERE is no doubt that disc wheels, or wheel discs, to be more correct, are increasing in popularity, and although opinion, at present, may be divided as to whether they render a machine's appearance clumsy or smart, approval on the score of cleanliness is apparently fairly general.

The first-mentioned difference of opinion has probably been caused by the many ill-fitting discs to be seen on even new machines, and which by no means enhance their appearance. There are few things which look worse than discs which have buckled surfaces or are fastened to the wheel by rusty nuts and bolts.

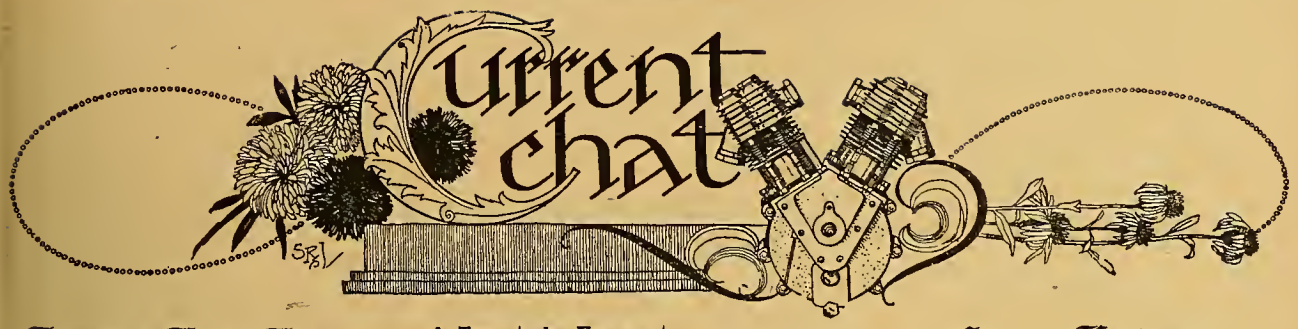
However, the latest wheel discs, such as are produced by the makers of the Ace in Coventry and the Chelsea Aviation Co., remove these objections. The former disc is secured by central flanges, while the latter has recesses to take the nipples of the tensioning bolts.



A smart solo Triumph machine fitted with "Ace" disc wheels. Note the neat flange fixing and the clean rear wheel. The disc before being fitted to the wheel is pierced to receive the connecting spokes for the belt rim.

Any motor cyclist who has seen the latest examples of wheel discs will agree that they are smart. It is obvious that they render a wheel easier to clean and, therefore, have utilitarian value. There remains one other query which is frequently raised. Do they seriously affect the steering in a strong side wind? Obviously the question is of greater importance to the rider of a solo machine than to the driver of a sidecar.

Personally, we have not noticed any appreciable difference when riding or driving a machine fitted with disc wheels, neither have we heard of many cases where owners have discarded their discs for this reason, but the views of motor cyclists who use them, or have used them, would be of interest at the present time, and, for that reason, we invite readers to express their opinion on the subject.



Times to Light Lamps.

SUMMER TIME

Sept.	11th	... ...	8.24 p.m.
,,	13th	... ...	8.20 ,,
,,	15th	... ...	8.15 ,,
,,	17th	... ...	8.11 ,,

New York to Chicago Record.

Scherer, riding a 6 h.p. flat twin sports model Harley-Davidson, has, we are informed, ridden from New York to Chicago in 31h. 24m., breaking the record by 10h. 56m.

A Sensible Amendment.

The speed limit throughout the Province of Ontaria has been increased from 15 to 20 m.p.h. in towns and villages, and from 20 to 25 m.p.h. on open country roads.

Over £159,000,000!

According to the latest official return, the value of the surplus Government property already sold is £159,806,177. Recently in one week alone the following amounts were realised: mechanical transport, £270,739; ferrous metals, £275,050, and £421,290 for non-ferrous metals.

The total amount received in the sales of mechanical transport up to date is £2,325,604.

Motorphobia in Switzerland.

The use of motor cycles is prohibited in Geneva (Switzerland) on Sundays and fête days from September 1st to October 31st between the hours of 1 and 6 p.m. From 6 a.m. to 1 p.m. the speed of all motor vehicles is restricted to twelve miles an hour in the whole of the canton of Geneva. The police and military owners may continue to use their motor vehicles without restriction.

A Two-stroke Exponent.

Those who recall Frank Philipp's performances on a Scott two-stroke machine in past T.T. and Six Days' Trials, will learn with interest that after a long spell in the engineering industry, apart from the motor trade, he has resolved to return to his first choice. At the moment he is not definitely fixed in either the car or motor cycle worlds, bnt his name will be a welcome addition to the lists of competitors in leading events.

Continental Road Conditions.

We have recently received a note (dated in Brussels) from Mr. Leonard B. Henderson, A.M.I.A.E., the sidecar manufacturer, of Sheffield, who is obtaining first-hand information regarding conditions of trade in Europe. Mr. Henderson is riding a 4 h.p. Norton with his own Elite sidecar, and tells us that the road conditions in Northern France and Belgium make sidecarring almost impossible with a rigid-frame outfit.

The Late Captain F. C. Mocatta.

Captain F. C. Mocatta, A.M.I.C.E., who died on Augnst 25th, aged 29, was well known as a motor cyclist, and joined the Army in the early days of the war. He was edncated at Clifton College, and at the City Guild's Engineering College, where he obtained his B.Sc. He took part in the Gallipoli campaign, and served in Egypt and France, but afterwards broke down in health, and lately became attached to the Aircraft Prodnction and Snpply Department. He obtained awards in the London-Edinburgh and London-Exeter Runs. We remember in 1916 that he showed us with great pride two Bosch sparking plugs in his 2¾ h.p. Douglas, which were taken from the first enemy airship brought down in the British Isles.

Special Features.

GUIDE TO SIX DAYS TRIALS.
THE M.C.C. TEAM TRIAL RESULTS.
AMERICAN NEWS LETTER.

Leicestershire Roads.

The daily and evening papers are remorselesss in pointing out, almost every week, that Leicestershire possesses some of the vilest roads in the Kingdom.

Race in Northern France.

The motor cycle race organised by l'Union Sportive Stéphanoise will be held in the district of St. Etienne on September 14th. The course includes a hill-climb on the Côte de Planfoy with an average gradient of 1 in 10.

Traffic Tactics.

In the current issue of *The Autocar* a special article appears on "Traffic Tactics," with special photographs and diagrams. Although primarily for car owners, the varions hints and information would be useful to motor cyclists, especially sidecarists.

Motor Cycles taken into France.

The dnty on motor cycles taken into France has been considerably reduced, and now stands at 220 fr. per 100 kilos, multiplied by 1.3, which is a coefficient of increase. The *ad valorem* Customs snrtaxes are now removed, and the tariff rates of dnty in respect of a large number of commodities are to be multiplied by a figure known as "coefficient of increase," which is calculated in each instance to represent the relation the official valuation of the goods of 1918 bears to the corresponding valuation of 1913.

Members of the Ilkeston and District M.C.C. on the occasion of their recent hill-climb at Pig of Lead Hill.

Average Second-hand Prices.

During the period of abnormal demand for motor cycles, the prices of second-hand machines have rested upon an adventitious basis. Values have been fixed rather by the anxiety of the buyer for possession than by actual worth.

Such being the case, we discontinued our lists of average prices, as it was no longer possible therein to reflect truly the marketable values of the machines dealt with. Of late, however, we notice a levelling up of the figures demanded by the sellers of identical machines; the demand, too, is being more fully met, and generally the outlook is being stabilised.

In compiling the list of average values herewith, early models have been ignored, and in most cases 1913 and 1914 models are grouped, and where no date is given it may be taken that the war and post-war models are averaged, when the latter show no great dissimilarity of price.

A.J.S. (1914), 6 h.p., sidecar	£95
„ (1917), 6 h.p., sidecar	£155
Ariel, 6-7 h.p., sidecar	£155
Bradbury, 4 h.p., solo	£43
„ 4 h.p., sidecar	£58
„ 5-6 h.p., sidecar	£90
B.S.A., 4½ h.p., 3-speed, sidecar	£112
Calthorpe-Jap, 2¾ h.p., 2-speed	£47
Clyno, 2½ h.p., 2-stroke	£45
„ 5-6 h.p. sidecar	£119
Douglas, 2¾ h.p., W.D. Model	£64
„ 4 h.p., 3-speed, sidecar	£114
Enfield, 2¼ h.p., 2-stroke	£57
„ (1915), 3 h.p., twin, solo	£61
„ 6 h.p., sidecar	£132
Harley-Davidson, 7-9 h.p., sidecar	£167
Humber (1914), 3½ h.p., 2-speed, sidecar	£62
„ 3½ h.p. flat twin, solo	£116
Indian, (1914), 7-9 h.p., 2-speed, sidecar	£88
„ (1916), 7-9 h.p., 3-speed, sidecar	£123
Levis, 2½ h.p., single-speed	£36
„ 2½ h.p., 2-speed	£60
Matchless, Victory and M.A.G. Models, sidecar	£138
New Hudson, 2½ h.p., 2-stroke	£46
„ (1914), 3½ h.p., 3-speed (hub), sc.	£64
New Imperial, 2¾ h.p. J.A.P., 2-speed	£45
Norton, 3½ h.p., T.T.	£79
„ 4 h.p., 3-speed, sidecar	£145
P. & M. (1912-1914)	£48
„ (1919), solo	£95
„ (1919), sidecar	£134
Rover (1918-19), 3½ h.p., T.T.	£79
„ (1914), 3½ h.p., 3-speed (hub), and sidecar	£71
„ 3½ h.p. 3-speed, countershaft, and sidecar	£145
Rudge, 3½ h.p., Multi	£77
„ 5-6 h.p. Multi, and sidecar	£108
Scott, solo	£73
„ sidecar	£77
Sunbeam (1914-19), 3½ h.p.	£111
„ 3½ h.p., sidecar	£147
Triumph, single-speed	£44
„ 3-speed (hub)	£56
„ 3-speed countershaft	£90
„ 3-speed countershaft and sidecar	£145
„ 2¼ h.p., 2-stroke	£56
Zenith, 6 h.p., solo	£110
„ 6 h.p., countershaft, and sidecar	£121

Coventry and Warwickshire Club Hill-climb.

September 27th has been fixed as the date for the Coventry club's hill-climb, which will be held on a hill within easy riding distance of Coventry. This year it is a closed event, but interested motor cyclists may become members by payment of 10s. annual subscription.

The classes will include scooters, motor cycles up to 275 c.c., 350 c.c., 600 c.c., and unlimited, sidecars and cars.

The entry fees are 5s. for solo machines, 7s. 6d. for passenger machines, and 10s. for cars.

A valuable silver challenge cup is being offered for the fastest time of the day.

Entry forms will be ready in a few days, and will be obtainable from the hon. organising secretary, Mr. E. J. Appleby, "Llanwrtyd," Osborne Road, Earlsdon, Coventry.

At the recent hill-climb held by the Southend-on-Sea and District Automobile Club a scooter class was included, the fastest time being made by Miss Keddie (on left) on an Auto-glider. Miss Cummings (on the right) is seen mounted on an A.B.C. Mota-scoota

Machine Gun Carriers at a Guinea!

Two sales of Government motor vehicles, conducted by Messrs. Cooper, at Newcastle, realised in the aggregate over £20,000. At one sale twenty-seven motor cycles realised 660½ guineas, and two machine gun carriages were sold at one guinea each, a third realising one and a half guineas. The top price reached for a motor cycle and sidecar combination was seventy-five guineas for a Clyno.

Scottish Speed Championships.

The Scottish Auto-Cycle Union will once again hold the Scottish Motor Cycle Speed Championships on the sands at St. Andrews. September 27th is the date fixed, and the start will be at 10 a.m. There are fourteen classes, three being for light, medium, and heavyweight championship respectively, over a twenty mile course. Classes for private owners and a ladies' one mile handicap are also included. The Scottish Inter-club Relay Team Race will also be run off at the same meeting. Entries close on September 17th. The address of Mr. J. S. Fulton, the secretary of the Scottish A.C.U., is 131, West Regent Street, Glasgow.

The Popular Sidecar.

With the arrival of September, the touring season for motor cyclists is drawing to a close. Unquestionably 1919 has been a record year in many ways. Never have so many sidecar machines been seen on our roads—this must surprise the critics, who many times in recent years threatened its demise with the arrival of the cycle car. But the sidecar has not only survived, as we of *The Motor Cycle* always said it would, it has seen the premature boom in cycle cars fizzle out, and is now ready for a second onslaught from the much-improved post-war designs of small cars, many of them with light air-cooled engines based upon aero engine developments.

SCOOTER NOTES.

Racing Scooters.

A well-known works director told us last week that his firm had built a scooter especially for a hill-climb. When taken on the road only one expert tester could ride the machine. It was not entered for the event intended as it was too fast—fact!

Enter the Scooter.

At last scooters are being turned out of the different factories devoted to these new-old velocipedes. Several agents have received machines for demonstration purposes. It will be some weeks yet before they appear in quantities.

Will a Scooter Skid?

We have several times been asked this question, but cannot answer it definitely, since our riding experience with four different types of scooters has been confined to dry or comparatively dry roads. It is asserted (with what authority we cannot say) that due to the quick steering a scooter will most assuredly skid.

Why Stand?

Two of the "stand-up" scooter merchants have decided to offer a seat "as an alternative," in deference to the wishes of clients. The original A.B.C., it will be recalled, had no seat, and when it acquired one its popularity went up 75%. Notwithstanding, two scooter designers in particular champion the saddle-less machine, contending that a machine with a seat must have an extended wheel-base, besides which the saddle interferes with starting and mounting.

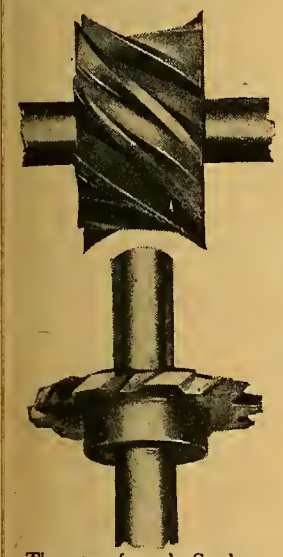
"Stand-up" Travellers.

A man who recently covered a long distance trip standing up on a scooter was asked at the finish if he intended to back up his policy by standing up in the railway carriage all the way home!

AN INTERNAL COMBUSTION TURBINE.

An Experimental Engine possessing Several Unique Features.

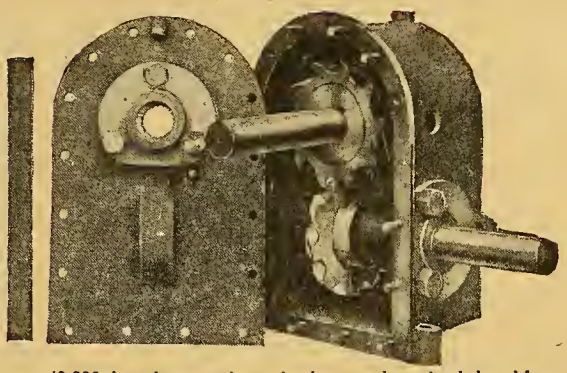
OWING to the constancy of their torque and absence of vibration, turbine engines will always appeal strongly to motor cyclists, and, among turbines, the engine invented by Captain J. M. Sanders, Woodside House, Canford Park, Westbury-on-Trym, is a very notable example. For a detailed description of this ingenious engine, we must refer our readers to *The Autocar* of August 30th. This will very well repay their study. Briefly, the engine consists of two elements of skew gear, one of which is termed the "cylinder," being made after the pattern of the Lanchester worm with a hollowed surface, the second or "piston" wheel being so narrow that its grooves appear more like the teeth of a chain sprocket than part of a worm gear. As the teeth of the piston wheel pass along the grooves of the cylinder wheel, compressed fuel enters behind them, and this is fired as the tooth advances. There will then be as many slight impulses per revolution as there are grooves in the cylinder wheel—in this case ten. The "piston" wheel revolves idly, but it will be readily understood that one wheel cannot revolve without the other. The plug which gives the mixture emits a constant stream of sparks.



The rotors from the Sanders turbine.

Not Yet Complete.

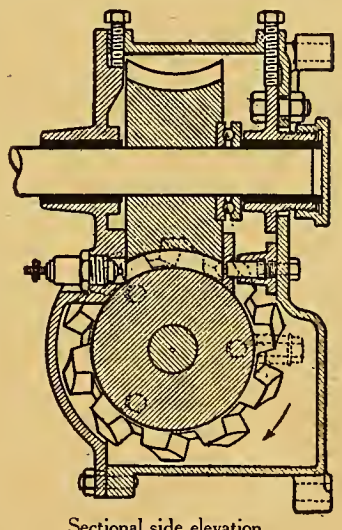
It will be noticed that combustion and exhaust only are provided for in the turbine, but, as the four-cycle principle is employed, the induction and compression are arranged outside the apparatus, a reciprocating compressor performing the other functions of the cycle, induction, and compression. Later, however, a third wheel may be included in the train in order to provide for the complete carrying out of the phases of the Otto or four-stroke cycle within the turbine itself.



40,000 impulses a minute is the speed attained by this experimental model of the Sanders turbine. Its size is indicated by the 12in. rule at the side.

Under test, the experimental engine ran on compressed air at a speed of 1,000 r.p.m., but, when the air was passed through a carburetter, mixed with petrol gas, and fired, the revs. immediately jumped up to 4,000, which means 40,000 impulses per minute.

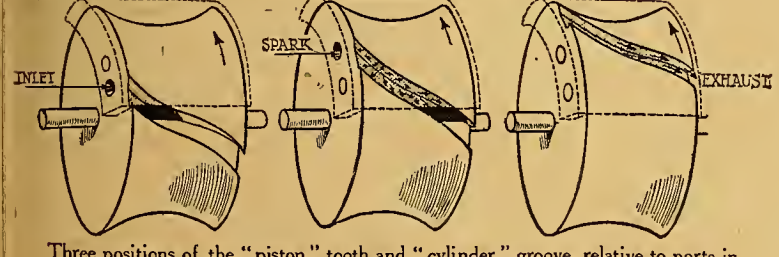
Cooling was effected by a blast of cold air directed from a small blower, but water-cooling could easily be applied; lubrication was supplied from oil cups on the journal bushings.



Sectional side elevation.

It is estimated that the fuel efficiency will be comparable with that of the standard type of internal combustion engine.

The engine is as yet only in its experimental stage, and may take a couple of years to develop, but Prof. W. Morgan, of Bristol University, states that it is constructed upon correct mechanical principles and involves no fallacy. It is expected that the weight per h.p. will be exceptionally low, since it is calculated that an experimental model which, having a 5½in. cylinder wheel and two piston wheels, should give 36 h.p. at a speed of 10,000 r.p.m.



Three positions of the "piston" tooth and "cylinder" groove, relative to ports in the shroud at the moment of gas admission, firing, and exhaust.

In view of the fact that many agents are alleged to be adding from £100 to £200 to the price of new cars, despite the fact that they are under agreement to sell at list price, the Motor Trade Association is taking action. Agents against whom the charge of demanding excessive premiums is proved will be placed on the "stop-list," which means that all reputable sources of supply, both of cars and accessories, will be closed to them.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

"CICETER."

Sir,—Permit me to question your contributor's statement that the correct pronunciation of Cirencester is only used by "the very old-fashioned country folk, and by Lord Bathurst and his country circle." What would Mr. Harper make of the following?

There was an old lady of Cirencester
Who went to consult her solicitor.
When he asked for his fee
She said, Fiddle-de-dee!
I only looked in as a visitor.

P. GARDNER-SMITH.

A STOLEN MACHINE.

Sir,—On August 16th, 1919, a new 1919 Triumph 4 h.p. motor cycle, index number BW 2930, engine number 19613, also a suit of overalls and a few accessories, were stolen from a garage in this city by Raphel Finella, alias Harry Ray, an Italian, ex-soldier, music hall artist, and hairdresser. Age 24, height 5ft. 5in., home address, 5, Little Saffron Hill, London, E.C.

Information is to hand that he has sold the stolen motor cycle for £80 somewhere, and was seen in Kingston-on-Thames, riding a 1914 Calthorpe-Jap motor cycle, number unknown, for which he produced a receipt showing he had purchased same for £40 at the end of August.

This may attract the attention of the people who bought or sold the above-mentioned motor cycles; if so, I shall be pleased to hear from them.

Oxford. OSWALD COLE, Chief Constable.

SPARE PARTS.

Sir,—Our business has necessitated the daily use of a Big Four Norton, and right well has it responded to the call. Naturally, constant work demanded spares, and in one instance an overhaul. It was with trepidation that we approached the makers, having in mind a particular friend who had been held up some considerable time by his inability to get spares. Judge then to our joy when we received a letter from the Norton Motors, Ltd., stating that they had sent on spares as requested, and at the same time advising us how to fit them.

We feel sure that such treatment deserves every publicity. J. W. STAINSBY AND CO.

Sir,—I have a 2¾ h.p. Omega-Jap, and the other day was unfortunate enough to break my chain. I wrote to Messrs. W. J. Green, Ltd., Coventry, about it, stating that the motor cycle was only two months old, and that the chain was obviously defective, and was agreeably surprised to receive almost immediately a new chain free of charge, and this though the broken part was not of their manufacture.

In the matter of spares the firm is equally obliging, and I have been able to obtain necessary parts per return without the inconvenience of *pro forma* invoices and long waits, which have been my experience elsewhere.

The usual disclaimer. A.C.P.

Northampton.

Sir,—I have a 1914 model of a well-known make, and have just applied for some new parts, including a rear brake block.

In reply to my letter, the makers regret they are unable to replace these parts, and return me my money. The result is I cannot use my bicycle at present, as I am unable to obtain the parts elsewhere.

At the same time they are turning out these very parts in hundreds, as shown by the large number of their 1919 models seen on the road.

Their anxiety to be first in the post-war rush one can readily understand, but surely their old clients should be given a little consideration? A. BEVAN.

ENGINE DESIGN.

Sir,—"Engineer's" letter in your August 28th issue, offering information respecting the advantages of outside flywheels, can hardly be allowed to pass unchallenged.

The presence of more than an insignificant quantity of oil in the crank case in entirely due to the absence of, or apology for, a lubricating system. There is also no reason for the flywheel clearance to be so small. The adoption of the outside flywheel does not remove the cause, but adds disadvantages (set out in my previous letter) in other directions.

"Engineer's" claim of both flexibility and ease of acceleration for the outside flywheel is absurd. These qualities, so far as affected by flywheels, are in direct opposition to each other, and no type of flywheel can effect improvement in both directions.

Again, "Engineer" claims the advantages of ball and roller bearings for the outside flywheel engine. I fail to see why such engines should derive greater benefit from their use than any other type of engine. Or is your correspondent under the impression that the use of these bearings is confined to this type? I am sure that if "Engineer" and any other readers interested give the question a further few minutes' study they will comprehend these simple facts.

Birmingham. TWO-STROKE.

An English machine in Denmark. Mr. Host, riding for Otto Drewsen, Danish agent for Invicta machines, recently completed 752 kilometres in 22½ hours, on a 2½ h.p. Invicta, fixed gear two-stroke.

ROLLER BEARINGS.

Sir,—Referring to the roller bearing described in *The Motor Cycle* of August 21st, I should like to point out that there is nothing novel in this, as the design was submitted by me to the Air Board in the early stages of the war, the objection to the design being the difficulty in hardening the crankshaft of the length required in modern aero engines.

C. BINKS.

BENZOLE.

Sir,— Having read an article on benzole in your issue of August 21st, I note that you advocate a test for benzole to ascertain its liability to freeze in the tank or carburetter. Why not carry out these tests in the laboratory? I would like to point out that if the National Benzole Association would include 3% of toluene in its specification no frost common to England would be severe enough to freeze it. A few experiments carefully carried out would enable a chart to be made giving the lowest percentage of toluene required to meet any degree of frost, the toluene making no difference to the working of the engine.

TESTER.

Risca, Mon.

A CHEAP MAGNETO.

Sir,—Having followed for some months the trend and design of the latest ideas in motor scooters and lightweight cycles, as described in your paper, I note the difficulty of the various enterprising firms in getting a cheap magneto for ignition, and therefore having to fit the rather clumsy Bosch type, though now made a little smaller.

I am prepared to design or supply the driveless pattern which is wrongly called flywheel magneto, and shall be pleased if you can draw attention to my statement. If a scooter or any other cheap motor bicycle is proposed for quantity production it will be just as well to get a standard design for this particular vehicle. It will make a nicer arrangement, be cleaner, and embody features which the motor cycle manufacturers like themselves, and not the magneto people only, viz., price.

FRED J. HOFFMAN.

COASTING WITH EXHAUST VALVE RAISED.

Sir,—*Re* Mr. Taylor's letter of June 12th and "Douglas's" reply, June 26th, the mixture is certainly not firing, and, consequently, there is no blue flame burning the exhaust valve. The effect of running with the exhaust valve lifted and with throttle and air open is, it appears to me, as follows: On the down (suction) stroke the piston exercises only a certain amount of suction, and as the exhaust valve is open as well as the inlet valve a large amount of warm (if not hot) air is drawn from the exhaust, and a small amount of mixture through the inlet valve. Nearly the whole of this very weak mixture is swept out through the exhaust on the upward (compression) stroke, with the result that, not only is there no compression, but, if the ignition is well retarded, the spark would occur when the piston was actually tending to create a partial vacuum, and air was being drawn in through the exhaust; consequently, it is a matter of impossibility for there to be any explosion in the cylinder. On the down (firing) and up (exhaust) strokes air is pumped in and out the cylinder through the open exhaust valve. The series of loud bangs to which "Douglas" refers are due, I think, to the fact that the air and mixture being pumped in and out through the exhaust valve does not have time to escape to the outer air, and, as on each suction stroke a small amount of gas is being drawn in, and then pumped into the silencer, the mixture there eventually grows rich enough to be fired by the heat of the silencer or exhaust pipe.

In my opinion, the reason why the throttle and air should be open, the former only slightly, but the latter fully, is that the mixture drawn in through the inlet valve is quite cool, whereas the air pumped in and out through the exhaust valve is hot. Not only that, but with both exhaust valves lifted and air and throttle open, freer running is obtained, and, unless the hill is very steep, it is not always desirable to check the speed to any considerable extent.

One word of warning before releasing the exhaust valve lifter at the bottom of the hill: it is advisable to close the throttle first for a moment, drop the valve lifter, and then reopen the throttle gradually to the required extent. This prevents the engine firing suddenly, with the consequential strain upon the working parts and transmission.

Hornsey, N. MACCABÆUS.

A MOTOR CYCLE CLUB FOR THE ROYAL NAVY.

Sir,—I write to endorse the letters of Lieut. Evans-Greaves and Signalman Fellowes.

Throughout the war I kept at least four separate motor cycles at Rosyth, and had a great many friends who did the same. At present, on board this ship, there are two cars, four motor cycles, fully twenty "push-bikes," and, of course, literally dozens more are kept ashore. I venture to suggest that the club, if ever it matures, makes some arrangement for the transfer of machines from port to port when it is impossible to have them on board.

Atlantic Fleet. MIDSHIPMAN.

COURTESY OF THE ROAD.

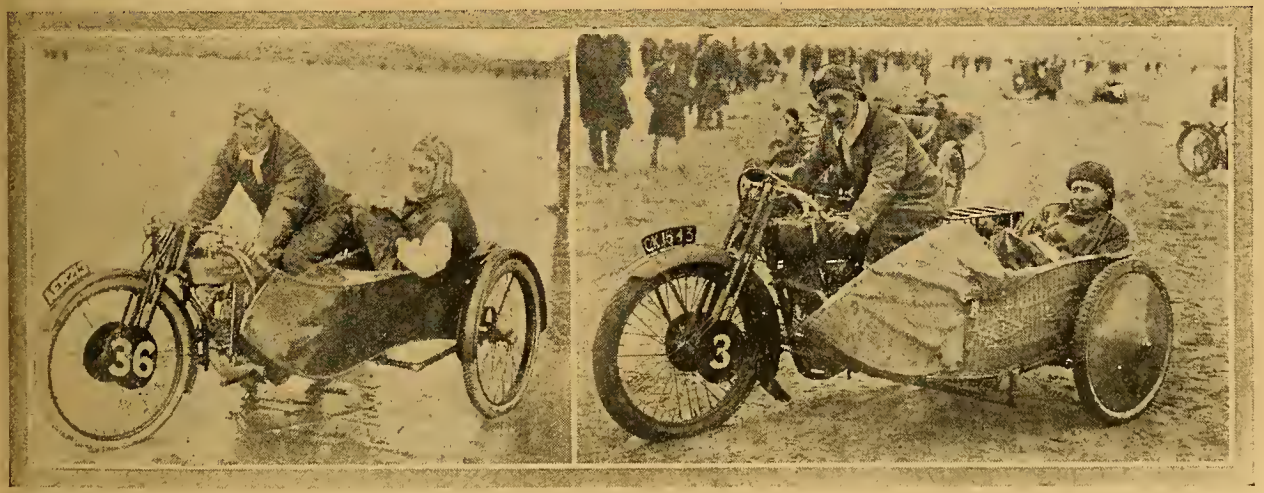
Sir,—Whilst proceeding from Redhill to Haslemere on Friday, August 1st, I was unfortunate enough to "come a cropper," resulting in a badly buckled wheel.

On considering the matter, I decided to leave the machine in a garage at Dorking and proceed to Haslemere by train, but, on examining my purse, I found I had left my money at home, and all I could muster up was 1s. 7d. in odd cash.

Whilst I was wondering how to manage another motor cyclist came by on a Douglas, and, after having a look at my "wreck," asked me what he could do to assist me, and when the position was explained, he promptly loaned me sufficient money to get home. This is the most gentlemanly and sportsmanlike case that I have met with during my motor cycling career.

BK 296.

Haslemere.



S. L. Bailey (Douglas, on left) and B. Houlding (Harley-Davidson), both winners in their respective sidecar classes at the Weston-super-Mare Speed Trials, a full description of which appeared last week.

CONCESSIONS TO DESPATCH RIDERS.

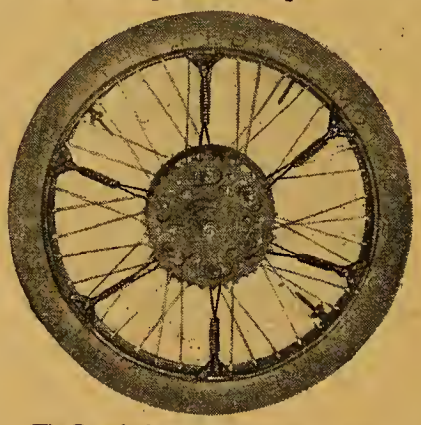
Sir,—"Discharged Highlander" ought to know by this time that the only way to get concessions out of the Government is either by "wanghng" or agitating. If somebody full of energy had started throwing Mills bombs at the Government Department concerned in the shape of urgent appeals on behalf of the infantryman he would no doubt have obtained the same concession in regard to motor cycles as the despatch rider. But this so-called concession for despatch riders seems to be all moonshine so far as I can make out. My application for a countershaft Triumph went in immediately through the A.C.U. to the War Motors Association, but the furthest I have got yet is the intimation that there are thousands of names on the list, and that the only machines being released are 2¾ h.p. Douglases and a few sidecar outfits, and very occasionally a hub gear Triumph, the later priced at sixty guineas apiece.

Is the War Motors Association a dividend-earning concern, or something in miniature after the style of the R.A.A.? Who fixes the prices of the machines, and has any ex-D.R. yet obtained a machine at a price which really made it a concession? EX-D.R.

A SPRING TRANSMISSION.

Sir,—I am forwarding a photograph of a spring transmission which I have fitted to my 8 h.p. Chater-Lea. Previously the machine had no cushioning device, and, although fitted with a good clutch, was very uncomfortable when running at a low speed on the top gear (3⅞ to 1). The jerk on the transmission was the cause of several spokes breaking in the back wheel. (The machine is a 1913, by the way.)

The good points of my idea (which I have protected) are a good range of movement of the gear wheel (this may be as much as to absorb one revolution of the engine) and the drive taken directly to the rim of the road wheel by the springs instead of through the spokes. The gear wheel is bushed and mounted so that it can oscillate on the hub, and, the connections to the rim being brought to a tangent, the springs are compressed by being pulled from opposite ends. The idea of having the springs in compression is that in case the springs break the drive would still take place.



The Beresford spring transmission device.

I have recently tested the transmission by taking four adults (thirty-nine stone) on top gear from Hathersage up the hill to the Surprise (Derbyshire), and more recently my wife and I rode the hilliest parts of North Wales on the machine, and I find I can run at very low speeds on the high gear without feeling in the slightest the impulses of the engine.

For single-cylinders, I would mount a ratchet wheel or ring on the gear wheel, with the pawl mounted on the chain stays of the frame. This would retain the gear wheel after each impulse of the engine until the springs had reassumed their normal position, thus making the drive continuous. For big singles, I am of the opinion this would be a great improvement.

I may point out that the photograph shows my device in the experimental stage only. When placed on the market it will probably have the springs enclosed. This would make for ease in cleaning, at the same time improving the appearance. W. H. BERESFORD.

FITTING A CHANGE-SPEED GEAR.

Sir,—For some time I have been looking for a change speed gear suitable for fitting to an ancient 4 h.p. Antoine in my possession. After many enquiries, I decided on the Mabon variable gear as the likeliest proposition. The results have entirely justified the expense, for I can now take a heavily loaded sidecar up hills which I used to have some difficulty in getting up solo.

Mine was an awkward machine to fit, as it had only one top tube, and, for the sake of appearances, I had to interpose the attachments for the guide bar of the gear between the tank and the top tube of the cycle frame. I also had to fit a new footrest. A new 1in. belt was fitted, which gave a little trouble at first, as all new belts do.

The gear keeps the belt in tension in all positions, and is a thoroughly workmanlike attachment. The only criticism I can make is that the ball bearing track on which the belt runs in the free engine position is not quite wide enough for a 1in. belt, but seems to have been intended for a ⅞in. belt. However, as my old pulley was a ⅞in., it is possible a small mistake was made in fitting. Anyway, the trouble soon rectifies itself with a little wear.

I can honestly recommend anyone wishing to turn a fixed gear machine into a variable to try the Mabon. I have no interest in the firm whatever save that of a satisfied customer. WILFRED M. BEAR.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—There have been several letters of criticism in your columns re the R.A.C. and the A.C.U. which, I think, are unwarranted, as the following experiences will show:

I started a fortnight ago on a journey from Rotherham to Morecambe, and, unfortunately, punctured just outside Doncaster. I was stooping down to examine the wheel when a cheery voice exclaimed, "Let me give you a hand," and I was delighted to find that an R.A.C. scout had ridden up to my assistance.

I continued my journey, and when about twenty miles from my destination a motor cyclist collided with me, ripping eight spokes and the valve out of my sidecar wheel. I was unable to repair the damage, and, as all communication from the village by telephone or telegraph was cut off till the following morning, I could not request assistance under the terms of the "Get you home" scheme. Fortunately for me, a motor car drove up on the way to Bradford, and I persuaded the chauffeur to take my wife and myself to Morecambe on his own terms. I wrote the R.A.C. and explained the circumstances, at the same time requesting them to meet me in the expense. The Club very promptly forwarded a cheque for the full amount, which I consider very good of it, as my case was rather outside the conditions set forth on the "Get you home" voucher. CHARLES BROWN.

SUMMARY OF CORRESPONDENCE.

A reader, signing himself F. Crow, has applied to the Automobile Association for particulars of membership, using a picture postcard published by the Douglas Co., and illustrating Major C. A. de Montigny, of the Belgian Army, on a Douglas motor cycle. Mr. Crow omitted to mention his address, so that the Secretary of the A.A. is unable to communicate with him. Similar requests have been received from readers of *The Motor Cycle* named Harold G. Hanley, J. P. Whelan, H. A. Gilmour, and Major C. Micklen, who should accept this intimation that their communications bore no address.

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A selection of questions of general interest received from readers and our replies thereto. All letters should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly, and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects

Normal R.P.M.

I have a twin-cylinder w.c. 80×80 mm. Fafnir engine of the year 1908, which I intend to use for stationary work. It has enclosed flywheels, and develops, I think, about 6 h.p., and as I am on the point of ordering pulleys for the work I intend it to do, I should like to know at what speed it develops its maximum power. I suppose the makers would be the best people to apply to, but they do not advertise in your paper, and so I am unable to get in touch with them or their agents.—W.S.H.

The Fafnir engine is a German production, hence your inability to get in touch with the makers. It probably develops its maximum power at about 1,800 r.p.m., but will no doubt be capable of reaching 2,000 r.p.m. or more, but without increase of power.

Consumption of Two-strokes.

(1.) I have a Sparkbrook two-stroke motor cycle and the gear worries me, as every time I change from top to bottom there is a jerk, as though there were a few teeth missing. When I want to change gear I slow the engine, lift the decompressor, then change, and sometimes only there is a stop, then start again. If I wheel the machine on low speed, lifting the decompressor at the same time, the engine suddenly stops for a fraction of a second and then goes on again. Could you explain why? (The gear lever is properly adjusted.) (2.) Is the consumption good if I travel from South Kensington to Eastbourne with not quite a tankful? I used to use petrol, but the last time I had benzole, and found that I consumed less than petrol. Is 23 m.p.h. a good average for a two-stroke? I only use the second gear in traffic. (3.) Is Castrol oil all right for two-strokes? About one drop every three minutes?—H.M.

(1.) We should advise you to examine the gear box and operating mechanism, as there is apparently something amiss with this part, and to continue running might result in serious damage. (2.) The petrol consumption is apparently about 60 m.p.g. This is not uncommon with 2¾ h.p. two-stroke engines. As compared with four-stroke engines they are certainly more extravagant. (3.) Castrol oil is quite satisfactory for your type of engine. If your machine is fitted with a drip-feed lubricator and oil pump combined, adjust the drip so that the pump discharges about every eight miles.

Spark Advance and Knocking.

When my machine has been running some time, as soon as I come to an incline, the engine commences to knock and lose power, which, I understand, is due to pre-ignition caused by excessive heat. If, however, this *is* due to the excessive heat in the cylinder, how is it that when the spark is retarded a little the engine immediately picks up speed and ceases to knock; the excessive heat is still present, is it not? therefore, why should retarding the spark alter the explosion at all? I had experience of this recently on the last ten miles of a 150 mile run, but no matter what sort of a hill I came across in the last few miles, the knock stopped immediately the spark was retarded, and the machine picked up splendidly in top gear. Now, if an engine is knocking and losing power through pre-ignition due to the gases being exploded by excessive heat instead of by a spark, why should alteration of the spark affect it to such a degree?—F.E.

Under the circumstances you describe, the pre-ignition is not caused by excessive heat, but by the fact that the speed in falling off sets up a condition having the same effect as when the spark timing is unduly advanced. Retarding the spark consequently corrects this, and the knocking ceases. The gases are not exploded by the excessive heat of the engine, as you could easily prove by cutting out the ignition if a magneto switch is fitted. Your engine is apparently timed too early.

Elusive Ignition Fault.

I shall be obliged if you will advise me concerning my 5-6 h.p. twin. The complaint is that the back cylinder will not fire under compression; disconnect the front cylinder cable and the back runs well, but as soon as the cable is placed on the front plug the spark at the back becomes too weak to ignite the charge. I have just had the magneto back for the second time from the makers of the engine, and they have not been able to correct the fault.—S.W.R.

As your magneto has been to the makers of the machine twice, we can scarcely assist you in eliminating the fault. The only thing we can suggest is that you try a new plug in the back cylinder. We presume that you have the correct terminals connected up, that is, the front terminal on the magneto to the plug of the rear cylinder, and the back terminal to the front plug. If these points are in order and you still get faulty running, we would suggest that you return the magneto to the makers, if it is an English one, or send it to one of the firms specialising in magneto repairs.

A close finish at the Ilkley M.C. and L.C.C. hill-climb. Tim Wood (3¾ Scott) is just beaten by F. Marshall (3½ Sunbeam). The results of this event were given in last week's issue.

A Question of Date.

Recently I purchased a 3½ h.p. Calthorpe motor cycle which was sold to me as a 1913 machine, but on taking down the engine for overhaul I found that the year 1911 was stamped on the crank case. Having paid for the machine and received a receipt for the money, have I any legal right to claim a portion of the amount paid as being the difference in value between a 1911 and a 1913 machine?—J.A.R.

You can certainly make a claim on the facts as stated by you, or send back the machine and demand the return of your money.

A Miniature Engine.

(1.) I have a 1914 lightweight fitted with single-cylinder engine, four stroke, 200 c.c., and cannot get the engine to respond to the throttle. If it is opened above one-third of the way, the engine stops firing, and the maximum speed does not exceed 20 m.p.h. I have fitted both a No. 30 and 28 jet to the B. and B. carburetter, but the trouble remains the same. The engine is in fair condition, and no difficulty is found in starting, although, in changing from low gear to high, the engine labours, and, if on the slightest up gradient, stops altogether. (2.) New piston rings have been fitted, and the compression is good, yet the crank case becomes too hot to bear one's hand upon. I should be glad if you could give me some possible causes of these troubles.—H.E.F.

(1.) These extremely small four-stroke engines are usually very sensitive to minor adjustments, and are not suitable for sustained high speed work, as they quickly lose their tune. From your description, the adjustments appear to be all in order, and, therefore, the cause of the trouble is somewhat doubtful. Possibly the sparking plug is not suited to the engine, and an improvement might be found if one were fitted having stouter electrodes. In changing from low gear to high, it is absolutely necessary with an engine of this size that you attain a fairly high road speed before actually making the change; this practically prevents you making any changes into high gear unless you have reached the top of a hill. (2.) The heating of the crank case is probably due to conduction only.

Tuning for Speed.

I am desirous of tuning up a 3½ h.p. single-cylinder engine for speed (to be used only in competition). I have already won numerous hill-climbs and ridden in the T.T., and am now trying to build a really fast engine. I shall be very pleased if you will tell me: (1.) The best compression ratio. (2.) The best compromise balance. (3.) The most efficient magneto advance in degrees. (4.) Valve timing.—R.C.

(1.) It is very difficult to advise on the best compression ratio, as everything depends on the design of the engine. Normally, the compression ratio of motor cycle engines is from 4 to 4½ to 1. If you are desirous of knowing the most suitable bore and stroke ratio, this again depends upon the personal inclination of the designer, as almost all types of engines have been equally successful in racing. (2.) The usual arrangement for the balancing of single-cylinder engines is to take the weight of the crank pin and big end of the connecting rod together with half the weight of the piston, gudgeon pin and little end, and balance this as a rotating mass. (3.) Thirty degrees is about the maximum advance of the magneto timing. (4.) Inlet opens top dead centre. Inlet closes 20° past bottom dead centre. Exhaust opens 40° before bottom dead centre. Exhaust closes 5° after top dead centre. Above is a normal timing, and the whole subject of timing for speed is open to discussion. You will require to experiment with such things as early and late opening of inlet valve, overlap, and strength of valve springs to obtain the maximum results from whatever type of engine you adopt.

Failure to Start.

As I am a novice I should be greatly obliged if you will answer the following: my 3½ h.p. Rudge starts well on the stand, but when I take it on the road I have to run a great distance before it fires. I have cleaned the sparking plug, but the result is the same.—T.J.P.

As the engine runs well on the stand, there is apparently very little wrong with it, and whatever prevents it running on the road can merely be a matter of small adjustment. Possibly an alteration of the level in the carburetter takes place when the machine is lowered off the stand on to the ground, or may be the belt is so slack that it will not turn the engine over compression when you run alongside in order to start.

An Unsatisfactory Purchase.

A few days ago, in answer to an advertisement which read: "Rex 3½ h.p. motor cycle, cheap, for quick sale, sound condition throughout." I called at the address mentioned. At the time I had rather a bad shoulder, and was unable to try the machine personally, so got the owner to give it a short run, and as it seemed satisfactory I purchased it. The owner told me that it was in good order throughout. I may mention that it was evening and the place rather dark. The following day I found that the engine cradle was broken in three places, and had been patched up. I therefore took the machine back and showed it to the vendor. He said that he had bought it off a man as being in good condition, and refused to return my purchase money, although I pointed out that I bought it on his representation that it was sound. I should like to know if (1) I can legally claim my purchase money back in full, or (2) in the event of my having the machine repaired, can I claim the cost from him?—J.A.

From your statement of the case, we think you will have very great difficulty in proving misrepresentation, unless you have witnesses who were present at the time of the sale. (1.) If proof is possible, however, you can legally claim the refund of your money. (2.) Or you might justly claim the cost of a satisfactory repair, if you desire to keep the machine.

Magneto Failing.

I have a Bosch magneto, and when I turn the sprocket by hand with a fairly sharp pull I get an excellent spark through the plug, but when the sprocket is coupled up to the chain and running fairly steadily there is no spark whatever. Do you think the magnets want remagnetising?—W.H.

There is no reason why the magneto should not spark. Why you do not get a spark is probably because when you give the magneto a sharp pull over this is equivalent to about 1,000 r.p.m. of engine, and when the magneto is rotated by the kick starter the speed is so low that either no spark or a very small spark is obtained. We hardly think that the magnets require remagnetising.

READER'S REPLY.

Valve Overlap.

If the correspondent who is having trouble with his 1912 5-6 h.p. Rex, through blowback, due to overlapping of valves, cares to put up with more noisy tappets, he may get over the difficulty of overlap by leaving the tappet adjustment rather wide, thus allowing the exhaust to close sooner and the inlet to open later. However, he should first examine the heels of each tappet lever arm, to see if any wear has caused a lip or ridge on either which would set up a drag on the valve action. It is not generally known that the timing of either valves or ignition can be minutely varied by adjustment, but I have had many engines through my hands where particular attention has had to be paid to these apparently unimportant details.—JOHN E. REDHEAD.

RECOMMENDED ROUTES.

CHELMSFORD TO WATFORD.—S.P.S.

Chelmsford, Bedells End, Leaden Roding, Sawbridgeworth, Eastwick, Stanstead, Hertford, Hatfield, St. Albans, Watford. Approximately 54 miles.

YEOVIL TO BRAINTREE.—M.N.C.

Yeovil, Wincanton, Hindon, Salisbury, Andover, Whitchurch, Basingstoke, Reading, Maidenhead, Beaconsfield, Watford, St. Albans, Hatfield, Hertford, Bishops Stortford, Gt. Dunmow, Braintree.

ST. LEONARDS TO YORK.—J.H.

St. Leonards, Battle, Robertsbridge, Lamberhurst, Tonbridge, Ightham, Wrotham, Meopham, Gravesend, by ferry to Tilbury, East Horndon, Brentwood, Chipping Ongar, Bishop Stortford, Little Hadham, Braughing, Buntingford, Baldock, Biggleswade, Eaton Socon, Stilton, Stamford, Grantham, Newark, Tuxford, Retford, Bawtry, Doncaster, Ferrybridge, Sherburn, Tadcaster, York.

ASHINGTON (NORTHUMBERLAND) TO WOLVERHAMPTON.—J.E.T.

Ashington, Morpeth, Newcastle, Chester-le-Street, Neville's Cross, Darlington, Northallerton, Boroughbridge, Wetherby, Aberford, Ferrybridge, Doncaster, Worksop, Mansfield, Nottingham, Long Eaton, Ashby-de-la-Zouch, Tamworth, Weeford, Muckley Corner, Brownhills, Gailey, Wolverhampton.

MOTOR CYCLES FOR SALE.

A.J.S.

NEW Military 6h.p. A.J.S., not ridden, fitted Sunbeam sidecar to match; best offer over £150.—een only at 29, St. Leonard's St., Bromley-by-Bow Exchanges. [4573

A.J.S. 1916 2¾h.p., 2-speed, hand clutch, kick starter, enclosed chain drive, in first-class condition, new ick tyre, lamp set, and horn; £67.—G. Savage, 7, High t., Sutton, Surrey. [3980

A.J.S. 2¾h.p., 1914, 2-speed, countershaft, hand clutch, in good running order, complete new mp set and horn; £45.—The Bungalow, Sutton, ear Hull, E. Yorks. [X2101

A.J.S., 1914, 2¾h.p., all-enclosed chain drive, kick start, footboards, special mudshields, excellent res, splendid mount for elderly gentleman; £50.—23, ardwicke Rd., Reigate. [3870

1919 A.J.S. Combination, not done 500 miles, lamps, horn, screen, spare wheel, etc., like new in every spect; any trial or examination; £200.—Marriott, 28, ladstone Rd., Scarborough. [X1663

h.p. A.J.S. Combination, 4 detachable wheels, wind screen, apron, speedometer, all lamps, horn, etc., rst-class mechanical condition, tyres good; after 6; est offers. Legge, 105, Abbotts Rd., Southall. [4179

1918 A.J.S. Combination, 6h.p., interchangeable wheels, tyres 700×80, spare wheel with new xtra heavy Dunlop tyre, perfect order and splendid ndition; Yorks district; £150.—Box L4,043, c/o *he Motor Cycle.* [4602

A.J.S. 3-speed 6h.p. Twin Combination, lamps, horn, speedometer, etc., just overhauled, new ains, new case, and back tyre, perfect running ndition, ride away anywhere; best offer secures.—59, Earl's Court Rd., London. [X2041

1914 A.J.S. 6h.p. Combination, 3 speeds, K.S., in excellent condition, just overhauled, enamelled, ated, and coach painted, new Dunlops, Lucas lamps, umerous spares, complete; 110 gns.—Bramall, Creswell ottage, Gt. Bridgeford, near Stafford. [X2005

A.J.S. 6h.p. Combination, 1914, 3-speed, screen, hood, horn, 3 lamps, new spare tyre, spares, and tools, ored from October (1914) till May (1919), excellent ndition; best offer over £105; seen by appointment dy.—Suggit, 14, Gloucester Rd., Regent's Park, N.W.1. [3842

A.J.S. 6h.p. Combination, 1916, luggage grid, 4 interchangeable wheels, Lucas horn, Stewart eedometer, accumulator lighting throughout, numerus spares, unused during restrictions, excellent conition; nearest to 145 gns. accepted.—263, Rawlinson ., Barrow-in-Furness. [X2057

A.J.S., 6h.p., late 1915, 3-speed, interchangeable wheels, with Gloria cane sidecar, all tyres new. ersize Dunlop grooved on back, spring seat pillar, new are chain, Lucas lamps, engine bearings perfect, excellent condition and running order; trial here; best ffer over £120.—James, Richmond, Llandyssul. [X2033

GENUINE Offer.—A.J.S. 4h.p. twin sporting combination, late 1916, disc wheels, T.T. bars, 1917 ills-Fulford sidecar, spare wheels, mechanical and ulb horn, Lucas lamps, stored 18 months, overhauled nd painted April this year; any trial; photo 6d., ower buying car; £115.—Ashworth, Pwllheli, Wales. [X2256

Alecto

ALECTO, Alecto, 3½h.p., 2-stroke, countershaft gear, hand-controlled clutch, chain-cum-belt, large tyres, ast, powerful, and reliable; price £83/7; quick delivery. f you are interested, call and see us.—Vivian Hardie nd Lane, Ltd. (sole agents for London north of the hames, and Middlesex), 24, Woodstock St. (off Oxford t.), Bond St., London, W.1. 'Phone: Mayfair 6559. [0036

Alldays

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [0017

ALLON 2-stroke Single Speed Motor Cycle, in excellent condition; £45.—Strange, Printer, Eastbourne. [3775

ALLDAYS Allon, 1916, 2-stroke, 2-speed, speedometer, horn, lamps; £55; after 6.—80, Vicarage d., Watford. [4345

ALLON, 1919, 2¾h.p., special model, accessories, complete; 60 gns.—Fairhaven, Wavertree Rd., outh Woodford. [4434

3h.p. Alldays Allon, 1917, 2-stroke, 2 speeds, free 4 engine, perfect condition; £62.—E.G., Belle Vue, rincieth, N. Wales. [3898

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside arade North Finchley. [2931

ALLDAYS Matchless, 1914, 3½h.p., 2-speed, Binks 3-jet, Bosch, good condition; £38; after 6 p.m.—29, Loveday Rd., West Ealing. [4118

1915 Allon 2-speed, clutch, lamps, horn, new tyres, belt, and chain, good condition, climbed Great rme; £48.—Bromhead, Laurel Bank, Rainhill, Lancs. [X2200

1917 Alldays Allon, 2-speed, 2-stroke, 2¾h.p., lamps, perfect condition, Cowey speedometer; £55.—rite appointment, Healey, Danetree House, Kilsby, ugby. [X2324

ALLDAYS 2-stroke, 3-speed, lamps, horn, speedometer, small mileage, perfect condition; first 50 secures.—Hemmings, Jersey House, Hewlett Rd., heltenham. [4273

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I would much rather break the prison of a wall or of the laws, than the bond of my word.

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You are the first agents I have come across who let me have the latest date of delivery that is probable, and let me have the machine sooner than expected. I shall in future always deal with you.

From a Customer, Sept. 3rd., 1919.

WE were all Optimists in the early part of the year and were all more or less fed on promises—but we think Godfrey's Advertisements will prove that we were one of the first to refuse to give definite dates of deliveries, and discourage the sending of deposits.

GODFREY'S have also been consistent all through in their policy of returning the deposit of any customer who for any reason wish to cancel his order.

IT occasionally happens that we are in a position to supply a new machine from stock or within a few weeks from date of order, but in any event a customer can rest assured that a promise given by Godfrey's can be relied upon.

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208, Gt. Portland St., LONDON, W.1.

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MOTOR CYCLES FOR SALE.

Alldays.

ALLDAYS Matchless 1914 4h.p. Combination, 2-speed, free engine, handle start, Bosch mag., Senspray carburetter, lamps, perfect condition; £65.—113, Alma Rd., Ponders End. [4395

ALLDAYS Matchless, 1915, 2¼h.p., 2-stroke, just overhauled and repainted blue and black, new tyres, horn and lamp; price £35, or nearest offer.—Capt. Edgar, R.A.F., Grain, Kent. [3939

Antoine.

3½h.p. Antoine, low, sporty, fine condition, Triumph free engine back wheel; £30.—67, Wantage Rd., Reading. [X2205

Ariel

CROW Bros., High St., Guildford.—Ariel agents since 1913. 1919 deliveries have begun. [5299

1916 Ariel 5-6h.p. Twin Combination, excellent condition; £110.—Grimmer, West Walton, Wisbech. [X2092

ARIEL 3½h.p., Druids, lamp set, horn, absolutely smart; £50; no dealers.—91, Fairfield Rd., Bow, E. [4669

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10 and Woodside Parade, North Finchley [2929

1916 Ariel, 3-speed countershaft gear, lamps, horn, coachbuilt sidecar; price £95.—Dix, 6, Bridge St., Cambridge. [4158

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Sneakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

1919 Ariel 3½h.p. Combination, new end June, lamps, horn, tools; £140, or near offer.—Belmont, Lyme Regis, Dorset. [4096

1915 3½h.p. Ariel Combination, 3 speeds, clutch, excellent condition, fully equipped; £75.—286, Hertford Rd., Lower Edmonton. [X2247

1918 Ariel Combination, Lucas, accessories, complete, fine condition; £105.—Eveson Bros., Ltd., The Dingle, near Stourbridge. [X1812

ARIEL, 3½h.p., late model, 3-speed countershaft, Ariel coach sidecar, very smart outfit; London district; £110.—Box L4,029, c/o *The Motor Cycle.* [4142

ARIEL Coachbuilt Combination, late 1914, 3½h.p., 3-speed, clutch, kick, lamps, new tyres, excellent; £80.—Parritt, 14, Stanhope Gardens, Highgate, N. After 6. [4610

ARIEL Combination, 1919, 6h.p., countershaft, new 20/4/19, Mills-Fulford sidecar, Powell-Hanmer lamps, trip speedometer, Klaxon, Tan-Sad, complete with valuable spares, mileage 987, privately owned; lowest £140 cash.—Apply after 7 p.m., Beverley, Oxhey Rd., Bushey, Watford. [X2174

ARIEL 1919 6h.p., just delivered from makers, and brand new Gloria C.B. sidecar de luxe, large Lucas lighting set, Lucas horn, complete tool kit, pump, Easting wind screen, extra apron, luggage and petrol carriers; 165 gns.—The Seven Dials Motor Cycle Depot, Prestonville Rd., Brighton. [4643

Armstrong.

ARMSTRONG Motor Cycle, 3½h.p., spring forks, mag., handle starting, splendid condition; £35.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X2026

Arno.

ARNO 3½h.p., new tyre and tubes, good condition; £45; after 6.—G. Beecham, Claypole. [X1917

ARNO 4h.p., 1914, 3-speed, handle-bar clutch, new Dunlops, lamps; £50.—Yapp, 32, High St., Congleton, Cheshire. [X2252

Auto-Wheels.

AUTO-WHEEL, B.S.A., good condition; £11.—56, Crown Rd., E. Twickenham. [4032

AUTO-WHEEL, complete, but needs repairs; what offers?—287, High Rd., Leyton. [3934

WALL Auto-wheel, good condition, not run 800 miles, stored 3 years; £11/10.—Stradling, Hungerford. [3797

AUTO-WHEEL, attached Rudge-Whitworth (gent's); £16, complete, or separate.—Fox, 94, Army St., Clapham, S.W.4. [4667

AUTO Wheel, model de luxe, splendid condition £12.—18, Bellevue Gardens, Clapham Rd., near Swan, Stockwell, S.W.9. [4631

AUTO-WHEEL, mileage 200, as new; any trial, £12; with cycle or tandem £19.—Harris, 7, St. Luke's Rd., Westbourne Park, W.11. [4718

AUTO-WHEEL, 1914, stored 3 years, new tyre, tube, £12; with cycle or tandem, £20, offers.—Harris, 7, St. Luke's Rd., Westbourne Park. [3433

AUTO-WHEEL, excellent condition, handle-bar controlled ignition, very powerful; any trial; including accessories and spares; 12 gns.—1, Florence Mansions, Rostrevor Rd., Fulham, London. [X1989

Bat.

BAT-J.A.P. 6h.p., 2-speed, Gloria sidecar, with accessories; £90; ride away.—Barton, 5, Station Parade, Palmers Green, N.13. [X1996

MOTOR CYCLES FOR SALE.

Bat.

BAT-J.A.P., late 1914, 6h.p., 3-speed, clutch, Millford coachbuilt sidecar, £80; also Morgan; call after 7 p.m.—9, Morland Rd., Ponge. [3997

B.A.T.-J.A.P. 6h.p. Combination, 1915, Bosch, countershaft, 3-speed, Swan sidecar, lamps, screen, hood, excellent condition, etc.; £120, or offer.—14, Lonsdale Rd., Queen's Park, N.W.6. Bakerloo Tube. 'Phone: Willesden 1336. [4473

1913-14 8h.p. Bat-Jap, all-chain drive, spring frame, C.B. sidecar, in thorough order; any examination and test; enamelling and plating in grand order, not scratched, and not faked up; £95 secures, no offers.—Apply, Schlienger, 19, Argyll St., W.C. [4203

BAT-J.A.P. Special Sporting Combination, all rigid enamelled Indian red, inlet and exhaust valves, overhead mechanically operated, round tank, coachbuilt bullet shape sidecar, good tyres, steel discs fitted, very smart, racy turnout, no gears or clutch; lowest price, £85.—E. Davies, 21, Bulkeley Rd., Poynton, near Stockport, Cheshire. [X2224

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and can give early deliveries. [5300

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [4016

BLACKBURNE.—Sole agents. Book now for early delivery.—Chandler, Reyre and Williams, Snn St., Hitchin. [0999

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

BLACKBURNE, latest model, ridden about 1,500 miles, lamps, horn, and tools, new condition; £80.—Thomas, Southgate, Chichester. [4288

Bradbury.

NEW 4¼h.p. Bradbury, single speed machines delivered from stock. Wauchope's, 9, Shoe Lane, London. [4639

BRADBURY 4h.p., 1914, clutch, perfect condition, ride away, buying combination; £38.—26, Vicarage Rd., Leyton. [4479

4h.p. Bradbury C.B. Combination, had very little use, splendid condition; £66.—E. Huxtable, 10, Clarence St., Gorton. [X2155

BRADBURY 4h.p. Combination, 2-speed, free engine, splendid condition; £45.—72, Gleathorne Rd., Hammersmith, W. [3855

BRADBURY 1914 4h.p., mechanically perfect, very powerful, tyres good, head lamp; £35.—Ransome, 2, Willow Grove, Chislehurst. [4197

BRADBURY 4h.p., 1913-14, 3 speeds, clutch, in excellent condition, new Dunlops; bargain, £48.—Dore, 2, Armagh Rd., Bow. [4427

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall Tel.: 444. [5606

BRADBURY, 3½h.p., Grado gear, C.A.V. mag., B. and B., lamps, etc., excellent condition; £28.—Young, 16, Gleanre Rd., Eltham. [4407

1914 Bradbury 4¼h.p. Single Combination, C.B. sidecar, 3-speed, free engine; £75; after 6 p.m.—13, Eastmearn Rd., W. Dulwich, S.E. [4367

BRADBURY 4h.p., good condition and running order, also Grado multi pulley; the two, £40, sell separately.—Bambridge, Pevensey Bay. [4262

BRADBURY 4¼h.p., upholstered cane sidecar, 3-speed, Bosch mag., clutch, electric lamps, first-class condition.—16, Blythswood Rd., Goodmayes, Essex. [4092

BRADBURY, 4h.p., engine just overhauled, tyres and belt nearly new, fast, ready to ride away; £35 for quick sale; after 6.—22, Bovington Rd., Fulham. [3920

BRADBURY, late 1914 4¼h.p., coachbuilt sidecar, Sturmey-Archer 3 speeds, Bosch mag., new tyre and belt; £65.—Crittenden, 15, Eccles Rd., Clapham Junction. [3902

4h.p. Bradbury, Bosch, Amac, new tyre, belt, and aluminium footboards, running order, needs tuning up and 2-speed adjusting, suit mechanic; £24.—Keen, Leominster. [X2125

BRADBURY 4h.p., 2-speed, clutch, free engine, starter, powerful and easily controlled, absolutely perfect, and nice condition; price 38 gns.; also luxurious sidecar.—136, Harrington Rd., Norwood Junction. [4063

BRADBURY 4¼h.p., coachbuilt sidecar, 3-speed, clutch, lamps, etc., just overhauled, good condition, ride away; 60 gns., or offer; after 7 p.m. or Sunday.—Wardle, 98, Greenvale Rd., Eltham, London, S.E.9. [4347

1919 4h.p. Bradbury, 3-speed, clutch, K.S., all-chain drive, Lucas horn, Smith's speedometer, tools, Brooks spare tube case and new Dunlop tube, numerous spares; best offer over 100 gns.; owner ordered abroad.—Lieut. Garnett, Shireburn, Clitheroe, Lancs. [X1822

1914 Bradbury, 6h.p., all chain, 3 speed, coachbuilt combination, recently overhauled, excellent running condition, new aluminium lamps, handle-bars, controls, 2 tyres, tools and spares, stored 3½ years; only reason sale, owner going New Zealand; £80.—Seen any day, Rawling's Garage, Gloucester Rd., S.W.7. [X1665

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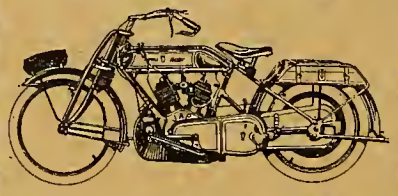

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8 h.p. Twin J.A.P., 3-speed, all chain drive, handlebar controlled clutch, 28 x 3 Dunlops.

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These are Brand New W.D. Models, but the enamel is in some cases tarnished through storage.

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MOTOR CYCLES FOR SALE.

Bradbury.

BRADBURY 4¼h.p. C.B. Combination, late 1912, Bosch, B. and B. carburetter, Brampton gear, X.L. saddle, Dunlop belt, recently new, well shod with 3in. heavy tyres as new, tools and spares, acetylene head lamp set, lit twice, condition and appearance excellent; £55.—Heath Cottage, Highweek Rd., Newton Abbot. [4091

BRADBURY 6h.p. C.B. Combination, K.S., 3-speed, disc wheels, Terrys spring links, speedometer, horn, Miller head lamp, C.A.V. accumulator electric side and tail lamps, Pedley grips, knee pads, spare chains, all in excellent condition, fast and reliable; £120, or nearest offer.—Lawson, Hemingford, Lancaster Av., Hitchin, Herts. [X1815

Brough.

1915-16 Brough, 3½h.p., S.A. 3-speed, K.S., clutch, Model HC, speedometer, lamps, good condition; £80.—Cable, Kinnerton, Gerrard's Cross. [4408

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., Official Dealers, Liverpool and Manchester. [7039

4h.p. Brough, open frame, Armstrong 3-speed hub, clutch, H. start, aluminium footboards; £48.—Hall, The Hawthorns, Cheslyn Hay, nr. Walsall. [X2098a

1919 5h.p. Brough, 3-speed, kick starter, special machine, winner of London-Edinburgh gold medal, and Henderson Elite sidecar (33 gns.), Cameo wind screen, Lucas lamps and horn, Watford speedometer, lots of spares, in perfect condition throughout; £160.—Wilkin, 154, Broomhall St., Sheffield. [X2264

Brown.

3½h.p. Brown, good running order; £30, or offer.—3, Keston Rd., Tottenham. [3972

3½h.p. Brown, mechanical valves, enclosed mag., splendid puller; £20.—Bambridge, Decorator, Riverside, Kingston-on-Thames. [X1935

BROWN, 3h.p., mag., Druids, good running order and condition; after 5.30; £20. — Grimsley, Smart's Lane, Loughton, Essex. [X2267

3½h.p. Brown, new Grado gear, kick start, Bosch mag., rebushed, good tyres; after 5 p.m.; £32.—31, Barnehurst Av., North Heath, Erith. [4465

3½h.p. Brown, Bosch, B.B., new tyres, belt, handle-bars, lamps complete, fast, reliable; nearest £40 by Monday secures.—Beeches Bank, Malpas. [X2019

3½h.p. Brown, pillion carrier, Bosch, B. and B. carburetter, m.o.i.v., running order; first 25 gns. rides away.—Bavey, 100, Anson, Wolverton, Bucks. [1863

B.S.A.

3½h.p. B.S.A., 1913, 2 speeds, requires slight repairs; £35.—29, Brudenell Rd., Leeds. [X2103

B.S.A., late 1917, Montgomery sidecar, pillion, lamps, etc.—11, Craven Rd., Rugby. [X2065

LATEST 1919 B.S.A. Chain-belt Combination.—Horswill, 42, Bridge St., Chester. 'Phone 943. [3984

B.S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5602

B.S.A., 3½h.p., 1914, single gear, excellent condition; £42.—Seddon, 446, St. Helens Rd., Leigh. [X1981

£52. B.S.A., late 1913, 2-speed, clutch, splendid order.—F. Hall, 36, Goldsworth Rd., Woking, Surrey. [4471

1913-14 B.S.A. 3½h.p., Mabon clutch, good condition; £38.—Lt. Morgan, 11 Squadron, R.A.F., Salisbury [X2043

B.S.A. 4¼h.p. 3-speed Combination, kick start, splendid condition; 85 gns.—Mitchell, The Square, Carshalton. [3772

1919 B.S.A. (engine No. 28419) and Coach Sidecar, delivered March; £100.—Fisher, Warwick House, Llanfairfechan. [X2000

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2919

B.S.A. 1916, 4½h.p., 3-speed, chain-belt, excellent condition, lamp, etc.; £80, or offer.—Box L3,981 c/o *The Motor Cycle*. [3853

B.S.A., 1913, Sturmey 3-speed, lamps, horn, splendid condition; £55.—Owen, 98, Woodberry Av., Winchmore Hill, N.21. [3600

B.S.A., 1919, brand new, unused, chain-cum-belt Lucas horn, registered; best offer over £100.—298, Lees Rd., Oldham. [X2010

1919 Model K. B.S.A., C.B. sidecar, 3 good lamps horn, tyres and belt good, perfect; offers over £125.—7, Dorset Av., Leeds. [X1880

B.S.A., 4¼h.p., 1916, 3 speed, chain-cum-belt, horn speedometer, splendid condition; £87.—Williams, 133, Gainsborough Rd., Crewe. [X1931

B.S.A. Combination, 1919, brand new 6 weeks ago, top-hole condition; nearest £110.—4, Warland Rd., Halesowen, Birmingham. [4351

B.S.A. Combination, 1919 (July), chain-cum-belt Montgomery sidecar not done 600 miles, splendid condition; £130.—1, Austin Friars, Stamford. [4264

B.S.A. Combination, 1916, 4¼h.p., 3-speed, chain and belt, K.S., speedometer, lamps, horn, etc. £95.—Geale, 95, Berwick St., London, W. After 1 o'clock. [4324

MOTOR CYCLES FOR SALE.

Dot.

OT-J.A.P., 8h.p., mechanically perfect, fastest bike in Midlands, well kept.—Full particulars, Deem-, Polesworth, Warwickshire. [4441

Douglas.

OUGLAS, 2¾h.p., 2-speed, late model; £60.—Mitchell, The Square, Carshalton. [3769

h.p. Douglas, incomplete, 3-speed; bargain, £35.—Box L4,050, c/o *The Motor Cycle*. [4627

919 4h.p. Douglas, done 300 miles; best over £140.—G.B., West Haddon Hall, Rugby. [X2039

OUGLAS, 1915 (late), 2¾h.p., free engine, as new; any trial; £60.—31, Coverton Rd., Tooting. [4075

OUGLAS 1914, 2 speeds, 2¾h.p., in fine condition; £50.—199, King's Cross Rd., London, W.C.1. [4194

OUGLAS.—Now delivering new 1919 model 4h.p. combination; £123.—Moffat, Yeovil. 'Phone: 50. [1103

OUGLAS 2¾h.p., W.D. model, 2-speed, had 2 months' wear.—189h, Lower Clapton Rd., London. [4416

3h.p. Douglas, 1911, splendid condition, smart 4 appearance; £24.—17, Heaton Rd., Mitcham. [4346

OUGLAS, 4h.p., 3-speed, clutch, kick starter; any trial; 80 gns.—Mitchell, The Square, Carshalton. [3770

OUGLAS 4h.p. Combination, 1918; £108; after 6 o'clock.—61, Colvestone Crescent, Dalston, E.8. [4674

OUGLAS, 2¾h.p., 1914, 2 speeds, kick start, clutch, perfect order; £45.—16, Haldon Rd., S.W.18. [4536

915 Douglas 2¾h.p., T.T., 2-speed, new C.A.V mag., new Amac; £45.—5, Cottage Grove, Bow. [4671

OUGLAS 1915 4h.p. Combination, overhauled, in good condition; £95.—Abbottswood Crescent, Croucl d. [3817

h.p. Douglas Combination, perfect condition, spares; 110 gns.—20, Ospringe Rd., Tufnell Park, near be. [3824

915 Douglas, 2¾h.p., 2-speed, good tyres and enamel; accept £52.—E., 277, Camberwell Rd., .5. [4385

OUGLAS, 2¾h.p., 2-speed, late W.D. model, excellent condition; 55 gns.—129, Brockley Rise, .23. [4131

919 Douglas 4h.p. Combination, W.D., everything in perfect condition; £140.—Wm. Bate, Ltd., lsall. [3890

OUGLAS 4h.p. C.B. Combination, about 1917 very good condition; £90.—200, High St., Toot-, S.W. [4296

OUGLAS 1916 4h.p. 3-speed Outfit, C.B. sidecar, nice condition; £115.—Derby Arms Garage, rtlake. [X1923

OUGLAS 2¾h.p., 2-speed, not done 500 miles, perfect condition; £85.—Uplands, Hook Heath, king. [4413

OUGLAS, 2¾h.p., 2-speed, 1911, just been overhauled and enamelled; £35.—Mitchell, The Square, rshalton. [3771

3h.p. Douglas, 1916 model, 2-speed gear, in excel-4 lent order; £40.—136, Lavenham Rd., South-ds, S.W.18. [4664

OUGLAS 2¾h.p., excellent condition, fast, 2-speed; £62.—Johnstone, 81, Barrowgate Rd., Chiswick, 4, London. [4414

OUGLAS, 2¾h.p., 2-speed, free, kick start, clutch, good condition; £55, or offer.—R.G.S., 39, Bulwer ., Leytonstone. [3921

919 4h.p. Douglas Combination, Lucas lamps, screen, etc., new condition throughout; £140.—2, Russell Brixton, S.W. [4196

OUGLAS 2¾h.p., 2-speed, F.E., 1913, Bosch, long exhaust, very fast; £45.—46, Stapleton Hall Rd., oud Green, N.4. [4202

OUGLAS, 1915, 2¾h.p., in excellent order; 50 gns. —Smith's, 10-16, Haverstock Hill, opposite Chalk rm Tube Station. [4685

OUGLAS, bought new 1916, 3-speed gear, new accessories, footboards; £52/10.—54, St. James St., ited, Birmingham. [X2233

OUGLAS 2¾h.p., 2-speed, countershaft, Bosch, good condition, ride away; £38.—23, Corbyn Hornsey Rise, N. [4522

914 2¾h.p. T.T. Douglas, excellent running order, re-enamelled, good tyres, lamps, etc.; £55.—23, rdwicke Rd., Reigate. [3871

OUGLAS 4h.p. Combination, July, 1919, in perfect condition, done 400 miles; best offer over £140. 3, Clifton Rd., Rugby. [X1672

3h.p. Douglas, 2-speed, Bosch mag., excellent con-4 dition, with spares; £60.—Seen evenings, 41, ple Rd., Anerley, S.E. [4440

h.p. Douglas, 3-speed, kick starter, about 1918 model; 85 gns., with sidecar chassis.—136, Lavenham , Southfields, S.W.18. [4663

OUGLAS 4h.p. Combination, 1919, all accessories, splendid condition; £130.—Mylam, 197, London , Croydon. 'Phone 2379. [3828

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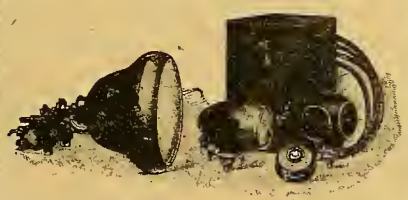

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DOUGLAS 1916 2¾h.p., T.T. and touring handlebars, knee grips, in new condition; £58.—5, Station Rd., Edgware, Middlesex. [X2225

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DOUGLAS 2¾h.p., 1911, Bosch, good Dunlop tyres, excellent running order; £27; after 6.—22, Havelock Terrace, Battersea, S.W. [4245

DOUGLAS, 4h.p., 3-speed, kick start combination, with Douglas sidecar, nearly new; £112.—Stevens, 184, Pentonville Rd., King's Cross. [4399

919 (June) 4h.p. Douglas Combination, 3 lamps, wind screen, horn, spare tyres and tubes; best offer.—5, Tavistock St., Leamington. [X1867

DOUGLAS, 2¾h.p., 1915, T.T., discs, mechanical horn, as new, recently overhauled, new tyres all round; 50 gns.—56, High St., Tooting. [4437

915 Douglas, 2¾h.p., 2 speeds, in splendid condition, new lamps; bargain, 50 gns.—Smith, 3, Parade, Staines Rd., Bedfont, Middlesex. [X1927

2¾h.p. Douglas Motor Cycle, late 1914, 2 speeds, 4 etc., complete with all accessories, nice condition; £55.—3, Parker Lane, Burnley. [X2135

919 4h.p. Douglas Combination, Lucas lamp sets, Klaxon, in new condition; offers.—Wallis, 49, High St., Saffron Walden. 'Phone: 45. [X2054

DOUGLAS, 4h.p., 1919, solo, delivered end July, lamps and horn; nearest offer £115.—Frost, Strathmore, Littledown Rd., Bournemouth. [4359

914 Douglas 2¾h.p., 2-speed, good condition, just overhauled; £48; seen by appointment only.—Freeman, Camp, Stroud, Gloucestershire. [X2222

TWO W.D. 2¾h.p. 2-speed Douglases, bought at Government sale; price £77/10 each.—Rothwell and Milbourne, Cowleigh Garage, North Malvern. [3869

GIBB, Douglas specialist, Gloucester, solicits your enquiries for anything concerning Douglases; try him for the part you require. 'Phone: 852. [6340

DOUGLAS 4h.p., 1914, new tyres, speedometer, tools, lamps, etc., excellent running order; best offer over £80.—L. Reid, Winterfield, North Berwick. [X2015

918 4h.p. Douglas, 3-speed, kick starter, lamps and accessories, hardly been used; £85; also a sidecar.—2a, Sistova Rd., Bedford Hill, Balham, S.W. [4353

DOUGLAS 1915 2¾h.p., new Amac, oversize tyres, many spares, just overhauled, and in new condition; £55.—17, Montpelier Rise, Golder's Green. [4373

DOUGLAS, 1915, 2¾h.p., T.T., 2-speed, Bosch mag., Amac carburetter, lamps, generator, Klaxon, and very fast; £56.—21, Maygrove Rd., Kilburn, N.W.6. [4000

DOUGLAS, 1914, tank and disc wheels enamelled Indian red, fine running order; 42 gns.—Whitehead, 4, Montague Mews, Crawford St., Baker St., W.1. [4336

919 Douglas 2¾h.p., long exhaust, Klaxon, 2 lamps, knee-grips, spare valve and tube, beautiful condition.—Pond, 349, West End Lane, West Hampstead. [4559

DOUGLAS 1915 2¾h.p. (makers' colours), very fast and sporty mount, in top-hole order; 55 gns.—175, Camberwell Grove, S.E.5. 'Phone: Brixton 286. [4419

DOUGLAS 2¾h.p., 1915, splendid condition, little used, overhauled; £55; no offers.—Welch, 15, Torrington Mews, Cambridge St., Edgware Rd., W.2. [4463

919 4h.p. Douglas Combination, just delivered from works, new type clutch, perfect; nearest £155.—Parkshot General Stores, Parkshot, Richmond, S.W. [X2164

DOUGLAS Combination, delivered middle July, absolutely new, extra accessories, horn; best offer over £135.—10, Bannerman Rd., Petersfield. [4502

FOR Sale, 4h.p. Douglas, 1918 model, very little used and equal to new, all accessories; price £85, or near offer.—Box 326, c/o *The Motor Cycle*. X2014

915 3¼-4h.p. Douglas, 3-speed, T.T., speedometer, lamps, and sporty sidecar, new tyres, very fast, trial after 6; £85.—97, Malvern Rd., West Kilburn. [4233

SEVERAL Douglases, 1915 and 1916, 2¾h.p., from £50; call and inspect stock.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4687

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DOUGLAS 1917 4h.p. Combination, overhauled and in fine running order; 95 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4686

DOUGLAS 1916 4h.p. Combination, brand new de luxe body, as new, recently overhauled; first £95 secures.—Saturday afternoon, 56, High St., Tooting. [4438

1919 4h.p. Douglas Combination, delivered from works August 2nd, bought for August, perfect running; £130.—Pearson, Hinton St. George, Crewkerne. [4622

1915 Douglas, Model W, de luxe, 2 speeds, clutch, kick start, fully equipped, low mileage, new condition; £60.—26, Brambleberry Rd., Plumstead, S.E.18. [4310

DOUGLAS 4h.p. O.B. Combination, war finish, overhauled, enamelled, plated, equal new, engine 4711; £120.—56, Kirkdale, Sydenham (1 min. Sydenham Station). [4037

2¾h.p. Douglas, W.D., 2-speed, excellent condition, lamps, horn, tools, spares; £55; appointment between 6 and 8 p.m.—J.W.B., 68, Lytton Rd., Leytonstone, E.11. [4423

1914 2¾h.p. Douglas, 2-speed, excellent condition, lamps, tools, spare tube (in case), belt, chain, 2 valves, 2 plugs; £40; seen after Friday.—38, Richmond Rd., Staines. [4046

DOUGLAS 4h.p. Combination, 1916, disc wheels, electric horn, head and tail lamps, good condition, fast machine; 90 gns.—Ottrigan, Oak Hill Gardens, Woodford Green. [X2229

1919 4h.p. Douglas, coachbuilt Dicky sidecar, in splendid condition, 3 lamps, Klaxon, and spares; best offer over £140.—Axford, 13, Crowndale Rd., Knowle, Bristol. [4383

DOUGLAS 4h.p. Combination, new last week in August, latest dry plate clutch, done 300 miles; can be viewed in Finchley; price £130.—Box L4,020, c/o *The Motor Cycle*. [4025

2¾h.p. Douglas, 2 speeds, free engine, kick starter and clutch model, excellent condition throughout, just overhauled by expert; £56, offers.—Lieut. R., Belle Vue, Criccieth, N. Wales. [3897

FIVE Douglases, 4h.p., 3-speed, K.S., clutch, late models, renovated as new, in good condition; £82, or near offer; also chassis to match, £6.—262, Blackhorse Lane, Walthamstow. [X1975

DOUGLAS 4h.p., late 1914, kick start, clutch, new tyres, speedometer, lamps, tools, running splendidly, but owner going abroad; best offer over £75.—L. Reid, Winterfield, North Berwick. [X2152

DOUGLAS 4h.p. 1919 Combination, T.T. bars, sidecar specially coach painted blue, tank to match, real smart outfit; £145; letters only.—Newbold, 23, Melrose Rd., Wandsworth, S.W.18. [4706

2¾h.p. Douglas Twin, 2-speed, just overhauled, new tyres, Klaxon horn, lamps; cost £58 a month ago; going abroad, must sell; what offers?—Dickinson, Elmfield, Woodley, near Manchester. [X1881

DOUGLAS, 1918, 4h.p., 3-speed, kick start, just been thoroughly overhauled, re-enamelled and plated, indistinguishable from new; any examination; £72.—Taplin, 159, Hornsey Rd., N.7. [4691

DOUGLAS, 1914, 2 speeds, stored, mileage 1,800, good as new; £65; part exchange light car; gent's leather coat, cap, rubber boots, long raincoat, £3.—Miss E. Holland, Eastry, Kent. X2042

4h.p. Douglas Combinations, brand new; prices and extended payment terms on application.—Harrods Motor Showrooms, 116-118, Brompton Rd., (opposite Main Building), London, S.W.1. [4161

2¾h.p. 2-speed Douglas, 1913 model, semi T.T. handle-bars, footboards, Binks carburetter, lamps and horn, just overhauled, real good condition; £48.—J. C. Phipp, Sherston, Malmesbury, Wilts. [4312

2¾h.p. W.D. Douglas, brand new; one or two early deliveries at £72, plus carriage; pamphlets with particulars.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [4459

2¾h.p. Douglas, 1915, 2-speed, good tyres, perfect mechanical condition, just been entirely overhauled and enamelled, tank correct colours, absolutely as new; 55 gns.—215, Upper Thames St., London E.C. [4516

1915 2¾h.p. Douglas T.T., very fast, just overhauled and enamelled, new Dunlop tyres and belt; any trial; after 6 p.m., or Thursday, Sunday afternoon; £60.—Haven, Portsmouth Rd., Esher, Surrey. 'Phone: 290. [3804

DOUGLAS, 4h.p., 1918, as new, just repainted and overhauled, fitted with new mag., carburetter, belt, and tyres; any trial or inspection; £85.—141, Sumatra Rd., near Met. Station, West Hampstead, N.W.6. [3998

4h.p. Douglas Combination, 3-speed gear model, clutch and kick start, fitted with smart Montgomery coachbuilt sidecar, complete with accessories, tools, excellent condition; £117/10.—Wauchope's, 9, Shoe Lane, London. [4640

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4h.p. Douglas Combination, latest model, delivered July, electric lighting, Easting screen, etc., mileage 400, perfect in every way; £140; seen on 15th or after.—22, Upper Grosvenor Rd., Handsworth Wood, Birmingham. [4119

DOUGLAS 1919 4h.p. Combination, little used, well looked after, head light, rear and sidecar lamps, horn, running splendidly, excellent reasons for selling; best offer over £140.—Stride, 16, Gladys Av., North End, Portsmouth. [4455

DOUGLAS 4h.p. Combination, just delivered, not ridden 40 miles, excellent engine, new clutch, horn, no lamps, owner does not now require it, great opportunity; Hampshire; £140.—Box L4,044, c/o *The Motor Cycle*. [4603

DOUGLAS 1917 2¾h.p., 2-speed, spring and baffle head, complete with lamps, footboards, perfect condition, exceptionally fine engine, tyres almost new; best offer £65 or over; private owner.—Can be seen 226, Brownhill Rd., Catford, S.E. [3815

DOUGLAS 1919 W.D. 4h.p. Combination, only expert driven about 600 miles, hardly scratched, brilliant as new, perfect every way, 3 new lamps, Klaxon, full kit; best cash offer about £150.—Vivian, St. Clair, Vista Rd., Clacton-on-Sea. [X2173

DOUGLAS 4h.p. Combination, new this year, engine 6924, horn, lamps, speedometer, spare tyres, spare valves, etc., 1,000 miles sound, smart, up to date; any trial or examination appointment; 130 gns., or offer.—Carmborough, 259, Lewisham High Rd., S.E.4. [4028

4h.p. 1919 Type Douglas Combination, with improved type of clutch; one or two early deliveries at £123, plus cost of crate and carriage; pamphlets with specification.—Robinson's Garage, 32-35, Green St., Cambridge Tel.: 995 (2 lines). T.A.: Bicycles. [4460

DOUGLAS, T.T., 1912, 2¾h.p., engine thoroughly overhauled and tuned, new carburetter, crankshaft, connecting rods and rings, new heavy Dunlops and Palmer tubes, mechanical horn, good machine, exceptionally fast; £45.—Corporal Hancox, H.M. Seaplanes, Plymouth. [X1825

DOUGLAS 1914 2¾h.p., 2-speed, painted grey, footboards, long exhaust, electric lighting (C.A.V.), Klaxon, new inner tubes and rear cover, thoroughly overhauled, mag. rewound, perfect condition; £55.—Lieut., Hermitage, Southville Rd., Long Ditton (Surbiton Station). [4274

DOUGLAS 2¾h.p., 1914, 2-speed, footboards, touring and semi T.T. bars, spare belt and chain, 3 lamps, speedometer, long exhaust pipe, Simms hooter, spare platinum screws (new), recently re-enamelled at Kingswood, engine sound, spanking little bike; £55.—Hugh P. Matthews, 9, Hartfield Sq., Eastbourne. [4681

DOUGLAS, 2¾h.p., W.D., uncrated end last June mileage about 1,000, excellent little machine, good condition, electric lamps, plenty of spares; seen Central London by appointment, if trial required, send deposit, owner parting regretfully, but larger combination being delivered; £82.—Box L4,022, c/o *The Motor Cycle*. (D) [4135

1919 4h.p. Douglas Combination, 3-speed, kick start specially fast engine, Lucas lamps, Klaxon horn accessories, post-war finish, mileage about 500, as new in every detail, and faultless; privately owned; reasonable trial at any time by appointment in Cambridge sacrifice; absolute lowest offer, spot cash, £118.—Write or wire to J. Elms, Willingham, Cambridge. [4394

1919 4h.p. Douglas Combination, August delivery (standard coachbuilt with luggage carrier), has just completed a tour of 500 miles in North Wales most satisfactorily, disc wheels, tyres as new, 3 lamps and generators, speedometer, Klaxon horn, and all accessories; £175, or nearest offer; owner going abroad.—A.C.T., The Bingham, Gerrard's Cross, Bucks. [4054

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ELSWICK-PRECISION 4h.p. Twin, 3-speed, kick start, new tyres, tubes, speedometer, lamps, coach built sidecar, wind screen; £80.—P., 2, Albert St., Whitstable. [394

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916 Hobart-Villiers 2¾h.p., 2-stroke, 2-speed, lamps, horn, not run since 1917; £42.—78, ayton Av., Alperton, Wembley. [4352

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HOCKLEY 2¾h.p. 2-stroke, 2-speed, recently overhauled, in excellent condition, owner purchased w Connaught; 37 gns.—Hawker, 54, Lorna Rd., ove. [4599

Humber.

HUMBER 3½h.p. Combination, 3-speed, clutch; 70 gns.—Box L4,040, c/o *The Motor Cycle.* [4596

HUMBER Twin 2¾h.p., 3-speed, 1914; £34, bargain.—84, Trinity St., Canning Town, E. [4290

HUMBER Lightweight, in new condition; £28.—47, High St., Battersea. 'Phone Battersea 780. [4365

HUMBER 1913 2¾h.p. Twin, 3-speed, clutch, very fast; £45.—J. E. Jones. Min Afon, Glan Conway. [X2254

1h.p. Humber Combination, 1912, 2-speed, splendid 2 condition; £50.—185, Fountain St., Morley, Yorks. [X1872

OR Sale, Humber, 4h.p., 2-speed, new tyre; ride anywhere; £45, offers.—J.H., 97, New Rd., Grays. [X2177

1h.p. Humber, 2-speed, handle starter, ride away; 2 £35, nearest offer.—30, Henry Rd., Chelmsford. [3802

919 Humber C.B. Combination for sale, unscratched, and mechanically perfect; offers wanted.—Box 322, *The Motor Cycle.* [X1944

UMBER Combination, 3½h.p., 2 speeds, handle start, lamps, horn, speedometer; £40.—142, High North, East Ham. [X2285

912 Humber Lightweight, mag., Amac, good tyres £25.—'Phone: Park 3232.—Blake, 216, West urne Grove, W.11. [4301

UMBER Combination, 3½h.p., 2-speed, excellent condition; £47; trial.—Brandom, 54, Weymouth , Apsley End, Herts. [X1965

912 3½h.p. Humber Motor Cycle, 2-speed, starting handle, in good order; £26, bargain.—47, Skelton l., Forest Gate, E.7. [3976

UMBER, 3½h.p., 2-speed, perfect; any trial; £28/10, lowest.—Burrows, 97, Sheffield Rd., rnsley. 'Phone: 160. [X2166

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UMBER Combination, 3½h.p., 2 speeds, new sidecar body, tyres, enamelling, and plating in good ndition; £42.—E., 277, Camberwell Rd., S.E.5. [4386

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UMBER 3½h.p., 1913, 2-speed, hand start, just overhauled, rebushed, good running order, all accessories; £45.—Byott, Snakes Lane, Woodford, Essex. [4088

UMBER Lightweight, 2¼h.p., Bosch, Grado gear, lamps, accessories, splendid condition; 26 gns.; er 7.—45, Ashen Grove, Wimbledon Park, S.W. [4256

UMBER 1914 3½h.p., Bosch, B. and B., Millennium 2-speed, mechanical condition equal to w, tyres new; £40.—207, Blackshaw Rd., Tooting, W. [4180

UMBER 3½h.p., 2-speed, in excellent condition, new tyres and belt, enamel very good; any trial; 38.—Ford, Junr., North Moreton, near Wallingford, rks. [X2189a

UMBER 3½h.p., 2-speed, free engine, handle starter, Bosch mag., engine rebushed and overhauled, runng order; £35.—60, Cambridge Rd., New Malden, rrey. [3790

UMBER Combination, 3½h.p., Canoelet sidecar, 1913, 3-speed, clutch, kick start, in thorough der and running condition; £60.—Beal, Ludgershall, ilts. [X2274

914 2¾h.p. Twin Humber, 3-speed, clutch, excellent condition, stored 4 years, all spares and accessories.—Cyril Williams, London Rd., Alderley Edge, eshire. [X1820

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MOTOR CYCLES FOR SALE.

Humber.

1915 4h.p. Humber Combination, water-cooled, 3 speeds, with lamps, horn, and tools, perfect condition, as new; any trial; bargain, £90.—101, Pattison Rd., Plumstead. [3967

1919 Humber 3½h.p. Flat Twin, new August, mileage 300, Milford sidecar, lamps, horn, tools; best offer over £130.—Briggs, 23, Burlington Terrace, Bradford, Yorks. [X2116

1914 2¾h.p. Twin Humber, 3-speed, clutch, B.B., stored 3 years; 35 gns.; evenings 6 to 8; quick sale desired; owner buying combination.—72, Jefferv St., Gillingham, Kent. [X2192

HUMBER Lightweight, excellent condition, plate and enamel as new, stored 2 years, just overhauled, good tyres and belt, Bosch mag.; £28.—Wonham, 61, Coombe Rd., Croydon. [4390

HUMBER 3½h.p., 3-speed Sturmey, hand clutch, handle start, Bosch, Amac, new tyres and belt, lamps, excellent condition throughout; trial; 50 gns. —Witto, Royston, Herts. [4259

HUMBER Lightweight, 2h.p., mag., little used, laid up during war, pair Dunlop studded tyres, ready to fit, original tyres quite good; £30.—Furlong, 61, Ashgrove Rd., Goodmayes, Essex. [X2268

HUMBER 1914 3½h.p., 2-speed, free engine, handle-start, coachbuilt combination, spare tube and belt, good condition throughout, usual accessories; £45. —26, Leighton Rd., West Ealing. [4476

1918 8h.p. Horizontal Water-cooled Twin Humber Combination, Mills-Fulford sidecar, electric light, condition as new; a first-class outfit; offers.—Barnstaple Motor Co., The Square, Barnstaple. [X1807

3½h.p. Humber, 1912, canoelet sidecar, 2-speed, handle start, 2 new tyres, perfect running order, good condition, stored during war; £60.—C. Ashley, 20, Everton Rd., Yeovil. [X2276

3½h.p. Humber and Sidecar, perfect condition, very powerful and fast, splendid condition, any trial, well kept; price £40; money wanted, no dealers; apply after 6.—F. Potter, 25, Conyer St., Grove Rd., Old Ford. [4477

HUMBER, 1914, 3½h.p., new condition, Sturmey-Archer 3-speed, clutch and kick starter, new Dunlops and belt, Stewart speedometer, horn and lamps; best over £60; seen after 5 p.m.—52, New Rd., Edmonton, N.9. [X1969

2¾h.p. Humber Twin, 1914, in very good order, now in use by advertiser, who is buying combination, Bosch, B. and B., 95 m.p.g., good tyres and belt, very useful runabout indeed; first cheque £32 buys it.—Box 314, c/o *The Motor Cycle.* [X1809

HUMBER Combination 3½h.p., 2-speed, handle start, engine and gear box overhauled, rebushed, stored throughout war, excellent appearance, with lamps, spare tube, belt; £39; sidecar £5 extra.—Harris, 7, St. Luke's Rd., Westbourne Park, W.11. [4719

1919 (July) 3½h.p. Humber Flat Twin, with new Grindlay Popular sidecar, lamps, horn, etc., insured, low mileage, splendid climber, carefully ridden by owner and guaranteed in perfect condition throughout; £120 cash.—43, King Edward Rd., Coventry. [X2272

HUMBER 1914 or 1915 V Twin, 3h.p., Sturmey-Archer 3-speed and clutch, Bosch, B. and B., and F.R.S. magneto lighting set, tyres almost new, needs new piston rings, cracked handle-bar, plating and enamelling very good; what offers over £30?—Box L3,975, c/o *The Motor Cycle.* [3847

Hurle.

HURLE Motor Cycle, 3½h.p., Senspray, new tank, Best-Lloyd drip feed, Mabon free engine clutch, adjustable pulley, lamps, generators, ride away; £25; after 6.—66, Dynevor Rd., Stoke Newington, N.16. [3965

Imp.

2¾h.p. Imp 1917 2-stroke, Dixie mag., B.B. carburetter, drip-feed sideboards, Pan saddle, Miller lamp, Lucas horn, tyres, belt, and enamel good; £35. Ride away.—George Warner, East Hagbourne, Didcot, Berks. [4484

Indian.

INDIAN 5-6h.p., 2-speed, excellent condition; £38.— 272, Green St., Forest Gate. [3778

1913 5-6h.p. Clutch Model Indian, T.T. bars, fast machine.—Pike, Port Regis, Broadstairs. [3884

INDIAN, 5-6h.p., racing model, perfect condition; £75.—11, Friern Barnet Rd., New Southgate. [3964

INDIAN, 1916, 7-9h.p., T.T. clutch model; bargain, 70 gns.—Marston, Howefield, Cononley, Yorks. [X1941

INDIAN Blue Combination, 5-6h.p., 2-speed, hood, screen, etc.; £58.—23, Green Lane, Penge, S.E.20. [X2111

INDIAN 1914 7-9h.p., T.T. clutch, stored 3 years; £70, or nearest offer.—17, Ranelagh Rd., South Ealing. [4162

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport, Mon. [0032

INDIAN 5-6h.p. Combination, clutch model, perfect order; £55; after 3 p.m.—Shorey, 19, Shorrold's Rd., Fulham. [4104

MOTOR CYCLES FOR SALE.

Indian.

7-9h.p. Indian, engine No. 84G103, T.T. clutch, as new; £85, or nearest offer.—Lee, Cheveley Terrace, Chelmsford. [4539

INDIAN 1915 Combination, beautifully equipped, in splendid condition; £110.—324, London Rd., Thornton Heath, Surrey. [3843

INDIAN 1915 Coach Combination, excellent condition; best over £85.—47, High St., Battersea. 'Phone Battersea 780. [4364

INDIAN 1914 7-9h.p., 2-speed, coachbuilt sidecar, excellent order, mileage 6,000; £100.—Elliot, Oranshaws, Leominster. [4621

INDIAN, 7-9h.p., 2-speed, spring frame model, original paintwork almost as new; £75; ride away.—Stevens, 184, Pentonville Rd., King's Cross. [4396

1916 6-6h.p. T.T. Red Indian, kick starter, clutch, 3 speeds, very nice order, and fast; 95 gns.—Jackson's Garage, High St., Guildford. [2899

1915 5-6h.p. Indian Combination, 3 speeds, clutch, kick starter, lamps, horn, and coachbuilt sidecar; £90, no offers.—237, Iffley Rd., Oxford. [4057

1914 7h.p. Indian, 2-speed, spring frame, Indian combination, wants overhauling; to clear £55, a bargain.—Horswill, 42, Bridge St., Chester. [3983

BARGAIN.—1915 Indian, 3-speed, clutch, kick starter, lamp, horn, tyres good, very nice condition; £82; after 6.—15, Waldemar Av., Ealing. [3945

1914 Indian Coachbuilt Combination, 7-9h.p., electrical model, just overhauled by makers, perfect condition; £135.—Myers, Worsley, Manchester. [3801

INDIAN (late 1915) 5-6h.p. Combination, 3 speeds, kick start, new tyres, lamps complete, condition as new; £100.—73, Century Rd., Walthamstow. [X2163

5-6h.p. Indian Combination, 3-speed, clutch, disc wheels, 1915 model, in excellent condition; any trial; £105.—Dunham, 44, Chapel St., Luton, Beds. [X1649

7-9h.p. Indian Combination, C.B. sidecar, 3 speeds, kick start, in perfect order; £130.—Apply, W. Whiles, 25, Upper Kennington Lane, London, S.E. [4183

INDIAN 1914 and Sidecar, with luggage carrier, stored 3 years, owner killed in France; offers over £70.—Write, Wilkinson, 41, Essendine Rd., Maida Vale, W. [4005

1915 Indian Combination, 5h.p., 3-speed, kick start, clutch, Henderson sidecar; best offer over £90.—Curedale, Station Rd., Ramsey, Huntingdonshire. [3923

INDIAN, 1915, 3-speed, new Millford sidecar, new tyres, very good order; £85.—Scott, c/o Queen's Gate Works, Jay Mews, Kensington Gore, London. [0034

LATE 1915 Indian 5-6h.p. Combination, 3-speeds, clutch, kick, all accessories, splendid running order; £100.—239, Leystonstone Rd., Stratford E.15. [4305

INDIAN, 1915, 7-9h.p., clutch model, perfect condition, stored 2 years; reason, too heavy for owner; £70.—S. Coleman, 55, Black Bull Rd., Folkestone, Kent. [4232

7h.p. Indian Motor Cycle for sale, in perfect running order, as new, 1916, 3-speed gear box, kick start, clutch; £115; without sidecar £90.—Marcus, Tilbury Docks, Essex. [3979

INDIAN, 1914, 2-speed, clutch, recently overhanled; 55 gns.—Whitehead, 4, Montague Mews, Crawford St., Baker St., W.1. 4386

INDIAN 7-9h.p. Coachbuilt Combination, 1914, 2-speed, clutch, kick start, speedometer, lamps and accessories, in perfect condition; £110.—Brewis, Kingswood, Melksham, Wilts. [4655

1915 7-9h.p. 3-speed and Clutch Indian Combination, lamps, horn, all tools, been stored 3 years, just been re-enamelled and plated; £120.—Wilkin, 154, Broomhall St., Sheffield. [X2263

1915 Indian 7-9h.p. Coachbuilt Combination, 3-speed, clutch, kick start, electric lamps and horn, recently overhauled by makers, tyres new; £80.—114, Keith Rd., Barking, London, E. [3803

ROAD Racer Indian, 1915, 7-9h.p., clutch, discs, B. and B., 85 m.p.g., new engine bearings June, topping condition, fast; £78, or nearest offer.—Bennett, 38, Brunswick Sq., Hove. [X2236

INDIAN Combination, 1919 model, just delivered, separate dynamo lighting set, Millford sidecar, and all latest improvements; £200.—69, Woodfield Rd., King's Heath, Birmingham. [X2104

7-9h.p. Indian Combination, 1914, 2-speed gear, clutch, speedometer, lamps, sprung back and front, fitted with handsome coachbuilt sidecar; price £115.—Wauchope's, 9, Shoe Lane, London. [4641

PLACE your orders for Indians now; don't be left, will northern county customers note the new address.—Horswill, 42, Bridge St., Chester. Castra Motor Cycle Garage. 'Phone: 943. [2141

1919 Powerplus Indian Combination, 7-9h.p., spring frame, electric light, etc., delivered less than week ago; too powerful for owner; price £240.—Jensen, 108, Victoria Av., Cliftonville, Margate. [X2296

1916 Indian 7-9h.p. 3-speed Combination, Mills-Fulford, £40 spent new gear box, engine overhauled, tyres as new; £135.—Clegg and Clegg, Swanage. 'Phone: 26. T.A.: Scope. [4613

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1915 Indian 7-9h.p., 3 speeds, clutch, kick start just overhauled by makers, coachbuilt sidec all renovated, splendid condition.—Offord and Son Ltd., 67, George St., Portman Sq., W.1. [00

1916 Powerplus Indian, 3-speed, foot and ha clutch, long exhaust pipe, sporting cane sid car, tyres good, lamps; £130.—Blake, 216, We bourne Grove, W.11. 'Phone: Park 3232. [42

INDIAN, late 1915, 5-6h.p. combination, ful equipped, 3-speed hand and foot clutch, electr lights, overhauled month ago; £105, or near offe after 6 p.m.— 162, Usk Rd., Clapham Junction. [42

INDIAN 5-6h.p., late 1915, 3-speed, discs, T.T. ha very fast, and in excellent condition, recent overhauled at a cost of £12, unridden since; £85, near offer.—7, Golder's Green Crescent, N.W.4. [38

INDIAN 1915 T.T. 7-9h.p., clutch, mechaniolly pe fect, enamel unscratched, solo-sidecar, sprocke spare tube, Lucas head lamp, 3in. Dunlops, 80 m.p. very fast; £70.—Tredegar, Empress Av., Woodfor Essex. [40

INDIAN, 1914, spring frame, 7-9h.p., coachbu combination, 2 speeds, clutch, electric lamp horn, speedometer, tools, and spares, 3 new tyr any trial; 90 gns.—63, Kenley Rd., St. Margare Twickenham. [37

INDIAN 1915 7-9h.p. T.T. Road Racer, speedomet tools, and long exhaust, very nice conditio £67/10; seen Daleham Garage, Belsize Lane, Sw Cottage. Also two Morgans and P. and M. combinatio [46

INDIAN, 7-9h.p., 3, kick, clutch, electrics, £45 luxe sidecar, grid, locker, apron, mileage und 5,000; £155; another machine part; seen evenings; pointment; no antiques entertained.—62, Knighton Pa Sydenham. [44

INDIAN 7-9h.p. Combination, 1915, guaranteed sm mileage, ridden solo only, sidecar brand new, gns., Montgomery, a fast and particularly sporti turnout; £115.—'Phone: Brixton 286, 175, The Gre Denmark Hill, S.E.5. [44

INDIAN, late 1914 clutch, coachbuilt combinatio 7-9h.p., been thoroughly overhauled, not heca u during war, top-hole condition; £95; can be seen fro 10 a.m. to 6 p.m.—Letoudu, Room 3, Chichester Cha bers, Chancery Lane, W.C. [39

1915 Indian Combination, 5-6h.p., 3-speed, k starter, sporting sidecar, engine thorough overhauled, Lucas lamps, horn, tools complete, ty nearly new, whole appearance as new; 114 gns Davison, 16, Bute St., Luton. [37

7-9h.p. 1916 Indian Powerplus Combination, 3-spe K.S., clutch, 2 lamps, mechanical horn, new W. ford speedometer, tyres good (back new), Motobi pump, accessories, just overhauled; £130.—Wilk Shirley, Rudolph Rd., Bushey, Herts. [45

1914 7-9h.p. Indian, 2-spced, clutch, K.S., spri frame, overhauled and enamelled, new Dunlo not used 3 years, fast and powerful, easily manag a topping 'bus; £77.—L. Nicholson, Tattenhall Hou Hinstock, Market Drayton, Shropshire. [44

INDIAN Combination, 1916, 7-9h.p., 3-speed, ha and foot clutch, electric light, horn, new Dunl back tyre and inner tube, Corbin speedometer, mile 5,900, splendid condition throughout; £105.—Lle Williams, The Bryn, Gold Tops, Newport, Monmou shire. [42

INDIAN-REX 6h.p. Twin, 2-speed, free engine, Bo mag., Amac carburetter, Dunlop heavy tyres, chain drive, nothing faster or more powerful on roa with gent's motor suit included; owner going in for c price £45.—H. Hubber, Staffordshire St., Sacriston, D ham. (D) [4

INDIAN Combination, 1915-16, 7-9h.p., spring fra 3-speed, clutch (hand and foot), mag., 3 lam horn, charging dynamo, accumulator, speedometer, to etc., new outer cover and inner tube, also spare tube, fine running order; £122; Kenilworth.—Box 313, *The Motor Cycle.* [X1

1914 (late) 7-9h.p. Indian Combination, spring fra model, in splendid condition (faultless), new cha and sprockets, speedometer, lamps, tools, mechan horn, Mills-Fulford sidecar; trial here; £120, offe stored 4 years.—Ford, jun., North Moreton, near W lingford, Berks. [X2

LATE 1915 Indian 7-9h.p. Combination, 3-sp gear, bottom gear slight adjustment, clut kick start, English and American controls, sport new torpedo sidecar, disc wheel, electric lighting horn, 4 spare covers, 3 tubes, etc., sporting and fa £125, or near offer.—Eccles, c/o Mrs. Langford, E St., Pershore. [4

LATE 1915 7-9h.p. Indian and Millford De L sidecar, 3-speed, K.S., spring frame, electric equipped, screen, discs, enamel and tyres good, been thoroughly overhauled, and now in grand conditi seen and tried any time.—R.J.W., King's Head, Ch St., Deptford, S.E.8. [4

INDIAN 1916 5-6h.p. Coachbuilt Combination, speed, clutch, kick, speedometer, lamps, pill new Dunlops and tubes, spare Dunlop and tube chains, beautiful leather upholstered sidecar wind screen and hood, stored 3 years; highest £135.—38, The Vineyard, Richmond. [4

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Minerva.

MINERVA, 2¾h.p., m.o.v., B. and B., Whittle belt, new tyre and tube, wants coil; £8/10, or offer. -7, Coleford Rd., Wandsworth. [X1919

2¼h.p. Minerva, running order, 26×2, B. and B., h.h.c., wants battery only; photo; £6/10.—H. G. righton, 53, Calvert Rd., High Barnet, Herts. [X1987

Moto-Reve

MOTO-REVE, like new; first cheque £21.—Mr. Irwin, Leavesden Rd., Watford. [4569

MOTO-REVE 2¾h.p. Twin, mag., spring forks, new tyre; £22.—16, St. Mary Abbotts Terrace, Kenington. [3839

Motosacoche.

MOTOSACOCHE Lightweight, 2h.p., mag.; seen running; £20.—Pratt, 46, Bird-in-Bush Rd., Peckham. [4552

MOTOSACOCHE 3½h.p., 1916, M.A.G. engine, Enfield gear, kick starter; £55.—Morton, Maybury Hill, Woking. [4553

1914 Motosacoche 3½h.p. Twin, 2-speed, F.E., new tyres, good condition; £45.—9, Pretoria Cottages, Footscray, Kent. [4275

3½h.p. Twin-cylinder Motosacoche, M.A.G. engine, Enfield 2-speed, Bosch mag., splendid running order; £35.—Griffiths, County School, Whitland. [X2223

New Hudson.

NEW HUDSON, 2¾h.p. J.A.P. engine, perfect running order; £25.—Clark, 4, Bank View, Henley-on-Thames. [3766

NEW HUDSON, 1917, 2¾h.p., 2-speed countershaft, little used; £42/10.—76, Herongate Rd., Wanstead Park. [3794

1914 2¼h.p. New Hudson, Bosch, B. and B., good condition, ride away; £36.—E. Scott, K.C.A., Sleaford, Lincs. [X1652

NEW HUDSON C.B. Combination, 1914, 3-speed clutch, F.E., all accessories; £80.—44, Eswyn Rd., Tooting, S.W.17 [X2238

FOR Sale, New Hudson, 2¾h.p., Bosch mag., B. and B. carburetter, 3-speed, ready to ride away.—Apply, 1, Mardol Head, Shrewsbury. [3807

1914 New Hudson 2¾h.p., Armstrong 3-speed gear, in perfect condition; 40 gns.—Trindall, 34, Mackenzie Rd., Beckenham, Kent. [4176

NEW HUDSON, late 1915, 2-stroke, 2-speed, stored during war, splendid condition; 35 gns., or nearest.—18, Wallace St., Halifax. [X2118

NEW HUDSON, 1913, 3½h.p. J.A.P., Bosch, 3-speed, clutch, new tyres, splendid condition; £48/10.—Watten, High St., Lindfield, Sussex. [4442

BRAND New 1919 Model New Hudson, delivery just being taken; will sell £5 premium.—T., 363, Croydon Rd., Caterham Valley, Surrey. [4340

NEW HUDSON, 3½-4h.p., 3-speed, clutch, Bosch, good tyres and belt, lamp, etc., in good running order; £50.—28, Brunswick Rd., Ipswich. [X2088

NEW HUDSON 1914 2¾h.p., 3-speed, lamps, horn, and tools, spare cover; £45, or near offer; seen after 7 p.m.—Bowtle, 1, Brookhill Rd., Woolwich. [3930

1919 4h.p. New Hudson, 3-speed countershaft gear, Klaxon, spare belt and valve, mudshields, excellent condition; £85.—83, Litchfield Rd., Bloxwich, Walsall. [X0974

NEW HUDSON, 6h.p., 3-speed, kick start, coach combination, hood, screen, lamps, etc., perfect; any trial; £98/10.—Burrows, Sheffield Rd., Barnsley. Phone: 160. [X2168

1913-14 4h.p. New Hudson Combination, Armstrong 3-speed, lamps, spares, good condition, recently overhauled; 55 gns., or offer.—Smith, 1, St. Cross Rd., Winchester. [4099

NEW HUDSON 2-stroke, 1916, lamps, horn, etc., in splendid condition throughout, tyres excellent, ready to ride away; 45 gns.—Naylor, Glenwood, Church Rd., Farnborough, Hants. [4212

NEW HUDSON-J.A.P. Coachbuilt Combination, 4h.p. 1913, countershaft gear, 1919, thoroughly overhauled, stored 4 years; viewed any time; 60 gns.—115, Woodside Rd., Bowes Park. [4555

NEW HUDSON, 4h.p., 1919, new July, 3-speed, clutch, kick starter, fast, all accessories, splendid machine; £98/10, including £3/10 insurance.—1, Melrose Terrace, Hammersmith, W.6. [4010

NEW HUDSON 3½h.p., 3-speed, kick start, clutch, decompressor, Bosch, new Dunlops, new belt, lamps, horn, perfect condition; £60; after 6.—The Cottage, Burnt Ash Lane, Bromley, Kent. [3959

NEW HUDSON 1915 Big Six, C.B. sidecar, lamps and horn, stored 3 years, tyres and belt as new, most silent machine, in first-class order; £130.—Beach, Tea Stores, Winsford, Cheshire. [X2170

65 gns. New Hudson 1914 4h.p., light coachbuilt, 3-speed, clutch, spares, accessories, many improvements, footboards, etc., unused during war, smart outfit.—Owen, 28, Silverdale, Sydenham. [4304

NEW HUDSON, 1919, 4h.p., 3-speed C.S. gear, K. start, hand clutch, complete with lamps, tools, new last month, unscratched, with sidecar, wind screen; £135.—1, Sussex Villas, Highland Rd., Aldershot. [3954

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NEW HUDSON Late 1915 3½-4h.p. C.B. Combination, chain-cum-belt, 3 speeds, accessories, in running order, good appearance, clutch needs adjustment; £65, or offer.—266, Wellington Rd. South, Stockport. [X2194

NEW HUDSON Twin Combination, clutch, 3 speeds, wind screen, hood, horn, 3 lamps, mirror, petrol carrier, speedometer, tools and spares, good condition, ready for the road, been stored 2½ years; £85; new back tyre and belt.—33, Macclesfield Rd., South Norwood, S.E.25. [X2291

NEW HUDSON Big Six Combination, late 1915, 3-speed, countershaft, B. and B. carburetter, Bosch mag., electric lamp front, gas sidecar and rear, Dunlop tyres, luxurious sidecar, hood, with side curtains, adjustable wind screen, spares, very little used, enamel hardly scratched, absolutely perfect.—H.C., Yew Tree Villas, Roseacre, Bearsted, Kent. [X2211

NEW HUDSON, 1915, 6h.p., clutch, 3-speed, sidecar combination, Lucas dynamo electric lighting and horn, first-class hood with side curtains and screen, mechanical horn, speedometer, handle-bar mirror, clock, other accessories and tools, complete, ready for road; £100 cash for quick sale; trial by appointment.—Andrew, "Westways," Milton Av., Gerrard's Cross, Bucks. [3916

ELECTRICALLY Equipped 6-8h.p. New Hudson Combination, late 1914, as new, 3 speeds, kick starter, Bosch mag., oil bath, Cowey speedometer, magnificent coachbuilt De Luxe detachable tandem 2-seater sidecar, luggage carrier, wind screen, Lucas electric lighting, comprising 3 lamps, dynamo, accumulators, and electric horn, spares, tools, and spare tyre; absolutely it; £140, or near offer; seen by appointment.—Owner, 91, Bertram Rd., Headoa, N.W.4. [3816

New Imperial.

NEW Imperial.—Coffyns, Ltd., Easthourne, are booking orders for delivery shortly. [0018

1917 New Imperial, 2¾h.p. J.A.P., 2-speed, perfect condition; £40.—Dean, Hutton, Brentwood, Essex. [X1915

NEW IMPERIAL-J.A.P. Combination, 3 speeds, 8 h.p., clutch, 1917; £100.—'Phone: Paddington 5956. [4314

NEW IMPERIAL-J.A.P., 2½h.p., 2-speed, 1914, privately owned; any trial, expert examination; £45.—Attles, Romsey. [X2216

NEW IMPERIAL-J.A.P. 8h.p. Motor Cycle, new, in stock; £115/10; sidecar if wanted.—Palin, Mansfield Rd., Derby. [3922

NEW IMPERIAL-J.A.P. 2¾h.p., 1914-1915, 2-speed, lamps, horn, good condition; 36 gns.—5, Frederica Rd., Chingford. [4227

6h.p. 1919 New Imperial, just had delivery, all equipped; what offers?—Smith, 3, Parade, Staines Rd., Bedfont, Middlesex. [X1928

1917 New Imperial, 2-speed, clutch K.S., splendid condition; £45; all accessories; after 7.—52, Hazelleville Rd., Hornsey Rd., N. [2764

NEW IMPERIAL-J.A.P., 1919, 2-speed, just bought, unscratched, owner requiring kick starter; by appointment.—Exhall Rectory, Alcester. [X1651

1917 New Imperial-Jap 2¾h.p., 2-speed, countershaft, heavy tyres, as new, lamps, horn, tools, splendid order; £50.—Homestead, Birchington. [4250

NEW IMPERIAL-J.A.P. 2½h.p., semi T.T., 2 speeds, horn, lamps, good tyres, good running order; Suffolk; £43/10.—Box 311, c/o *The Motor Cycle.* [X1866

NEW IMPERIAL, 2¾h.p. J.A.P., 1916, tyres new, B. and B., 2-speed, very good order, with lamps and horn; £50.—Box L4,026, c/o *The Motor Cycle.* [4139

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, lamps, generator, horn, perfect condition; £42; after 7.—1, Elizabeth Villas, Victoria Rd., New Barnet. [X2265

1919 New Imperial Jap 2/h.p., 2 speeds, free engine, K.S., hand clutch, little used, as new; £62, or nearest offer.—J.S.B., 8, Park Rd., Green Lanes, Ilford. [3994

NEW IMPERIAL-J.A.P. 2¾h.p., 2-speed, countershaft, excellent running order, lamps, generator, horn, etc.; £46; evenings, after 7.—30, Plympton Rd., Brondesbury, N.W.6. [4226

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed countershaft, 1916, new Palmer and tube, other as new, lamps, hooter, splendid runner; £50.—Decming, Polesworth, Warwickshire. [X1670

1916 New Imperial, 2¾h.p., 2-speed countershaft, Stewart speedometer, lamps, horn, Dunlops, tools, spare parts, stored during war, splendid condition; £50.—Holme, Clothier, Millom. [4127

1919 New Imperial, 2¾h.p. J.A.P., clutch, kick starter, 2 lamps, all accessories and insurance, excellent condition throughout; £58.—'Phone: Paddington 2505. Box L4,049, c/o *The Motor Cycle.* [4626

8h.p. New Imperial 1919 Combination, 3-speed chain drive, hand clutch, run under 1,000, £150; or with speedometer, Lucas lamp, tail lamp, D.A. cylinder, mechanical horn, tube and valve, £160.—Lismaine, Portsmouth Rd., Kingston-on-Thames. [4538

Norton.

CROW Bros., High St., Guildford, Norton agents; let us reserve you one. [5301

MOTOR CYCLES FOR SALE.

Norton.

NORTON Brooklands Special, 1916-17, very fast, exceptional fine condition; lowest £80.—Gayford, 60, Drayton Gardens, Kensington. [3956

1918 Norton Combination, perfect condition, lamps, horn, and speedometer, extra heavy Dunlops, new; £130.—Mitchell, Garage, Rectory Rd., Farnborough, Hants. [4368

NORTON 1919 3½h.p., T.T. model, with Philipson pulley, delivered last week in July, in perfect condition throughout; £90.—Fryers, No. 2 Garage, Hereford. [X2069

NORTON, 4h.p., 1914, 3-speed (overhauled), coachbuilt sidecar, Cowey, Binks, largest F.R.S. (replated); £75.—Seen, Martin's Garage, Highgate Hill, London. [4533

NORTON 1915 3½h.p., T.T., Klaxon, spare Lodge and inner tube (new), very fast and good appearance; £70.—Hayworth, Ferneyffe, Pembury Rd., Tunbridge Wells. [X1900

NORTONS.—We are now booking orders for the latest model Norton solo and sidecar outfits; £5 deposit; deliveries in strictest rotation.—Maudes', 100, Gt. Portland St., London, W.1. [4156

NO. 9 Standard T.T. Norton, Philipson, ordered early June, expected this month; advertiser will transfer order for £15 (£5 deposit already paid); reason for disposal, finance.—Capt. Marr, Dobson's Yard, Lythe, Whitby. [X1648

1919 Big Four Norton, all-chain drive, and 3-speed gear, hand clutch, T.T. bars and Pedley grips, foot-rests (and footboards spare), long nickel exhaust and muffler, all tools, Klaxon and spares, mileage under 500, and condition as new, engine very fast and mechanically perfect; £120, no offers; any trial.—Goodwin, Heath House, Hyde Heath, Amersham. [3896

NORTON Big Four Combination, 1915, Sturmey countershaft, dual control clutch, new oversize back tyre, new tubes all round, new Brooks saddle, completely overhauled July and rebushed, canocled sporting model sidecar, new, apron and screen, mechanical horn, dry battery lighting set, only done 3,000 since new; £130.—Trollope, 39, Westbury Rd., Bowes Park, N. [4297

1919 Norton Big Four, latest model, all-chain drive, 3-speed countershaft, handle-bar clutch, with Millford coachbuilt sidecar, apron, and Easting wind screen, Lucas lighting set throughout, all accessories, tyres excellent, machine exceptionally fast and powerful, whole outfit perfect condition; only reason for selling owner buying car; expert examination invited; best offer.—Apply, Box L4,024, c/o *The Motor Cycle*. [4137

N.S.U.

N.S.U. 3½h.p., 2-speed, running order; £22.—255, Barcombe Av., Streatham Hill, S.W. [4322

N.S.U. 4h.p. Combination, C.B. sidecar, perfect condition; £28.—George, 31, Somerford Grove, Tottenham, N.17. [4338

3h.p. N.S.U., overhauled, re-enamelled, new back tyre, £30; also wicker sidecar, £3.—Hall, The Hawthorns, Cheslyn Hay, nr. Walsall. [X2098

6h.p. N.S.U., 2-cyl., 2 speeds, Bosch mag., B. and B. carburetter, just overhauled, ride away; £35, or offer.—18, Lonsdale Rd., Kilburn, N.W.6. [4002

N.S.U. 6h.p. Ariel, 3-speed countershaft gear, B. and B., electric light, Klaxon, spares, Millford de luxe sidecar, hood, screen, splendid condition; £70. —12, Elm Gardens, Hammersmith. [2759

N.U.T.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for N.U.T.-J.A.P. motor cycles; early delivery. [4019

N.U.T. 1915 4h.p. Twin, overhead valves; best offer over £55.—N. Walker, Atlantic Hotel, Newquay, Cornwall. [X1698

N.U.T.-J.A.P., 1915, 8-10h.p., 90×77, single speed, stored 2½ years; best offer quick sale.—Sapper F. W. Smith, Military War Hospital, Bath. [4384

N.U.T.—Sole agents for Staffordshire. For particulars of prices and deliveries, watch future announcements.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5605

1916 (June) N.U.T. 4h.p. T.T. Combination Millford C.B., all overhead valves, Sturmey 3-speed countershaft, fast and powerful, fine condition; accept £90.—93, Northwold Rd., Clapton. [4568

N.U.T.—We have been appointed district London agents for N.U.T. motor cycles. We hope shortly to be in a position to give full particulars of the new models and approximate dates of delivery.—Vivian Hardie and Lane, Ltd., 24, Woodstock St. (off Oxford St.), Pond St., London, W.1. 'Phone: Mayfair 6559. [0026

O.K.

O.K. Junior 2¼h.p., M.A.G. engine, 2-speed, very good condition; £45; offers.—78, Springbank Rd., Hither Green. [4652

JONES' Garage, special agents for O.K. machines, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2922

O.K., brand new 1919, 2½h.p., 2-speed model, aluminium footboards, lamps, horn, etc.; £60.—11, Ivy Rd., Cricklewood. (After 7.) [3914

LANCASHIRE
Chater Lea
2½ h.p. Two-stroke Two-speed

Efficient, Flexible, Stoutly Constructed Light Weight, Low Running Expenses. Chater-Lea Quality Design and Workmanship.

We are Official Dealers for South Lancashire and can deal with Enquiries from this district only.

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DOUGLAS, 2¾ h.p., W.D. model £57 10
DOUGLAS, 2¾ h.p., W.D. model £49 10
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DOUGLAS, 4 h.p., W.D. model ..... 75 gns.
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SCOTT and Sidecar W.D. machine £48
P. & M. and Sidecar, W.D. machine £85
ENFIELD, 6 h.p., 1916, and new Sidecar, W.D. £110
In running order or requiring slight attention.

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TRIUMPH, 4 h.p., countershaft £37 10
TRIUMPH, 4 h.p., countershaft £29 10
B.S.A., 4¼ h.p., 3-speed countershaft..... £45 0
DOUGLAS, 2¾ h.p., 2-speed £22 10
DOUGLAS, 2¾ h.p., 2-speed £29 10
INDIAN, 4 h.p., spring frame £22 10
CLYNO 6 h.p. twin. countershaft £46

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Triumph 4 h.p. Frame, wants new lug 37/6
Douglas Forks, late type, with buffer springs.. £3 15
4 h.p. Triumph Engine, good £12 10
4 h.p. Triumph Engine, frame, and tank £19 10
Douglas 2¾ h.p. Engine £12 10s., Gear Box.. £7 10

Cameo Screens, £3; Easting Screens, £4 10s.; "Perfection" Coach Sidecars, £16 16s.
"Perfection" Coach Bodies from Stock.

MOTOR CYCLES FOR SALE.

O.K.

O.K., 1917, 2¾h.p. J.A.P. engine, countershaft 2-speed, very good condition all respects, little used; any trial; £48, or offer.—6, The Avenue, Tonbridge. [X1970

1915½ 2¾h.p. O.K. 4-stroke, J.A.P. engine, absolutely perfect condition, overhauled, enamelled, new Dunlops, 2-speed countershaft, lamps, spares, been stored; £38/10.—H. Smith, Wetwood, Eccleshall, Staffs. [X1666

Omega

OMEGA-J.A.P. 2½h.p., 2-speed, a.i.v., good condition; £30.—96, Green St., High Wycombe. [4228

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Omega-Jap motor cycles; early delivery. [4018

1919 2¾h.p. Omega-Jap, Albion 2-speed gear box; price £50.—Napier, Aldersyde, New St., Kenilworth. [X1690

1919 Omega-Jap, 2-speed gear, perfect condition, delivered August; owner bought larger machine; highest offer over £60.—Hands, Burton Walks, Loughborough. [4080

Overstone.

OVERSTONE 1919 2¾h.p., bought 6 weeks, mileage 100, all spares; £55.—28, Rose Lane, Mossley Hill, Liverpool. [3868

VILLIERS-OVERSTONE 1919 New 2-stroke, 2-speed; £55, offers.—Outram, Rectory Rd., Southport. [X1808

P. and M.

P. and M., 1919, delivered Feb., perfect condition; price £90.—Dr. Tippett, Rashcliffe, Huddersfield. [4356

1919 P. and M. Combination, ridden 50 miles, unscratched; £122.—5, Cottage Grove, Bow, E. [4672

P. and M. 3½h.p., 2-speed, Bosch, lamps, horn; exchange considered.—Westacre, Droitwich. [X2226

P. and M. Combination, 1914, good order, all accessories; £80.—J. Smith, 230, St. John St., E.C.1. [4026

P. and M. Combination, late 1913, 2-speed, kick start, speedometer, lamps, perfect; any trial; £70.—1, Priory Rd., Kew Green. [4581

1919 P. and M., R.A.F. model, delivered June, excellent condition, new tyres, lamps, horn; £90, or best offer.—44, Victoria Rd., Keighley. [X2095

P. and M. 1913 3½h.p., 2-speed, splendid running order; seen any time; £50, or near offer.—4, Knockholt Mansions, Ravensbourne Park, Catford. [4201

P. and M., 2-speed gear, free engine, chain drive, fitted with handsome light coachbuilt sidecar, hood and accessories, good as new; £80; on view any time.—58, Peckham Rye, S.E.15. [4055

BRAND New 1919 P. and M., straight from makers, and perfect in every way, never been ridden; best offer over £100; owner buying car.—Box 319, c/o *The Motor Cycle*. [X1695

P. and M. Combination, Turner No. 3 coachbuilt sidecar, 4-point attachment, condition good throughout, lamps and accessories; £90; any trial by appointment.—Riches, Roseneath, Bury Rd., Harlow, Essex. [4468

FOR Sale, 1919 model P. and M. and sidecar (P. and M.), in perfect running order, used only 1,000 miles, P. and H. head lamp and generator, sidecar lamp and generator, rear lamp and generator, spare cover, new covers on all wheels; £125, no offers.—Apply, Lieut. Geddes, Craig Mount, Peebles, N.B. [4030

Peugeot.

PEUGEOT Twin, 2-speed, mag., running order; after 6; £25.—108, Borough Rd., London, S.E.1. [4618

PEUGEOT 2¾h.p., 1914, 32 gns.; ride away.—89, Dartmouth Rd., Brondesbury, N.W.2. [3878

Precision.

PRECISION 3¾h.p., 2-speed, £35; lightweight. £15.—42, Prince's Rd., Holland Park. [4272

2½h.p. Precision Lightweight, 2 spares, o.h. valves, perfect; nearest £30.—159, St. Anne's Rd. East, St. Anne's-on-Sea. [X2293

PRECISION, 2¾h.p., 2-stroke, 1915, perfect condition, lamps, horn, etc., take 2 anywhere; £36.—2a, Ladbroke Grove, Holland Park Av., W.11. [4186

3¾h.p. Precision, 1912, B. and B. variable jet carburetter, Bosch waterproof mag., adjustable pulley, Miller lamp set, in good order, just overhauled; £27; seen after 6 p.m.—Glossop, Lee Green, Cliffe-at-Hoo, Kent. [X1936

Premier.

PREMIER 3½h.p., 3-speed, kick start, Bosch, B. and B.; £55.—54, High St., Camberley. [3780

PREMIER 3½h.p., all accessories, any trial; real bargain, £45.—C., 26, Powell Rd., Clapton. [X2113

3½h.p. Premier, lamp, horn, ride away; bargain £29.—White, 21, Brighton Rd., Addlestone. [4501

PREMIER Motor Cycle, 3½h.p., free engine, lamps horn, etc., in good running order; £38.—Thrall Skegness. [X2241

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (nine lines).

Northern Offices:
199, Deansgate, Manchester.
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Subscription Rates: Home, 17s. 4d.; all countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

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This Week's Six Days Trials.

ONCE again, after a lapse of five years, we have returned to the serious business of the motor cycle world. The Six Days Trials and the Tourist Trophy Race have always been *the* events of the year, and since the latter could not be arranged for 1919, much interest and importance are added to the trials held this week.

At Llandrindod Wells there is a large assembly of trade and competition riders, and though many familiar faces are absent—some, alas! to be seen no more—there is a touch of pre-war times in the atmosphere which no other motor cycling event could produce. The classic Six Days Trials of the A.C.U. have a far-reaching effect. The buying public of the world to a great extent is watching these trials with interest, and the manufacturers of successful machines are likely to reap a well-deserved reward. Here it may be mentioned that, so far as the competing machines are concerned, real novelties are few and far between. Amongst the most practical tendencies are the fitting of electric lighting installations to many, if not most, of the passenger outfits. There is but little sign of dynamos for solo machines, though the A.B.C. is a particularly neat and striking exception. Brakes are improving or, at any rate, have attracted the attention of designers.

Few Spring Frames.

New spring frames are not much in evidence in spite of the bad roads—in fact, one rider of a spring frame machine has reverted to a rigid frame, as the sprung type is not considered suitable for a gruelling trial. Spiral and leaf springs seem to be fairly evenly represented.

Generally speaking, there is an improvement in mudguarding, much wider guards being fitted, especially to sidecar machines, whilst undershields and leg-shields are also making an appearance as integral portions of the motor cycle. The methods of securing them also exhibit improvement. With regard to chain cases, it is significant that many old riders prefer their absence to their presence for competition work, where a single stop of but short duration destroys all chances of a first-class award. This points either to a lack of confidence in the strength of the chains fitted to the standard motor cycle or to the difficulty of removing and refitting the casing, should it be necessary to remove the wheel for tyre repairs.

In respect of noise, there would appear to be a considerable improvement, at any rate in certain cases, and perhaps the possibility of Dr. Low's presence with his audiometer is partly accountable for this welcome feature. We are inclined to think that the maximum penalty for a noisy machine is not sufficient, for nothing is so prejudicial to the pastime and industry as a noisy exhaust and rattling valve gear.

The general impression to be gained from a survey of competing machines is that manufacturers are using the trial as a test for certain features or modifications, and that we shall have to wait at least till the Olympia Show for the final product. Improvisations are, of course, plentiful; here one finds a novel way of carrying a spare tube, and there a guard to protect some vital part from the ravages of mud and water. This is not as it should be, for standard machines should be provided for all the exigencies of modern touring. It may be argued that the A.C.U. Six Days Trials are not a pleasure tour. This is true indeed, but nevertheless they have been instituted with the idea of improving touring motor cycles, and consequently the fitting of such devices as are outside the standard specification is not likely to create a favourable impression on public opinion.

There are many interesting mechanical features, most of which are decided steps in the right direction, but it will be more fitting to deal with them from a technical standpoint when their merits have undergone practical demonstration.

An index to the advertisements in this issue will be found on the page facing the back cover.

BY IXION

A New Sensation in Motor Cycling.

IT is rather odd that the average rider is taking no special interest in spring frames, especially as they are not necessarily either heavier or more expensive than the rigid types. I suppose the explanation of this apparent callousness is that we are all thankful to get delivery of any old thing, and that we can only exercise fastidiousness when supply is about equal to demand. At any rate, let me once again assure our readers that the eulogies which our staff have repeatedly awarded to spring frames are not hot air. The contrast between an ordinarily good spring frame and the best rigid frames can hardly be exaggerated. I ride both types alternately, day in and day out; and, to be quite frank, I would never straddle another rigid frame but for the exigencies of my calling. I am sure there will be a huge slump in rigids when the possibilities of fore and aft springing become common property.

An Aggravating Brake.

WHEN riding in company, a certain amount of waiting at corners is necessary to avoid losing one's pal, who may have taken a false turning or sustained roadside trouble away back. During such a wait last week, I noticed that the rear chain of my 1919 machine had developed an excess of droop, and blithely proceeded to tighten it. I had never essayed the job with the machine before, and I noted with approval the substantial character of the parts concerned and the ease with which they slid into the desired positions. Being a cautious man, at least when I am out of the saddle, I glanced at the back brake before hurtling astern in search of my missing friend, just in case the new chain setting had upset the brake adjustment. Not unnaturally I found that it had. The brake would go on with excessive vim, but absolutely refused to come off. Since I am apt to ride rather "blue," my brakework on occasions resembles Beckett's punch, the sequence being: A No. 10 boot goes plonk on the pedal, deft wrists correct the resultant swerve, and on I go again. With a brake that will not come off by itself, such jockeyship is dangerous, so out came the spanners again. A series of discoveries followed. Item: the belt rim was not true. Item: the brake shoe fulcrum eye was drilled out of truth, and could not enter the rim accurately. Item: the pull-off spring was stretched at a false angle, and exerted little influence on a reluctant brake shoe, should the latter elect to jam in the rim. Finally, I got the brake to free itself by dint of setting the back wheel slightly across the track. Bad design and worse workmanship, was it not, gentlemen? I really wonder that no firm has yet produced a back wheel which *cannot* be adjusted across the track, for, as I pry about garages, I notice many machines with their rear wheels running askew. I believe that rear brake design requires fresh attention now that all-chain drive is booming. This is my third trouble of the kind this season, the other two relating respectively to an insecurely anchored cable and to a brake drum which moved away from an immovable fulcrum every time the chain was adjusted. A few years ago rear chain adjustments necessitated two other adjustments, viz., to the gear control and to the rear brake. Messrs. Sturmey-Archer and others have eliminated the need for resetting the gear control, but there are still many machines on which a rear chain adjustment upsets the action of the rear brake.

Curse that Fitter.

I WAS ambling out to a distant golf links this morning, when my front tyre began to bump faintly in that execrable fashion which betokens a pinhole puncture. I dismounted as blithely as any saint could do, considering what tyre repairs imply in a heat wave when one is swathed in overalls of the type that take ten minutes to get into. But the old Adam produced a few ripe ejaculations when I found that my brand new pump showed a mean effective pressure estimated at a rose leaf and a half per square inch. Being a man of infinite resource, I dismounted the pump plunger in order to immerse its washer in the oil tank and so improve the compression. But, gentlemen, there was no washer on the plunger, and I was miles from human habitation. I sat down by the roadside to await some friendly cyclist. After ten minutes I began to debate whether the required washer should be hacked from (a) the saddle, (b) the toolbag, or (c) a favourite baccy pouch, when a human ploughboy arrived and lent me a pump.

The Rarity of Good Steering.

IT is gradually being borne in upon me that there are only one or two designers in the kingdom who know how to lay out the steering of a motor bicycle. My stable at present houses two machines, both of which I ride regularly over baddish roads, and both of which bear very famous names. I can steer machine A with one hand and in perfect comfort over all the roads which I normally frequent; in fact, except when grease is about, I usually steer it with the second, third, and fourth fingers of my left hand. By contrast, machine B requires two hands all the time, and demands special wariness over deep potholes, rough metal, or a ruts-and-hump road. Yet the latter mount is the more famous of the two. It is true that machine A has a spring frame, but I do not think the rear springing affects the steering in the very least in this case. I could name a third machine which steers better than either of the pair on good roads, though it is inferior to machine A on really

Occasional Comments.—

bad roads. I presume that the manufacturer of B has never tried a machine with decent steering, and does not know what an exacting beast he is selling. Last week I tried the experiment of lending B to a very experienced rider without warning, and awaited his comments with interest. He just said, "Some engine, eh? But I should like to try it on decent roads; these lanes fairly put the wind up me. I don't quite know what's the matter with them, but I felt as if I simply couldn't steer." He failed to tumble to the fact that the machine was to blame, and that on his own mount he would have roared over my local surfaces in an effortless beeline.

Complicated Gear Changes.

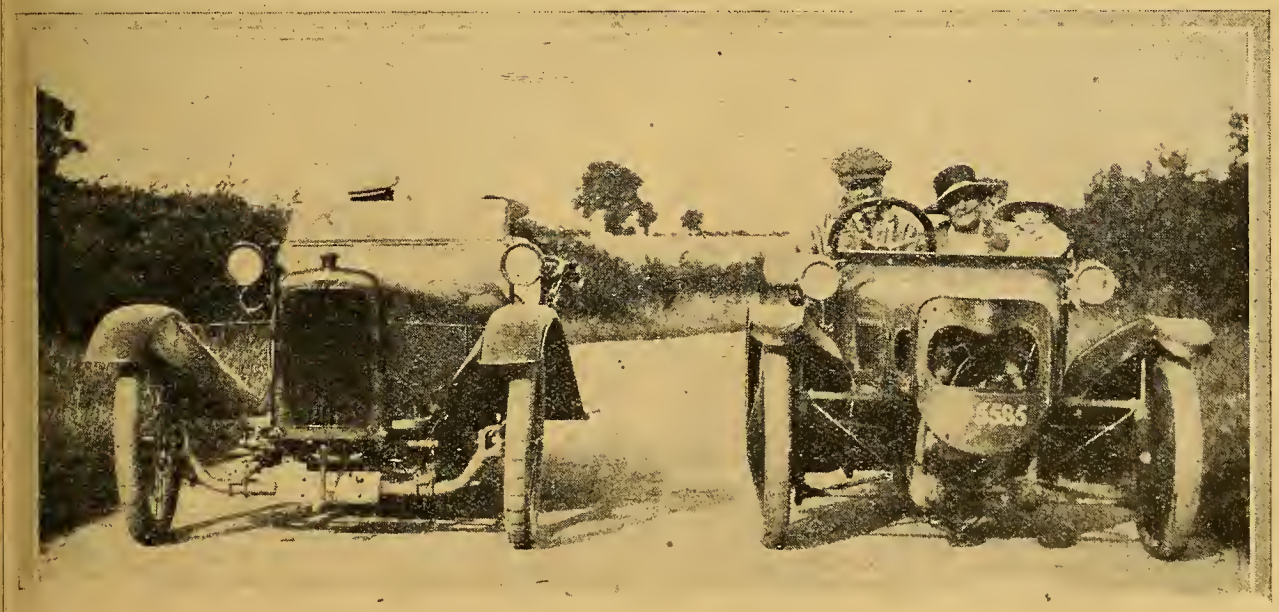
I SUPPOSE some day the ideal gear change system for motor cycles will come along. Enthusiasts for individual makes probably regard the change with which they are familiar as ideal, but the harassed journalist, confronted with a different system every week-end, knows how awkward most of them are. Leaving the questions of clutch and throttle control on one side, I have tackled the following different methods in the past fortnight:

1. Four-speed box; four-notch gate, set across the machine.
2. Three-speed quadrant, set along the machine.
3. Rotary knob.

I think any unprejudiced rider would admit that a day on any unaccustomed three or four-speed gate or quadrant in freak hill country is apt to be annoying. The four-speed change is particularly tiresome, because the required movement is too long for a quadrant, and the "gate" is so tiny that the central opening for the crossover is easily missed. Some readers will say that the case of a journalist does not really matter, seeing that ordinary owners ride one machine only, and rapidly become used to it. I beg to differ. Very many riders remain clumsy gear changers with any box less simple than a two-speed. Most owners are clumsy and uncertain for a few weeks with a new make of gear box. These badly made gear changes are by no means good for the machine. The B.S.A. designer knew what he was about when he devised a box that could safely be changed down without declutching. He scored one point on convenience, and two points on wear. So far as my experience goes, makers should pay more attention to foolproof gear changes, especially on four-speed boxes; the longitudinal quadrant, applicable to most three-speed boxes, is not too bad. As a sample of owners' ignorance, I recently encountered a man who had been riding for three seasons, and was still unaware that there was a neutral position of his gear lever.

Two Nuts and a Bolt.

STOPPING to consult a map the other day, I noticed that my new hooter had shed one of its securing nuts. I lashed it up temporarily with a pocket handkerchief, and called at the next garage to obtain replacements. This trivial incident led to several discoveries. In the first place, the hooter manufacturer uses B.A. threads, and spare bolts are therefore hard to come by. Why he uses an uncommon thread, goodness knows; possibly he fancies that it will stand vibration better; nevertheless his theory did not prevent my hooter shedding a nut. I decided that an ordinary ¼in. Whitworth bolt would serve my turn, and added a couple of nuts for safety. The charge was 10d.—5d. the bolt, and 2½d. for each nut. Incidentally, I am going to stick to my improvised fitting. The head of the Whitworth bolt is locked by a shoulder on the hooter clip, whereas the original bolt could not be tightened without using a pair of tools. But if a small bolt with two nuts costs 10d. in these days, what is the commercial price for a Rolls-Royce?



THE VOGUE OF THE RUNABOUT.

The Premier "Super" runabout, a new three-wheeler of attractive design, alongside a Morgan, the prototype of the modern three-wheeler. It will be seen that although the former closely resembles a conventional light car, its height and general dimensions approximate to the Malvern machine. The Premier has a 7-9 h.p. water-cooled V-type engine, three speeds and reverse, chain drive, and detachable wheels.

The Outlook for Motor Cycles in France.

A Bleriot Motor Cycle—French Company to Manufacture the A.B.C.—British Manufacturers' Prospects—Forthcoming Competitions.

By W. F. BRADLEY.

FRANCE, which has always been backward in the use of motor cycles, is on the eve of a boom in these popular machines. The war is responsible for it in a very large measure, for the development of the Motor Transport Corps of the Army has initiated thousands of men to motordom, who otherwise would never have solved the mysteries of the internal combustion engine, and the introduction of the eight-hour day—another war measure—has given the workers time for sports and recreations.

Undoubtedly it will be a long time before motor cycles are as plentiful in France as in England, for the Frenchman does not part with his money so readily as his ally across the Channel, but there is no doubt that the boom is coming. The peculiar thing about it is that the French manufacturers are not at all prepared for it. One firm, the Clément Co., sees so little future in the motor cycle that it has already decided to drop the power-driven and devote itself to the push type of bicycle. This policy is hard to understand in view of the success of the Clément machine during the short time it was on the market prior to the war.

Growing French Interest.

On the other hand, Blériot is about to manufacture a motor cycle, and there are rumours that De Dion Bouton, whose range already runs all the way from tractors to bicycles, is about to add a motor cycle department. The most important development, however, is the formation of a powerful company to manufacture and market the A.B.C. machine in France. This machine is now being built near Paris by the Gnôme and le Rhône Co., a world-famed firm which has grown big during the war on the manufacture of rotary air-cooled engines.

The business manager of the French A.B.C. Co. is an Englishman, Mr. Graeme Fenton, who, prior to the war, occupied a similar position with the Clément Co., and helped to make Clément machines popular in both racing and touring competitions.

The French motor cycle boom will be a wonderful opportunity for English makers. Without any false pride, it can be asserted that English machines are classes ahead of French productions. There is nothing surprising in this, for while the French have preferred to ignore the motor cycle, the English have been using them in thousands, and have accumulated experience which has been turned to good account in successive models. The best known machines in France are Douglas, B.S.A., Triumph, and Rover. Others are coming, however, and hardly a day passes but one hears of additional agencies having been obtained for British motor cycles.

There will be some competition from America, for during the last two years the American Army has helped to make Harley-Davidsons, Indians, and Reading Standards known to the French public, and these agencies have been secured by enterprising French dealers, who hope to do business as soon as import duties permit.

French enthusiasts will have the opportunity of deciding between the big powerful American machines and the smaller and more economical English mounts without any false notions as to maintenance. It had been expected that before this date American motor cycles would have been operating on the streets of Paris as taxis. They have not done so yet, owing to the impossibility of getting delivery of Army stocks. The American forces had about three years' reserve stores of all kinds to dispose of. The French were anxious to secure these, but wished to pick and choose, and among the things they decided to decline were the American motor vehicles. The matter could not be settled on these lines, and in the end the whole of the stores had to be taken. This has caused an important delay, and even yet it is doubtful if the Paris motor cycle taxi company has secured possession of its American machines.

Competitions of all kinds are announced. It is true they are not of great importance, but they indicate a healthy condition, and they contribute largely towards the spread of the movement. The latest of these events is the Paris Belt competition, or rather demonstration, to be held on September 21st. A roughly circular route, about 130 miles in length, has been mapped out around the city of Paris. On the south it almost hugs the city walls, but on the east, the north, and the west it goes far afield. All that is required of the competitors is that they shall maintain an average of thirty kilometres (eighteen miles) an hour for the entire distance. A simple event at first sight, but not so easy when account is taken of the awful condition of some of the roads around Paris. Rough *pavé* which has carried intensive loads without repair for more than five years, and macadam which never was known to be good, are apt to reveal defects in really first-class machines. Then there are a few hills of a fairly serious nature.

Continental Conditions.

It is encouraging to note that English machines are taking part in these French events very freely. Proud as we are of our product, there is a lot to be learned from Continental competitions. Everybody who has had experience abroad will admit that touring conditions are very much harder across the Channel than at home. Speed kills, and French roads are an open invitation to speed. Some of the Continental hill-climbs, too, are likely to be a revelation to British riders, and of valuable experience to English makers. Steep as are some of the gradients in Great Britain, they are so short that they are no real test of any engine.

I have an English friend in Italy, who has taken part in many of the Italian Alpine climbs on British machines. He says he has never had a British machine which could cover the twenty miles of steady climbing up Mont Cenis on a really hot day—say 120° or more—without conking and overheating fearfully. He still maintains that the English are the best all-round machines, but he asserts that they are inferior to the foreigners in the matter of cooling.

THE 5,000 MILES BENZOLE TEST.

The A.A. Extended Test of 1920 Triumphs Running Solely on National Benzole Association Motor Spirit.

AS stated in our last issue, the extended test of benzole used as the fuel in a standard air-cooled engine commenced on Thursday, the 11th inst.

This trial, organised by the Automobile Association, will follow on general lines that already undertaken on a Sunbeam car—and which, in the first instance, was projected largely as a result of suggestions emanating from the editorial department of our sister journal *The Autocar*.

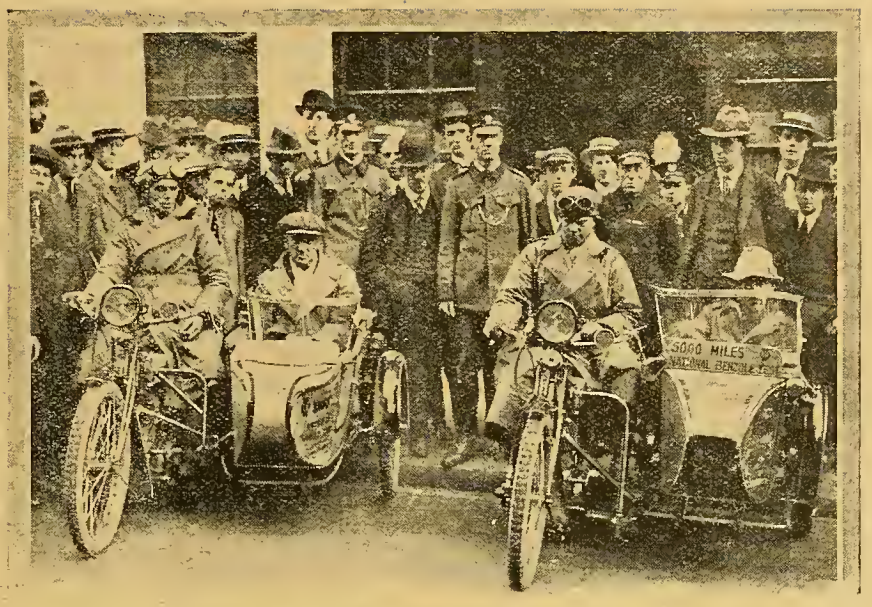
When the car test was discussed, it but needed the expression of our own regret that the motor cycle was not likely to gain to the fullest extent by the reports which would be drawn up, to induce the fuel department of the A.A. to at once put in hand arrangements for the trial now under review.

The particular machine selected for the purpose is one of the 1920 chain-driven Triumphs with Gloria sidecar, and this is accompanied by a sister outfit, which is acting as a tender.

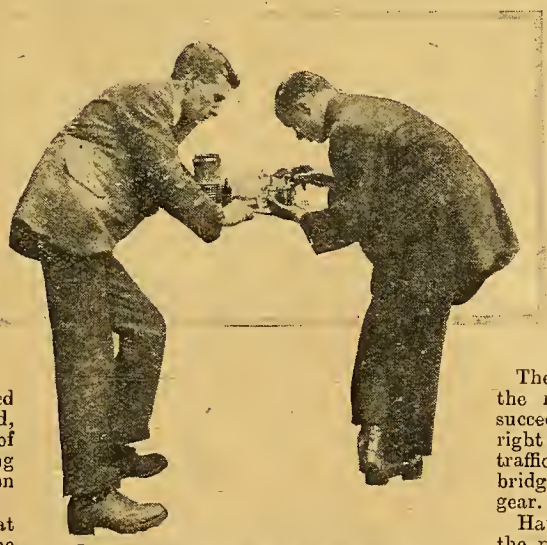
A few days before the start we were present at a final examination of the engine parts on which benzole might, according to some people, have a deleterious effect. This scrutiny was conducted by representatives of the engineering department of the A.A. and the Triumph Co., an engineer nominated by the Institute of Automobile Engineers, and a member of the staff of *The Motor Cycle*.

Subsequently the engine was assembled and tested, then the tank was drained, and thereafter, until the completion of 5,000 miles, it is not to receive anything but spirit conforming to the specification of the National Benzole Association.

At the appointed hour we arrived at the Triumph works, and there noted the very elaborate arrangements for sealing the engine ports in order to prevent removal during the progress of the trial.



The two 4 h.p. Triumph outfits at the A.A. headquarters, Fanum House, previous to starting on the 5,000 miles benzole test.



Careful observation was made of the working parts, with a view to making comparisons at the finish of the trial.

The valve caps, plug, oil pipe, and cylinder nuts were all wired and sealed in such a way as to render removal impossible without detection.

A special measuring device was also employed, by which an accurate quantity of spirit could be supplied to the tank. The oil and petrol filler caps were fitted with locks soldered to the tank.

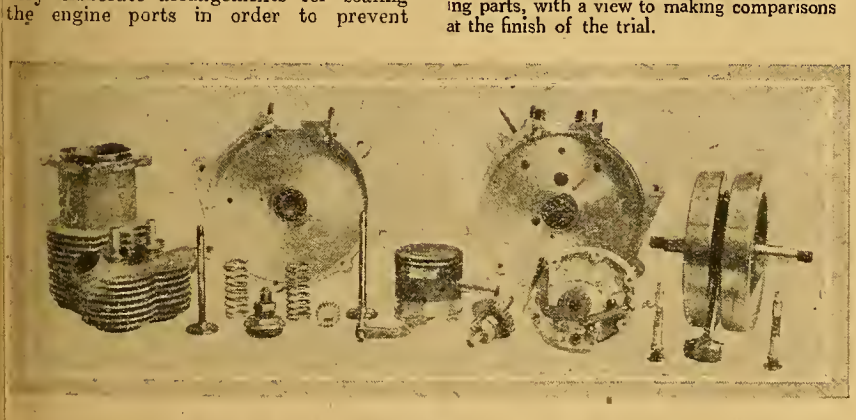
One gallon of benzole being measured into the machines, a start was made, and, thanks to most glorious weather a delightful run was made to London.

The test machine covered 105 miles on the measured gallon, while the tender succeeded in travelling from Coventry right across London, including dense traffic in Edgware Road and Knightsbridge, without once coming out of top gear.

Having refilled tanks in Kensington, the party headed for Fanum House, the G.H.Q. of the Automobile Association, where a large crowd of spectators and press photographers had assembled. Having made final arrangements and shaken hands with everyone from Major Stenson Cooke to the D.C.M. road patrol sergeant, we left Leicester Square behind us, heading northward on the first stage of the 5,000-mile journey, covering parts of England and Scotland.

The test machine and sidecar, driven by H. Finch, who was one of the winning team in the recent M.C.C. Inter-club Trial, weighs unladen 546 lb., and with passengers 826 lb. The tender is being driven by C. R. Little, of the Triumph Co., and carries as observer a member of the A.A. Engineering Department.

At the end of 2,000 miles the engines will be decarbonised. Meanwhile we shall keep our readers informed as to the progress of the machines from week to week.

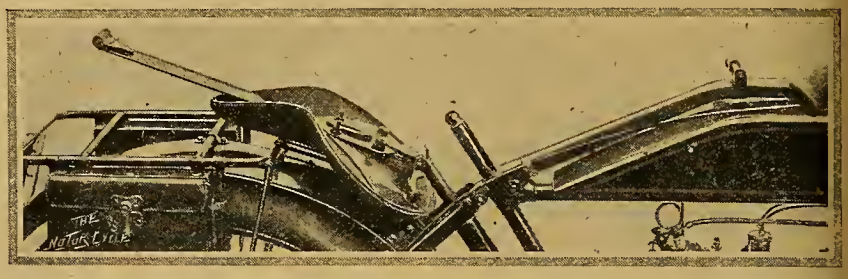


One of the 4 h.p. Triumph engines completely dismantled.

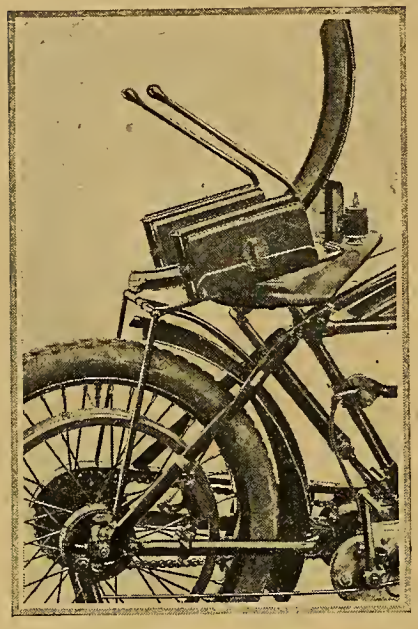
A NEW LONG-STROKE TWIN.

The 1920 L.M.C., with 7-9 h.p. Engine, 79 mm Bore, 98 mm. Stroke. 960 c.c. Capacity.

IT would seem that designers of motor cycles intended for sidecar work have agreed that for this purpose the long stroke engine has advantages not possessed by the "square" engine, which were generally installed in pre-war machines. Most of the new designs with which we have dealt in *The Motor Cycle*, and others at present in the experimental stage, are of the long stroke type.



Showing the new saddle suspension. A long leaf spring is used, pivoted at the front on the top tube, and at the rear on a spring loaded plunger.



The hinged rear guard designed to facilitate tyre repairs.

The new L.M.C. twin, which makes its *début* in the A.C.U. Six Days trials, has a bore and stroke of 79 mm. and 98 mm. respectively, the cylinder capacity being 960 c.c. Details of the machine entered for the Six Days trial are not yet available as it was finished only a day or so before the trial started. It has, in fact, been entered purely as a preliminary model to test its various features, and the ultimate design will be based upon the experience so obtained. This is somewhat the reverse of the more usual practice of entering well-tried machines for the purpose of demonstrating their reliability.

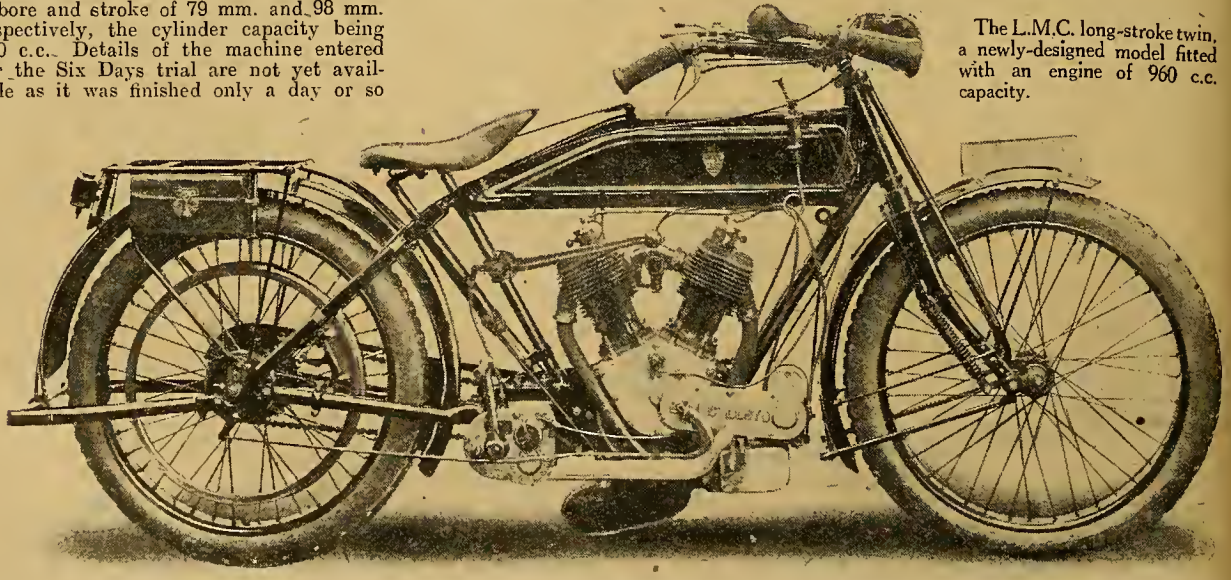
Apart from the engine, the new features of the machine include a redesigned frame, chain transmission with spring shock absorber in the rear hub, internal expanding brake with phosphor-bronze shoes, spring seat-pillar and footboards, 28in × 3in. tyres, and a hinged rear mudguard.

Springing the Rider.

Probably the most interesting feature of the new L.M.C. is the provision made for the driver's comfort. This takes the form of a spring saddle, which is connected to the footboards so that the whole of the driver's weight is carried on springs. The saddle is supported on a long leaf spring, pivoted at its forward end on the frame at a point nearly midway along the top tube. At its rear end the spring swivels on the top of a spring loaded plunger, which is connected by tension rods to the footboards. In addition to this springing system, the "seat-pillar" also contains a plunger with a roller head, which bears upon the centre of the main frame of the saddle. Below this plunger are inserted springs of predetermined strength to suit the weight of each individual driver. From a test of the seat we should say that it will provide a considerable increase in comfort.

Another feature of the machine is the hinged rear guard and carrier to facilitate repairs to the rear tyre. No tools are necessary to release the stays holding the unit at the fork ends. Studs are fitted which are sprung into position, when they are self-locking. The stand, too, assists in holding the hinged portion in position.

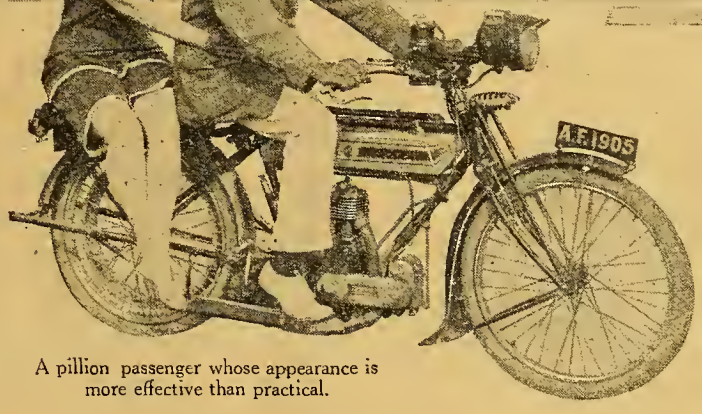
The new L.M.C., which is finished all black with the tank ornamented with a gold line, presents a very handsome appearance, and altogether should make an appeal to Overseas buyers on account of its sturdy construction, large wheels, and 6in. ground clearance.



The L.M.C. long-stroke twin, a newly-designed model fitted with an engine of 960 c.c. capacity.

Should Pillion Riding be Banned?

A Further Selection of Readers' Opinions on the Subject of Passenger Carrying on a Solo Machine.



A pillion passenger whose appearance is more effective than practical.

MANY letters continue to reach us on the subject of pillion riding, which show that in the unlikely event of its being prohibited by Government, a hardship will be inflicted upon many. We have never advised our readers to take passengers on their carriers, for we know that, under certain circumstances, the practice is attended with risk; it adds, moreover, to the difficulty of getting out of a tight corner. Still, it cannot be denied that many careful riders indulge constantly in this sport, with perfect safety to themselves and their passengers. Whether a passenger can be safely carried or not depends to a large extent upon the weight distribution of the machine. When the weight is well forward the presence of a passenger does not seem to affect the steering adversely, but, on the contrary, the added weight in the rear steadies the machine over rough roads.

It is true that coroners sometimes express very decided views upon this matter, but we confess that the outpourings of coroners do not greatly impress us. Still less do those of coroners' juries and town councillors. We want no grandmotherly legislation. Hunting accidents often occur, but we do not find the parish councils suggesting that hunting should be stopped by law. Driving to the danger of the public is already—and quite rightly—a punishable offence. Whenever it can be shown that the presence of a passenger on the pillion endangers the public it becomes an offence—surely this is enough!

Curiously enough, none of our correspondents have touched upon the sidecar pillion rider. There can be but little danger here to the public, or to the rider. In any case, a sprung seat which does not sway sideways adds both to the comfort and safety of the pillion rider, and eases the shocks which fall upon the carrier and frame.

Sir,—In reply to Mr. John Trewavas, jun., may I say that I have motored continuously since 1904, including the war period. Prior to that time I rode thousands of fast miles on a mixed tandem cycle. In 1918, as I could not take my family out, I bought a tandem, and put my invalid daughter (3 to 4 stone weight) pillion fashion. One ride—thirty miles—was sufficient. I sold the tandem.

Mr. Trewavas should try pillion on a tandem motor cycle; he would receive all the argument he requires.

If one could get the passenger's weight between the spindles I think it would be possible to carry a couple of passengers in safety, but as motor cycles are generally now constructed I should be hard put to to carry anyone pillion. If luggage as heavy as a passenger is carried the balance might be worse, owing to the difference between live and dead weight.

Manchester. S.W.

Sir,—I see in the newspapers that attempts are to be made to put pressure on our legislators with the object of prohibiting pillion riding. I trust motor cyclists will resist any such attempts. Pillion riding is described as a "dangerous" practice. No doubt to the staid old fogeys advocating its being made illegal it *does* "look" dangerous, but, considering the great extent to which it is indulged in, I think accidents are remarkably rare, and will compare favourably with other means of locomotion. The low centre of gravity of modern machines renders them quite safe with two up, except to those who are wilfully reckless.

No doubt there are many hundreds of motor cyclists who, like myself, have a limited purse, and equally limited accommodation, either of which circumstances rules a combination out of the question, and as even a motor cyclist likes to be *sociable* (who more so?), what can we turn to but pillion riding?

My own machine is a 2½ h.p. two-speed Levis fitted with Tan-sad spring seat (absolutely necessary with the present state of the roads), and a collapsible side footrest of my own contrivance. The engine has ample power for riding *à deux* even in hilly country.

Uttoxeter. NOMIDUROY.

Should Pillion Riding be Banned?

Sir,—I see a lot of correspondence in *The Motor Cycle* about pillion riding. Whether it is dangerous or not depends upon who is driving. An ordinary bicycle is dangerous in some people's hands, and I for one find pillion riding safer than a sidecar, but, of course, less comfortable for the passenger. I had my wife as passenger from Bournemouth to Keighley, in Yorkshire, last year, and did the journey in two days, as she got tired, and had to stop early the first day. We kept up a good speed, climbed all hills on top (3½ to 1) on an o.h.v. Bat-Jap, and found the greatest of ease in turning corners. I brought her back in a sidecar, and took three long days—slow speeds on hills, difficult in traffic, and tiring to steer, but I must own I am not a sidecar expert. SPEED MERCHANT.

Alderholt.

Sir,—I have read with much interest the articles and letters in *The Motor Cycle re* pillion riding. A little incident which happened to me may be of interest to some of the would-be sportsmen who think it dangerous. Most of the critics appear to be riders who think more about the extra wear on their back tyre than giving anyone a lift. Such people should be "warned off."

I took my mother for an evening run some five weeks ago in the sidecar. When about fourteen miles from home, the front sidecar connection broke. Being miles from a repair shop, which one does not find on the Welsh hills every mile or so, and the passenger being anxious to get home that night, I was puzzled. After disconnecting the sidecar, I left it in a barn to await my return two days later with a new connection, and my mother did not hesitate to ride on the so-called flapper bracket, on which there already was a pillion cushion. The age of my mother, I may say, is sixty-seven; I wonder whether it is not an age record for pillion riding. We arrived home safe and sound.

Pillion riding is not a bit dangerous, in my idea. When riding solo, to avoid any accident in town or country the greatest care has to be exercised. To have any responsibility behind them makes some folk nervy, and I venture to say that nervousness alone is responsible for all or the greater part of the accidents.

"A.C.R." in his letter talks rather wildly when he terms pillion riding "most dangerous." It *is* dangerous to the wear of the back tyre certainly, and that is all, I find. However, in conclusion, let all the over-stile helpers and sportsmen hope that "A.C.R." will never be stranded on the road, longing for a lift on the flapper bracket; if he is, let him remember what an extremely *dangerous* business it is.

I have a cousin who prefers to ride on the carrier, and thinks nothing of a jog from North Wales into the heart of Yorkshire on a Saturday and a return on the Sunday. He says cornering with the sidecar is not healthy. L.O.B.

Chester.

Sir,—May I say a few lines in answer to "Duggie's" letter in your issue of August 14th.

Whilst approving of pillion riding for those who feel capable of hanging on, and who have faith in their pilot, I must say that we people of Cambridge will be considered mad, if the rest of the country is allowed to believe that we "burble aroound the town with one on the tank, one on the saddle, and two on the carrier." If "Duggie" still claims to have seen this, I should suggest that he "take more water with it"—his vision may then remain clear. I certainly have seen overloaded combinations in the town, but never a solo machine with four up. I saw an Indian combination with two in the sidecar, one on the saddle, one on the carrier, and one standing on the sidecar luggage carrier, holding on to the shoulders of one of the sidecar passengers, but it did not "burble," it sounded more like a machine gun at close quarters. ANOTHER DUGGIE.

Cambridge.

Sir,—In discussing this subject there is one point which is often overlooked, viz., that there is a vast difference between riding on the bare carrier or with it thinly padded and riding on a properly constructed pillion seat, with back and footrests. In the first case, the swaying of the passenger is caused *(a)* through his changing his position owing to being uncomfortable, or *(b)* through his slipping when the driver swerves or turns a corner.

In the case of a passenger riding on a properly constructed pillion seat, he is prevented from slipping by the backrest on one side and the footrest on the other side. In addition, owing to the springing and the cushion, he will be much more comfortable, and, consequently, not always wishing to change his position. Further, some pillion seats are fitted with a handle for the passenger to hold on by. This is much more satisfactory than having him clinging to the driver.

Summing up, then, I think that any extra risk incurred by pillion riding is reduced by fully 80% if a good make of pillion seat is fitted. The only risk then outstanding being due to the slightly raised centre of gravity of the whole outfit. R. C. TAYLOR.

THE M.C.C. TEAM TRIAL FOR "THE MOTOR CYCLE" CUP.

One of the features of the trial (fully described in last week's issue of *The Motor Cycle*) was the consistent running of the Ilkley team, the members of which all rode Scott motor cycles. Reading from left the riders are: N. O. Vinter (reserve), J. E. Walker, W. R. Haggas, W. Moore, W. L. Guy, H. W. Sellers, and W. F. Scott. The Ilkley team secured second place.

A Sensible Sidecar Construction.

Body, Luggage Grid, and Mudguard, mounted on Springs.

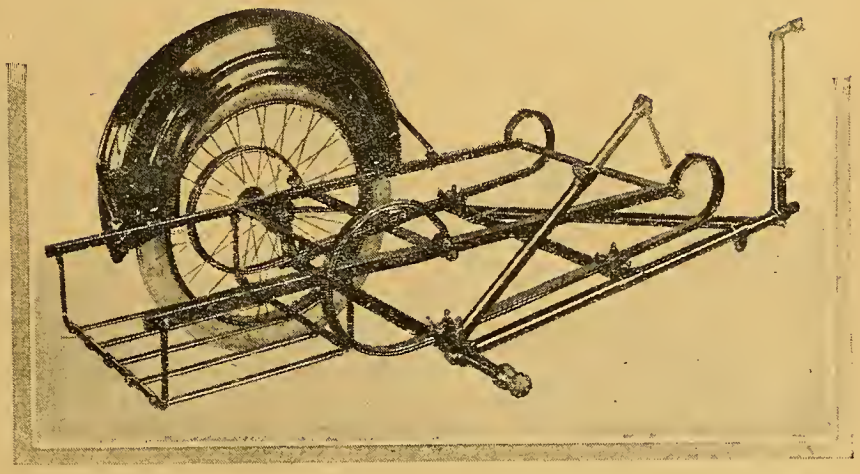
THERE are many devices so obviously simple and simply obvious that on our first sight of them we are tempted to ask the question, "Why was it never done before?"

Such a thought is at once aroused by the layout of the Rudge sidecar, which at once removes two of the greatest faults of the sidecar. We refer, of course, firstly to rigid luggage grid of the ordinary chassis, which when loaded with petrol cans, suit cases, etc., adds so much to the unsprung weight, and secondly to the normal type of fixed mudguard, which invariably shakes adrift at some period in its history.

Sprung Luggage Grid.

These undesirable features are obviated by the simple expedient of mounting an angle steel frame on the sidecar springs. On this frame the body is fixed on the usual cross stretcher-bars at the front and centre. The rear part of this subframe is extended to form a capacious luggage grid, while on the side member are two lugs with taper sockets into which fit the conical mudguard supports.

The chassis itself is quite simple and strong, of the under-slung type, and is fixed to the motor cycle by four points of attachment.



The Rudge-Whitworth sidecar chassis. Note the angle-steel framework, supported on springs, which insulate body, luggage-grid, and mudguard from vibration.

Exceptional finish characterises the bodywork, which is painted a dark green with a polished aluminium front panel; a convenient locker is provided in the rear panel. Thus it will be seen that the sidecar has large carrying capacity.

The Rapson Unpuncturable Tyre.

A Tyre Designed to Eliminate the Motor Cyclist's Bugbear.

MOTOR cyclists who do not follow the movements of the motor car world may be unfamiliar with the inventions of Mr. F. Lionel Rapson, whose trouble-saving devices have been chiefly applicable to the heavy four-wheeler.

An unpuncturable tyre has been the hoped for desideratum of all motorists, and probably by no class more than the solo motor cyclist, who has so little accommodation for carrying spare wheels, even when they are fitted to his mount.

The Rapson tyre aims at eliminating the necessity of carrying spares by preventing the occurrence of the puncture in the first place, and so far as car tyres are concerned, preliminary tests have been very promising.

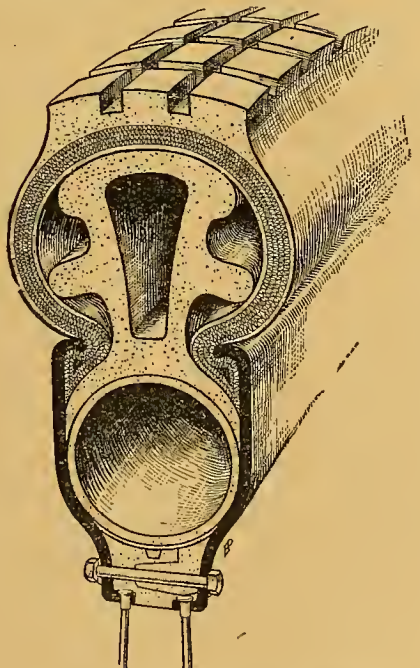
We illustrate here the type which is designed for motor cycles. It will be seen that it requires a special rim to accommodate it, and is a modification of one of the patterns suitable for cars.

The Pneumatic Principle Retained.

The pneumatic principle is retained, but the inner tube is considerably smaller, as compared with the cover size, than the ordinary air tube. Between the tube and cover lies the deflector, which is an endless band of rubber having spaces throughout its length containing air at atmospheric pressure.

The inner tube lies in the recess of the rim itself, and is therefore completely protected at the sides, while the depth of the deflector above it supplies a like protection against anything passing through the tread.

In actual tests on a car we learnt from experience that the heat usually generated by the use of puncture-proof bands and certain forms of tyre casings was non-existent with the Rapson tyre, and, provided there is no interference with the liveliness of the machine—a much more important point with the motor cycle than with the car—a great demand is bound to arise.

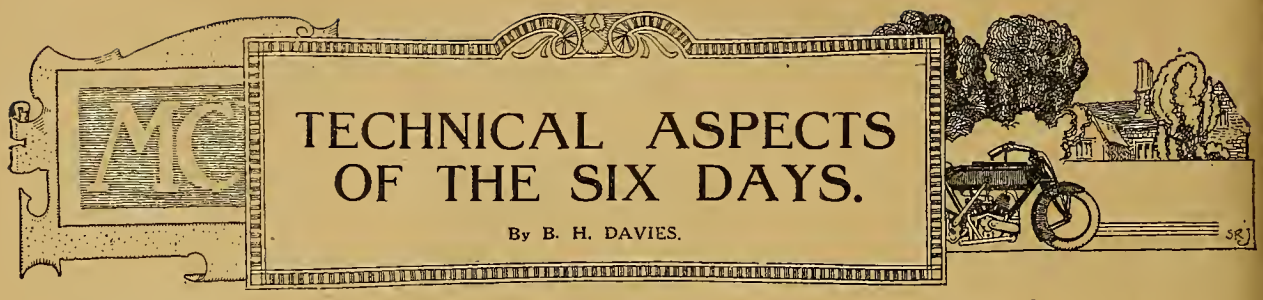


Sectional drawing of the new Rapson tyre for motor cycles.

The sole manufacturing rights for the United Kingdom have been secured by Messrs. Oylers, Ltd., 35, New Cavendish Street, London, W.1.

UNIFORM SIGNPOSTING IN FRANCE.

The French Government, according to a correspondent of the *Daily Mail*, is about to adopt a uniform scheme in connection with signposts and kilometre-posts. The department responsible, profiting by experience gained during the war, intends to replace all signposts by large metal plates bearing directions and distances in white letters on a blue ground, of sufficient size to be legible while travelling. Villages will also have the name posted in eight-inch letters on the police stations, post offices, and mayoral halls; this being a very useful innovation, as the motorist will agree, bearing in mind the complete ignorance as to whereabouts with which he passes through the intermediate villages on a road of which he only knows the terminal points. Our own national signposting might well be overhauled in the same efficient manner.



TECHNICAL ASPECTS OF THE SIX DAYS.

By B. H. DAVIES.

A Review of the Conditions and Regulations obtaining in this week's Trial.

IN one respect, and one only, the present Six Days Trial *is* disappointing. We all know that sundry revolutionary designers have thrown down the gauntlet to the pre-war motor cycle. Certain audacious 1919 machines, together with others which are still secret, have parted with most of the 1914 conventions. We hear of steel or aluminium cylinders, alloy pistons, overhead valves, spring frames, high horse-power from very small engine dimensions, sweeping reductions in weight, and other interesting innovations. Few of us have yet enjoyed a trial trip on any of these machines. In certain cases nobody has so much as seen the drawings or read the specification. The motor cycling public is thirsting for authentic information about these newcomers, and for the most part they are not here. This disappointment is inevitable. A rider who lives in a remote corner of the provinces can "size up the market" pretty accurately when three sources of information are open to him, viz.:

(1.) A trial run (prohibited at present by the special circumstances attending reconstruction). This tells him what the machine "feels like."

(2.) The results of the Tourist Trophy; cancelled this year owing to the switch over from war to peace. In normal years it tells us the speed and stamina of the different engines.

(3.) The Six Days, which tells us in what class each machine should be ranked, so far as its reliability and hill-climbing qualities are concerned.

This year we are unluckily deprived of two out of our three normal sources of information, while the event now proceeding will leave many burning questions unanswered. The fault, however, is not that of the A.C.U., which is going to provide much invaluable data for deciding our 1920 orders.

Finishing Condition.

The best feature of the whole trial is the close scrutiny of the condition in which the machines finish, which takes place on Saturday. The potential loss of *fifty* marks for any symptoms of excessive wear and tear comprises a quarter of the total which can be earned by the five days' riding, and are equal to the reliability marks, of which only fifty can be earned by a rider who is dead on time at every check. Compare this with "rememberable" trials in which several hundred marks were given for timekeeping, whereas the maximum penalty for finishing with a battered machine was a beggarly twenty-five points or so. Unless quality has improved past belief, we shall not be able to say this year, as was hinted in a byegone era, that the A.C.U. desires to give everybody a gold medal. In the most popular classes a machine has to earn 180 or 185 marks to secure its gold; if the "condition marks" are allotted with any stringency, no dud machine can snatch a cheap notoriety in this year's trial. I take it for granted that the inspection at the finish will be severe; in which case, this change in the marking would have reduced the gold medals to single figures, had it been applied seven or eight years ago.

Hill-climbing.

Of the remaining 100 marks thirty are being awarded for hill-climbing. To my mind these are the least interesting on the list. With the low bottom gear ratios which are now universal, there is no engine so bad that it cannot climb any "pleasure" hill. The test hills on the modern trials route seldom trouble an engine: they test the rider, and they are situated along such appalling roads that they impart a special meaning to the reliability marks, since most of the mechanical troubles of the week are caused by hard driving over difficult routes. But the climbing marks have lost their original significance.

Acceleration and Maintenance of Tune.

Forty of the remaining seventy marks are allotted at the rate of twenty for acceleration and twenty for keeping tune. Neither of these points are easily tested in respect of 114 machines in any manner which can interest the ordinary user. So far as acceleration goes, his wants are simple. Bang-smash acceleration of the Brooklands type has but limited interest for him; it is expensive and of little practical use. All he demands is an engine which will pick up without conking and without being too exacting about the setting of the carburetter levers. The A.C.U. will be puzzled to penalise these two common faults. Maintenance of tune is another matter altogether. From a practical standpoint it may be divided in ordinary riding experience into two categories. Every machine requires sundry routine attention, *e.g.*, decarbonisation, after a certain mileage. What is that mileage for each of the 114 entrants? Again, particular machines suffer from little periodic weaknesses from which others are wholly immune: *e.g.*, some two-strokes gum up their top piston rings rather quickly: some flat twins overlubricate the front cylinder so badly that it needs dismantling after 800 miles. Do any of the 114 entries suffer from these or similar peculiarities? We must wait and see what the second instalment of the consistency test discloses to-morrow, although it will probably stop short of telling us all we wish to know.

Thirty marks are left; they are evenly distributed between brakes, mudguards, and silence. Worthily so. We have no greater need than guards which

Technical Aspects of the Six Days.—

actually keep off the mud. Brakes are not yet perfect; I have a 1915 machine with a front brake which cannot help becoming noisy in 1,000 miles, and a back brake which is liable to fail me without any warning. Its 1919 stable companion has a front brake which sheds small parts, and a back brake which requires readjustment every time the tension of the rear chain is altered. Silence? "Mphm," as the Scots say. Personally, I hope the judges will reserve nine of the ten silence marks for mechanical silence, and use the odd mark to penalise any knut or greenhorn who fails to understand that 114 open exhausts would not popularise motor cycling in Llandrindod Wells.

Fuel Economy.

Over and above these obvious features, the judges "may record" half a day's consumption of petrol. I hope there will be marks for fuel economy next year. I admit the practical difficulties. I have run consumption trials myself, and, even with a small entry to manage, I would rather be a publican in the Rhonddha Valley on a weekly ration of one barrel of four half. I know, too, that a manufacturer might tune up his trial machines to 150 m.p.g. and deliver to the public machines capable of no more than 75 m.p.g. On the other hand, the manufacturers who take any serious interest in fuel economy are few and far between. Of my two machines, cited above, the consumptions in delivery tune were respectively 61 m.p.g. and 112 m.p.g.; both are of the same nominal h.p. I think stock machines would develop better economy if the trade had to fight once per annum to extract the last kick out of the juice used in a special machine in a premier event.

Lamps.

Furthermore, lamps were tested on Monday for the first time, though here the penalty is indirect, since lamp trouble will be registered under the "reliability" marking. This stunt will boost up the electric dynamo mightily, since few riders will trust to a single acetylene lamp and generator on such an occasion, whilst nobody dare start with two or three, and risk losing umpteen condition marks at the finish if some of them fell off.

An Imaginary Diary.

To show how very little may lower a sound, reliable machine to the bottom of the list under the severe marking instituted by the A.C.U., I have framed the following imaginary diary of an aspiring amateur on a first-class mount of 3½ h.p.

MONDAY.—Valve of acetylene generator shook loose and drowned my carbide; no reserve supply; twenty-four minutes late at night check.

TUESDAY.—Horsenail through back tube five minutes from lunch. Muffed repair; eleven minutes late at lunch.

WEDNESDAY.—Non-stop.

THURSDAY.—Non-stop except for a side-slip (no official looking).

FRIDAY.—Non-stop.

SATURDAY.—Docked five marks for too noisy a silencer, eight marks for poor show in brake test (I rode clumsily), five marks for loss of tune during week (carboned up through oil working past rings down so many steep hills), ten marks for duffing the patent consistency test, five marks for inefficient mudguarding, and twenty-eight marks for bad finishing condition (bent footrest, number-plate, and front guard in sideslip on the Thursday, scrapping when the rain was drying off after those beastly mountain roads; and they took off some for an oily crank case.

The imaginary rider whose tribulations are described above encounters no mechanical trouble of any sort or kind; is a good rider on freak hills and dangerous roads; storms up every selected precipice, but goes home without so much as a bronze medal, and his penalties, due to a trifling lack of experience and forethought, tot up to ninety-six marks. Two hundred minus ninety-six equal one hundred and four.

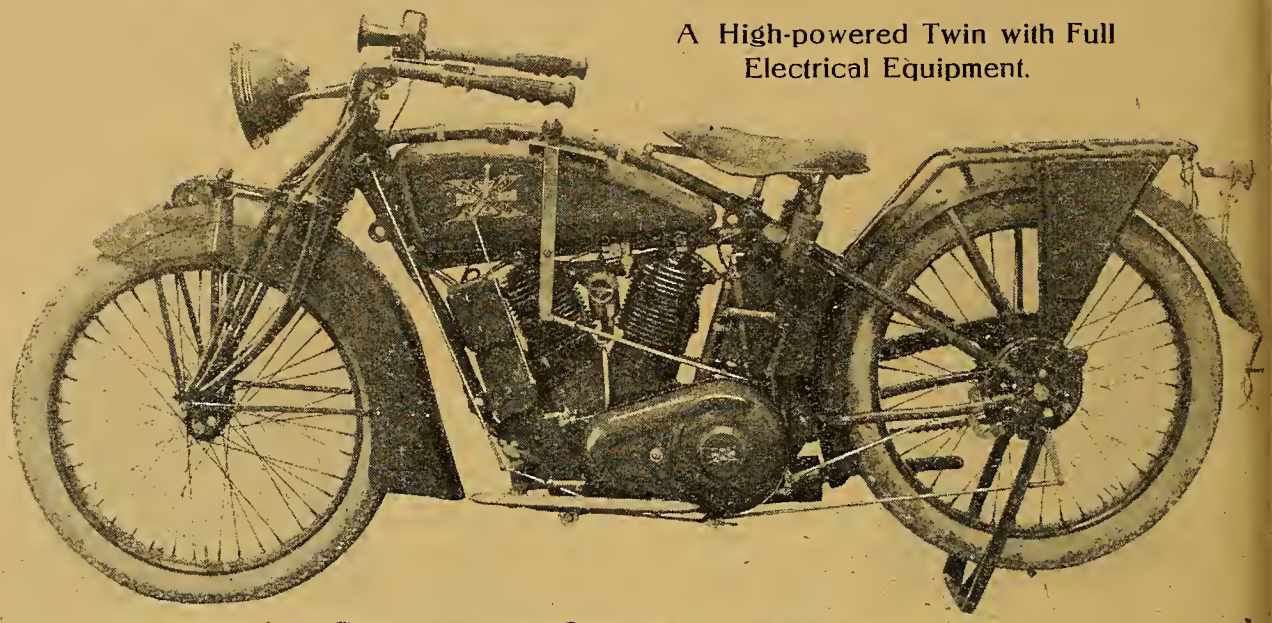
Administered in a fair but firm spirit, the 1919 regulations connot fail to differentiate quite sharply between machines of various grades of excellency. The Competitions Committee are to be heartily congratulated on the success of their deliberations.

STUDIES IN CORNERING AT SPEED.

Competitors rounding the hairpin bend on Sutton Bank, during a hill-climb held there by the York and District M.C. Observe the various styles of cornering adopted. The rider on the left appears to be quite at home, although his machine is leaning over at quite an acute angle.

THE LATEST AMERICAN EXCELSIOR.

A High-powered Twin with Full Electrical Equipment.



The latest model American Excelsior, fitted with an engine of 1,000 c.c

PRELIMINARY details of the Series 19 Excelsior have already appeared in these pages, but we recently had an opportunity of seeing the latest model at Mr. W. J. de Greeuw's new, but not quite completed, showrooms in Great Marlborough Street, London, W.1.

The Excelsior has a very attractive type of engine, with a cylinder capacity of 61in. (1,000 c.c.), a bore of 3-21/64in. (84.5 mm.), and a stroke of 3½in. (88.9 mm.).

The valve mechanism is extremely simple. There is only one large gear wheel with a cam on each side, of which the one on the outside comes in contact with two roller bearing rockers actuating the inlet valves, while the inner one does the same in the case of the exhaust valves. A large oil tank, which forms part of the accumulator case, is situated behind the saddle tube, and oil is delivered through a tap, which can be regulated to the oil pump, which maintains the correct level of oil in the crank case.

A novel feature is the system of priming the engine. There is a small needle pattern tap in a T union underneath the tank which communicates directly with pipes leading into each cylinder so that the priming can be effected with the utmost celerity.

The ignition and lighting are by the Midco electric system, consisting of a generator, transformer, and contact breaker, the whole being carried in the position usually occupied by the magneto. An interesting feature of the system is that there is a junction block for the insertion of a plug for an electric inspection lamp or for a sidecar lamp.

The usual type of motor cycle three-speed ball bearing gear box and a kick-starter are incorporated. The kick-starter is well designed, and allows of easy and instantaneous engagement, and it is coupled up to the exhaust lifter, which raises the valves and drops them at the correct moment.

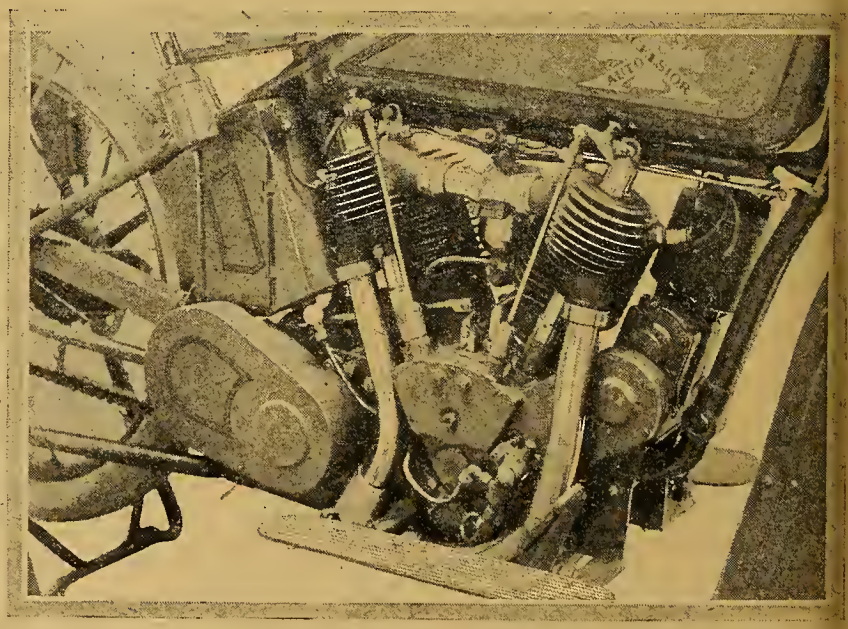
The makers of the Excelsior favour the dry type of multiple-disc clutch running on roller bearings, and the one fitted to this model contains two steel plates and three faced with Raybestos.

In the transmission arrangement the engine chain is on one side, and the final drive from the gear box to the rear wheel is on the other.

The clutch is actuated by a pedal, and also by the left twist grip on the handle-bar. An efficient transmission shock absorber of well-tried design is fitted.

It is claimed that the Excelsior frame was the first, and remains the only one, to be built of seamless tubing and nickel steel drop forgings throughout.

To enable the owner to get at the engine the auxiliary horizontal tube is made detachable, which is an extremely useful feature, and obviates the necessity of taking the engine from the frame to remove the cylinders.



Showing power unit assembly, and details of the Midco electric system, in use on the Excelsior

QUADRANT

MOTOR CYCLES

THE HIGH STANDARD OF ENGINEERING EXCELLENCE ATTAINED IN THE POST-WAR

QUADRANT

IS THE RESULT OF 20 YEARS OF MANUFACTURING :: EXPERIENCE. ::

4½ h.p. PEACE MODEL.

ITS REPUTATION WON IN COMPETITIVE TRIALS PREVIOUS TO THE WAR.

TO WHICH IS ADDED THE EXPERIENCE GAINED IN THE MANUFACTURE OF AEROPLANE ENGINES DURING THE WAR.

LAWLEY STREET, BIRMINGHAM.

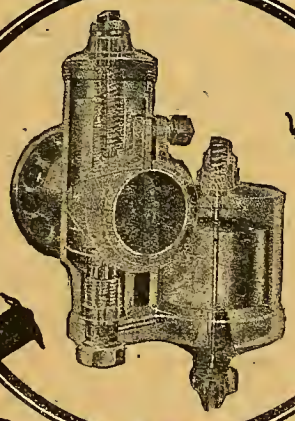
Inseparable

Cool Running.
Easy Starting

Low Petrol Consumption.

Great Flexibility.

Plenty of Power on Hills.



The AMAC CARBURETTER

Write for Catalogue.

A. M. A. C., Ltd.
(DEPT. A),
Aston Cross, Birmingham.

ALPERTON, WOOLER ENGINEERING Co. Ltd. LONDON, N.W.

Telephone: Wembley, 252.

Telegrams: "Two-stroke, London."

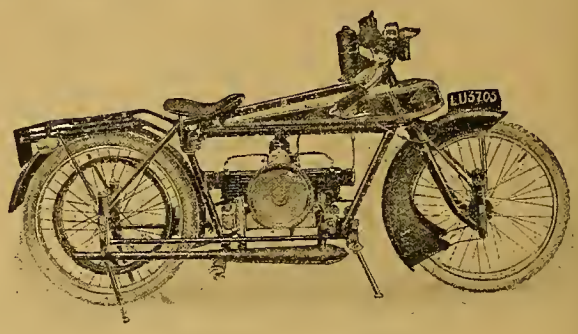
311 Miles per Gallon.

The result recently achieved on a

Wooler 2¾ Flat-Twin

is indeed excellent; but astonishing? By no means, when you carefully consider the many unique features embodied in this machine.

The closer you examine the Wooler, the less astonished you will be at its exceptional mileage per gallon.



Consider carefully the reasons for this ultra-economical running:

(1) The Induction System has been designed entirely to eliminate freezing. By reason of the mixture first passing through warm passages in the Crankcase the petrol becomes perfectly atomized The Super-heated Induction System we call it to emphasize the fact that freezing cannot occur.

(2) The correct design of the Valve Gear prevents leakage in this quarter

(3) The free running of the engine owing to the three ball bearings supporting the Crankshaft, and perfect workmanship throughout.

(4) The Infinitely Variable Gear, with 9 speeds enables the rider always to use the exactly suitable ratio.

(5) The frictionless running of the Gear, all stress being taken by ball bearings and ample ball thrust washers.

(6) Belt Drive absorbs less power than any other form of Transmission, but the belt must always be at the right tension to achieve this object.

The Wooler Rapid belt Adjusting Device (without use of tools) accomplishes this essential.

(7) The Wooler Spring Frame obviates all back wheel bounce.

Northern Representatives:
Wooler Motors Northern Depot, 186, Albert Avenue, Hull.

WHY NOT RIDE A WOOLER AND DO THE SAME?

Write for Particulars.

SPECIAL NOTICE.

WHY NOT TRY ONE?

JUST THE THING FOR MOTORING DURING THE COMING WINTER.

We have secured a large quantity of Slightly-worn Government **LEATHER JACKETS**, three-quarter length, **LINED WOOL**, which we can offer at the very low price of **12/6** each, postage paid.

The above is a very special line, and we would advise buyers to send their Postal Orders per return to avoid disappointment.

SPECIAL TERMS FOR QUANTITIES.

LEVI & BARNETT (Contractors to the Admiralty and War Office),

99, HOUNDSDITCH, LONDON, E.1.

Telephone No.: Avenue 3271. **Telegraphic Address: "Levigable, Ald, London."**

CURRENT CHAT

TIME TO LIGHT LAMPS

SUMMER TIME

Sept. 18th	...	...	8.8 p.m.
,, 20th	...	...	8.4 ,,
,, 22nd	...	...	7.59 ,,
,, 24th	...	...	7.54 ,,

Race Meeting in Sydney.

Over 18,000 people attended a motor race at Sydney recently, showing the keen public interest in motoring in Australia.

Fresh from the Country of Revolt.

L. A. Bees, who is riding an L.M.C. in the Six Days Trials, has only just returned from Russia, where he has been driving armoured cars.

Surplus Government Property.

The latest figures available of sales of surplus war material by the Disposal Board, Ministry of Munitions, show that £869,856 were secured for mechanical transport during August.

Liverpool M.C. Open Trial.

The Liverpool Club will hold an open trial on October 25th for the Reliance and many other cups, trophies, and medals. The trial will be in North Wales, and will cover about 165 miles and include petrol consumption, brake, acceleration, and flexibility tests. Further particulars may be obtained from Mr. E. N. Dean, 22, Lord Street, Liverpool.

SPECIAL FEATURES

TECHNICAL ASPECTS OF THE SIX DAYS TRIALS. WEEK END TRIALS.
5,000 MILES BENZOLE TEST

M.C.C. Run to Exeter.

The Motor Cycling Club will hold their winter run to Exeter on Boxing night, and an announcement regarding the annual dinner will be made later.

Johannesburg to Durban Record Broken.

A wireless just received states that the record for the South African blue riband event—Johannesburg to Durban—has been broken by a rider of a Harley-Davidson, but details of the new time taken to cover the 420 miles that separate the two cities are not yet to hand

Motor Cycles as Prizes.

A motor cycle trial has been concluded to Norway from Christiania to Trondhjem and back to Christiania by the Norsk Motorcykkelklub and Ooslandske Petroleumskompani. The winners received new motor cycles as prizes, viz., a B.S.A., an Excelsior, a Reading Standard, an Indian, and a Harley-Davidson. Is this a sign of American penetration?

Mentioned in Despatches.

We learn that Maj. A. M. Low, R.A.F., D.S.C., has, for the second time, been mentioned in despatches, his name having been brought to the notice of the Secretary of State for valuable services rendered. At one time Maj. Low, the well-known two-stroke authority, and a contributor to these pages, had no fewer than fourteen of his patents actually in operation against the enemy at the Front.

TOURING ON A TANK.

Many readers who were for so long closely associated with all forms of tank warfare during the war will be interested in the little Renault tank shown touring in Switzerland. General Estienne, of the French Army, General Swabley, and Major Hyler are among the passengers.

Italian T.T.

Probably the most important race of the year in Italy was on the 7th inst. over the Cremona course, which was covered five times, totalling 195 miles. Seven competitors started in the 350 c.c. class, and twenty in the 500 c.c. class. The results were as follow:

350 c.c. CLASS.

		h.	m.	s.
1.	Pozzi (Motosacoche) ..	4	21	52⅕
2.	Baj. Badrico (Douglas) ..	4	29	17⅘
3.	Sassi (Maffeis)	4	34	0

Average speed of winner 44.85 m.p.h.

500 c.c. CLASS.

		h.	m.	s.
1.	Dovo (Della Ferrera) ...	3	32	34⅘
2.	Gnesa (Motosacoche) ...	3	58	52⅘
3.	Borogotti (Fougri) ...	3	59	59⅘

The average speed of winner was 55.25 m.p.h.

Official Results of the M.C.C. Team Trial.

We are now enabled to give the official results of the team trial for *The Motor Cycle* challenge cup.

As previously announced, the trophy was awarded to the Coventry and Warwickshire M.C., each competitor in which gets the M.C.C. gold medal. This was the only team to finish complete—S. Wright (3½ Humber), R. B. Ewens (3½ Rudge-Multi), W. Brandish jun. (5-6 Rover), F. G. Edmond (4 Triumph sc.), H. A. Finch (4 Triumph), and B. Ryecroft (4 Triumph). No other team made a full score on mileage, but the following list shows the records of the other teams:

2. ILKLEY M.C. AND L.C.C.—J. E. Walker, W. Moore, W. L. Guy, H. W. Sellers, and W. F. Scott (all rode 3¾ Scotts). 524½ miles. (Each member was awarded an M.C.C. silver medal, as the team rode most consistently.)
3. THE MOTOR CYCLING CLUB.—E. A. Bridgman (7 Indian sc.), P. W. Moffat (4 Douglas), B. A. Hill (8 Morgan), R. B. Clark (2¾ Douglas), and F. J. Watson (6 Ariel). 506 miles.
4. WOOLWICH, PLUMSTEAD, AND DISTRICT M.C.C.—T. J. Ross (4 Triumph), J. D. Hardee (8 Matchless sc.), R. Boxer (4 Triumph), F. J. Ellis (8 Matchless sc.), and B. J. Sims (4 Triumph). 492 miles.
5. SHEFFIELD AND HALLAMSHIRE M.C.C.—A. B. Chapman (3½ Brough), D. Kaye (4 Triumph), H. Reynolds (4¼ B.S.A.), and S. Sawer (4 Norton sc.) 451 miles.
6. ESSEX M.C.—E. A. Colliver (7 Indian sc.), S. R. Axford (8 Sunbeam sc.), and F. W. Applebee (4½ B.S.A.). 433½ miles.
7. LIVERPOOL M.C.—R. J. Mundy (8 Matchless), V. E. Horsman (4 Norton), S. Parker, and N. H. Brown (7 Indian sc.). 413 miles.
8. CAMBERLEY AND DISTRICT M.C.C.—W. K. Alfold (3½ Ariel), H. T. Whitty (6 Ariel sc.), and F. Baker (8 Matchless sc.). 370 miles.
9. SOUTH BIRMINGHAM.—B. Kershaw (2½ Verus), and G. Dalby (4 Triumph sc.). 347½ miles.
10. PUBLIC SCHOOLS M.C.C.—J. A. Watson-Bourne (4 Blackburne), and E. M. P. Boileau (8-10 Henderson). 317½ miles.
11. EALING AND DISTRICT M.C.C.—F. A. Longman (7 Harley sc.), and S. E. Longman (4 Triumph). 297½ miles.
12. MIDDLESEX M.C.C.—J. Hilyer (3½ Rover). 215 miles.
13. EASTBOURNE AND DISTRICT M.C.C.—J. Blakemarsh (3½ Norton). 140 miles.

The Motor Cycling Club desires to thank the many willing helpers who gave their valuable services during the trial, and especially mentions the names of Messrs. W. H. Wells, R. C. Davis, Capt. R. C. Charlesworth, and Major Chater-Lea.

Awards in the Circuit de l'Eure.

It is interesting to British motor cyclists and manufacturers to know the value of the prizes won in the important French race Le Circuit de l'Eure. Louis, winner of the 250 c.c. class, takes altogether in money £15, and the M.C.F. gold medal, and a silver medal presented by "Motocyclisme." Milland, first in the 350 c.c. class, takes £11 and gold and silver medals. Péan, who won the 500 c.c. class, gains £17, two gold, and one silver medal. Huret, winner of the sidecar 750 c.c. class, gains £25, one gold, and one silver medal. Houel, £25, one gold and one silver medal.

HP?

There has been a veritable scramble for the distinction of having the first number registered with the new index letters allocated to the city of Coventry. These are HP, and several local owners of Triumphs have been as keen to obtain HP 4 as the dozens of car and motor cycle owners have been to obtain HP 1 or HP 3, HP 10, HP 11, HP 12, HP 15, according to the power of their car or cycle. The Chief Constable, however, decided that the numbers should be granted automatically, with the result that Mr. Fulford of sidecar fame has HP 1 for his 11 h.p. Hillman car, while HP 2 goes to a Scott owned by a member of the staff.

Imports and Exports.

Considering that the restrictions on the importation of motor cycles were not removed until September, it may cause a surprise to some to find that 166 machines arrived during August, valued at £10,641. This fact, however, is of little importance, for these increased figures are forerunners of the more formidable quantities that are soon to reach these shores.

The value of imported tyres, parts, and accessories amounted to £9,590.

EXPORTS.

In August our exports were maintained at a moderate level, their value being nearly double that of the corresponding month last year.

	1917.	1918.	1919.
Number of motor cycles exported..	1,263	475	849
Value of motor cycles and accessories	£105,383	£55,868	£109,984

14,744,369 gallons of petrol were imported into the country during August, this amount being a very slight increase on the July figures.

British Machines in Italy.

Several British machines were used by competitors in a hill-climb at Como (Italy) on the 24th August; the hill is called in a French newspaper Come-Brunate. The results were: 750 c.c. Class.—First, Grignani (Fongri), speed 24¾ m.p h.; second, Pietrasanto (Tar); third, Galluri (Ariel). 500 c.c.—First, Bordino (Motosacoche), speed 25 m.p.h.; second, Marcoli; third, Capitani (Triumph). Frera, Fongri, and Triumph machines were fourth, fifth, and sixth in order named. The 350 c.c. class was won by a Frera, speed 19 m.p.h., the second machine being a Douglas. In the sidecar class (1,000 c.c.), the winning machine was a Sun, followed by a Frera. The hill is 3.16 miles in length with an average gradient of 1 in 7½.

A Dangerous Game.

We have lately received several long lists of motor registration numbers, evidently compiled by children and forwarded in the expectation of receiving some award for the fruits of their misdirected energies. We regret to disappoint the youngsters, but the responsibility for any competition involving the noting of numbers on passing motor cycles and cars is not ours.

Recently in many rural districts we have noticed parties of children armed with paper and pencil, and seen, too, that their pastime has often brought them into danger through running into the road without noticing that other vehicles were following the one whose number they were intent on taking.

The Institution of Automobile Engineers.

The first meeting of the session of the Institution of Automobile Engineers will be held on Wednesday, October 1st, at the Royal Society of Arts, John Street, Adelphi, W.C., at 8 p.m., when Mr. Thomas Clarkson, M.Inst.C.E., will deliver his presidential address. Mr. Clarkson will also deliver his address to the Midland Centre on the following night, Thursday, October 2nd, at the White Horse Hotel, Congreve Street, Birmingham, at 7.30 p.m. A card of invitation to either meeting may be had on application to the secretary of the Institution of Automobile Engineers, 28, Victoria Street, London, S.W.1.

The following list of papers has been promised to the Institution for the forthcoming session. Those members who desire to have a copy of any paper in advance of the meeting, with a view to taking part in the discussion, should notify the secretary without delay. It is hoped to have copies ready two or three weeks before the paper is actually read so as to give time for members to prepare their remarks: Presidential address, by Mr. Thos. Clarkson; "Valve Failures in Petrol Engines," by Dr. L. Aitchison; "Car Design and Car Usage considered from the Standpoint of the Majority of Owner-drivers," by Mr. E. N. Duffield; "Producer Gas as applied to Vehicle Propulsion," by Lt.-Col. D. J. Smith; "Cast Iron in Relation to the Automobile Industry," by Mr. J. E. Hurst; "Some Experiments on Supercharging for High-speed Engines," by Mr. H. R. Ricardo; "Air-cooling of Engines," by Dr. A. H. Gibson; "Gear Cutting," by Mr. P. J. Worsley; "Inertia Torque in Crankshafts," by Mr. F. A. S. Acres; "The Final Drive of the Motor Cycle," by Mr. E. Candwell; "The Process of Ignition," by Mr. A. P. Young and Mr. H. Warren; "Steel Tubes—Their Manipulation and Use in Construction," by Mr. W. W. Hackett; "Volatile Fuel Supplies," by Dr. W. R. Ormandy; "The Single-cylinder Motor Cycle Engine," by Mr. N. W. Bowkett; "American Practice," by Mr. A. Ludlow Clayden.

Road Signals.

A committee appointed by the Commissioner of the Police of the Metropolis has suggested that the following code of signals be used by drivers of motor and horse vehicles.

There is much diversity of opinion, even amongst experienced drivers, as to what are the correct signals to indicate to other drivers the intended movements of the vehicle, and great advantages would accrue were signals standardised.

All signals to be given on the right-hand side of car and in ample time to be of use.
Right forearm vertical—stop.
Right arm horizontal—turning to right.
Right arm horizontal and then swept to left—turning to left.
Right arm horizontal, palm of hand down, and moved slowly up and down—slow down.
Right arm waved low from rear to the front—pass

FOR HORSE DRIVERS.

Whip rotated above head—turning
Whip raised vertically—stop.

It is obvious that one code only is possible owing to the confusion that would arise were duplicate signals admissible.

THE SCOOTER IN COMPETITION.

O. G. Benson making a good climb on an Autoglider at the York and District M.C. Hill-climb at Sutton Bank.

The Luton and South Beds. A.C. Open Speed Trial.

QUITE a successful meeting was held on Saturday last by the Luton and South Bedfordshire Automobile Club in Luton Hoo Park, by kind permission of Lady Wernher.

The weather was fine on the whole, but dull and rather cool. Among the competing machines we noticed the new Duzmo recently described in these pages. It had bad luck in its first run, and sheared a pulley key. There was a Reading Standard there, the American motor bicycle which conforms most closely to English ideas, and the latest type A.B.C., to which a few refinements have been added. (These machines did not compete.) Other interesting mounts were the M.A.G.-engined Matchless machines, and two Douglases with overhead valves, one of which was ridden by Kickham.

The following are the results:

EVENT 1.—EXPERT AND GENERAL (CLASS 1) UP TO 275 C.C.—(1) G. J. McIntosh (Singer, 274 c.c.), time 23⅘s. = 47.01 m.p.h.; (2) W. A. Jacobs (Singer, 248 c.c.), 25s.

EVENT 2.—EXPERT AND GENERAL (CLASS 3) UP TO 500 C.C.—1, H. Le Vack (Edmund M.A.G., 496 c.c.), time 20s. = 55.94 m.p.h.; (2) H. H. Beach (Norton, 490 c.c.), 20⅘s.

EVENT 3.—EXPERTS BARRED (CLASS 1) UP TO 275 C.C.—(1) G. J. McIntosh (Singer, 274 c.c.), time 24s. = 46.62 m.p.h.; (2) W. A. Jacobs (Singer, 248 c.c.), 25s.; (3) T. Eve (Martio, 245 c.c.), 38s.

EVENT 4.—EXPERT BARRED (CLASS 3), UP TO 500 C.C.—(1) H. Martio (Matchless, 482 c.c.), time 19⅘s. = 57.68 m.p.h.; (2) H. Le Vack (Edmund M.A.G., 496 c.c.), 20s.

EVENT 5.—EXPERT AND GENERAL (CLASS 2), UP TO 350 C.C.—(1) E. Kickham (Douglas 350 c.c.), time 20⅘s. = 53.79 m.p.h.; (2) A. E. Wills (Douglas 350 c.c.), 22⅘s.

EVENT 6.—EXPERT BARRED (CLASS 4), UP TO 750 C.C.—(1) H. Martin (Matchless, 482 c.c.), time 19s. = *58.88 m.p.h.; (2) H. Le Vack (Edmund M.A.G., 496 c.c.) 19⅘s. *Fastest machine up to 500 c.c.

EVENT 7.—EXPERT BARRED (CLASS 2), UP TO 350 C.C.—(1) A. E. Wills (Douglas, 350 c.c.), time 23s. = 48.64 m.p.h.; (2) G. J. McIntosh (Singer 274 c.c.), 23⅘s.

EVENT 8.—EXPERT AND GENERAL (CLASS 10) CYCLE CAR, THREE-WHEEL.—(1) S. Hall (Morgan 1,090 c.c.), time 31s. = 36.09 m.p.h. (walk over).

EVENT 9.—EXPERT BARRED (CLASS 10), CYCLE CAR, THREE-WHEEL.—Lt. S. Cox (Morgan 1,100 c.c.) time 29⅘s. = 37.8 m.p.h. (walk over).

EVENT 10 (CLASS 6).—MOTOR CYCLE WITH ENGINE NOT EXCEEDING 275 C.C., WHEELS NOT EXCEEDING 20IN.—O. G. Beoson (Autoglider 269 c.c.) time 34⅘s.

EVENT 11.—EXPERT AND GENERAL (CLASS 4), UP TO 750 C.C. (1) H. Le Vack (Edmund M.A.G., 496 c.c.), time 19⅘s. = 56.5 m.p.h. (2) H. Martin (Matchless, 482 c.c.), 20s.

EVENT 12.—EXPERT BARRED (CLASS 5), UP TO 1,000 C.C.—(1) E. Baragwanath (Zenith, 984 c.c.), time 16⅘s. = 66.61 m.p.h.; (2) F. A. Wheeler (J.A.P., 998 c.c., 17⅘s.

EVENT 13.—EXPERT AND GENERAL (CLASS 7), SIDECARS UP TO 500 C.C.—(1) H. Le Vack (Edmund M.A.G., 496 c.c.), time 23s. = 48.64 m.p.h.; (2) D. R. O'Donovan (Norton 490 c.c.) 24⅘s.

EVENT 14.—EXPERT AND GENERAL (CLASS 9), ANY MACHINE UP TO 1,000 C.C.—(1) E. Baragwanath (Zenith, 984 c.c.), time 16⅘s. = *66.61 m.p.h.; (2) F. A. Wheeler (J.A.P., 998 c.c.), 17⅘s. = 63.7† m.p.h.

*Fastest time of the day, and twice accomplished by this rider. †Second fastest time.

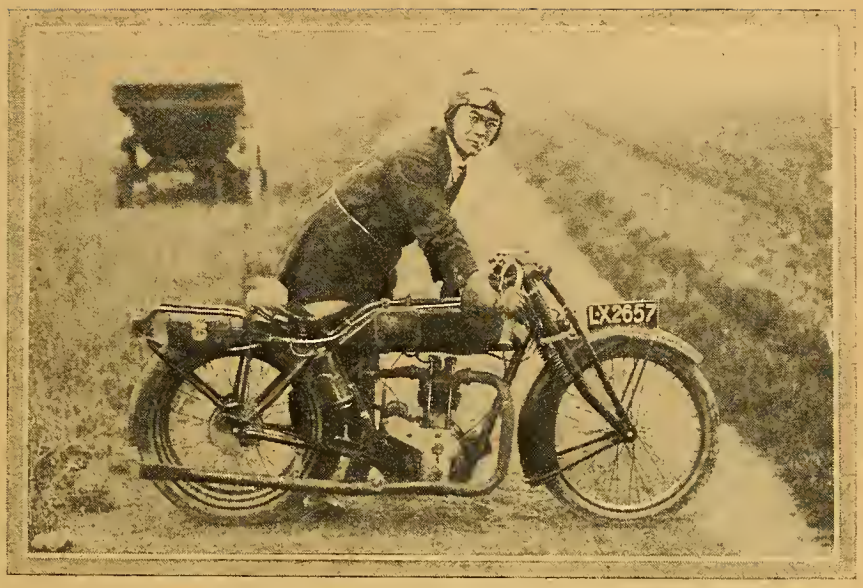
EVENT 15.—EXPERT BARRED (CLASS 7), SIDECARS UP TO 500 C.C.—(1) H. Le Vack (Edmund M.A.G.), 496 c.c.), time 22⅘s. = 49.51 m.p.h.; (2) N. Albon (Rover, 499 c.c.), 27⅘s.

EVENT 16.—EXPERT BARRED (CLASS 8), SIDECARS UP TO 750 C.C.—(1) H. Le Vack (Edmund M.A.G. 496 c.c.), time 23⅘s. = 48.22 m.p.h., and E. Swain (Indian 685 c.c.), 23⅘s. = 48.22 m.p.h.

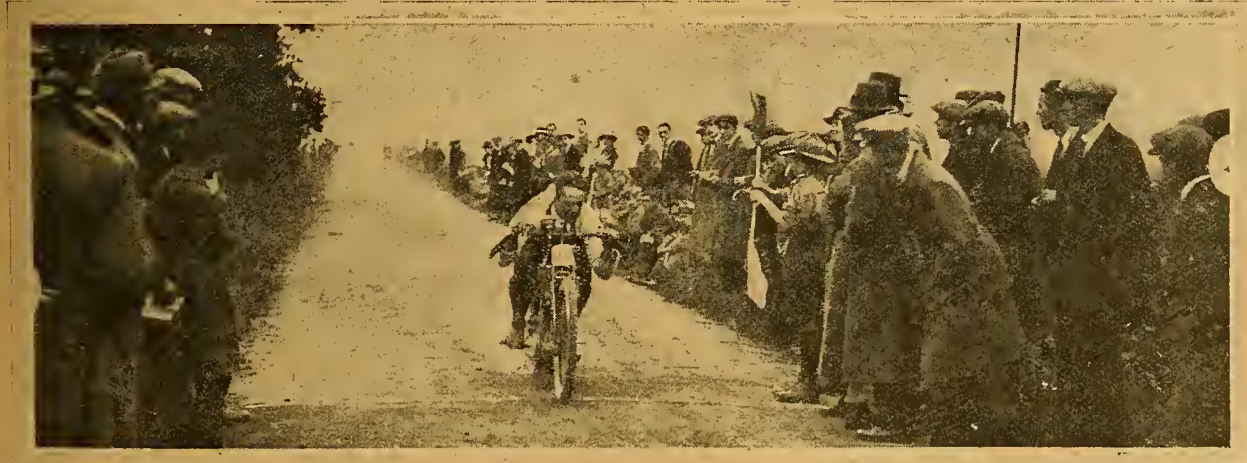
EVENT 17.—EXPERT AND GENERAL (CLASS 9), SIDECARS UP TO 1,000 C.C.—(1) E. C. Baragwanath (Zenith, 984 c.c.), time 20⅘s. = 54.31 m.p.h.; (2) W. J. Barker (Henderson, 998 c.c.), 23⅘s.

EVENT 18.—EXPERT AND GENERAL (CLASS 8), SIDECARS UP TO 750 C.C.—(1) H. Le Vack (Edmund M.A.G. 496 c.c.) (walk over).

EVENT 19.—EXPERT BARRED (CLASS 9), SIDECARS UP TO 1,000 C.C.—(1) E. C. Baragwanath (Zenith, 984 c.c.), time 21s. = 53.28 m.p.h.; (2) H. A. Reyre (Zenith, 998 c.c.), 25s.; (3) C. G. Stokes (Harley-Davidson, 998 c.c.), 25⅘s



The 3½ h.p. Duzmo, a recent addition to the popular single-cylinder class Ridden in the Luton Hoo speed trials by J. Wallace

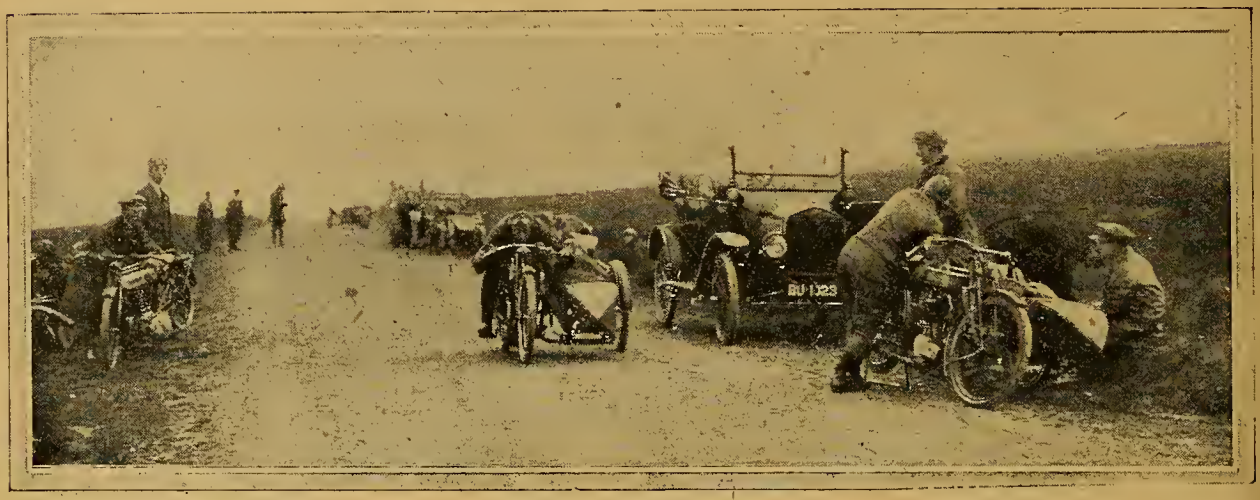


G. W. Wallace (3½ h.p. Norton) passing the timekeeper at the speed trials on Saturday

The Luton and South Beds. A.C. Open Speed Trial. –

A feature of the meeting was the triumph of Le Vack's M.A.G.-engined Edmund, which won four events and was second in two, and the success of Baragwanath's Zenith, who has had many wins to his credit, and was first in four events. We were also pleased to note that the fine old veteran, Harry Martin, had lost none of his former skill. Mr. T. D. Dutton was the timekeeper, and the times at the start (flying) were taken by the buzzer on the field telephone, which worked admirably.

Manchester M.C. Speed Trials.



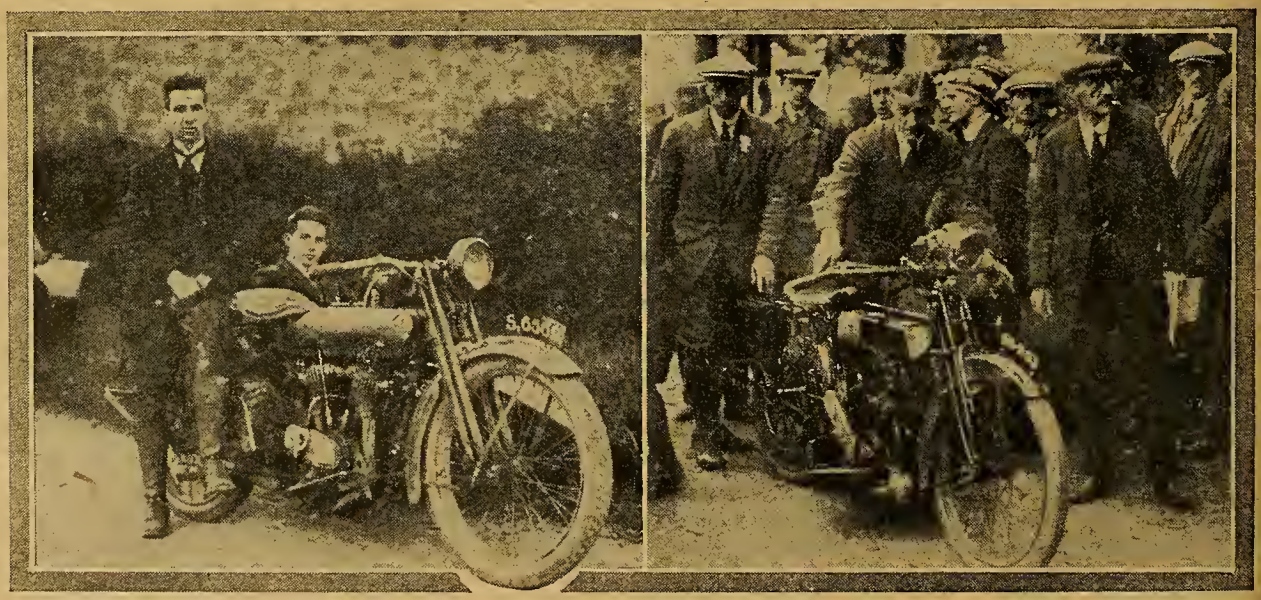
A scene at the Manchester M.C. speed trials J. Smith (Triumph sc.) has just passed the starting line

THE course selected by the Manchester M.C. for its speed trials on September 14th was a well chosen straight two-mile stretch of road over the moors, known as "Bill-o'-Jacks," Greenfield, on the borders of Lancashire and Yorkshire. A following wind prevailed, and, with a half-mile start and ample space in which to pull up, some good riding was accomplished.

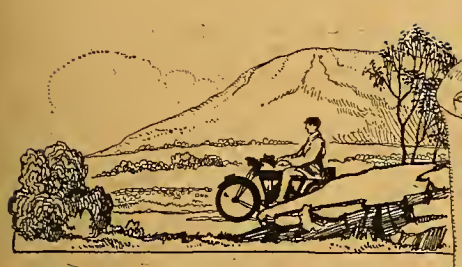
As is frequently the case up North, entries were confined rather largely to pre-war models, and the lack of new machines has seriously handicapped club developments.

Many well-known local riders competed in the two unlimited classes for solo and sidecar machines respectively, and amongst those who achieved exceptionally fast times were P. Platt (3½ Norton), J. Smith (Triumph sc.), W. Bottoms (6 Bradbury sc.), and N. Taylor (who also rode a 6 Bradbury).

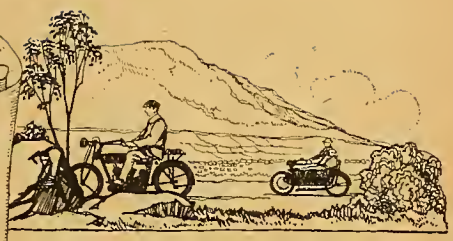
The weather throughout the event was dull and cold, but in no way interfered with the progress of the competition. Results will be entirely decided on A.C.U. formula, and are not available at the moment, but will be announced in due course.



There was a record entry in the Western M.C. (Glasgow) Hill-climb, on Garshake, on Saturday last. Geo. Grinton (7-9 h.p. Harley-Davidson sc.) made fastest time of the day in the sidecar class, while McCullach (3½ h.p. James twin) won the event for solo machines up to 600 cc., being awarded the MacLean Cup for the best performance of the day.



THE A.C.U. SIX DAYS RELIABILITY TRIAL



A Representative Range of Competing Motor Cycles, mostly British, but including Specimens from America and France.

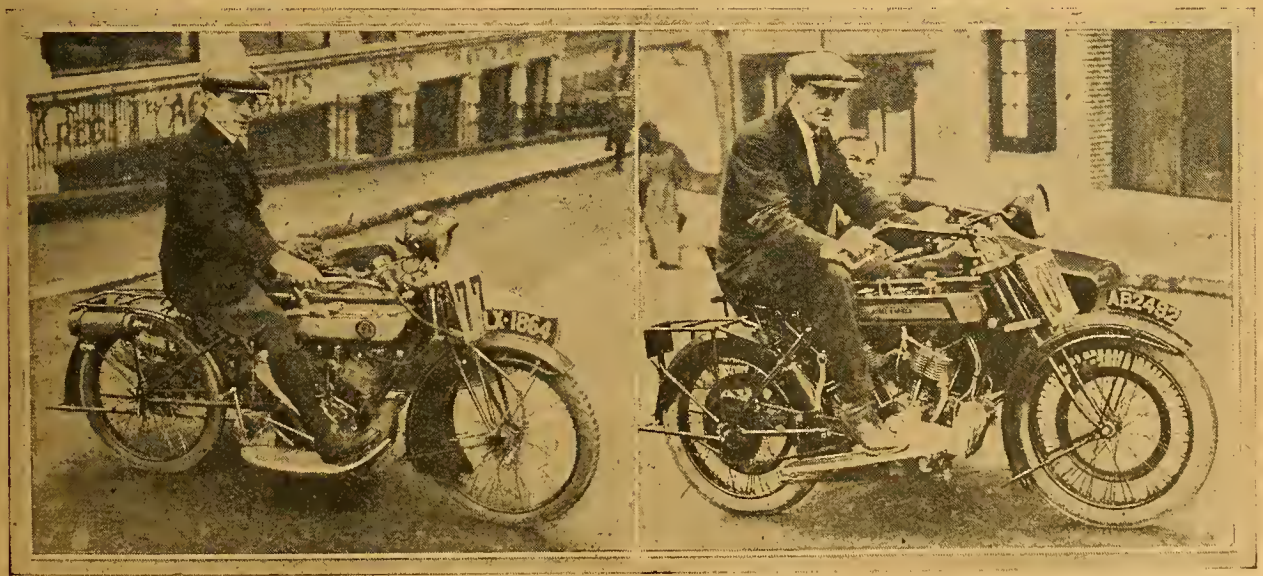
Entries include 65 Solo Machines, 44 Sidecars, and 6 Runabouts; 41 Single and 24 Twin-cyl. Solo; 9 Single and 35 Twin-multi Sidecars.

LLANDRINDOD WELLS this week is the Mecca of all enthusiastic motor cyclists, and those manufacturers who follow with close interest the performances of their own as well as rival manufacturers' machines. The splendid entry of 115 machines is thoroughly deserved by the Auto Cycle Union, for none will deny that the governing body's events are always well arranged and splendidly organised, which, of course, is as it should be. British-made machines naturally predominate. One wishes that Italian and Belgian machines could have figured among the lists to give the event a more international character. As it is, the solitary entry of a G.L. machine represents France, whilst the reputation of the United States is being worthily upheld by the Harley-Davidson, Indian, and Henderson.

All Roads lead to Llandrindod.

Competitors converged on the popular Central Wales resort from all corners of the British Isles, mostly, be it said to their credit, by road, though many journeyed by rail. And what weather it was to welcome them. Pouring rain, greasy roads, and the surrounding hills obscured by rain clouds. Many broke their journey on Saturday evening at Leominster, Kington, and Penybont, and rode in on Sunday morning. Consequently, the scene at Mr. Tom Norton's garage at Llandrindod was an extremely busy one throughout Sunday, most riders finding plenty of finishing touches needful; others adjustments far more ambitious. De-la-Hay whipped his cylinder off just to make sure all was well; whilst a Douglas rider removed the rear portion of his frame. Spindles, too, which had, apparently, already found the wet, were removed for examination.

Given wet weather for two or three days during the trial, much new and useful light will be shed upon the design of weatherproof hubs. Even on Sunday not every rider was a sure starter, strange it is how ill luck dodges some riders. The 1920 Levis, for instance, entered by Messrs. Butterfield's, P. Pike riding, suffered trouble with its sloping tank of new design near Radnor When we passed him he had not diagnosed the complaint, but it was found later to be due to the oil sump joint having sprung and allowed a too thorough admixture of petrol and oil, which the engine did not like. Of course, Levis engines have a proper lubrication system, and the additional supply due to the leaky tank was most unfortunate. Not to be outdone, however, a 1919 machine was telephoned for, and in case of that failing to arrive in time, a two-gallon petrol tin was to be affixed to the carrier of the 1920 mount, and a start made.

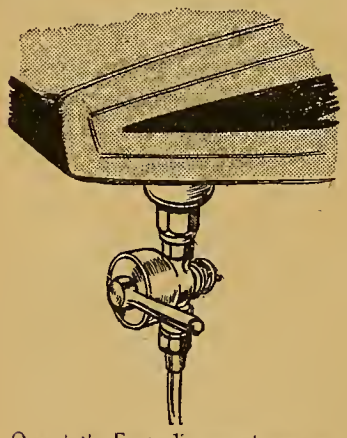


France's only representative, the G. L., ridden by F. Thorp
The sidecar carried two spare wheels at the rear.

The 8 h.p. Enfield Colonial Model with 28 × 3in. wheels, high ground clearance, and three-gallon tank.

Cleaning up after a wet and muddy run to Llandrindod. The new 8 h.p. Dot-Jap machines ridden by H. Reed and J. H. Place

Due to the muddy state of the roads, there was much hosepipe in use at the week-end, in itself a point worthy of notice, for it is only in recent years that such complicated mechanism as a motor cycle necessarily possesses could be sprayed with water with impunity, lest mysterious short-circuits should be set up. Nowadays, entirely waterproof mag-



One of the Enots disc petrol taps on A. Sumner's Zenith

netos have disposed of all fears on this score. The state of some machines, however, shows that there is still room for improvement in respect of mudguarding.

Observations on the Course

Of course, rumours were rife at the start as to the unexpected severity of the hills and road surfaces. Not all are agreed as to which day constitutes the most arduous trial, though the majority considered Wednesday's programme, with Bwlch-y-Groes and other lesser known but equally difficult ascents, the severest. Of tricky bends approaching single figure gradients there are an abundance. Of course, the water-splashes included have been exaggerated into roaring mountain torrents.

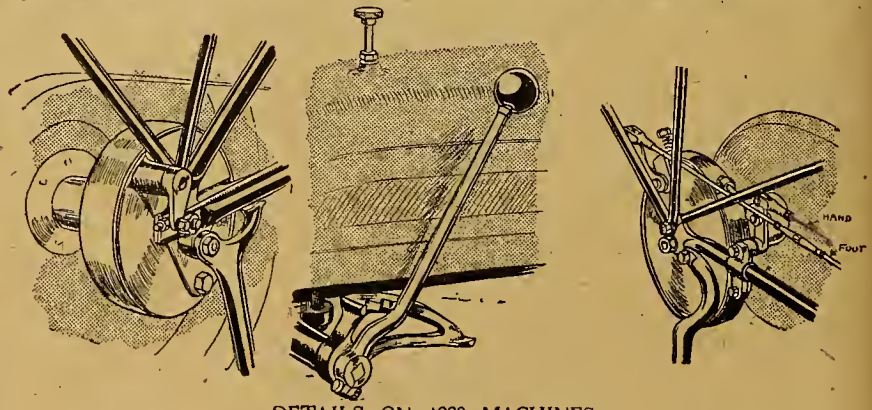
In conversation with Mr. T. W. Loughborough, the hard-working secretary of the A.C.U., we learned that under certain weather conditions which obtained during the week-end some of the mountain passes are likely to be so entirely enveloped in rain clouds as to equal a thick November fog, in which case a 20 m.p.h. average would be impossible or, at any rate, dangerous. Should such conditions prevail, the judges will have to consider the question of allowing an extension of time. In this connection we well recall an ascent of Bwlch-y-Groes (The Pass of the Cross) from Dinas Mawddwy in pouring rain, when it was difficult to see twenty yards ahead owing to the mist, and the sheer descent of several hundred feet by the roadside was a not too comforting prospect.

There are three 3½ h.p. sidecars (a B.S.A. is notable for the lowest gear ratio of 21 to 1) and several 4 h.p. single-cylinder sidecars in the event, including Norton, Triumph, B.S.A., and James. Their final performances will be most interesting to watch, for the greatest credit will be due to any rider who succeeds in piloting such a machine safely home, in view of the conditions. Much mystery surrounds the new Triumphs.

A. Sumner on the new countershaft Zenith; the kick-starter is in a higher position than usual.

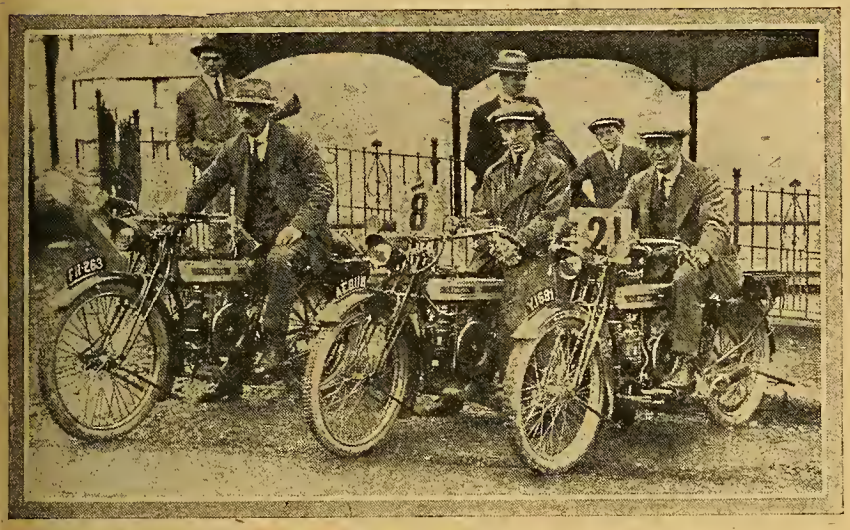
There are two entered with all-chain drive, Triumph three-speed countershaft gears, with a new form of change speed by a neat quadrant on a bracket supported by the tank tube, and, of course, the new Triumph enclosed fork springs. The mystery is in the engine, for it is said that G. E. Stanley has been at work, and the engines are quite the hottest 550 c.c. motors ever produced. Their performance already is quite an eye-opener.

The lamp test worried many competitors; dynamos are fairly common on the



DETAILS ON 1920 MACHINES.

The internal expanding brake on H. Reed's new 8 h.p. Dot. The neat quadrant on G. Shemans's chain-driven Triumph. Rear brakes of T. Stevens's 4¼ h.p. James. Ferodo-lined internal expanding and external contracting.



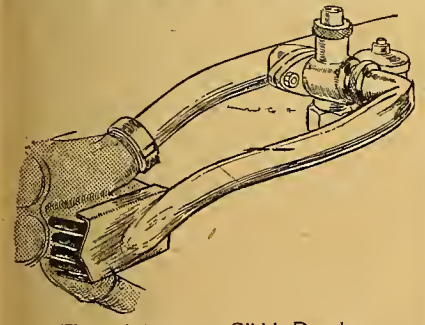
The Douglas team : P. W. Moffat (3½ h.p. spring frame), W. B. Gibb (2¾ h.p.), and F. G. Ball (2¾ h.p.)

machines; some have D.A. (dissolved acetylene) cylinders, but the majority have pinned their faith to the old reliable generator and lamp mounted on the handle-bar bracket.

E. A. Colliver's Indian is in itself in perfect order, but a crack developed in the carbon brush holder of the magneto, and a temporary repair was effected just before the start, with shellac and rubber solution, which, it is hoped, will hold out.

Tyres are frequently 28 × 3 inches; most sidecars are equipped with this size, Palmer cords being particularly prominent.

Stevens's single-cylinder James sidecar has three brakes, the usual front rim brake, an external contracting brake

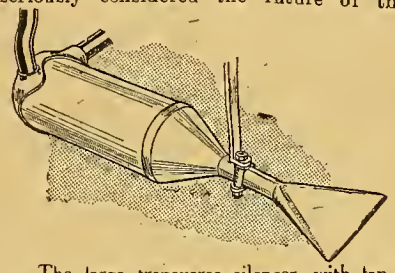


Warm air intake on Gibb's Douglas.

on the rear wheel operated by a Bowden handle-bar lever, and an internal brake operating on the same drum, but foot-operated. A New Imperial outfit also has an additional rear wheel brake. The Sunbeams, to outward appearance, are standard machines in every particular. The G.L. footplates, shaped to form a screen for rider's legs by covering in the whole of the space between power unit and footrest, are a commendable feature. C. Sweerts, brother of G. Sweerts, of Paris, well-known in pre-war days, is Thorp's passenger on this French production, largely composed of British standard fittings. It is noticeable that a number of competitors have dispensed with the rear chain guard, evidently in order to simplify repairs should adjustments prove necessary. We were glad to see that due attention had been paid to the question of easily effected chain adjustments. The Scotts buzz around as usual, but again we notice a lack of unanimity in the question of the most suitable form of lubricator. Harry Reed's workmanlike Dot-Jap sidecars have already won much favourable comment; they may be expected to finish well. Two non-competing machines engaged on the trial and worthy of mention are a new Morgan, with a twin Blackburne engine, and W. H. Egginton's 8 h.p. Sunbeam, with one of the only two V type engines of Sunbeam manufacture in existence. The latter mount, which is highly spoken of by its owner, has a Lucas Magdyno outfit.

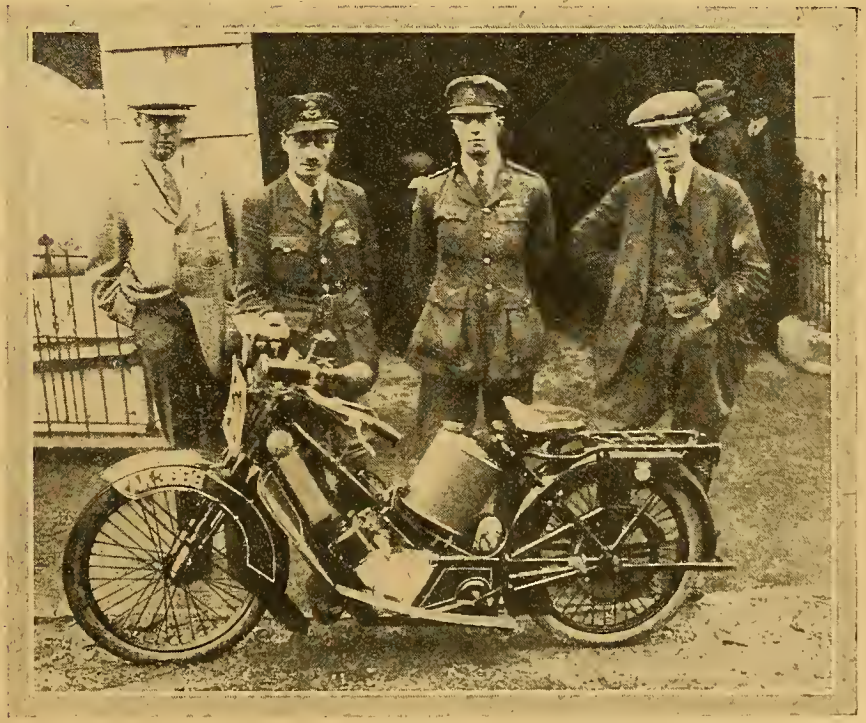
Overseas Conditions.

The Enfield Co. are wise in having entered their Colonial model sidecars, for unquestionably the A.C.U. have seriously considered the future of the



The large transverse silencer, with tan tail extending under the sidecar of Creak Davis's Chater-Lea.

motor cycle industry in introducing so many overseas conditions into the trial. 8 h.p. engines, three-gallon tanks, dynamo outfits, and a ground clearance of seven and a half inches are features of the excellent design of the Enfield mounts. A twin Zenith which is being ridden by A. V. Sumner has the kick starter mounted higher and more conveniently than formerly. Modern belts being made of really durable material, this machine may confidently be expected to do well. We were sorry to notice that Mr. F. W. Barnes's new spring saddle was not fitted, as we hear golden opinions of the comfort it provides, some going so far



The Scott riders : H. O. Wood, B. Alan Hill, Capt. C. P. Wood, and W. L. Guy.

The A.C.U. Six Days Trials.—

as to suppose that it may dispense with the need for a spring frame.

A Variety of Types.

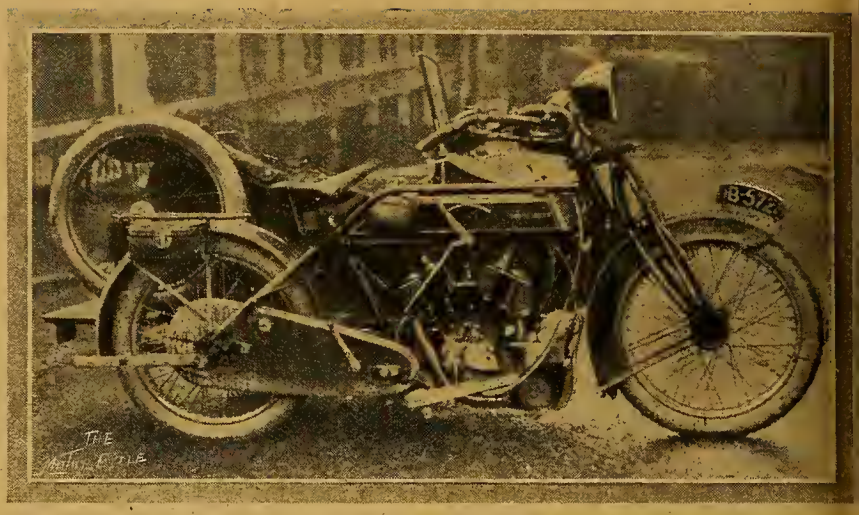
The James team is representative of all James productions, from the two-stroke lightweight to the luxurious sidecar outfit. The Douglas range, too, is

Twin silencers on a B.S.A.

very complete, being representative and businesslike, and their riders are all men of extensive competition experience.

Quite a number of competitors are using benzole, which fact invests the trial with added interest. They are bound to show up well when the checked consumption figures are divulged.

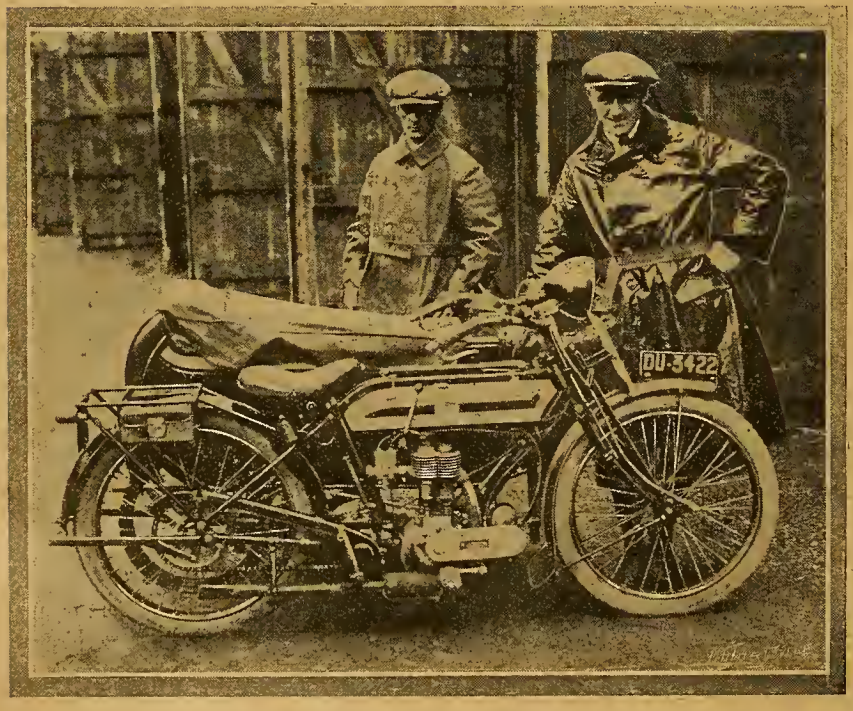
Great interest centres in the A.J.S. Matchless and Clyno combinations, for here we have some of the best passenger machines that British motor cycle engineers can produce. Their initial performances have been impressive. One is sorry to observe that few three-wheeled runabouts of the Morgan type—a number of new makes of which have lately made their bow to the public—are competing in this week's great event. The opportunity of comparing their performances with the best of the sidecar outfits must be postponed for some time as a result, though the team of Morgans may be expected to uphold all the excellent traditions they set up as the successful forerunners of the weatherproof and reliable vehicle of motor cycle type. Following upon a recent decision of the A.C.U. no four-wheelers are admitted this year—a policy sound in itself, but regrettable no doubt to many who, with possibly £200 to expend in a motor vehicle, desire to invest it in any form of three or four-wheeler whose general performances are the most praiseworthy, if running costs are moderate.



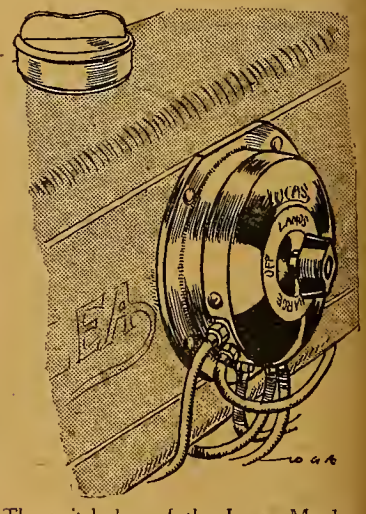
An interesting machine at Llandrindod Wells—W. H Egginton's 8 h.p. sidecar—one of the only two experimental models fitted with the new Sunbeam twin engine.

Ariels, both single and twin, with a competition record second to none, strike one as sound designs, whose records only ill-luck can check. The Blackburne riders, possessing such flexible engines—excepting the two-strokes and flat twins (they are the only engines with outside flywheels in the trial)—attract attention by the slow tick over of the engines when in the free position.

Creak Davis is riding a khaki-finished Chater-Lea, the sidecar having five separate connections. It has, too, the Lucas Magdyno, with a neat switch mounted on the side of the huge petrol tank. Davis is not new to six day events, nor is his passenger, Mrs. Davis, for that matter.

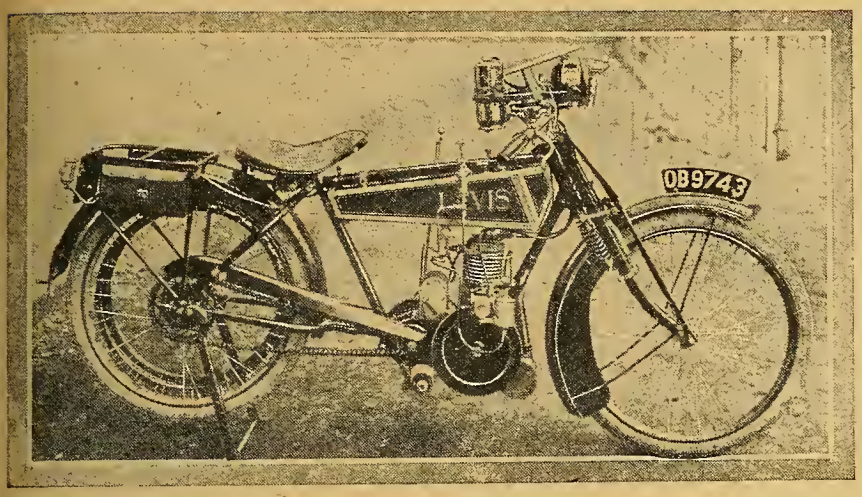


The 1920 chain-driven Triumph, with the new Triumph gear box and improved front fork ridden by G. Shemans, who is seen on the right.



The switch box of the Lucas Magdyno, fitted on the Chater-Lea.

Though described as a six day event, the 1919 A.C.U. reliability trial is a five day, or more correctly a four and a half day event, for Monday was devoted to official inspection and sealing, whilst the sixth day (Saturday) will be taken up by a thorough examination of the competing machines by the judges, since



The 1920 Levis, entered by Messrs. Butterfield's, Ltd.—P. Pike, rider

"condition" marks will again enter largely into the final classification of the competitors.

The Riders and their Machines.

CLASS A.—FOR MOTOR BICYCLES NOT EXCEEDING 250 C.C.

1. J. F. Lidstone (2¼ James).
2. P. Pike (2¼ Levis).
3. R. H. Baxter (2¼ Radco).
4. L. C. M. Davies (2¼ Velocette).
5. E. F. Goodman (2¼ Velocette).

CLASS B.—FOR MOTOR BICYCLES NOT EXCEEDING 350 C.C.

6. Thos. J. Stordy (2¾ A.J.S.).
7. S. T. Ashby (2½ Connaught).
8. F. C. Ball (2¾ Douglas).
9. W. B. Gibb (2¾ Douglas).
10. J. R. Lane (2¾ Douglas).
11. Chas. Hartwright (2¾ New Imperial).
12. H. L. Kitcher (2¾ New Imperial).
13. B. Kershaw (2½ Verns).

CLASS C.—FOR MOTOR BICYCLES NOT EXCEEDING 500 C.C.

14. J. Emerson (3 A.B.C.).
15. H. Fairley (3 A.B.C.).
16. Tom Peck (3½ Ariel).
17. C. W. Smith (3½ Ariel).
18. T. B. C. Vale (3½ Ariel).
19. P. J. Enticknapp (4 Blackburne).
20. J. Watson-Bourne (4 Blackburne).
21. P. W. Moffatt (3½ Douglas).
22. James Edwards (3½ Humber).
23. G. A. Strange (3½ James).
24. E. F. Chidley (3½ P. and M.).
25. W. Drake (3½ P. and M.).
26. R. Lewis (3½ P. and M.).
27. W. Denskin ((3½ Rover).
28. G. Featherstonhaugh (3½ Rover).
29. Morris Isaac (3½ Rover).
30. Jessa Baker (3¾ Scott).
31. Mansel Davies (3½ Sunbeam).
32. W. R. Eadington (3½ Sunbeam).
33. G. Dance (3½ Sunbeam).
34. J. Dudley (3½ Sunbeam).
35. T. C. De la Hay (3½ Sunbeam).
36. Capt. Oliver (3½ Sunbeam).
37. J. A. Newman (3½ Sunbeam).
38. T. Rutherford (3½ Sunbeam).
39. J. T. Shillito (3½ Sunbeam).

CLASS D.—FOR MOTOR BICYCLES NOT EXCEEDING 750 C.C.

40. E. W. Choldcroft (4 A.J.S.).
41. F. W. Applebee (4¼ B.S.A.).
42. H. F. Edwards (4¼ B.S.A.).
43. L. L. Sealey (4¼ B.S.A.).
44. F. Turvey, jun. (4¼ B.S.A.).
45. A. E. Wood (4¼ B.S.A.).
46. V. E. Horsman (4 Norton).
47. Capt. Alexander Lindsay (4 Norton).
48. D. H. Noble (5 Rover).
49. W. Leslie Guy (3¾ Scott).
50. Capt. C. P. Wood, M.C. (3¾ Scott).
51. H. O. Wood (3¾ Scott).
52. Lt. B. Alan Hill (3¾ Scott).
53. Capt. F. C. Townshend (4 Sunbeam).
54. C. Cather-Cooke (4 Triumph).
55. Ernest Cross (4 Triumph).
56. H. Pattinson (4 Triumph).
57. M. Ryecroft (4 Triumph).
58. W. Elce (5 Zenith).
59. A. V. Sumner (5 Zenith).
60. Gerald Brown (5 Zenith).
61. R. Charlesworth (5 Zenith).
62. Kay Don (5 Zenith).

CLASS E.—FOR MOTOR BICYCLES NOT EXCEEDING 1,000 C.C.

63. J. W. Wills (6-7 Ariel).
64. Edgar Bottomley (7-9 Harley-Davidson).
65. Lt. Lauro de Aranjo (7-9 Harley-Davidson).

CLASS G.—FOR MOTOR BICYCLES WITH SIDECARS NOT EXCEEDING 500 C.C.

66. F. E. Jones (3½ Ariel).
67. W. J. Chambers (3½ B.S.A.).
68. Reg. Brown (3½ Sunbeam).

Next week's issue of "The Motor Cycle" will contain a description of the Six Days Trial, with many illustrations, by members of our own staff who are accompanying the competitors.

CLASS H.—FOR MOTOR BICYCLES WITH SIDECARS NOT EXCEEDING 750 C.C

69. C. Collins (6 A.J.S.).
70. Eric Williams (6 A.J.S.).
71. O. Wade (6 A.J.S.).
72. F. W. Giles (6 A.J.S.).
73. H. C. Heath (6 A.J.S.).
74. W. Edwards (4¼ B.S.A.).
75. Howard R. Lane (4¼ B.S.A.).
76. H. Thorpe (4 Douglas).
77. F. Thorp (5-6 C.L.).
78. T. Stevens (4¼ James).
79. G. E. Stohart (5-6 James).
80. S. Sawers (4 Norton).
81. F. G. Edmond 4 Triumph).
82. G. Shemans (4 Triumph).

CLASS K.—FOR MOTOR BICYCLES WITH SIDECARS NOT EXCEEDING 1,000 C.C.

83. F. J. Watson (6 Ariel).
84. J. L. Stocks (6 Ariel).
85. J. S. Holroyd (8 Blackburne).
86. S. S. Dehenham (6 Campion).
87. R. Creak Davies (8 Chater-Lea).
88. Hugh Gibson (8 Clyno).
89. Harry Reed (8 Dot).
90. John H. Place (8 Dot).
91. W. A. Fell-Smith (7-9 Harley-Davidson).
92. H. A. Leak (7-9 Harley-Davidson).
93. E. A. Colliver (7-9 Indian).
94. J. D. Prythercb (7-9 Indian).
95. L. A. Bees (7-9 L.M.C.).
96. C. R. Collier (8 Matchless).
97. G. D. Hardee (8 Matchless).
98. James A. Hoult (8 Matchless).
99. G. C. McGlashan (8 Matchless).
100. Fred W. James (8 Morgan).
101. H. F. S. Morgan (8 Morgan).
102. N. Svanso (8 Morgan).
103. W. R. Haggas (8 New Imperial).
104. J. Drew (8 New Imperial).
105. D. Alexander (8 Royal Enfield).
106. J. Dosher (8 Royal Enfield).
107. D. C. Guise (8 Royal Enfield).
108. Stanley Parker (8 Royal Enfield).
109. J. G. Lowles (8 Sunbeam).
110. Harry Jepson (8 Zenith).

CLASS L.—FOR MOTOR BICYCLES WITH SIDECARS EXCEEDING 1,000 C.C.

111. W. J. Barker (10 Henderson).
112. H. Greaves (10 Morgan).
113. Sydney Hall (10 Morgan).
114. W. Douglas Hawkes (10 Morgan).
— R. G. Mundy (8 Matchless sc.).

INCIDENTALLY——

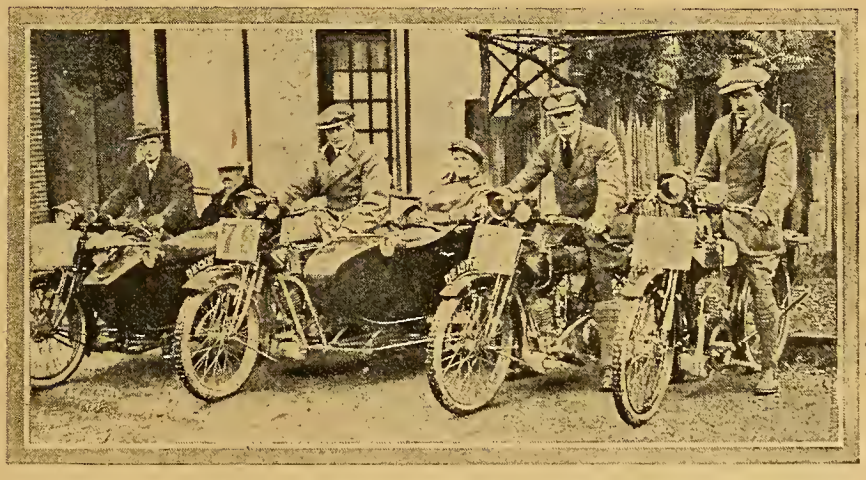
Too much last minute preparation was noticeable.

Great Britain, France, and America are the only countries represented among the competitors.

The riders are very largely composed of ex-Service men, including majors and captains.

Drivers of three 3½ h.p. sidecar outfits are sufficiently confident of their chances to have entered this, the most severe Six Days event yet arranged.

Caio Hill, in to-morrow's route, is said to be as difficult as any in the trial. The contour reminds one of the roof of a house.



Four types of James machines in the trial. T. Stevens (4¼ h.p. single sc.), G. E. Stobart (5-6 h.p. twin sc.), G. A. Strange (3½ h.p. twin), J. F. Lidstone (2¼ h.p. two-stroke)

FIRST DAY'S RUN DESCRIBED.

111 STARTERS—110 SURVIVORS.

MONDAY'S ROUTE: 98½ Miles.

Llandrindod, Builth, Garth (consistent driving test), Brecon, Llangynidr, Abergavenny, Talgarth, Builth, Llandrindod. The return journey from Abergavenny was undertaken in the dark and included a lamp test.

Ideal riding conditions prevailed on Monday in contrast to the inclement weather of the two previous days. The morning was devoted to replenishing and sealing the vital parts of the machines, and arranging them in marked off spaces in the Drill Hall and at Tom Norton's garage adjoining the railway station. There was more than the usual scene of animation outside, for the interest in this year's event is exceptional. Many prominent trade representatives were there, not only watching their own riders' interests, but intently examining the features of other makes of machines. By noon all but five entrants had reported themselves, and after an adjournment for lunch, the trial proper commenced at 2.30, in the presence of a considerable crowd.

The Start.

Around a clock outside the Drill Hall the various competitors' numbers are arranged, and as the hand points to the numbers a bell is rung, and number cards are handed to the competitors concerned, after which they obtain their machines from the garage. Before actually leaving Llandrindod competitors were taken through the goods station yard, and each machine weighed as it stood, in complete touring trim. Then the long journey was commenced, *via* Howey, Builth, and Garth, beyond which place the consistent driving test was encountered. Sumner was unlucky in sustaining a collision with a Ford when leaving the station yard. There were cattle on the roads for the first few miles, as it was Builth Fair, and the farmers here formed a line to watch the procession of riders.

Panne Hill, near Garth, is a fairly difficult climb, exceeding two miles in length, with three bends, the last the most acute, but the gradient does not exceed 1 in 8 at any point, and the surface is moderately good. Early competitors were up in arms against the consistent driving test. They argued, not without good reason, that it was rather a test of the driver than of the machine. Certainly, the Six Days Trials are regarded as tests of motor cycles and, so far as is possible, the personal factor should not enter into the condition of awards.

Generally speaking, the performances were not brilliant, for it must be admitted that the long and tiring climb heated up many engines to the point of knocking on the bends, and there were several failures. There were, however, notable exceptions. Hardee climbed well, as did all the Matchless machines. The Velocettes and the Levis ridden by Pike made no mistake; the latter is riding an old model after all, but Colliver (Indian), mentioned in the introductory notes, received a new carbon brush and holder on Monday morning in time to fit them.

Parker's Enfield misfired most of the way up, the Dot-Japs made impressive climbs, and the Triumphs were noticeably fast on the upper reaches, even with sidecars attached. Drew's New Imperial did well, also Moffatt's 3½ h.p. Douglas and Stevens's single-cylinder James sidecar. Charlesworth (Zenith) was fast, but Dance stopped momentarily for some reason, though he at once restarted. Hawkes's Morgan was quite fast, and the Scotts were much admired by the spectators. The Blackburnes and Rovers performed conspicuously. Applebee's B.S.A. travelled well, but Chambers, on a 3½ h.p. sidecar of the same make, was naturally slow, and was passed by Bees (L.M.C.) and Peck (Ariel), but later Bees stopped on the top bend.

Others who stopped were Dosher (8 h.p. Enfield sc.) and Lane (B.S.A.), due to overheating, Edwards, who changed a plug, and Lowles (8 h.p. Sunbeam), whose timing slipped just below the timekeeper.

The positions of the timekeepers were not sufficiently clearly marked, but the route generally is splendidly arrowed. Prytherch (7-9 h.p. Indian sc.) broke a high-tension wire, which delayed him twenty-five minutes. Good roads followed to Brecon, where crowds lined the streets. Shortly afterwards, however, the route took the competitors down a byroad, with difficult corners. The test hill of the day was shortly after the 41st mile. Starting up in a sinuous climb through Llangynidr a rough lane led to the crucial point, a sharp right-hand corner on a steep gradient, followed by a two-mile ascent. Eleven competitors failed, one, Barker (10 h.p. Henderson sc.), owing to his gear lever slipping into neutral. Restarting he wrenched off his front tyre.

A long descent followed, to Abergavenny, where tea was taken and lamps lit.

The Return Run.

The return run was uneventful, the roads on the whole being excellent. There was a steady climb of ten miles over the pass above Talgarth, but no serious gradients. The lamps generally behaved most satisfactorily. The competitors were arriving up to eleven o'clock, and before returning to the garage the tanks had to be replenished. All except Sumner checked in.

Dr. Low, whose audiometer was installed on Panne Hill, tells us that the results were disappointing, except for a few notably silent machines.

OBSERVATIONS.

Only five competitors failed to face the starter. These were J. R. Lane (2¾ Douglas), C. Hartwright (2¾ New Imperial), Lt. L. de Aranjo (7-9 Harley-Davidson), W. Elce (5 Zenith), and H. A. Leak (7-9 Harley-Davidson sc.).

Tuesday's run started under favourable weather conditions, the whole of Monday's survivors leaving Llandrindod in practically every case without adjustments being found necessary.

Working from 4.30 a.m., Mr. T. W. Loughborough and his assistant, Maj. Dixon Spain, had all the weights and consistent driving times on the notice boards for all to see on Tuesday morning.

On the previous page is given a list of competitors, to which must be added E. W. Merrall, who is driving a 1915 Jap-engined 8 Morgan.

In the fast stretch of the consistent driving test, the lightweights averaged 14 m.p.h., and the 3½ h.p. machines about 20 m.p.h.

The lightest machines in the respective classes were as follow: 250 c.c., 2¼ Radco, 170 lb.; 350 c.c., 2½ Connaught; 500 c.c., 3½ P. and M., 268 lb.; 750 c.c., 4 Triumph, 256 lb.; 1,000 c.c., 6-7 Ariel, 336 lb.; 500 c.c. sidecar, 3½ Ariel, 444 lb.; 750 c.c. sidecar, 4¼ B.S.A., 464 lb.; 1,000 c.c. sidecar, 6-7 Ariel, 488 lb.; over 1,000 c.c. sidecar, 10 Henderson, 588 lb.

The chief item of interest of Tuesday's run was the brake test at Pumpsaint during the morning.

Among the most notable performances in the consistent driving test may be mentioned: Fairley (3 A.B.C.), 7.45 m.p.h. slow, 22.65 m.p.h. fast; Horsman (4 Norton), 8.2 slow, 24.25 fast; Charlesworth (5 Zenith), 8.85 slow, 24.15 fast; Edmund (4 Triumph sc.), 6.95 slow, 22.35 fast; Alexander (8 Enfield sc.), 6.8 slow, 25.25 fast; and Wills (6-7 Ariel), 7.35 slow, 24.05 fast.

The Second Half of the Trial.

Yesterday Bwlch-y-Groes was the *pièce de résistance* of the day—approximately the half way mark in the trial. To-morrow's 159 mile run will bring the total up to 570 miles, the route being Llandrindod Wells, Newbridge-on-Wye, Builth, Upper Chapel, Garth, Llanwrtyd, Llandovery, Lampeter, Tregaron, Ypsytty-Ystwyth, Devil's Bridge (lunch), Devil's Bridge, Aberystwyth, Machynlleth, Stay-a-little, Llandiloes, Tylwch, St. Harmon, Rhayader, Llandriudod.

On Friday a further 161 miles are added to the trial, which completes the 732 mile total. The consistent driving test on the hill from Garth, climbed on Monday, will be repeated, and the competitors will pass through the following towns and villages: Builth, Garth, Beulah, Llanwrtyd, Llandovery, Llangadock, Pontardawe, Neath, Swansea (lunch at the Royal Hotel), Pontardulais, Llanddarog, Llanfynydd, Abergorlech, Llansawel, Caio, Cilycwm, Llanfair-ar-y-bryn, Llangammarch, Garth (consistent driving test), Builth, and Llandrindod.

Saturday is being devoted to a "technical" examination of the machines, when penalties up to a maximum of 50 marks will be imposed upon those machines which have suffered undue deterioration.

Essex M.C.

A gymkhana has been arranged by the above club for the 27th inst. at the Essex Track, High Beech. Any members of affiliated clubs will be welcomed as competitors, and entries must be received before September 25th by Mr. F. A. Applebee, 208, Great Portland Street, W.1.

Reading and District M.C. and L.C.C.

This club's social run to Savernake Forest on the 7th inst. proved a very enjoyable affair. One member demonstrated that it was possible to ride a sidecar with the wheel off the ground up Salisbury Hill, which includes two awkward bends

Cardiff City and District M.C. and L.C.C.

On Friday, the 5th inst., at the Grand Hotel, Cardiff, a large gathering of motor cycle and light car owners met and decided to inaugurate a club. The name selected was "The Cardiff City and District Motor Cycle and Light Car Club," and it is to be affiliated to the Auto Cycle Union. This club will fill a much-needed want in Cardiff, and prospective applicants for membership are beartily invited to communicate with the hon. sec., Mr. E. C. Pascoe, 100, Llanfair Road, Cardiff, who will be pleased to give them further particulars. The next meeting will be held on Friday next at 8 p.m. at the Grand Hotel, Cardiff.

Liverpool M.C. Open Trial.

On Saturday, October 25th, the Liverpool Motor Club will hold its open Reliance Cup trial. Its importance may be gauged by the imposing list of cups and medals that are offered: Reliance open challenge cup, Reliance amateur challenge cup, Read Martin challenge cup, Mogridge memorial cup, O. Ware prize for amateurs on A.J.S. machines, Butterworth trophy, gold medals for ninety-six marks or over, silver medals for ninety marks or over, and bronze medals for completing the course within thirty minutes of schedule time.

The trial will be held in North Wales, and the course will cover about 165 miles.

A team of three riders on the same make of machines may enter, and the winning team will receive a cup for each rider.

During the trial, petrol consumption, acceleration, brake, and flexibility tests will be held, and at one time during the run machines will be examined for cleanliness.

Applications for entry forms should be addressed to E. Norman Dean, hon. sec., 22, Lend Street, Liverpool.

Future Events.

SEPT. 18-20.—A.C.U. SIX DAYS RELIABILITY TRIALS (concluded).
Sept. 19.—Cardiff City and District M.C. and L.C.C. General Meeting, Grand Hotel.
Sept. 19.—Essex M.C. Gymkhana.
Sept. 20.—Blackburn and District M.C.C. Hill-climb on Waddington Fells.
Sept. 21.—Rochester, Chatham, and District M.C. Treasurer's Surprise Run.
Sept. 21.—Reading and District M.C. and L.C.C. Run to Hindhead.
Sept. 21.—Eastern Counties M.C. Picnic at Norton Heath.
Sept. 21.—N.M.C.F.U. (Leeds) Run to Boroughbridge.
Sept. 27.—Coventry and Warwickshire M.C. Hill-climb.
Sept. 27.—Essex M.C. Gymkhana.
SEPT. 27.—WOLVERHAMPTON M.C.C. OPEN HILL-CLIMB AT STILE COP.
SEPT. 27.—SCOTTISH A.C.U. SPEED CHAMPIONSHIPS AT ST. ANDREWS.
Sept. 27.—Reading and District M.C. and L.C.C. Flexibility Hill-climb.
Sept. 27.—Exeter M.C. and J.C.C. Trial.
Sept. 28.—Rochester, Chatham, and District M.C. Consumption Test.
Sept. 28.—Reading and District M.C. and L.C.C. Run to Virginia Water.
Sept. 28.—Eastern Counties M.C. Afternoon Run to Harlow Bush.
SEPT. 28.—THE SCOTT SPORTING TRIAL.
Sept. 28.—N.M.C.F.U. (Leeds). Scott Trials (Charleston).
Sept. 28.—N.M.C.F.U. (Wolverhampton). Run to Crackley Bank, Wellington.
Sept. 28.—Manchester M.C. Closing Run
Oct. 4.—Essex M.C. Hill-climb.
Oct. 4.—Birmingham M.C.C. Captain's Day
Oct. 4.—Edinburgh and District M.C. Trial for Amateurs for Palmer Trophy.
OCT. 25.—LIVERPOOL M.C. OPEN RELIANCE CUP TRIAL.

Blackburn and District M.C.C.

The annual hill-climb will be held at Waddington Fells on the 20th inst. at 3.30 p.m. The classes will include motor scooters, lightweights up to 270 c.c., lightweights up to 350 c.c., standard touring motor cycles up to 560 c.c. on handicap, sporting motor cycles up to 560 c.c., classes for solo machines up to 750 c.c., and classes for unlimited solo motor cycles and passenger classes up to 560 c.c., and unlimited passenger classes. Entries closed on Friday last.

Wolverhampton M.C.C.

This club's third annual open hill-climb will be held at Stile Cop, near Rugeley, on Saturday, the 27th inst. Ten events, with separate classes for experts, are arranged for in each class, and cater for all classes of machines from the scooter to the powerful twin. The meeting will be held under the auspices of the Auto-Cycle Union, and the prizes offered are quite attractive. Mention should be made of a special departure the club is making with formula prizes in one or two of the events. Timing of competitors will be electrical, and telephonic communication is to be down for this event. All intending competitors should get into touch with Mr. J. E. Greenwood, Trials Secretary, 2, Stubbs Road, Wolverhampton.

Carmarthen M.C. and L.C.C.

Capital sport was witnessed at this club's recent speed trials on Pendine Sands. The chief results are as follow:

557 c.c. Class (Solo).
1. Segonina (3½ Norton).

Sidecar Class
1. Thomas (6 James).

Trial for Scottish Amateurs.

The Palmer Tyre Co. has asked the Edinburgh M.C. to organise a trial for amateurs resident in Scotland, and has offered a handsome trophy, which is to be won outright. The event is open to all solo, sidecar, and runabout owners who are "amateurs," *i.e.*, those who are *bona fide* owners of their machines, and who are not in any way connected with the motor industry. Standard touring bodies must be fitted; toolbags will be sealed, and both driver and passenger are liable to be searched. The date fixed is October 4th, and entries close on Tuesday, the 30th inst. The start will be at 11 a.m.; the route will be as follows: Liberton, Gifford, Redstone Rigg, Garvald, Elmscleuch, Crickness, Snout Hill, Donnally, Haddington, and back.

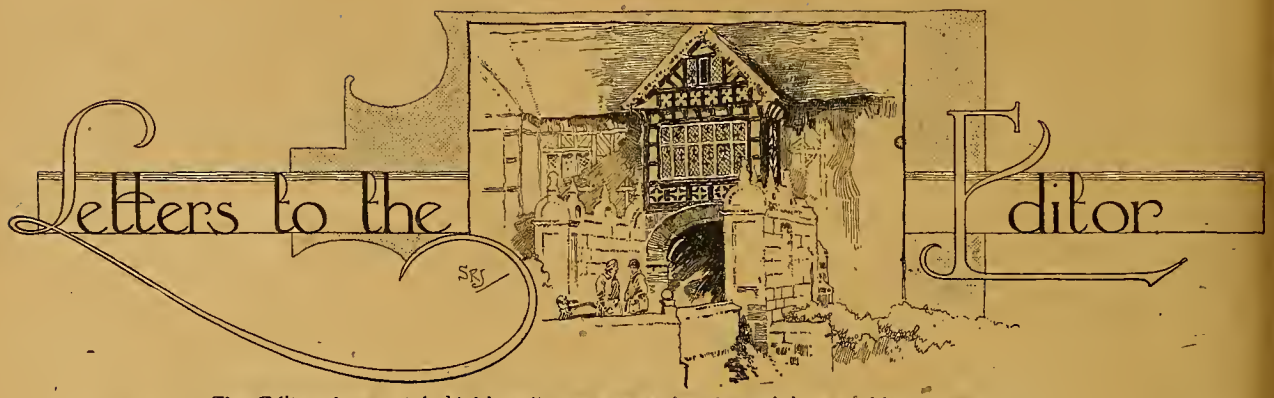
Further particulars may be obtained from Mr. J. Watt Anderson, 6, Castle Terrace, Edinburgh.

Cumberland County M.C.C.

This club has instituted a movement which other leading clubs of the country might do well to copy. In running off the many strenuous trials which the club has from time to time mapped out for itself and carried through with very marked success, it has, of necessity, enlisted the services of a number of enthusiastic motorists of various parts of the country, and more particularly in Scotland, where its more prolonged trials are held, and it has felt so much indebted to these gentlemen that it has requested the following to allow themselves to be elected as honorary members of the Cumberland County Motor Cycling Club, and which they have all been pleased to do. The names are as follow: Messrs. John Beveridge and R. G. Steel (Perth), John Grant and A. T. Lunn (Crieff), J. Maller and A. R. Monteith (Stirling), and Tom Gillies (Hawick).

BIRMINGHAM SERVICE MOTOR CYCLISTS.

It has been decided that the welcome home meeting for Birmingham Service motor cyclists shall take place on Friday, October 17th, in the Grosvenor Room, Grand Hotel, Birmingham. The guests will be limited to 200, and each guest will be at liberty to invite one friend to the concert which will follow.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Moto. Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address

DELIVERY.

Sir,—Your correspondent "L.C.W.," in your issue of September 4th, seems to have been more fortunate than some of us in getting delivery from Messrs. Douglas. I gave an order for a 2¾ h.p. motor cycle some time in March from a local agent; now it is September, and I am just as far from getting a machine. Do London agents get a preference? If so, I do not think it fair, as orders should be sent off in rotation as received. H.W.T.

High Salvington.

THE OVERHEAD VALVE NORTON.

Sir,—We are much interested in the illustration of a Norton engine with overhead valves ridden by a private owner at Weston-super-Mare.

Although we commenced experiments with this type of engine something like fifteen years or more ago, we are not at present supplying an overhead-valved engine, the one in question being made entirely upon the owner's initiative, and by himself. We can congratulate him upon a very workmanlike and sound job.

We mention this, as, from our experience in the past, any reference to an alteration of design in your pages has caused us to be inundated with enquiries, and many of the writers take it as a personal slight if we are unable to supply.

We might here mention that never have we made a departure from our standard engine in the shape of special cams, cylinders, or such like for competition purposes, machines always being to catalogue specification.

NORTON MOTORS, LTD.

HONOUR TO WHOM HONOUR.

Sir,—As a welcome contrast to the treatment that I have sometimes received at the hands of large garages, I should like to record the courtesy of the Moortown Motor Cycle and Cycle Co., of Leeds. I was held up last Sunday with magneto trouble, but a gentleman from the above garage passed, offered his help, and finally (although on his way to church) took my machine to his garage, went home and changed, and also took me to his home and gave me tea, after which he remedied the defect and wished me good-bye; all this in spite of the fact that his garage was locked up and the keys were some distance off. J.D.W.

Sir,—In these days of indifferent service, the following may be of interest to the readers of your excellent paper.

A few days ago I bought a second-hand two-stroke fitted with an E.I.C. magneto, in which the contact breaker was damaged. I took the magneto off the machine and sent it to the makers for repair. Imagine my surprise when the magneto was returned to me in *less than a week* with a new contact breaker fitted and nothing to pay.

I have since tested the magneto over a couple of hundred miles, and can bear out the makers' statement that it is better than the Bosch. Usual disclaimer.

JOHN HARRISON.

Sir,—I wonder whether any other readers have been so fortunate to meet with such consideration as was shown me last week? I was on a journey from Brockenhurst to Exmouth, when the clutch on my Rover motor cycle began to slip, the complaint becoming so chronic that I had to stop at Bridport. By chance, I was recommended to try Ganges, a small engineering firm, and although it was seven o'clock and Saturday evening, the job was started, and took till after midnight to complete, including a small forging, the charge for a first-class job being quite nominal. There was a member of the firm on the premises before 8 o'clock on Sunday morning, so that I could make an early start. Such good treatment, I think, would be hard to equal anywhere. E. BROWN.

Sir,—May I recommend any of the readers of *The Motor Cycle* who require small parts made accurately to write to Mr. C. R. Foster, 170, Cardigan Road, Leeds, whom I have found to be invariably courteous and obliging. I was home on leave a short time ago and broke my exhaust valve the first day. I took the bits to Mr. Foster and explained the circumstances, and at considerable inconvenience to himself he had a valve turned up to fit my engine straightaway. This is only one of several occasions when he has shown himself to be courteous and (more to the point still) capable of "delivering the goods."

I have no interest in the firm other than that of a very satisfied customer. CLIVE BARRACLOUGH

311 M.P.G.

Sir,—With reference to the Ealing and District M.C. Club's Petrol Consumption Trial, in which a 2¾ h.p. Wooler motor cycle is reputed to have done 311 m.p.g., the method by which this was measured gives so much scope for inaccuracy, that the record is of no practical value whatever.

The carburetter was flooded before the trial but not afterwards, and over the short course used, 880 yards, the petrol contained between the flooded and normal working levels would run the machine anything from 25% to 50% of the total distance, and would not be counted in the final consumption. In fact, with a large enough float chamber, one might show no consumption of petrol at all over a half-mile run.

My own machine, a 4 h.p. Triumph, in a further trial in which the carburetter was not flooded at all, gave a consumption of about 107 m.p.g. as against 146 m.p.g. in the club trial, so that instead of the accuracy within 3% claimed for the apparatus used, 30% would seem nearer the mark. F. A. HUDSON, M.A., A.M.I.C.E.

THE SCOTT TRIAL.

Sir,—I am pleased to note that according to your issue of September 4th the Scott Motor Cycle Co., Ltd., are going to hold one of their special reliability trials on September 28th.

Previous to the war I used to reckon that these little outings were most interesting from a sporting, an instructional, and a social point of view. I can personally testify that they are run in quite a happy spirit, and I can also guarantee that anyone who takes part therein "must go some," for the routes are invariably of a colonial type, and as they are of this nature I always hope to see teams composed of American machines endeavouring to prove their superiority over the handy Scott.

Personally, I am not a Scott rider, but I have had some little experience of this mount, and am of the opinion that for a "rough and tumble" ride it requires some beating, and I would sooner tackle a bad course on a Scott, which

we all know is one of the handiest mounts on the road, than on a heavy multi-cylinder machine, but I am open to have my opinions altered if any makers or teams of riders can do it on the 28th inst.

By the way, I was at the Sutton Bank Hill-climb on the 6th inst., and noticed that an Indian, an A.B.C., and a 2¾ h.p. A.J.S. made some remarkably fine ascents. Would not teams composed respectively of these machines make the Scott people look to their laurels?

It would be "some" event. H. W. FORTUNE.

SPARE PARTS.

Sir,—I think it may interest your readers (if any happen to be in possession of faulty Cowey speedometers) to know that this firm has supplied me with a new worm drive for my speedometer by return of post. H. W. CROPP.

Sir,—I should like to place on record yet one more instance of prompt and courteous treatment I have recently received at the hands of Messrs. H. Miller and Co., Ltd. The trouble, a defective generator, although my own fault, was repaired, no charge being made at all, and was back in my possession within twenty-four hours. I was told at various garages "they (the makers) would take quite three weeks to repair it." Instances such as these make motor cycling a pleasure instead of a burden.

Needless to say, I have no interest whatever in this firm.

Birmingham. OE 1287.

Sir,—Having read your splendid paper week by week from cover to cover for some seven years past in silence, I should be glad if you could spare the space to insert the following three points:

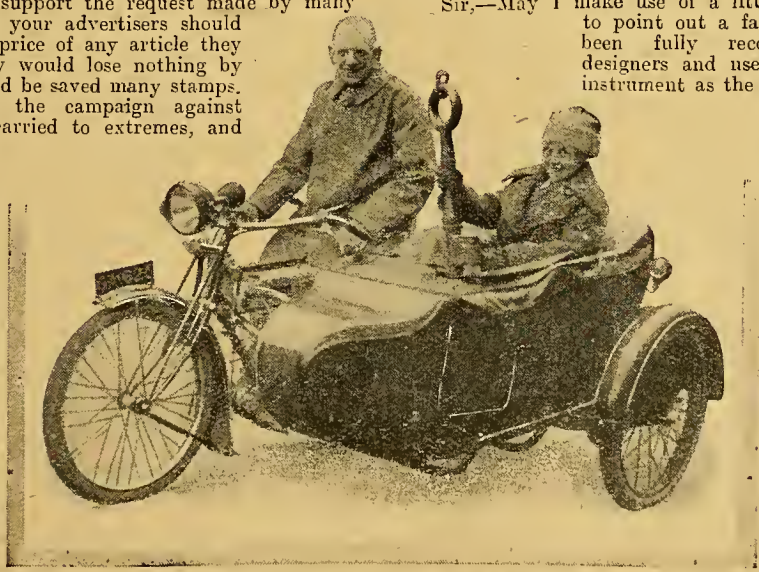
(1.) With regard to treatment received from firms, I should like to give my experience concerning two firms as a contrast to the continual complaints from some of your readers. A few weeks ago I purchased from an agent a Premier mechanical horn. This almost immediately gave trouble, and after a week or two I have several ineffectual attempts at repairing it. No good being done, I passed it on to a professional repairer, who replaced one or two parts, but did it no real good. As a last resource I wrote to the makers, Messrs. Gratze, Ltd., who replied that they would replace it or repair it free of charge—this despite the fact that I told them it had been tampered with. Upon sending it back I almost immediately received a brand new one with their compliments. How is that for good treatment?

The other firm who have invariably accorded me prompt and courteous treatment on the several occasions I have had to write to them for replacements are Messrs. Rudge-Whitworth, Ltd., and anything which I require I can be sure of getting from them by return post.

(2.) I should like to support the request made by many of your readers that all your advertisers should be required to give the price of any article they advertise for sale. They would lose nothing by it, and your readers would be saved many stamps.

(3.) I consider that the campaign against pillion riding is being carried to extremes, and the alleged dangers greatly exaggerated. I am not a rider who habitually has an ornament on his flapper bracket, and prefer riding solo, but have carried passengers in this way some thousands of miles, during which time I have suffered one spill with a passenger and two riding solo. Provided reasonable care is exercised, the danger is negligible—at least, that is my confirmed opinion. To say the brakes are rendered less efficient is fallacious, for I have *proved* that the brake may be used with greater force and the 'bus brought to a standstill quicker with a passenger than without one, because the wheel will not lock so readily. On my Rudge the balance and steering are virtually unaffected.

Bedford. RUDGE-MULTI.



KEYS ANCIENT AND MODERN.

The passenger in the sidecar is holding the enormous and ancient key of Penrith, but the rider of the Triumph holds a more valuable key—that of the open road!

SPEED WOBBLE.

Sir,—With reference to the letter in *The Motor Cycle* of August 21st signed "G.E.S." on the subject of speed wobble, I think the explanation is quite simple.

Present-day roads are quite unfit for a speed of 65 m.p.h. "G.E.S." probably struck an uneven piece of road, which caused the machine to wobble, the braking effect of suddenly closing the throttle made the wobble worse, and "just hanging on" implies that this unwise rider lost his head at the critical moment, and was lucky not to lose his life. I hope it will not be my misfortune to meet him doing 65 m.p.h. on a machine he has never ridden before, or on any other machine for that matter! ANTI-ROAD-HOG.

Englefield Green.

GEAR CHANGING WITH THE FOOT.

Sir,—Reading in your issue for Aug. 28th, "Ixion's" Occasional Comments, I was interested in his remarks on the Novice and the control of modern motor cycles, where he states that they always wobble when changing gear. I can quite understand this, and know that when riding solo on a motor cycle where a hand has to be taken from the handle-bar to change speed, even riders of long experience wobble, but what I should like to point out is, that it is totally unnecessary to take a hand from the handle-bar for any control. Has "Ixion" tried the Triumph when ridden as the D.R.'s and others rode them when on Active Service, namely, changing gear by the right foot? Most motor cycles and cars are awkward in regard to control when a change is made from a mount to which one has been accustomed. One can get used to any form of control, but possibly not be comfortable. I emphasise this point, as perhaps some riders will think that changing gear with the foot as I do myself on a Triumph fitted with a S.A. countershaft gear box is a form of trick riding.

I wish to assure users of Triumph and other similar machines that when they have got used to this method they will never return to another for solo riding.

In conclusion, if a Binks carburetter is fitted, changing speed will be as simple an operation as on a car; there is no need whatever to touch the clutch or exhaust lever; use the throttle lever as one does the accelerator on a car, and the changes can be made steadily, noiselessly, and without shock, and without taking the hand from the handle-bar.

Wimbledon. SGT. L.A.M.B.

STARTING JETS AS DECOMPRESSORS.

Sir,—May I make use of a little of your valuable space to point out a fact which I think has not been fully recognised by carburetter designers and users, namely, that such an instrument as the Binks three-jet, in which, for starting, a small jet is used, surrounded by a very restricted choke tube, is in itself a decompressor.

When the engine is revolved smartly, either by pushing the machine or by the kick starter, the small choke tube permits a rich charge to enter the cylinder, but, owing to the small size of the choke tube, the charge will be considerably less than would be required to fill the space swept out by the piston at atmospheric pressure; in other words, there will be quite a considerable partial vacuum in the cylinder when the compression stroke begins. A considerable part of

the compression stroke will then be necessary to raise the mixture to atmospheric pressure before any actual "compression" occurs; the final compression pressure will thus be considerably lower than if a full charge were drawn in through a large choke tube. The reduced pressure in the cylinder during the latter part of the inlet stroke, and the first part of the compression stroke, also helps any unvaporised particles of petrol to evaporate. From the foregoing somewhat long-winded remarks I hope some at least of your readers may gain something, and will realise that such an instrument as I have mentioned, in addition to providing the necessary small charge of rich mixture, also reduces the resistance to be overcome by the flywheels when starting or running dead slow.

I have no interest in the makers of the Binks carburetter, other than that of a prospective user, when I can get delivery of my next machine. D. H. GRIFFITHS.

A CANDID CRITICISM.

Sir,—While reading your ever excellent journal on August 28th (my usual occupation on Thursdays), I noticed Major J. Kennedy's letter concerning the 1919 Triumph. Now, if I am not encroaching on your valuable space, I would like to give my experiences and a few criticisms on the 1919 I.O.M. Rudge-Multi.

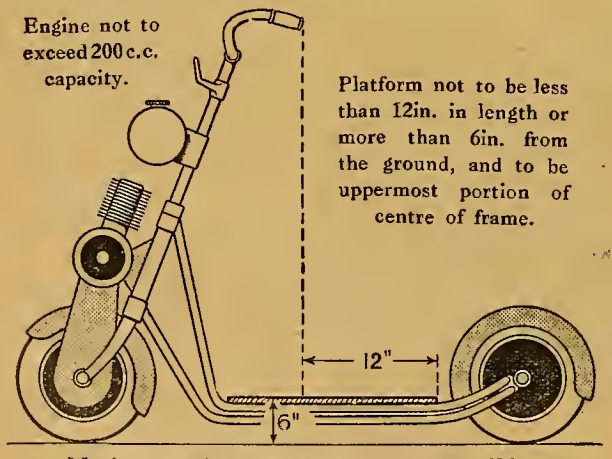
I have ridden many makes of machines, both English and American. This year I decided on the above machine after giving the matter much careful thought.

In the first place, I am more than satisfied with it in every way. The construction of the machine is excellent, the frame being exceptionally strong, and the riding position the most comfortable of any machine I have ever ridden, this being due to the sloping top tube. The balance and steering is magnificent, and, fitted with semi-T.T. bars, fatigue on a long run is unknown to me.

I must disagree with Major Kennedy's remark regarding one becoming "part and parcel" of the machine if it is American. I had an American machine before delivery of my present mount, and it was exceedingly uncomfortable compared with the Rudge. My tank I cannot complain about, its capacity being about two and a quarter gallons and the oil tank half a gallon. The foot oiling, for which the Rudge is famous, I much prefer to any other type; oily and dirty hands are things unknown. Petrol consumption is good, averaging about 90 m.p.g., and I hustle all the time. The oil consumption is negligible. As to gears, well, the multi-gear is a source of delight to me after gear boxes. One can amble along on a gear of about 3 to 1 comfortably at 35 m.p.h., and, judging from the contented beat of the engine, it appears to be about 20 m.p.h. There is a joy in "blinding all out" on this 'bus, but it is not to be compared to looping on a bare-backed mule, but rather to flying a "camel" at 120 on a calm day.

I need say nothing about the engine. To my mind, it is perfect.

A.C.U. DEFINITION OF A SCOOTER.


Engine not to exceed 200 c.c. capacity.
Platform not to be less than 12in. in length or more than 6in. from the ground, and to be uppermost portion of centre of frame.
12"
6"

Maximum weight, empty, not to exceed 60 lb.

Diagram of a scooter (not necessarily to scale), illustrating the proposed A.C.U. definition of a scooter.

Having a belt instead of a chain, the adjustment is very simple, due to the neat little belt adjuster.

Now, as to faults. My only complaint is the trouble of removing the cylinder for decarbonising, and the paper washer is unsatisfactory, as it is liable to be damaged.

I have no interest in the Rudge firm more than that of a thoroughly satisfied owner.

HAROLD W. MATTHEWS.

Sir,—I notice in your isue of August 28th a letter criticising the 1919 Triumph. Some of Major Kennedy's remarks are undoubtedly correct, but may I differ from him on one or two points?

The valve gear is certainly noisy, and I heartily agree with him in wishing the makers would fit something more substantial than a paper washer under the cylinder. I also agree with his comments on the gear box and the fitting of a draw bolt for both magneto and driving chains.

But now we differ. He suggests fitting a magneto advance lever on the tank, and says it is seldom necessary to move it. Personally, I hate unsightly levers on the tank, and it is far easier to operate it where it is. I live in a hilly district and often have to employ my spare lever when climbing Devonshire hills. Perhaps Major Kennedy lives in flat country where, of course, it is not so much employed.

I wonder why he has never found any use for the air lever, and, as for placing a hand-controlled slide on the carburetter, I dislike tying myself in knots when riding if I wish to adjust the mixture.

Perhaps his distaste for the air lever has something to do with his petrol consumption. I rode 540 miles recently in four days on a shade under six gallons of petrol, at an average riding speed of 27 m.p.h., which compares favourably with Major Kennedy's "70 m.p.g. when hustled!"

The same reason might apply to his criticism of the tank capacity—to fill up twice in a day means riding about 250 miles per day, which is rather a tall order "done frequently!"

As for the "paltry tyres," I may have been very lucky, but I have ridden 2,300 miles without a single puncture, and certainly have never been "miserably uncomfortable" in spite of a 150-mile day.

Altogether, the 1919 Triumph is one of the very best.

ROY S. HARTREE.

SCOUTS AND PATROLS.

Sir,—I have been a member of the A.C.U., but, fortunately, until recently, have been spared the necessity of calling for roadside assistance. I was travelling along Watling Street on a recent Sunday when my transmission chain broke. I had not been stopped many minutes when an *A.A.* man appeared. Imagine my surprise when he informed me he could give me no assistance as I was not a member of his union!

Since then I have marked these men more particularly, and I must say there are very few A.C.U. men about. It occurs to me that this surely is a case for co-operation under the one body, instead of different ones soliciting our membership and sending out their own assistants—clashing in some places and leaving others quite unprovided with patrols.

J. G. IRVING.

BOOKS AND MAPS FOR MOTOR CYCLISTS.

Issued in conjunction with "*The Motor Cycle.*"

	Price net.	By post.
"MOTOR CYCLES AND HOW TO MANAGE THEM." The standard handbook on the motor cycle, its care and management. Twentieth Edition. 286 pages. 400 illustrations.	2/6	2/10
"HINTS AND TIPS FOR MOTOR CYCLISTS." Containing over 400 useful "wrinkles" and helpful hints in regard to motor cycles. Sixth Edition. (Second Reprint).	2/-	2/3
"TRACING MOTOR CYCLE TROUBLES." A reliable system for tracing motor cycle faults and of remedying any trouble when found. Fourth Edition	2/-	2/3
"THE MOTOR CYCLE" ROAD MAPS. England and Wales, Scotland, London (showing roads into and out of London and avoiding London). Mounted on linen. Set of three, complete in case.	4/6	4/10

Obtainable by post (remittance with order) from ILIFFE & SONS Ltd. 20, Tudor Street, London, E.C.4, or of leading Booksellers and Railway Bookstalls.

QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply**. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects

Minimum Age for Motor Cyclists

Can you tell me the minimum age at which it is possible to obtain a driving licence?

A licence to drive motor cycles only may be obtained by any applicant who is at least fourteen years of age.

Single for Sidecar Touring

I have a countershaft Triumph, and am quite satisfied with it, but I hope to come home next year, and, as my motor cycling experience only extends to the flat plains of India, I write for your assistance. My wife and I intend doing a lot of touring in England, and as I think I can get a better price for my machine in India than in England, I shall dispose of it before I leave. (1.) Would a similar machine be sufficiently powerful for extended touring without giving trouble? I am rather inclined to go in for a more powerful machine, say, 6 or 8 h.p. (we are both lightweights). Would 4 h.p. be enough for the hills one would meet with in England or elsewhere? (2.) On my return to India in the autumn I anticipate being stationed where I should not want a motor. Would any agent sell me a machine (new) on the understanding that he would take it back when I had finished with it? (3.) What would you say would be a fair percentage for depreciation? Of course, I should take care of the machine. (4.) Which is the better for touring, a chain-driven or belt-cum-chain? (5.) I fear I am no great mechanic, so would want a more or less fool-proof machine, my only experience being with hub gear and countershaft Triumphs. Will you kindly recommend a machine?—INDIA

(1) A countershaft Triumph will be quite suitable for touring with a sidecar in any part of the British Isles. Of course, 6 or 8 h.p. machines would enable you to keep up a higher average speed, but in other respects the extra power would not be necessary. (2.) Under present conditions, we do not think any agent would sell a machine on the terms you suggest. (3.) Provided you kept the machine in good condition, there would be little depreciation, say 10% after six months' running. (4.) In hilly districts, especially in wet weather, a chain drive is certainly more satisfactory, but the chain-cum-belt models are usually quite reliable, and the adjustments and tyre repairs, etc., are certainly more easily carried out. (5.) As you are familiar with the Triumph, you would be well advised to continue with this make.

Misfiring on One Cylinder.

My 3 h.p. twin has been running irregularly for some time lately. As I have just decarbonised the engine, and get an excellent spark at the plugs, I imagine the trouble lies with the carburetter, a Senspray. I think the jet is about right, as it caused me no trouble previous to the present irregularity. In altering the levels of the float there are three alternatives, adjusted by means of a small spring. When adjusted to the highest of these three points, the engine fires continuously on the front cylinder and shows no sign whatever of firing on the rear one. When adjusted to the middle point, the engine starts up at once and runs well, firing on both, for a short distance (anything from 100 to 500 yards) when it will suddenly die out. It starts up again at once and takes me another few hundred yards, when it repeats the same performance. When adjusted to the lowest level, the result is a combination of both the above symptoms. It will take me rather further in this case (about half to one mile) before stopping, but occasionally fires on the front cylinder only. I am continually taking the jet out, but have not yet found any obstruction.—L.L.B

The Senspray carburetter is not particularly sensitive to variations of level, and we rather think that your engine trouble is due to air leaks. Make certain that all the carburetter connections are tight, if necessary, wrapping them with insulation tape, also note if the inlet valves are worn in their guides, as a bad fit at this point is a common cause of indifferent running in two-cylinder engines. Also try setting the plug points a little further apart.

Hub Gear Adjustments

I have a 1914 Triumph motor cycle with Sturmey-Archer hub gear. I find on changing the gear from top to second or low gear the engine races and the wheels stop, and for a moment the machine will stop with the engine still racing, then suddenly it will dart away, run about two yards, and then stop dead. What is the cause of this?—NOVICE.

The trouble with your Sturmey-Archer hub gear is due to incorrect adjustment of the control rod, which apparently allows the gear to remain in neutral when changing, and is liable seriously to damage the gears by so doing. The correct adjustment is as follows: Make sure that the clutch is in firmly, place the gear lever in the adjusting position, which is between the top and middle on the Triumph control. The back wheel should now revolve freely, and without noise if the adjustment is correct. If this is not so, increase or decrease the tension on the rod as required by rotating the milled adjusting sleeve.

ON THE 1 IN 4 GRADIENT OF SUTTON BANK

Geoffrey S. Boston, at the recent York M.C.C. open hill-climb listens to the engine beat of his very lively 2¾ h.p. A.J.S. before changing gear

Fitting a Variable Jet.

Will you kindly give me your opinion as to the W.S.R. variable jet adapter. I have a 2¾ h.p. Douglas with Amac carburetter. Now, would the above adapter be of any use to my machine, say, on a steep and long hill, and would the fitment save petrol? Your candid advice would be very much appreciated. —A.B.A.

The variable jet adapter would probably be a very useful fitment on your carburetter. You could easily experiment in this direction by fitting a larger jet, when, if you notice an improvement in hill-climbing, it follows that a device allowing variations in the jet size would be useful, since you could open it out for hill-climbing and close it down to secure economical running under normal conditions.

Clutch Control.

(1.) I have a 1911 Triumph fitted with pedal clutch, and should like to know what you suggest as a method of adding a handle-bar control as well. (2.) The left-hand side of my rear fork has been slightly bent as a result of the cycle being "banged" up on the stand, thus throwing the wheel slightly out of truth. Will it weaken the fork to any appreciable extent if it is bent back with the aid of a blow-lamp? If so, can you suggest any other remedy? (3.) Is there any quick means of removing enamel from frames other than scraping and polishing? (4.) Do Robbialac and similar enamels set with a better finish if applied hot? And should it be finally treated with varnish?—L.G.S.

(1.) We do not think a handle-bar control would be very satisfactory with the old pattern Triumph clutch, on account of the amount of pressure which would be required to secure complete disengagement. (2.) It will be quite satisfactory if you straighten the rear fork by means of the heat of a blow-lamp. (3.) The quickest way to remove the enamel would be to burn it off. (4.) Robbialac and similar enamels must not be applied hot. They do not require varnish, though it improves the finish.

Finding Gear Ratios.

I propose to construct a light cycle car. Can you recommend a book clearly and simply explaining gear ratios? I shall use a Sturmey type three-speed gear box driving on to a countershaft, which will carry the pulleys for the final drive. I wish to know how to determine the sizes of the various pulleys, sprockets, and belt rims.—R.K.

The rule for determining the gear ratio between two sprockets or pulleys is to divide the pitch diameter of the driving into that of the driven sprocket, or in the case of a compound drive employing countershafts, divide the product of the diameters of all the driven sprockets (or pulleys) by the product of those of the drivers. In dealing with toothed gears or sprockets, it is easier to take the numbers of teeth instead of diameters. Thus, supposing in your suggested design you require a top gear of 4½ to 1, you could arrange it thus: First reduction, engine to gear box, 2 to 1. Gear box to countershaft, equal pulleys, giving no reduction. Second reduction, countershaft to road wheels, 2¼ to 1. You can arrive at this as follows: First reduction, engine sprocket, 15 teeth; countershaft sprocket 30 teeth. Second reduction, countershaft pulleys, 8in. diameter; rear wheel pulleys 18in. diameter. And the total reduction is given by equation.

$$\frac{30\times 18}{15\times 8} = \frac{9}{2} = 4\frac{1}{2}$$

Gear therefore equals 4½ to 1.

Hub Gear Adjustment.

Would you please give me the correct method of setting an Armstrong three-speed Mark VI. hub gear. There is a small hole through the quadrant marked adjuster.—C.E.P.

The gear should be adjusted in the following manner: See that the clutch is in engagement, move the change speed lever into the free or neutral position, unscrew the locking nut at the base of the gear control rod, and turn the adjusting sleeve until you find the free or neutral position by rotating the back wheel by hand in either direction. It is important to see that the elbow which carries the bell crank is screwed on to the spindle the correct distance, and the push rod lever lightly rests upon the carrier so that the correct movement is given to the push rod inside the axle.

RECOMMENDED ROUTES.

NORTHAMPTON TO EDINBURGH *via* DONCASTER.—W.

Northampton, Kettering, Stamford, Grantham, Newark, Retford, Doncaster, Boroughbridge, Northallerton, Darlington, Durham, Newcastle, Jedburgh, Melrose, Edinburgh.

WELLINGTON (SALOP) TO LONDON.—L.W.G.W.

Wellington, Gailey, Muckley Corner, Weeford, Coleshill, Stonebridge, Coventry, Dunchurch, Daventry, Weedon, Towcester, Stoney Stratford, Fenny Stratford, Dunstable, St. Albans, Chipping Barnet, London.

WELLINGBOROUGH TO ABERGAVENNY.—S.J.C.

Wellingborough, Northampton, Daventry, Southam, Leamington, Warwick, Stratford-on-Avon, Evesham, Tewkesbury, Ledbury, Ross, Monmouth, Raglan, Abergavenny.

WALSALL TO BOURNEMOUTH.—E.G.R.

Walsall, Birmingham, Alcester, Evesham, Tewkesbury, Gloucester, Stroud, Bath, Warminster, Salisbury, Fordingbridge, Ringwood, Christchurch, Bournemouth. Distance approximately 160 miles.

LONDON (WILLESDEN) TO CHORLEY.—A.J.S.

Willesden, Harrow, Watford, Boxmoor, Berkhampsted, Tring, Aylesbury, Bicester, Banbury, Stratford-on-Avon, Alcester, Headless Cross, Bromsgrove, Kidderminster, Bridgnorth, Wellington, Hodnet, Whitchurch, Tarporley, Warrington, Wigan, Chorley.

What's in a Name?

We learn that the engine recently described by us as the Buzmo (it was originally known as the Ace) has again been renamed, and will in future be known as the Duzmo.

A Useful Magneto Knife.

A handy magneto knife of the usual pattern has just been introduced by Tuck and Blakemore, Ltd., Coventry. It contains a gap gauge and contact file in addition to the Sheffield steel blade. The price is 3s. 9d.

Shortage of Douglas Spares.

Douglas Motors, Ltd., inform us that, as a result of the Government disposing of many thousands of incomplete machines, they have been inundated with orders for spare parts, and as a consequence further supplies will not be available until the first week in October.

Reading-Standard Agency.

Mr. Stanley J. Watson, Berners Works, 37, Sheen Road, Richmond, London, S.W.14, has been appointed sole agent for the Reading-Standard motor bicycle. Mr. Watson is well known in the motor cycle industry, and handled one of the principal Continental magnetos before the war.

The Inexorable Increase.

Owing to the recent advance in the cost of coal and its consequent effect on the price of steel, the Coventry Plating and Presswork Co., Ltd., inform us that the rates for all presswork and cycle mudguards will be now increased 10%, excepting motor cycle and light car mudguards which will be increased only 5%.

British Magnetos.

The Sunbeam machines ridden at the recent Birmingham M.C.C. hill-climb at Stile Cop last month by G. Dance and J. E. Greenwood were fitted with M-L magnetos. The former was first in four solo classes, first in stopping and starting, and made fastest time of the day and best performance on formula. The latter made fastest sidecar time of the day.

Complimentary Tickets for the Show.

The system which has hitherto been in force whereby agents' complimentary tickets for the Olympia motor cycle show were issued by individual manufacturers has been abandoned. In lieu thereof, a complimentary ticket will be sent by the Cycle and Motor Cycle Manufacturers' and Traders' Union direct to all whose names appear on its register of *bonâ-fide* agents. Should any *bonâ-fide* agent not have received a ticket by November 1st, the Union will be pleased to forward one on application to its offices, The Towers, Warwick Road, Coventry. Such application should be accompanied in every case by evidence that the applicant is a *bonâ-fide* agent.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable & Co. to ILIFFE & SONS Ltd., and crossed Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. 000, c/o "Motor Cycle," 20, Tudor Street E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½ %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Perr St., Liverpool [0003

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London. E.C.4.

For square deals and Values

We are prepared to take easy payments for new 1920 models of any leading makes of motor cycles—or sidecar combinations—payments can be made now, in instalments to suit customers' convenience. Machines to be settled for fully within twelve months after receipt of first payment. No extra charge if paid for before delivery. Special arrangements made for commission on outstanding amounts at time of delivery. Prices to be those ruling by the makers at time of delivery.

Book now for 1920 Models.

Machines supplied strictly in rotation. There is no certainty that deliveries will not be crippled and the demand for 1920 will be certain to rival that of 1919.

There is no responsibility in booking, but you secure preference in delivery and an opportunity to pick up your machine if required. We take good second-hand machines in part payment for new models.

WAUCHOPE'S

invite enquiries for particulars of stock of second-hand light cars—cycle cars—motor cycles, and sidecar combinations.

The latest 1919

6 h.p. J.A.P. Twin Cylinder Engines

from Stock. Trade Supplied. Terms on application; these include extras. 50 Engines to Immediate delivery, £42 10s. each.

Second-hand Engines taken in part payment. GOOD PRICE ALLOWED

Makers' Guarantee

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C. Distributors for Radnorshire. Book your orders now to ensure early delivery.—Owens, Baveno Garage, Llandrindod Wells. [7863

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [5601

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

A.J.S. 6h.p., 3 speeds, excellent condition; £100, or near offer.—41, Cavendish Rd., Brondesbury. [5116

A.J.S. 6h.p. Combination, 1915, interchangeable wheels, etc.; £120.—R., 24, Fulham Rd., S.W.3. [5584

1915 6h.p. A.J.S. Combination, 3-speed, hood, screen, lamps, etc.; £110.—97, Chestnut Rd., Plumstead. [X2731

A.J.S. 4h.p. Spares.—Two chains, two valves, complete, never used; what offers?—Moat, High St., Normanton. [X2939

A.J.S. (new) 6h.p. Combination, W.O. finish; £615.—The Eastern Garage Co., 416, Romford Rd., Forest Gate, E.7. [0042

A.J.S. Military Model and Sidecar, fitted with Lucas head lamp and horn; £148; all new.—Taylor's Garage, Wednesbury. [5023

:: DEPOSITS ::

SPECIAL NOTICE.

The attention of Advertisers is called to the fact that Deposits are now dealt with at

20, Tudor St., London, E.C.4,

to which address all communications relating to deposits should be directed

A.J.S., 1915, 3-speed countershaft, clutch, enclosed chain drive, very fast; £65, bargain.—Gibson, Stanstead, Sutton, Surrey. [5547

1916 A.J.S., 2¾h.p., 3-speed, kick start, hand clutch, lamps, horn, fine condition; £65; after 6.—92, Napier St., Deptford, London. [4769

1914 A.J.S. 6h.p. Combination, 3-speed, K.S., in splendid order; any trial; best offer secures.—Blakeley, 96, Goddard Av., Swindon. [X2928

A.J.S. 2¾h.p., late 1915, 3-speed, clutch, all on, in nice condition, stored 2 years; offers, no exchanges.—Gowers, 12, Ruthin Rd., Blackheath, S.E. [5191

A.J.S. 6h.p. Combination, late 1918, 3-speed engine, tyres, everything absolutely perfect; any trial; nearest £160.—Popplewell, Halton, Leeds. [X2660

A.J.S. 6h.p. Combination, 1916, lamps, horns, speedometer, spare wheel, and hood; what offers?—418, Hertford Rd., Enfield Highway. [5471

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries. [0007

1916 T.T. 2¾h.p. 3-speed A.J.S., gear and chain cases complete, electric lighting outfit, tyres almost new; price £65.—Royston, 1, Adam St., Adelphi, London. [X2767

A.J.S. 6h.p. 1914 Combination, stored 4 years, splendid condition, any trial, seen by appointment; £110, no reduction.—Box L4,200, c/o *The Motor Cycle.* [5046

A.J.S. 6h.p., 1918 M.M., 3-speed, just delivered, not done 50 miles, Klaxon, Lucas lamps; buying car; best offer over £130 secures.—Major Blackwell, R.A.M.C. Mess, Aldershot. [5252

A.J.S. new Peace Model 6h.p., A.J.S. sidecar spare wheel outfit, purchased this week, not ridden; best offer accepted; seen any time.—29, St. Leonard's St., Bromley-by-Bow. [5385

FOR Sale, 1916 A.J.S. Combination, in good running order, complete with wind screen, spare wheel and tank; price £130.—Apply, Ind, Coope and Co. (1912), Ltd., 6a, Fulford Rd., York. [X2872

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., 1913, 3 speeds and clutch, speedometer, etc., with Mills-Fulford C.B. sidecar, fine condition; expert examination invited; reasonable offers.—W.J.P., Warrea's Coal Office, Woking. [X2723

A.J.S. 2¾h.p., 1913 (Dec.), little used, 2-speed, hand controlled clutch, kick start, enclosed chain drive, lamps, generators, horn, extra heavy Dunlops, splendid condition; £60.—99, Hatfield Rd., Ipswich. [X2994

A.J.S., coachbuilt sidecar, with lockers and luggage carrier, not done 250 miles, jacks, tyre, and coupling bolts; price £22, or nearest offer.—Jas. McCarthy, Kilcrean, Listowel, Co. Kerry. [X2773

6h.p. 1918 A.J.S., black and gold model combination, bought Dec., 1918, first used Jan., 1919, hood, screen, pillion seat, tools and spares, electric lamps; price £150.—McClure's Garage, Stoke-on-Trent. [X2447

1918 A.J.S. Combination, spare wheel, wind screen, 3 electric lamps, speedometer, horn, etc.; cost £170 2 months ago; good condition, engine just cleaned; what offers.—'Phone: Regent 3884. Griffin, 32, Butler Av., Harrow. [5542

1918 A.J.S. 6hp., 3-speed, spare wheel, tyres 700×80, B.S.A. sidecar, hood, screen, apron, horn, F.R.S. electric lighting, 3 lamps, practically new condition; a very fine outfit; 169 gns.—Reveshy, Bramber Rd., North Finchley. [5081

1914 A.J.S. 2¾h.p., 2-speed, hand controlled clutch, kick start, enclosed chain drive, Stewart and Clark speedometer, new King of the Road lamp set, in perfect order, just returned from rebuilding by A. J. Steveas; what cash offers?—Toomer, Cleveland House, Markse-by-Sea. [4730

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

Alldays.

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [001

ALLON, 1919, 2-speed clutch model, indistinguishable from new.—Parker's, Bradshawgate, Bolton. [X3069

1919 Allon, 2-speed, lamps, horn, accessories, all perfect; £58.—116, Askew Rd., Shepherd's Bush. [5416

ALLON 2-stroke Single Speed Motor Cycle, in excellent condition; £45.—Strange, Printer, Eastbourne. [3775

ALLON, 1916, all accessories, perfect order; best offer over £30.—Woodward, Mill Lane, Formby, near Liverpool. [X2768

1919 Allon, run 100 miles, Lucas lamps, horn, pump, tools, etc.; £65; seen Friday evening.—212, Sussex Rd., Southport. [X2443

JONES' Garage, special agents for Alldays Allon Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2931

1916 Alldays Allon, 2-speed clutch model, tip-top condition throughout, fully equipped; £55.—Parker's, Bradshawgate, Bolton. [X3072

ALLDAYS Matchless, 1914, 2-stroke, single speed, good tyres, good maning order; £33.—Fairhurst, 151, Tempest Rd., Lostock Junction, Bolton. [X2482

ALLDAYS Matchless, 1915, 2¼h.p., 2-stroke, just overhanled and repainted blue and black, new tyres, horn and lamp; price £35, or nearest offer.—Capt. Edgar, R.A.F., Grain, Kent. [3939

ALLON 2¾h.p., 1919 all-weather countershaft model, nearly new, lamps, horn, B. and B., variable jet, heavy Dunlops, excellent condition; £65; seen after 3 p.m.—21, Westfield Park, Redland, Bristol. [4856

1917 Allon, purchased new May, 1918, mileage under 2,500, 2-speed, hand-controlled clutch, 3 Dunlop tyres, tubes, engineer owned, excellent condition, insured, spares; £55.—Simms, 56, Green Lane, Oldham. [X2698

ALLDAYS-VILLIERS 1915 2½h.p., 2-stroke, in perfect condition, just been overhauled and enamelled, tyres and tubes good, mechanical horn, Amac carburetter, U.H. magneto, handle-bar controlled, a really fine machine which will take two up easily; £34.—W.A., 32, Somerby Rd., Barking. [4992

Alcyon.

ALCYON 3¾h.p. Twin, spring forks and B.B., complete, less belt and mag.; £12.—Bell, Fellside, Lambley, Carlisle. [X2576

Ariel

3½h.p. Ariel, in good condition; £30; after 6 p.m. —85, Merrill Rd., Brockley, S.E. [4901

3½h.p. Ariel, single speed, C.A.V., B.B., good tyres; ride away; £28.—19, Earlsmead Rd., Tottenham. [4792

ARIEL 3½h.p., mag., B.B., running order; £25, or near offer.—R. C. Driver, Stratton, Cirencester. X2886

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2929

1916 Ariel, 3-speed countershaft gear, lamps, horn, coachbuilt sidecar; price £95.—Dix, 6, Bridge St., Cambridge. [4158

ARIEL, 1913, 3½h.p., single gear, thoroughly overhauled, fast engine, splendid condition; £37.—125, High St., Woolwich. [4811

EASTERN GARAGE

IMPORTANT ANNOUNCEMENT

We much regret that, in consequence of short deliveries, we have been unable to execute some of the many orders for motor cycles which have been placed with us this season, and we fear a number of our clients will not now require their new machine.

We therefore beg to announce that in addition to continuing our policy of

Refunding Deposits in Full

and without question we have decided to pay to our clients who desire to cancel their orders

Interest at the Rate of 5%

per annum on the amount of their deposit.

At the same time we feel bound to

Warn Our Patrons

that the demand for machines next spring will probably be far more in excess of the number available than has been the case during the present year, and that they will be well advised to retain the

Priority in Delivery

to which they are now entitled. We shall be greatly obliged if clients, whose orders we still have in hand, will communicate their decision to us, so that we may immediately comply with their wishes.

Eastern Garage Co.,

Official Repairers to
R.A.C., A.C.U., A.A. & M.U.

418, Romford Road, Forest Gate, E.7.

Telephone—400 East Ham.
Telegrams—"Egaraco, London."

MOTOR CYCLES FOR SALE.

Ariel.

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

ARIEL 1914 8h.p. Combination, Bosch, fast, powerful, 2-speed, hood, lamps; £80; after 6.—C.H., 11, Edge Hill, Plumstead. [5376

1919 3½h.p. Ariel Combination, as new, horn and spares, only done 900 miles; £120.—Clyde House, Strawberry Vale, Twickenham. [5445

1914 Ariel, 3½h.p., with coachbuilt sidecar, 3-speed, K. start, clutch, lamps, good condition; £75.—15, Elmhurst Rd., Dovercourt, Essex. [5251

ARIEL 3½h.p., 3-speed, countershaft, kick start, with Gloria spring wheel C.B. sidecar; £76, or offer; any time.—C.S., 14, Swaton Rd., Bow, E.3. Tel.: E3 155. [5132

ARIEL 1914 3½h.p. Combination, underslung sidecar de luxe, 3-speed, decompressor, electric light, only 8 months' wear, owner in India, must sell; £68.—592, Holloway Rd., N. [5583

1919 Ariel 5-6h.p. Twin Combination, speedometer, electric lighting, Tan Sad, Klaxon, mirror, Easting screen, all accessories, mileage 800; £145.—Marlow, 3, Crouch Hall Rd., Crouch End, N.8. [5308

ARIEL 2¾h.p., good running order, Fisher mag., Senspray carburetter, footboards, toolbag, hora, etc., ready to ride away; no reasonable offer refused; any evening by appointment.—64, Sarre Rd., Cricklewood. [X2962

ARIEL 3½h.p. Combination, Sept., 1915, 3-speed countershaft, K.S., speedometer, horn, complete acetylene and electric lamp set, luxurious coachbuilt sidecar, brand new Amac carburetter, Dunlop rear tyre, perfect condition, appearance as new, fully insured; best offer over 90 gns.—Goldsmith, 9, The Hythe, Staines. [X2834

ARIEL, 1918, 3½h.p., 3-speed countershaft, Ariel C.B. sidecar, wind screen, lamps, horn, tools, accessories, all in new condition, very low mileage, best offer over 100 gns.; also 6-7h.p. twin Ariel combination, in faultless condition, reasonable trial.—Huggett, Teignmouth House, The Crescent, Belmont, Sutton, Surrey. [5216

Armstrong.

ARMSTRONG 3-speed Wheel with internal expanding brake and controls, new condition; £10/10.—Motherby, Hemsworth, Wakefield. [5193

Arno.

ARNO, 2¾h.p., B.B., Simms, re-enamelled, new tyres (Hutchinson), perfect order; trial any time; private; £30.—Walder, Shelwood Gate, Uckfield. [4905

4h.p. Arno, hand clutch, variable pulley, B. and B., Simms mag., B. and L. sight drip lubricator, new Dunlop, ride away, too heavy; £40, or exchange good 2-stroke.—A.B., 31, Ashbourne Rd., Gorringe Park, Mitcham. [4770

Auto-Wheels.

WALL Auto-Wheel, overhauled, excellent condition, powerful; £10.—B. Kinneen, Galway. [X2921

AUTO-WHEEL, Wall, in good condition; £12/12.—143, Vaughan Rd., Harrow, Middlesex. [5335

WALL Auto-Wheel, £11/15; 3½-5h.p. engine wanted, also magneto.—Robinson, Sandy, Beds. [5451

WALL Auto-Wheel, splendid condition, original tyre; £12.—Mitchell, 28, Heddon St., Derby. [X2451

AUTO-WHEEL For Sale, splendid condition; £14.—E. White, Shalford, Charlton Musgrave, Wincanton. [5070

AUTO-WHEEL, with excellent cycle, perfect running, slightly used; £21.—101, Balham Park Rd., S.W.12. [5074

AUTO-WHEEL, 1914 B.S.A., in good running order; £9, no offers.—Auld, 228, Whippendell Rd., Watford. [X3011

AUTO-WHEEL and 3-speed bicycle, just overhauled, ready to ride away, good tyres; £17; after 6.—81, Gray St., Waterloo Rd., S.E. [4805

AUTO-WHEELS, latest Model de Luxe; £23/2, or 42/4 monthly.—Metropolitan Machinists' Co., Ltd., 248, Bishopsgate, London, E.C. [5596

AUTO-WHEEL, complete with gent's B.S.A. 3-speed cycle, tyres good; £16; after 6 p.m.—Thurgood, 17, Richmond Crescent, Barnsbury, London, N.1. [4956

Avon.

2¾h.p. Avon, 2-stroke, like new; £30.—The Avon Motor Cycle Co., Southbridge Rd., South End, Croydon. [5503

Bat.

JUST Delivered.—Latest Bat-Jap, Model 2B, 6h.p., and Rennoc 2-seater sidecar with large hood; £160.—38, Salisbury Rd., Norwich. [4972

1917 Bat-Jap 6h.p., 3-speed, countershaft, kick starter, spring frame, lamps, like new; £110.—Someries Farm, near Luton, Beds. [5285

B.A.T.-J.A.P. 6h.p. Combination, splendid condition, any trial; owner giving up motoring; what offers.—31, Waterlow Rd., Dunstable, Beds. [5177

B.A.T.-J.A.P. 4h.p., P. and M. 2-speed gear, Binks carburetter, Bosch mag.; £37.—Willis, 16, North Rd., Highgate, N.6. 'Phone: 457 Hornsey. [5172

MOTOR CYCLES FOR SALE.

Chase.

CHASE Motor Cycle, Bosch mag., lamps; equal new; fine outfit; first £37/10 secures.—Apply, 109a, St. James' Rd., Croydon. 'Phone: 1087. [4893

Chater-Lea

CHATER-LEA 2-stroke, in good condition; £32; close offer.—C.B., 34, Park Rd., Harringay, N. [5234

SOUTH Lancashire Only.—Chater-Lea enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7040

CHATER-LEA, 3½h.p. Fafnir, U.H. mag., Dunlops as new, guaranteed good hill-climber; £36, or offers.—23, Bourne Rd., Bexley, Kent. [5065

1914 Chater-Lea, 8h.p., No. 7, combination, 7,000 miles, Milford coach sidecar, hood, wind screen, first-grade outfit, and everything to-hole condition; ready to go anywhere; nearest offer to £125; appointment.—30, Kensington Rd., Southend-on-Sea. [4871

CHATER-LEA 8-10h.p. Combination, 3-speed countershaft, kick-start, 2-seater cane sidecar, Binks 1919 carburetter, P. and H. Autoclipse and rear lamps, Lucas horn and mirror, speedometer, watch, back rest, petrol carrier, spare chain, 2 spare valves, 2 spare inner tubes, new 700×80 back tyre (cost £5), 6 months full insurance, splendid condition, seen Friday; £125.—12, Thornbury Av., Osterley, Middlesex. District Railway. [5409

Chater-Lea-Fafnir.

CHATER-LEA-FAFNIR, 4h.p., Bowden 2-speed, free engine, kick start, starts with a walk; this machine is a very powerful bike, will take a sidecar with 4 up anywhere; £38.—White, 62, High St., Kingston. [5255

Chater-Lea-Jap.

CALTHORPE-J.A.P., 2¾h.p., 1919 (new July), Enfield 2-speed gear, hardly used; £60:—Fletcher, Fletcher Gate, Nottingham. [4832

CHATER-LEA-J.A.P., 6h.p., 2-speed, handle start, good running order, spares, recently overhauled, complete; £60.—K.L., 97, Lansdowne Rd., Croydon. [4802

8h.p. Chater-Lea-Jap, Bosch, Binks, lamps, horn, and generator, new heavy Druids, Millford torpedo cane spring-wheel sidecar, all tyres good, also general condition, very fast and powerful; £50.—116, Seabrook Rd., Hythe, Kent. [4879

Chater-Lea-Minerva.

CHATER-MINERVA, 2½h.p., m.o.v. U.H. mag., B. and B., drop frame, fast little machine; trial; £25.—151, Kingston Rd., Teddington. [5271

CHATER-LEA 3½h.p., Minerva free engine, mag., B.B. carburetter, Xl'all saddle, lamps, horn, registration; £38, or near offer; after 5 p.m.—10, Mandslay Rd., Well Hall, Eltham, S.E.9. [5154

3½h.p. Chater-Lea-Minerva, recently overhauled, re-enamelled, Bosch mag., low built, climb anything; £35, or nearest; not swank, but a genuine and very smart machine.—3, Foxley Rd., Kennington. [4912

Cleveland.

CLEVELAND-PRECISION, 1914, 4h.p., 2-speed model, lamps, horn, and mileage recorder; £38.—The Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7. [0039

Clyno.

5-6h.p. Clyno and Sidecar, 2-speed, kick start; £65.—17, Garden Av., Mitcham, S.W. [5097

GROVER, Smith, and Willis, Basingstoke, Clyno Agents.—Deliveries in strict rotation; order now [5778

CROW Bros., High St., Guildford, West Surrey agents for the new Clyno.—Order now for early delivery. [4084

CLYNO, 6h.p., 2-speed, kick start, 1912, with nice sidecar; £56.—Brown, Rangemore Village, Burton-on-Trent [X2984

CLYNO 1915 2½h.p., 2-stroke, 2-speed and clutch, good condition; £45; after 6 p.m.—44, Brandram Rd., Lee, S.E. [5254

2¾h.p. Clyno, 2-stroke, 2-speed, new bushes and gears, all accessories, perfect condition; £47.—Heselton, Ings House, Hawes. [X2806

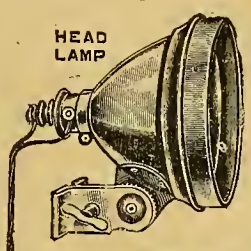
CLYNO Combination 6h.p., new Venus sidecar, excellent condition; first cheque £80.—60, Bradford Rd., Weymouth. [X3061

CLYNO 2-stroke, late model, black and gold finish, absolutely as new; £38.—Short, 489, Upper Richmond Rd., East Sheen. [5164

CLYNO Outfit, 6h.p., 3-speed countershaft, condition like new, only run 1,500; £130, or nearest.—Hollingworth, Shepley, Huddersfield. [X2920

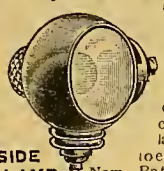
CLYNO Combination, 5-6h.p., late 1914, 3 speeds, interchangeable wheels, lamps, tools, etc., excellent condition; seen in Reading by appointment; 100 gns.—Barlow, Newlyn, Dorell Rd., Caversham, Reading. [4155

CLYNO 6h.p., 2-speed countershaft, kick start, Bosch, B. and B., just overhauled, large coachbuilt sidecar, well sprung, 4-point, speedometer, watch, electric horn, wind screen, 3 lamps, 2 generators, new Palmer cord back, others unpunctured, tools and spares, first-class condition, stored 3½ years; 78 gns.—Sawyer Bros. and Bowling, 14, York Rd., Southend-on-Sea. [X2756



"VOLEX"
Dry Battery LIGHTING OUTFITS.
BRITISH MADE.

Volex Lighting Sets are the ideal, no-trouble outfits for the Motor Cycle and Sidecar.
For over ten years they have been in use for this service, and of recent years, in consequence of their dependeucy, the demand is constantly increasing.
Dynamo Lighting Sets with Accumulators require careful attention and owing to complications have a tendency to go out of order. Accumulators, if not regularly charged, whether in use or not sulphate and become useless.



"VOLEX" DRY BATTERY LIGHTING SETS give no trouble whatever. The Battery, which is fitted in a metal container with switchboard mounted on top, lies conveniently in the bottom of the sidecar and with ordinary care will last, when in use, from six months to eighteen months without renewal. New Battery can be fitted in a few minutes at but little cost. The Battery Case contains three separate Volex 4-volt Aero Dry Cells, with separate connecting boxes for the cables to Head, Side, and Rear Lamps. If one of the batteries becomes exhausted it can be replaced independently of the others. Unless specified, we always provide 4 volt Metal Filament Bulbs to each lamp, but 8 volt Bulb for Head Lamp will be provided where desired.
Complete outfit (as illustration), including Head Lamp, Ball Pattern Side and Tail Lamps, 3 Volex Aero Dry Batteries in metal container with switchboard, 2 Sets of Metal Filament Bulbs, and Water proof Conducting Cords. - - Price £6 10.
Spare "Volex" Aero Batteries 15/- each

CAUTION.—We would warn users that they may be offered substitutes for the "Volex" Dry Battery. No other battery will approach in reliability, durability, or capacity the British Made "Volex."

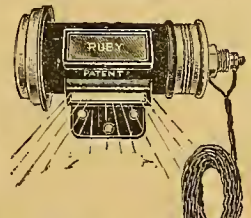
Sectional List, "VOLEX" DRY Batteries free on request.

UNITS of the above outfit.

HEAD LAMP, with switch and cord..... 32/-
SIDE LAMP, with lamp holder and cord..... 18/6
TAIL LAMP, with lamp holder and cord..... 13/6
BATTERIES IN CASES, complete with waterproof conducting cord, to work in conjunction with own lamps.

Description	Price.
3 Volex "Aero" Batteries in metal container, with switchboard mounted on top, as illustrated	70/-
Ditto with 2 Volex "Aero" Batteries and switchboard comprising 2 switches and connectors	49/-
Ditto with 1 Volex "Aero" Battery, and switch and connector	28/-

THE "GEM" ELECTRIC REAR LIGHT
British Made



Strong construction, neat appearance, ebony black body, nickel plated relief, fitted with ruby lens, white lens for illuminating number plate, and six feet of conducting cord.

Price 7/6.

Ward & Goldstone
SALFORD MANCHESTER

MOTOR CYCLES FOR SALE.

Condor.

4½h.p. Condor Combination, coachbuilt, 4-speed countershaft gear, kick starter, in first-class condition, and guaranteed to give absolute satisfaction to buyer; trial given; £75, no offers.—Dawkin, 244, Gulson Rd., Coventry. (D) [X2818

Connaught.

CONNAUGHT 2¾h.p., 2-stroke, in good condition, with lamp set; £30.—A. Gilbert, 130, Philip Lane, Tottenham, N. [4736

HOVE Engineering Works, Davigdor Rd.—Sole district Connaught agents; deliveries in rotation; all accessories and repairs. [3183

CONNAUGHT 1914 2¾h.p., 3 speeds, clutch, kick starter, lamps, tyres new; £45, or exchange for 3½h.p.—8, Martin St., Wolverhampton. [X2965

Coulson.

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

Coventry Eagle.

1919 2¾h.p. Coventry Eagle, just delivered; best offers over £55.—Maitlands, Yeovil. [X2467

1919 Coventry Eagle 2½h.p., 2-stroke, 2 speeds, practically unused, special exhaust, Bramptons, Dunlops, M.L. mag., lamps, horn, etc.; £70.—3, Milton Rd., Bedford. [X2885

Dayton.

DAYTON 2-stroke Lightweight; bring £24 and ride it away.—Tylar, Ferndown, Dorset. [3936

DAYTON, 2-stroke, 1½-2h.p., new tyres and belt, guaranteed in good order; £24.—Ellis, Cecil Rd., Swanage. [5540

DAYTON, 1915, 2-stroke, 2¼h.p., new back tyre, nearly new tubes, mechanical horn, U.H. mag., Amac carburetter, recently overhauled; £35.—Fowler, 12, Gleneagle Rd., Streatham. [4822

De Dion.

DE DION 3½h.p., Chater-Lea frame, 2-speed, tyres excellent, B. and B., Bosch, horn, condition good, private owned; £25.—Willesden Green Garage, 151, High Rd., Willesden Green. [5069

Diamond.

1916 Diamond-Jap 2¾h.p., 2-speed Enfield gear, perfect running order; £55.—Jones, 4, Woodside Parade, North Finchley, N.12. [5054

DIAMOND 2¼h.p. Villiers 2-stroke, Albion 2-speed, Amac, M.-L. lamp, horn, tyres as new, hardly used, fast; best over £48 secures; bought 1915, stored to 1919.—Kinnard, Duke St., Tavistock. [5395

Douglas.

DOUGLAS, 2-speed, 2¾h.p., splendid condition; £45.—Doxey, Ashbourne, Derbyshire. [X2625

1919 2¾h.p. Douglas, immediate delivery.—Arthur G. Daw, 114, Brixton Hill, W. [5571

DOUGLAS, 2¾h.p., W.D. model, 2-speed; £65.—31, Cumberland Park, Acton, W. [5298

DOUGLAS 2¾ h.p., 1914, kick starter; £60.—Ellison, 1, Denton's Green, St. Helens. [X2868

DOUGLAS 1914, good condition; £58; after 2 Saturday.—5, Station Rd., Shortlands, Kent. [5267

DOUGLAS 2¾h.p., war model, 2-speed; any trial; £70.—Motor Mart, Sea Rd., Bexhill. [5183

DOUGLAS, 1916, 2¾h.p., 2-speed, condition like new; £55.—12, Southgate Rd., Liverpool. [X2747

DOUGLAS.—Now delivering new 1919 model 4h.p. combination; £123.—Moffat, Yeovil. 'Phone: 50. [1103

DOUGLAS, new, with special buffer shock absorbers; £70.—27, Silverlock St., Rotherhithe, S.E.16. [X2615

DOUGLAS 1914 2¾h.p., 2-speed, overhauled, tyres nearly new; £50.—29, London Rd., W. Croydon. [4852

70 GNS.—2¾h.p. Douglas, practically new, late model.—Miller, 62, Hampstead Rd. 'Phone North 1519. [4829

DOUGLAS 1914 2¾h.p., 2-speed, in excellent condition, new tyres; £47.—18, Chesilton Rd., Fulham. [4728

1916 2¾h.p. T.T. Douglas, nearly new, absolutely perfect; £65.—Longthorp, Inglehurst, Hessle. [5056

DOUGLAS, 2¾h.p., W.D., 2-speed, condition as new; £68.—32, Grove Lane, Stamford Hill, N.16. [4872

DOUGLAS, 1919, as new, all accessories and speedometer; £85.—Motor Mart, Sea Rd., Bexhill. [5185

DOUGLAS 2¾h.p., W.D. model, just uncrated; £65.—Write, F., 194, Wymering Mansions, W.9. [4971

LATE 1914 Douglas, 2-speed, footboards, splendid condition; £51.—Hawthorn, Woodville, Llandrindod Wells. [X2651

NEW 2¾h.p. W.D. Douglas, buffer springs, run 60 miles only; 73 gns.—54, Whamcliffe Rd., Boroughbridge. [X2987

DOUGLAS, 4h.p., 1919, Empire sidecar, head lamp, rear lamp, horn, etc.; £130.—Taylor's Garage, Wednesbury. [5025

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Douglas.

DOUGLAS, 2¾h.p., single gear, belt, tyres, horn, in good running order; £27.—R. Clare, Beech Hill, Wells, Somerset. [X2630

1915 2¾h.p. Douglas, perfect condition, lamps, horn, speedometer; £65.—11, Upper Teddington Rd., Hampton Wick. [5200

1915 2¾h.p. Douglas, 2-speed, perfect in every respect; £60.—Jones, 4, Woodside Parade, North Finchley, N.12. [5050

1919 4h.p. Douglas Combination, new in June, done 500; nearest offer £120.—Thomas, 35, West St., Maesteg, S. Wales. [X2472

DOUGLAS 1915 2¾h.p., 3-speed, speedometer, lamps, horn, footboards; £60.—106, Digby St., Crosby, Scunthorpe. [X2887

DOUGLAS Combination, 3½h.p., 2-speed, 1914, mechanically perfect; £85.—R., 9, Abbey Rd., Enfield, Middlesex. [5195

DOUGLAS, 1915, 2¾h.p., in excellent order; 50 gns. —Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4685

DOUGLAS, 1911, 2¾h.p., single speed, new crankshaft, requires tuning; what offers?—Pond, 13, Milton Rd., Bow, E.3. [X2704

BRAND New 1919 2¾h.p. Douglas, just delivered from makers; £85, or near offer.—4, Harcourt Rd., Redland, Bristol. [X2895

1919 2¾h.p. Douglas, unused, complete with speedometer; what offers?—Edwards, 7, Exhibition Rd. South Kensington. [5589

DOUGLAS 2¾h.p., 1915, 2-speed, re-enamelled and plated, as new; £68.—Apply, Accessories Co., 308, High Rd., Lee. S.E.13. [4844

1915 Douglas, 2¾ h.p., 2-speed gear, good tyres, in new condition; £65.—Robertson, North, 55, Broad St., Peterborough. [5017

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DOUGLAS 4h.p. Combination, new January, 1919 lamp and spare tyre; £100.—25, Handsworth Wood Rd., Birmingham. [X2900

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DOUGLAS 1919 4h.p. Combination, brand new, latest type clutch; £147/10.—Short, 489, Upper Richmond Rd., East Sheen. [5168

£48.—Douglas 2¾h.p., 1915-16, W.D. 2-speed model: seen by appointment at Euston Station.—Box L4,220, c/o *The Motor Cycle.* [5478

1919 (end July) 4h.p. Douglas Combination, unscratched, extra accessories; offers over £135.—10, Bannerman Rd., Petersfield. [5530

1919 Douglas 2¾h.p., perfect order and tune, complete lamps, tools, etc.; best offer over £85.—65, Burnt Ash Hill, Lee, S.E.12. [5391

DOUGLAS 2¾h.p., 1915, overhauled, first-class condition, makers' colours, very fast; £55.—10, West End Lane, Kilburn, N.W.6. [5390

DOUGLAS 4h.p. (1916), 3 speeds, kick start, and Douglas chassis; £80, or exchange lightweight.—Buntiog, Masons Av., Wealdstone. [5444

1914 Douglas, 2 speeds, lamps, etc., new tool bags, just overhauled, fine running order; £48.—Cox 24a, Edgington Rd., Streatham. [5500

1919 4h.p. Douglas and Sidecar, delivered August 12th, mileage under 500, lamps, mechanical horn, spares; £150.—'Phone Mayfair 1330. [5015

DOUGLAS 4h.p., 3-speed, engine thoroughly overhauled, T.T. bars, new tyre; great bargain, 63 gns. —H. Julian, 84, Broad St., Reading. [0038

DOUGLAS 4h.p. 1918 Combination, little used, condition absolutely as new; £105; only wants seeing.—6, Gibson Sq., Islington, N.1. [5572

DOUGLAS, 2-speed, 1914, smart mount, splendid condition, sporty; £56; exchange 2-stroke and cash.—Box L4,232, c/o *The Motor Cycle.* [5492

1919 Douglas Combination, complete, with spares, tools, accessories, first applicant secures.—Clancky, 23, Russell Av., Bedford. [4904

1915 Douglas 2¾h.p., new tyres, lamps, Klaxon horn, spare belt (new); £56.—Mr. W. Cleary, 18, Essex St., Hapwood Lane, Halifax. [X2778

DOUGLAS, W.D., uncrated late July, good tyres, lamps tools; owner bought combination; £82.—Capt. Cave, Kilworth, Woking, Surrey. [5276

DOUGLAS 1914 2¾h.p., 2-speed, clutch, kick start model, exceptionally good condition; £55.—Puge, Warreedene, Warren Rd., Wanstead. [X2663

2¾h.p. Douglas, 1914, 2-speed, mechanically sound, good condition; £54; would exchange higher power.—Box L4,231, c/o *The Motor Cycle.* [5491

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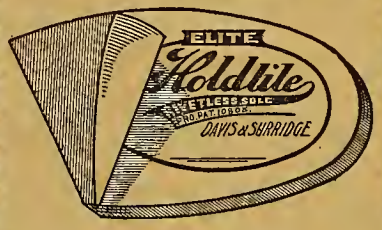

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DOUGLAS 1913 2¾h.p., 2-speed, Bosch mag., lamps, new horn, pannier bags, and tools; £45; Ealing.—Box L4,203, c/o *The Motor Cycle.* [5044

DOUGLAS, 1915, 2¾h.p., 2-speed, condition as new; £53; deposit, approval, if customer pays carriage both ways.—57, Great George St., Liverpool. [X2746

DOUGLAS 4h.p. Combination, 3 speeds; £92, must sell immediately.—Can be seen, Short's Motor Stores, 489, Upper Richmond Rd., East Sheen. [5167

4h.p. Douglas, solo and combination, £75 to £95; 2¾h.p. Douglas, 1915-1916, £58 to £62.—Clapham (Motors), King George St., Greenwich. [5525

DOUGLAS Combination, 4h.p., Aug., 1919, not done 100 miles, complete with lamps, horn, etc.; best over £135.—H. Askew, The Green, Banbury. [X2732

GIBB, Douglas specialist, Gloucester, solicits your enquiries for anything concerning Douglases; try him for the part you require. 'Phone: 852. [6340

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1916 2¾h.p. Douglas, 2-speed, enamelling, plating, and tank as new, perfect in all details; £65.—Jones, 4, Woodside Parade, North Finchley, N.12. [5051

DOUGLAS 1914 2¾h.p., 2-speed, stored during war, lamps, generator, horn, good order; ride away; 50 gns.—Willmott, Maltby Lane, Barton-on-Humber. [X2954

SEVERAL Douglases, 1915 and 1916, 2¾h.p., from £50; call and inspect stock.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4687

4h.p. Douglas and Sidecar, W.D. model, completely overhauled by makers, lamps, spare belt and tube, picked machine; £110.—Sanctuary, Bridport, Dorset. [4814

DOUGLAS 4h.p., 1914, 2-speed, clutch, kick start, lamps, horn, tools, spares, laid up during war; £60, or nearest offer.—Ives, Holmfield, Crook, Durham. [X2749

DOUGLAS 1917 4h.p. Combination, overhauled and in fine running order; 95 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4686

DOUGLAS 3½h.p. Motor Cycle, in good running order, covers, tubes new; will accept reasonable offer.—Apply Oxley, Frederick Haven, Kirby Cross. [4954

DOUGLAS T.T. 2¾h.p., in tip-top condition, not been used since 1915, owner just demobbed; nearest £70.—8, Glengarry Rd., East Dulwich, S.E.22. [5421

DOUGLAS 2¾h.p., 2-speed, Bosch mag., engine, tyres, machine fine condition, running boards; ride away; £45.—Palmer, 333, Katherine Rd., Forest Gate, Essex. [4781

DOUGLAS 4h.p. Combination, new this August, one of the finest engines on the road; offers.—Richardson, Guildhall Buildings, Navigation St., Birmingham. [4762

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DOUGLAS, 2¾h.p., 1914 model, 2 speeds, footboards, Klaxon, lamps, good tyres, etc., overhauled, all black; £58.—15, Enmore Rd., South Norwood, S.E. [5216

FOR Sale, 4h.p. Douglas, 1918 model, very little used and equal to new, all accessories; price £85, or near offer.—Box 326, c/o *The Motor Cycle.* X2014

1919 2¾h.p. W.D. Douglas, unscratched, all accessories, including tools, spare valve, etc., small mileage; 73 gns.—Wyatt, 58, South St., Bridport, Dorset. [5316

DOUGLAS, 2¾h.p., 1914, 2 speeds, clutch, kick start, lamps, horn, etc., stored 3 years, perfect condition; first £55 secures.—Cutler, 134, Lincoln Rd., Peterboro'. [X2972

DOUGLAS 1915 2¾h.p. Colonial Model, 2-speed, footboards, good tyres, as new; £55.—The Laurel Motor Co., Melbourne Rd., Leyton, E.10. Walthamstow 426. [5229

1915 Douglas, 4h.p., 3 speeds, K.S., cork clutch, lamps, Klaxon, new sidecar, thoroughly overhauled; any trial; £130.—15, Enmore Rd., South Norwood, S.E. [5222

4h.p. Douglas Combination, about 1918, 3-speed, kick starter, clutch, requires enamelling, but wooderful goer; £100; exchange light car.—82, York Rd., Battersea. [5277

2¾h.p. Douglas, 2-speed, free engine, new tyres, lamps, enamel, and plating perfect, stored 3 years, smart turnout; bargain, first £55.—101, Grove Lane, Camberwell. [4960

4h.p. Douglas, 3-speed, etc., 1916, incomplete; must sell owing to fatal accident (not with machine); also contents of small garage.—Write, 35, Bradbourne St., Fulham, S.W. [5297

FOR Sale, 4h.p. 1916 Douglas Combination, beautiful condition, little used, cheap, garaged at Maida Vale.—For appointment write 47, Barringtoo Rd., Crouch End, N.8. [5559

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F.N., late model, 5-6h.p., 4-cyl., enclosed Bosch, multi-clutch, beauty; 55 gns.—Below.

F.N., late model, 5-6h.p., 4-cyl., enclosed Bosch, multi-clutch; only 50 gns.—Below.

F.N., 5-6h.p., 4-cyl., Bosch mag., shaft drive, enamelled red; 42 gns.—Below.

F.N., 4½-5h.p., 4-cyl., enclosed Bosch, shaft drive, multi-clutch; sacrifice 39 gns.—Below.

F.N., 4½-5h.p., 4-cyl., Bosch mag., shaft drive, wants little attention; gift, 26 gns.; easy terms arranged.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). 'Phone: Battersea 327. [5208

F.N. 5-6h.p. Combination, 2-speed, clutch, Bosch (ZEN4), heavy Dunlops unpunctured; £70.—Haseldine, Garston, Watford. [X2941

F.N., 4-cyl., shaft drive, B. and B., Bosch, tyres perfect, sound throughout, overhauled; £30 cash.—Resslyn, 5, Clifford Rd., Blackpool. [X2468

F.N., 4-cyl., 2-speed, clutch, Binks carburetter, good condition, ready to ride away; £37.—Dansie, Wychcote, Stoney Rd., Coventry. [X2992

F.N., 5-6h.p., 4-cyl., Bosch, B. and B., shaft drive, enamelled red, just overhauled, sporting appearance; £40.—Hillsborough, Totteridge, Herts. [X2766

2¼h.p. F.N splendid condition, less mag. and carburetter, best offer over £10 secures; 2½h.p. engine, good condition, first P.O. 30/- secures.—Pront, Curzon St., Taunton. [4818

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4¼h.p. Grandex-Precision and Sidecar, E.I.C., B.B.; trial; £35.—Yerrell, 6, Church Plain, Gt. Yarmouth. [X2884

4¼h.p. 1916 Grandex-Precision, Enfield 2-speed gear, splendid running order; £70, or offer.—200, Wellmeadow Rd., Catford. [4975

Harley-Davidson

1919 19-20 Harley-Davidson.—Deliveries of latest models now expected.—Parker's, Bradshawgate, Bolton. [X3071

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HARLEY-DAVIDSON Combination, 1915, Model 11C, in splendid running order; £86.—Rugby House, North Malvern. [X2772

HARLEY-DAVIDSON 1916 Coach Combination, electric model, 3 lamps; Yorkshire; £140.—Box 380, c/o *The Motor Cycle.* [X2882

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HARLEY-DAVIDSON Combination, 7-9h.p., dynamo lighting, splendid outfit; £120.—W. Maton, 41, Mortimer Lane, Basingstoke, Hants. [4986

HARLEY-DAVIDSON 7-9h.p., 1915, solo; a real sporting model; in good condition; £85.—Call, or write, Flinn, 29, Cunningham Park, Harrow. [X2855

HARLEY-DAVIDSON 7-9h.p., electrical model, in stock for immediate delivery at list price.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0552

HARLEY-DAVIDSON, 1915, Bosch mag., Milford family car, wind screen, storm apron, lamps, horn, condition perfect; £125.—22, Francis St., Mansfield. [X2997

GENUINE 1915 Harley, short wheelbase, K racer, in perfect condition, very fast, total mileage 500, lamps; £140; full particulars.—Write, Box 374, c/o *The Motor Cycle.* [X2703

HARLEY-DAVIDSON Combination, late 1915, electric model, splendid running order, handsome Milliford sidecar; 120 gns.; after 6.—Lyons, 99, Willifield Way, Golders Green, London. [4750

HARLEY-DAVIDSON 7-9h.p. Combination, late 1915, little used, condition absolutely sound, open to expert examination; what offers over £130?—34, Florence Rd., West Bridgford, Nottingham. [4877

HARLEY-DAVIDSON 1915 Combination, electric model, perfect condition and completely overhauled; 128 gns.—17, Bond St., Ealing; and 387, Uxbridge Rd., Acton. 'Phone: Chiswick 1578. [5506

HARLEY-DAVIDSON, 1916, mag. model, genuine Harley-Davidson sidecar, luxuriously equipped, mileage 5,000, guaranteed perfect, numerous spares, new condition; £140.—9, Derwent St. East, Derby. [X2863

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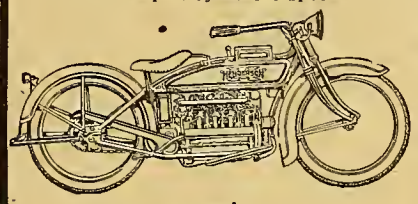

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HARLEY-DAVIDSON Combination, 7-9h.p., late 1916 electric model, bulbous back sidecar, wind screen, just thoroughly overhauled by expert, new tyres, splendid condition; £155.—23, Tonsley Place, Wandsworth, S.W. [5000

HARLEY-DAVIDSON 1916 3-speed Clutch Combination, Swan Oxford sidecar, disc wheels all round. P. and H. lamps, Klaxon, accessories, perfect condition; £135, or near offer; after 6.—Goodman, 5, Hilda Rd., East Ham. [4795

1917 Harley-Davidson Combination, polished aluminium sidecar, disc wheels, the whole outfit in absolutely perfect condition; any trial by appointment; price £150.—Sgt. Belcher, M.T. Details, Canadians, Ashford, Kent. [5541

HARLEY-DAVIDSON, new April, 1916, 7-9h.p., 3 speeds, 1915 electric model, lamps and horn, with Gloria sidecar, wind screen, thorough order, mileage 4,000 to 5,000, ready for touring; any trial; £125.—Watts, 34, Lister St., Rotherham, Yorks. [X3010

HARLEY-DAVIDSON, 1917 (July), 7-9h.p., electric model, Millford sidecar, very good condition, overhauled June, 3-speed, kick start, Rom steel-studded back, Goodyear all-weather front tyres, both new, spares include 2 good covers, 4 tubes, battery, speedometer (unfixed), valves, brake band, jack, Bosch mag., acetylene generator, Tan-Sad pillion seat; owner bought car: £170.—Visible, Streatham Motor Garage, 43, Mitcham Lane, S.W.16. [4801

Hazlewood.

1916 6h.p. Hazlewood-Jap C.B. Combination, 3 speed, countershaft, K.S., clutch, lamps, speedometer, spares; £120.—33d, London Rd., Forest Hill. [4969

2¾h.p. Hazlewood-Jap, Bosch mag., good tyres, lamps, horn, engine recently overhauled by makers; £35.—Apply 6.30 to 8.30, 59, Gaisford St., Kentish Town, N.W. [X2477

HAZLEWOOD-J.A.P., 1915, 5-6h.p., Bramble sidecar, Tan-Sad, Bosch, B. and B., 3-speed, kick start, fully equipped, excellent condition; £120, or offer.—Reynolds, 49, Parklands Rd. Streatham Park. [5187

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HENDERSON 8-10h.p. Combination, 1916, F.R.S. lighting set, good tyres; £120.—Apply, Bell Motor Works, Brent St., Hendon. [5410

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HENDERSON, new Aug., 1914, laid up during greater part of war, done about 4,000 miles.—Offers to Lt.-Col. Brereton, Felden Lodge, Boxmoor, Herts. [5060

HENDERSON 1916, 8-10h.p., 4-cyl., 2 speeds, clutch, accessories, £115; Canoelet coach sidecar, £15; exchange entertained.—5, Victoria Av., Surbiton. [5447

LATE 1915 4-cyl. 10h.p. Henderson, with new torpedo coachbuilt sidecar (Mills-Fulford), lamps, horn, speedmeter, etc., all in splendid condition, engine just overhauled; any test; £135, no offers.—Clay, 35, Topsfield Parade, Crouch End, N.8. [5383

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HOBART 2¾h.p., 1913, lew, fast, good appearance; £26; by appointment.—Harris, 7, St. Luke's Rd., W.11. [5239

HOBART-VILLIERS, 2½h.p., 2-speed, perfect condition, lamps, horn, good tyres; £50.—D. Stopher, Church Rd., Merton, Surrey. [4786

HOBART, 2½h.p., 2-speed, 2-stroke, new, delivery from stock; 60 gns.—17, Bond St., Ealing; and 387, Uxbridge Rd., Acton. 'Phone: Chiswick 1578. [5511

HOBART, 1916 (late), fitted with 2¾h.p. Levis 2-stroke, engine recently thoroughly overhauled, new tyres, accessories, excellent condition; £45.—Holder, Oxford, Suffolk. [X2974

HOBART-J.A.P. 6h.p. Combination, 1915-16, 3-speed, Bramble sidecar, hood, screen; £98; will take any small machine in part payment.—216, Rodney Hut, Crayford, Kent. [X2624

LATEST Model Hobart-Villiers, 2¾h.p., 2-speed gear box, with featherweight sidecar, fully equipped, condition perfect, original tyres; £65.—94, Arden Rd., Birchfields, Birmingham. [X2769

Hockley.

HOCKLEY 2¾h.p. 2-streke, 2-speed, recently overhauled, in excellent condition, owner purchased new Connaught; 37 gns.—Hawker, 54, Lorna Rd., Hove. [4599

MOTOR CYCLES FOR SALE.

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HOCKLEY 2¾h.p., fitted new engine, new mag., new carburetter, new spring forks, new belt, good tyres and tubes; will take £25 to clear; owner buying higher power.—Spacie, Fox House, Todwick, Sheffield. [X2865

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HUMBER 3½h.p., 2-speed gear, clutch, handle-starter, Bosch mag.; £35.—Moss, Wem. [X3018

HUMBER 2½h.p., good condition; £35, or nearest; after 6 p.m.—6, Thurlow St., Walworth, S.E.17. [5198

HUMBER Lightweight, good condition; £30, or exchange combination.—5, Horn Lane, Acton, W. [5556

HUMBER Lightweight, 3-speed, perfect condition; owner wants combination.—S., Clifton Villa, Launceston. [X2800

HUMBER 3½h.p., F.E., Bosch, B.B., Philipson, 70 miles gallon paraffin; £35, offer.—Turner, Bridgeman Place, Bolton. [X2445

HUMBER Combination 3½h.p., 2-speed, wind screen, good condition; £54. Evenings.—85, Eland Rd., Lavender Hill. [5093

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1912 3½h.p. Humber Motor Cycle, 2-speed, starting handle, in good order; £26, bargain.—47, Skelton Rd., Forest Gate, E.7. [3976

HUMBER 1917 3½h.p., 2-speed, countershaft, first-class condition; £55.—Whitehead, 4, Montague Mews, Crawford St., Baker St., London. [5380

3½h.p. Humber, rebushed throughout, C.A.V., Amac, good tyres, Druids, in running order, ride away; £20, no offers.—29, Park Rd., Harringay, N.15. [4878

HUMBER 1913, 2 speeds, fully equipped, new Dunlops, spare belt and tubes, like new; must sell; £45.—359, Wimbledon Park Rd., Southfields Station. [5328

6h.p. Water-cooled Humber, Millford sidecar, hood, screen, lamps, horn, in brand new condition; nearest offer to £150.—15, Stanley Rd., Earlsdon. [X3021

6h.p. Water-cooled Humber, Millford sidecar, hood, screen, lamps, horn, in brand new condition; nearest offer to £150.—15, Stanley Rd., Earlsdon. [X3021

1914 Humber, 3½h.p., 3-speed Sturmey hub, B. and B., lamps, coachbuilt sidecar, tools, apron; 70 gns.; after 6.—Hurst, Chertsey, Gresham Rd., Edgware. [X2763

HUMBER 1919 3½h.p. Flat Twin, 3-speed, hand clutch, T.T. model, demonstration machine; £90, offers; no dealers.—The Hill, Perry Barr, Birmingham. [X2476

HUMBER 3½h.p., about 1915, Sturmey 3-speed, clutch, kick start, Amac, lamps, horn, good tyres, good condition, perfect running, fast, climber; £75.—Holland, Aberfoyle, Sutton Coldfield. [4890

HUMBER Combination, 3½h.p., S.A. 3-speed, hand clutch, new tyres and belt, lamps, Swan sidecar (C.B.) with luggage grid, apron, etc., mechanically sound, excellent condition; trial; £65.—Witts, Royston, Herts. [5468

HUMBER 3½h.p., 1913, 2-speed, clutch, engine, and gear box overhauled, rebushed, stored throughout war, excellent appearance, with lamps, spare tube, belt; £39; offers; also sidecar, £6; by appointment.—Harris, 7, St. Luke's Rd., W.11. [5240

HUMBER 3½h.p. Twin, war model, excellent condition, large coachbuilt sidecar, 2 pistons, rings, and gudgeon pins new August, chain and 3 covers new July, 3 lamps, perfect, speedometer, large carrier on sidecar; best offer over £100.—Stillman, 7, St. John's Rd. Spalding. Tel. 147. [5550

Imperial.

2¾h.p. 1916 Imperial-Jap, 2-speed countershaft, Amac, P. and H. lamp, horn, Dunlop tyres, new belt and chain, stored 12 months, good condition; £38, no offers.—Brynawel, Cwmsychpant, Llanybyther. [X2953

Indian.

INDIAN 7-9h.p., clutch; £65.—Motor Mart, Sea Rd., Bexhill. [5181

1916 Powerplus Indian Combination for sale; £120.—Bennett, 19, Monument Park, Wigan. [X2967

INDIAN 5-6h.p., clutch, new Amac, splendid order; bargain, £68.—87, Dyers Hall Rd., Leytonstone. [4847

1915¾ 7-9h.p. Indian Combination, just repainted; £120; perfect.—Vinson, Monkton, near Ramsgate. [4927

1919-20 Indians.—Deliveries now expected, Powerplus models; enquire dates.—Parker's, Brndshawgate, Bolton. [X3070

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport, Mon. [0032

1912 4½h.p. Blue Indian, clutch model, good running order; £40.—Bellwood, Victoria Rd., Scarborough. [5036

INDIAN 7-9h.p., clutch model, in perfect condition seen week-ends; £55.—H Smith, Wetwood, Eccleshall Staffs [X3003

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MOTOR CYCLES FOR SALE.

Indian.

1916 Powerplus Indian, 3 speeds, clutch, Millford Empress sidecar, lamps, and horn; £120.—Tew, Petersfield. [5144

1916 Indian Combination, Powerplus electric model; £120.—The Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7. [0041

INDIAN Single, 3½-4h.p., 2-speed, clutch model, Henderson's featherweight sidecar, new; £65.—Jackson, 77, Station Rd., Sidcup. [5437

INDIAN 1915 7-9h.p. Combination, 3-speed, electric light, in perfect order; price £135.—6, Connaught Mews, Marble Arch, W.2. [4761

INDIAN Combination, 1915, 5-6h.p., 3-speed, K.S., clutch, lamps, horn, handsome turnout; 80 gns.—Caldra, Ashdown Rd., Epsom. [5001

1914 Indian, 7-9h.p., spring frame, coachbuilt combination; £80.—The Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7. [0040

INDIAN 7-9h.p., 2-speed, clutch, coachbuilt sidecar, thoroughly overhauled, paint perfect; £95.—Gilbert, 16, Bicester Rd., Aylesbury. [5091

INDIAN 7-9h.p., 1915, clutch, F.R.S., tools, nice condition; seen any time; 65 gns.—64, Clifton Rd., Asylum Rd., Peckham, S.E.15. [5130

INDIAN 5h.p., with sidecar, complete, in perfect condition; £80.—Chas. Venables and Co., Ltd., Taplow Paper Mills, near Maidenhead. [5290

INDIAN 5-6h.p., 1915, 3-speed, clutch, kick start, with lamps, tools, etc., in first-class condition; £85.—Leigh, 26, Roome St., Warrington. [X2673

INDIAN Combination, 7-9h.p., 1915, 2-speed, with lamps, accessories, very fast, good; £110, near offer.—36, Trent Rd., Brixton Hill, S.W.2. [X2996

INDIAN 5-6h.p., 3 speeds, kick start, clutch (1916 machine), just like new; £90, or exchange lower power.—Bunting, Masons Av, Wealdstone. [5443

INDIAN, 7-9h.p., 2 speeds, 1915 model, selling, as new; £100, or offer; no dealers.—Ivelson, 11, Newlyn Rd., Lordship Lane, Tottenham. [4868

1915 3-speed 7-9h.p. Indian Combination, just overhauled, in perfect running order; £110.—Jones, 4 Woodside Parade, North Finchley, N.12. [5052

1916 Indian, 5-6h.p., 3-speed, clutch, K.S. Millford red sidecar, fitted electric lighting; £120.—Mann, Heighton, Danes Hill, Woking, Surrey. [X2770

INDIAN, 1915, 7-9h.p., spring frame, 3-speed, kick starter, clutch, lamp, horn, etc., perfect condition; trial any time; £85.—237, Iffley Rd, Oxford. [4883

INDIAN Combination, 1917, 7-9h.p., electric light, splendid condition throughout; nearest £130 secures.—Browning, Heathfield Farm, Berkley, Glos. [X2942

1920 Indian 7-9h.p. Powerplus, absolutely new, unscratched, 3 speeds, countershaft, automatic oil pump feed; £170.—Gilbert Long, Shirehampton, Bristol. [X2922

GENUINE Bargain.—1914 7-9h.p. Indian combination, stored away since May, 1915, ready to ride away; what offers?—West, Bladon, Woodstock, Oxon. [5102

INDIAN Coachbuilt Combination, 7-9h.p., 2-speed, clutch, excellent condition throughout; £85, close offer.—33, Hoveden Rd., Cricklewood, N.W.2. [5459

INDIAN 3½h.p., all chain drive, in perfect mechanical order, fast, solo mount; also 2 new outer covers; offers over £36/10.—Halsey Hill, Acton St., Wigan. [4940

INDIAN 7h.p., 1914, clutch model, English carburetter, in excellent condition, lamps, new Renold chain; £58.—82, Stamford Brook Rd., Stamford Brook, W. [5426

INDIAN, 1914, 7-9h.p., clutch model, and sporting sidecar, condition as new, stored 2 years; £95; seen after 6.—Mitchell, 61, Earlswood St., East Greenwich. [5221

INDIAN, 7-9h.p., 1914, 2 speeds, clutch, spring frame, and coachbuilt sidecar, tyres and general condition excellent; £85.—85, Ermine Rd., Ladywell, S.E.13. [X2840

7-9h.p. Indian (1917 Model) Combination, grand outfit, £125 cash; 5-6h.p. Indian (1916 model), solo, splendid condition, £75 cash.—Apply, Griffiths, 8, King St., Yeovil, Som. [4864

INDIAN 1915 7-9h.p. Combination, coachbuilt, spring frame, 3-speed, kick starter, all accessories; exceptional value £120; after 7.—11, Felix Av., Weston Park, Crouch End, N.8. [5139

1915 7-9h.p. Indian, clutch, 2 speeds, kick starter, new tyres, perfect condition; seen Kent; owner going abroad.—Box L4,192, c/o *The Motor Cycle*, 20, Tudor St., E.C.4. [4911

INDIAN C.B. Combination, 1914, 7-9h.p., 2 speeds, clutch, kick starter, splendid engine, English controls, £95; also another red torpedo sidecar, £16.—45, Castelnau Gardens, Barnes. [5105

1915 7-9h.p. Indian Road Racer, beautiful condition, 70 m.p.h., new chains, good tyres, accessories, tools, spares; £75, or near offer.—A. Mackenzie Cott, Ashby Magna, Lutterworth. [X2738

PLACE your orders for Indians now; don't be left; will northern county customers note the new address.—Horswill, 42, Bridge St., Chester. Castra Motor Cycle Garage. 'Phone: 943. [2141

MOTOR CYCLES FOR SALE.

Matchless.

MATCHLESS, 1913, 8h.p., 2-speed, clutch, kick starter, speedometer, new belt, Glorio spring wheel sidecar, luggage grid; £80; seen Friday.—15, Enmore Rd., South Norwood, S.E. [5219

1913 Matchless, Montgomery cane sidecar, 6h.p., 2-speed, clutch, Bosch, back tyre new, Cowey, 2 lamps, generators; 70 gns.—Write, Box 70, c/o Scripps, South Molton St., W. [4873

MATCHLESS Combination, 1914, M.A.G. 7-9h.p. engine, 3-speed countershaft, clutch, and kick starter, condition perfect; trial anywhere; £130.—111, Durham Rd., East Finchley, N.2. [X2717

8h.p. 1914 Matchless-Jap, with luxurious underslung sidecar, speedometer, 2-speed, fine touring model; expert test; 85 gns.—Marchant, Young's Corner, George Lane, Woodford, E.18. [5372

MATCHLESS, delivered June, 1919, hood, lamps, screen, horn, Tan-Sad, a very smart lot; £170, no offers; seen by appointment, any evening.—F. Brooking, 52, Chaucer Rd., Herne Hill, S.E. [X2678

MATCHLESS-J.A.P., Combination, 8h.p., 1913, 2-speed, speedometer, wind screen, fully equipped, thoroughly overhauled, stored 2 years; 100 gns.—23, Fairford Grove, Lower Kennington Lane, S.E.11. [5566

MATCHLESS, 1919, Victory model, C.A.V. lighting, Klaxon, spare wheel, perfect condition; £150, for quick sale; owner going abroad; trial willingly.—Apply, any time, Batten, Home Farm, Stanwell, Staines, Middlesex. [4982

1919 Matchless, Victory Model, new June, interchangeable spare wheel, mechanical horn, Lucas lamps, exceptionally silent and powerful engine, has been well looked after; £170.—Payne, East Burnham Lodge, Slough. [5532

MATCHLESS-J.A.P. 1913-14 4h.p., free engine, clutch, fast and powerful, lamp set, etc., special heavy nearly new tyres, splendid running order, and excellent condition; £45.—Martin, 8, Grenville St., W.C. (near Russell Sq.). [5568

MATCHLESS 6h.p. J.A.P. Combination, wicker sidecar, kick starter, single gear, lamps, C horn, good condition, tyres nearly new, heavy Dunlops; seen any time after 5; £70, or would exchange for Douglas.—Blanks, Station Rd., Addlestone. [5313

MATCHLESS 8B Combination, 7-9h.p. M.A.G., 1915, mileage 3,500, condition mechanically perfect, appearance as new, speedometer, lamps (never lit), horn, kit of tools, splendid turnout; any trial; £145.—Box L4,236, c/o *The Motor Cycle*. [5497

MATCHLESS New Model H, spring frame, 8h.p. J.A.P. engine. Write at once and book for earliest delivery. Lucas dynamo outfit at option, 5% on your deposit. Decide now and order the best combination.—J. Tassell 1a Bloomfield Rd., Plumstead. [4791

SOANS and Dunn, 93, Mason's Hill, Bromley, Kent, have placed a good contract long ago for Matchless Combinations, and are now booking orders strictly in rotation for earliest possible delivery; be early on our waiting list satisfaction assured. 'Phone: Bromley 350. [4068

1918-19 Victory Matchless Combination, luggage grid, hood, 3 lamps, spare wheel and tyre, spare tube, etc., three 700 tyres and one 650, back tyre rubber-studded, only run 500, sound mechanical condition; £140.—Letters, Major W. H. C. Watson, Leafland, Harrow. [X2973

1918 Victory Model 8h.p. Matchless-Jap Combination, performance and appearance much admired, electric light, full tools and spares, perfect mechanically, interchangeable and spare wheels, well shod, mirror, Lucas horn and lamps; any trial or examination; bought car; owner-driven; £155, or sacrifice nearest cash; no dealers.—By letter, Lt. McMurtrie, Signals, H.Q., Southern Command, Salisbury. (D) [X2684

Metro.

METRO-TYLER, new August, long exhaust, real sporty mount; £55, or exchange higher power and cash.—Tudor, Morda, Oswestry. [X2964

METRO-TYLER, 1919, few weeks old, red discs, plated exhaust, new lamps, horn, tools; best offer over £50.—Ellis, 70, Lewisham Park, S.E. [X1265

METRO-TYLER 2-stroke, 1915, 2-speed, new lamps, Senspray carburetter, Brooks saddle, guaranteed; £38, near offer.—Goss, 71, South Side, Clapham Common, S.W.4. 'Phone: 322 Brixton. [5152

Minerva

MINERVA Lightweight, Druid forks, Bosch mag., in running order; £17, or offer.—136, Rye Lane, Peckham, S.E. [4846

2½h.p. Minerva, Chater-Lea frame, Dunlop tyres, Bosch mag., excellent condition; bargain, £28; call any evening after 6.—32, Dunford Rd., Holloway. [4949

3¼h.p. Minerva, Bosch mag., B. and B. carburetter, low, ready to ride away; £26, or near offer.—E. A. Beven, 8, Rossen St., Maes-y-coed, Pontypridd, S. Wales. [X2866

Moto-Reve.

MOTO-REVE, 2h.p., perfect running order; £25.—Howell, Bragbury End, nr. Stevenage. [5012

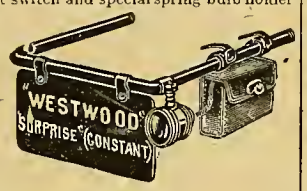
Motosacoche.

MOTOSACOCHE Lightweight, magneto, Whittle belt, good throughout; £18.—Thomson, 85, Chapel Rd., Willesden. [5354

"Westwood"
REAR LIGHTS.
Patented and Registered Designs.

"SURPRISE" TAIL LAMP.

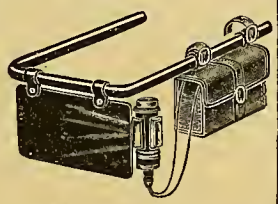
A Lamp of high-class finish with 1⅛in. Ruby Bull's-eye lens. Made of brass throughout, and heavily nickel-plated, and fitted with neat switch and special spring bulb holder which effectually prevents the bulb from working loose or breaking through jar. Complete outfit, including Lamp, Bulb, Battery, and Leather Case



14/3.

"ROYAL RUBY" ELECTRIC TAIL LAMP.

A reliable efficient electric rear lighting set at a popular price. Lamp is fitted with red rear lens, and White Opal Side Lens. Outfit complete with Bulb and Battery, and Leather Case,

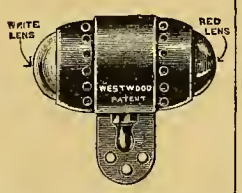


12/6

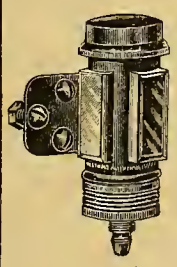
Patent "Torpedo" ACETYLENE LAMPS.

Made from solid brass, turned and threaded at joints. Every part of solid construction. These Lamps may be taken to pieces for cleaning, and will remain alight in the strongest gale. Best quality 1⅛in. diameter Ruby Glass Lenses are fitted, and can be easily replaced if broken. These lamps will last as long as the machines they are used on, and are absolutely rustless.

Tail Lamp,
Price, **6/6** each.



SIDECAR LAMP,
Price, **7/6** each.



"Royal Ruby" Acetylene Tail Lamp.

A strong, well-made and serviceable lamp, with ruby rear and white Opal Side Lens, complete with pins for attachment to Number Plate.

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MOTOR CYCLES FOR SALE.

Motosacoche.

MOTOSACOCHE 2¼h.p., Druids, new belt, spare Whittle, just been overhauled; £20, or offer.—118, Thistlemore Rd., Peterborough. [X2827

MOTOSACOCHE Lightweight, 1¼h.p., battery ignition, fitted to 3-speed bicycle, in perfect condition; a splendid little runabout; bargain, £17.—Warwick House, 2, Leigham Courts Drive, Leigh-on-Sea. [4908

New Hudson.

NEW HUDSON, 2-stroke, tyres as new, perfect; £30.—29, Thornhill Rd., Leyton, E.10. [X2464

1914 New Hudson-Jap, 2¾h.p., 3-speed, like new; £40, near offer.—50, Ballspond Rd., Islington. [5100

NEW HUDSON, 1917 2½h.p., 2-stroke, 2-speed, very little used, as new; £47.—Hickman, Wharncliffe Rd., Ilkeston, Derbys. [X2589

NEW HUDSON, 2¾h.p. J.A.P., late 1913, 3-speed, splendid condition; £45.—The County Garage, South Bar, Banbury. [X2733

NEW HUDSON, believed 1914, 3 speeds, clutch, accessories, in perfect running order; £50.—115, Fordwych Rd., West Hampstead, N.W.2. [5257

NEW HUDSON Combination, 6h.p., 3-speed, foot clutch, new condition, in perfect order; nearest £140.—Greaves, Hallowes Farm, Dronfield. [5268

BRAND New 1919 Model New Hudson, delivery just being taken; will sell £5 premium.—T., 363, Croydon Rd., Caterham Valley, Surrey. [4340

1914 New Hudson Combination, 4h.p., 3 speeds, clutch, good running order; £70.—Seen at County Garage, 17, Gloucester Place, Brighton. [X2759

1914-15 4h.p. New Hudson, 3 speeds, clutch, Bosch, B. and B., lamps, tyres and belt new, condition new; £65.—Fowler, 54, Wyndcliff Rd., Small Heath. [4819

NEW HUDSON 2¾h.p., 1915, never used 1916-17, 3-speed, Armstrong clutch, splendid condition; £55, or nearest.—12, Prince's Av., Church End, Finchley. [4966

NEW HUDSON 4h.p. 1914 Combination, 3-speed, clutch, Binks, lamps, horn, etc.; £60, or would exchange late model Douglas.—45, Belgrave Rd., New Moston, Manchester. [X2837

NEW HUDSON 1914 3½h.p. C.B. Combination, 3-speed, hand controlled clutch, speedometer, lamps, tools, 2 new tyres, re-enamelled and plated; any trial; £90.—Hughes, 51, Albert Rd., Aldershot. [5202

NEW HUDSON 1915 Big Six, C.B. sidecar, lamps and horn, stored 3 years, tyres and belt as new, most silent machine, in first-class order; £130.—Leach, Tea Stores, Winsford, Cheshire. [X2170

NEW HUDSON 1915 4h.p. Combination, 3-speed countershaft, complete with lamps, Klaxon, and accessories, enamelling and condition like new; £90, or nearest.—22, Chalfont St., Bolton, Lancs. [X3000

NEW HUDSON 2-stroke, 1917, tank enamelled, slightly damaged by benzol, otherwise perfect, 2 lamps, horn, pump, puncture outfit, spare plug; £46.—Handen Cottage, Kidbrook Grove, Blackheath, S.E.3. [4758

NEW HUDSON, 2¾h.p., 4-stroke, Bosch mag., B. and B. carburetter, Victoriaphone, complete lighting set, good tyres and tubes, a low sporting mount, in excellent running order, take 2 anywhere; a bargain, £40.—Knight, 17, Wilson St., Newark, Notts. [X2760

NEW HUDSON 1918 5-6h.p. Twin C.B. Combination, 3-speed countershaft, hood, screen, lamps, Klaxon, speedometer, tools, excellent condition, paint practically undamaged; £130, or near offer; owner going abroad.—Simons, Staverton, Yarborough Rd., Lincoln. [X2937

ELECTRICALLY Equipped 6-8h.p. New Hudson Combination, late 1915, as new, 3 speeds, kick starter, Bosch mag., oil bath, Cowey speedometer, magnificent coachbuilt De Luxe detachable tandem 2-seater sidecar, luggage carrier, wind screen, Lucas electric lighting, comprising 3 lamps, dynamo, accumulators, and electric horn, spares, tools, and spare tyre; absolutely it; £140, or near offer; seen by appointment.—Owner, 91, Bertram Rd., Hendon, N.W.4. [3816

New Imperial.

NEW IMPERIAL, 2-speed, good order; £48.—Grover, Bletchley. 'Phone: 45. [4800

NEW Imperial.—Caffyns, Ltd., Eastbourne, are booking orders for delivery shortly. [0018

NEW IMPERIAL-J.A.P. 2¾h.p., 2-speed, good tyres, splendid condition; £42.—424, High Rd., Leyton. [4991

1916 New Imperial-Jap 2¾h.p., T.T. bars, 2 speeds, excellent condition; trial; £48.—Tew, Petersfield. [5143

2¾h.p. New Imperial, J.A.P. 2-speed, good running order.—Hazeldcer, Strawhouse Lane, Hitchin, Herts. [4778

1919 (July) New Imperial 8h.p. Combination, speedometer, horn, condition as new; £155.—28, Badminton Rd., Balham. [X2993

1919 8h.p. New Imperial Combination, new June; £150, or nearest offer; seen by appointment.—St. Faith's, Ottersbaw, Surrey. [4739

NEW IMPERIAL-J.A.P., 1914, 2-speed countershaft gear, Bosch, just overhauled; £35.—32, Melrose Av., Norbury, S.W.16. [4928

MOTOR CYCLES FOR SALE.

New Imperial.

NEW IMPERIALS. Call and inspect the latest models.—Sole London agents, Rey's, 173, Great Portland St. 'Phone: Mayfair 879. [9677

1916-17 2½h.p. New Imperial-Jap, 2 speeds, clutch, K.S., excellent condition; £45.—Heaton, 33, Victoria Rd., Garswood, near Wigan. [X2748

NEW IMPERIAL, believed 1917, 2¾h.p. J.A.P., 2-speed, Amac, E.I.C., hooter, absolutely new condition; £46.—63, Solon Rd., Brixton, W. [5175

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, lamps, horn, toolbag, excellent condition; £47, bargain.—Write, 37, Elm Park Rd., Finchley, N.3. [5189

NEW IMPERIAL-J.A.P. 2¾h.p., 2 speeds, free engine, late 1916, perfect; £49, or near offer.—Raven, 44, Cambridge Rd., Gunnersbury, W.4. [496

NEW IMPERIAL, 1915, 2-speed, just overhauled and repainted, perfect running order; £42.—Nixon, 16, Woodland Crescent, Muswell Hill Rd. (After 7.) [5586

1919 New Imperial-Jap, 2¾h.p., 2-speed, complete lamps, horn, tools, spare belt, delivered Aug., done 630 miles; £65.—W. J. Cooper, 26, College St., Salisbury. [X2753

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, 1916, new semi-T.T. bars, excellent condition and appearance, lamp and horn included; 50 gns.—Dawson, The College, Brighton. [X2701

NEW IMPERIAL-J.A.P., 1914, 2-speed, T.T., excellent condition, engine just overhauled, new back tyre; any trial; £540.—Write only, Holmes, Petridge Wood, Redhill, Surrey. [X2830

NEW IMPERIAL-J.A.P. 1917 2¾h.p., 2-speed, countershaft, lamps, horn, spare tube and tyre, excellent condition; £55.—Veneer, 59, St. James's Rd., Brixton, S.W.9. [5378

NEW IMPERIAL, 1916, 2¾h.p., 2-speed, countershaft, lamps, good tyres, just been overhauled; £45.—The Laurel Motor Co., Melbourne Rd., Leyton, E.10. Walthamstow 426. [5230

1914 New Imperial-Jap, 2¾h.p., countershaft 2-speed, engine guaranteed perfect, lamps, tools, etc., complete; £45, or near offer.—The Haven, 120, Sutherland Rd., West Croydon. [5196

1917 New Imperial-Jap, 2¾h.p., 2-speed, lamps Stewart mechanical horn and speedometer, 2 toolbags, scarcely used, and in new condition; what offers? —Payton, Baumber, Horncastle. [X2439

NEW IMPERIAL 8h.p. Combination, electric lamps, Service green throughout, hardly used, delivered too late for holiday; £145; 1919 Douglas combination and cash considered.—Norman, 523, Cambridge Rd., E.2. [4825

1919 6h.p. 8h.p. New Imperial-Jap and luxurious side-car, handsome turnout, in brand new condition, mileage about 900, very powerful, complete with P. and H. lamps and accessories; £143.—12, Granville Rd., Sevenoaks. [5104

1919 New Imperial-Jap, 8h.p., 3-speed, clutch, kick start, Whitham coachbuilt sidecar, apron, etc., running since May; owner giving up owing to illness; perfect condition; no dealers, no offers; £145.—Row, 57, Bolton Rd., Chorley, Lancs. [X2577

NEW IMPERIAL-J.A.P. 2¾h.p., 1919 engine, 2-speed, countershaft, F.E., new heavy Dunlops, all accessories, full insurance policy; any trial; after 2 Thursday.—Bert's Garage, opposite Brondesbury Station, L. and N.W. Railway, Kilburn High Rd., London. [5470

Norton.

3½h.p. Norton, 7th place on waiting list, for sale; what offers?—Brooks, Balcombe, Sussex. [X2697

NORTON, Brooklands special, 1916-17 very fast, has done 80, exceptional fine condition; £80, or offer.—R. Diss, Haslemere, Letchworth. [5148

1917 Norton B.S., Philipson, discs, equipped, perfect condition, appearance like new, pass anything; 80 gns.—Hyde, Breedon Hill Rd., Derby. [4836

NORTON, 1917, Big Four de luxe, sidecar, 3 speeds, countershaft, clutch, kick starter, chain drive, lamps, spares; £120; exchange late Douglas, cash.—371, King St., Sirhowy. [X2680

NORTONS.—We are now booking orders for the latest model Norton solo and sidecar outfits; £5 deposit; deliveries in strictest rotation.—Maudes', 100, Gt. Portland St., London, W.1. [4156

1916 3½h.p. Norton, Rudge sidecar, Sturmey-Archer 3-speed countershaft, P. and H. lighting set, speedometer, watch, spare belt, tube, perfect condition; £115, or nearest; seen by appointment.—Wallace, 10, Campbell St., Gainsborough. [5336

1919 3½h.p. Norton, B.R.S., practically brand new, delivered only last week, very flexible, climb anything, adjustable pulley, long exhaust, tool roll and pump, only ridden about 50 miles; too fast for owner; in absolutely perfect condition; 100 gns.—Minoprio, 28, Alexandra Drive, Liverpool. [5325

NORTON 1916 Big 4, all-chain drive, 3-speed gear box and K.S., and heavy C.B. sidecar, re-enamelled and plated, thoroughly overhauled, very reliable and fast, Dunlop extra heavies, disc wheels, Cowey speedometer, Klaxon, h.b. mirror, knee-grips, 3 lamps, all accessories and spares; any trial by appointment; full particulars; £130.—G. Copeland, Wanesfield, Brentwood, Essex. [X2475

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1919 James Combination - £150

1919 James 5-6 twin and Cooper sidecar, as new - £155

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MOTOR CYCLES FOR SALE.

N.S.U.

N.S.U. 3½h.p., perfect.—Hall, Hockman Cottage, High Rd., Whetstone, Middlesex. [5476

3½h.p. N.S.U., good condition, running order, new belt, good tyres; £20.—Bryan, 17, Regent Grove, Leamington Spa. [X2940

3h.p. N.S.U., in perfect condition, fast and reliable, new tyres and belt; £30.—Wagstaff, Colony Farm, Chalfont S. Peter, Bucks. [5248

N.S.U., 2-speed, 5-6h.p., twin, and Middleton 1919 coachbuilt sidecar, in good serviceable condition; £48.—Seen, 85, Church Rd., Willesden. [5356

N.S.U. 4½h.p. Twin, free engine, Bosch, powerful, good tyres, £25; also sidecar, £10; together or separate; exchange offers.—40, Westbourne St., Hull. [5111

6h.p. N.S.U. Twin, with sidecar, waterproof mag., B.B., Druids, 2-speed, free engine, tubes and tyres almost new, in excellent condition; bargain, £35.—Sharples, 6, Peter St., Daisyfield, Blackburn. [5088

N.U.T.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for N.U.T.-J.A.P. motor cycles; early delivery. [4019

N.U.T., sporting, exceedingly fast, 5-6h.p. twin J.A.P., overhead valves, disc wheels, excellent condition; £80.—Balderston, Horwich Rd., Wymondham. [X2817

N.U.T.—Sole agents for Staffordshire. For particulars of prices and deliveries, watch future announcements.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5605

O.K

O.K. Junior 2½h.p., 2-spced, fine order; £39/10, bargain.—78, Springbank Rd., Hither Green. [5453

JONES' Garage, special agents for O.K. machines, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2922

O.K. Juniors must be booked now if you really want to get there and back every time.—Youngs, The Parade, Kilburn, N.W.6. [0967

Omega

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Omega-Jap motor cycles; early delivery. [4018

OMEGA, latest model, 2¾h.p. J.A.P. engine, 2-speed, clutch, kick starter; delivery from stock; 68 gns.—Righton and Bennett, Ltd., Gosport. [X2815

1918 2¾h.p. Omega-Jap, 2 speeds, countershaft, kick start, hand clutch, lamps, etc., new condition; £60.—767, Fulham Rd., S.W.6. [5123

P. and M.

P. and M. Combination, 1914, good order, all accessories; £80.—J. Smith, 230, St. John St., E.C.1. [4026

P. and M., 1919, and sidecar, little used; £110, bargain.—4, Dollis Rd., Church End, Finchley. [X2849

P. and M., 1919, delivered March, excellent condition; £85.—Hacon, 122, Rosehill Rd., Ipswich. [5092

1919 P. and M. Combination, Lucas lamp; £130; lightweight part exchange.—H. Rock, Cradley, Staffs. Tel.: 145. [X2853

3½h.p. P. and M., 2-speed, new back cover, Bosch mag.; £26; perfect.—Dudley, Fairfield Rd., Grove Park, S.E.12. [X3063

1919 P. and M., 4h.p., not yet unpacked; £110, or offer; bargain.—Cucksey, 6, Manchester Rd., Thornton Heath, Surrey. [5129

P. and M. 1919 Combination, complete with Lucas accessories, low mileage, fine condition; £112 nett.—Heybourn, Grand Garage, Maidenhead. [5465

P. and M., believed 1916, semi-T.T., kick start, 2-speed, Bosch mag., P. and M. carburetter, Miller lamps, 2 generators, Tan-Sad pillion seat, full insurance policy, very fast, and guaranteed perfect order; £70, or near offer.—Letters, Wilson, Redbrook Rd., Gawber, Barnsley. [X2982

P. and M., 3½h.p., 2-speed, believed 1914, just been enamelled, plated, and overhauled, and fitted new back wheel, and tyre, and tube, gear parts and new sprockets, 2 chains throughout, and new 1918 footrests, complete with handle-bars, etc.; best offer over £65.—21, Hopton Rd., Streatham. [4869

Peugeot.

4½h.p. Peugeot, Bosch mag., B.B. carburetter, Chater-Lea frame, Matchless forks, perfect running condition; £35; all-metal undershung sidecar if required. —3, Crownhill Rd., Harlesden, N.W.10. (After 6.30.) [4952

Precision.

PRECISION 3½h.p., 2-speed, £25; lightweight, £12.—42, Princes Rd., Holland Park. [5155

1919 4¼h.p. Precision, sidecar, Armstrong 3-speed, clutch, accessories; £50.—39, Wernbrook St., Plumstead, S.E.18. [4744

PRECISION, 4h.p., Gradua pulley gear, Bosch mag., lamp, good running condition; £33.—Write, Wheatland, 7, Powaall Gardens, Hounslow. [4807

 All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

MOTOR CYCLES FOR SALE.

Precision.

PRECISION, 1914, and coachbuilt sidecar, 2-speed, free engine, go anywhere; £65.—The Avon Motor Cycle Co., Southbridge Rd., South End, Croydon. [5502

3¾h.p. Precision, 2-speed, handle start, mag., B. and B., m.o.v.'s, has pulled heavy sidecar, in thorough good order, just completely overhauled; first £40 secures. genuine bargain.—Victor Schofield, Broughton, Pershore. [X2948

4¼h.p. Precision Combination, C.B. sidecar, S.A. 3-speed and clutch, heavy Dunlops, Bosch waterproof, B. and B., lamps, horn, speedometer, spares; Huddersfield; trial given to best offer over £60.—Box 573, c/o *The Motor Cycle*. [4764

1919 Sporting 2¾h.p. Precision Lightweight, powerful 2-stroke engine, just overhauled and decarbonised, Bosch mag., 2-speed gear, Lucas complete acetylene lighting set, sporting frame, semi-T.T. bars, Clincher heavy 2¼in., Brooks, excellent finish in black and regal red, little used, in fine running tune; price £48.—Enquiries for particulars, photos, or appointment to see, to McCormack, 76, Middleton Hall Rd., King's Norton, Birmingham. [X2614

Premier.

4h.p. Premier, ride away; £33.—Marks, 121, Acton Lane, Chiswick. [5418

PREMIER 3½h.p.; bargain; good condition; £35.—G.A., 10, West St., Reigate. [4848

PREMIER 2¾h.p., tyres and belt as new, perfect condition; £30.—48, Prince George Rd., Dalston, N. [5577

PREMIER, 1914, 3 speeds, clutch, countershaft, combination; any trial; £65.—Motor Mart, Sea Rd., Bexhill. [5173

PREMIER, 1911, 3½h.p., good condition; £25.—17, Bond St., Ealing; and 387, Uxbridge Rd., Acton, Chiswick 1578. [5509

2¾h.p. Premier Motor Cycle, re-enamelled and plated like new, Bosch mag.; ride away; £30.—96, Doncaster Rd., Leicester. [4843

PREMIER, 1914, 4h.p. engine, Bosch, Senspray 2-speed, copper exhaust, all accessories; £50.—80, Bulow Rd., Fulham, S.W.6. [5362

1915 Premier, countershaft, 3-speed, kick start, clutch, smart lot; £65.—Ough, 12, Huntsmoor Rd., Wandsworth, London, S.W. [5233

PREMIER, 2¾h.p., 3 speeds, 1914, good condition; ready to ride away; 40, lowest.—Saunders, 31, Etheldene Av., Muswell Hill, N. [4865

PREMIER 1914 3½h.p., T.T. model, 3-speed, clutch, Senspray; not done 2,500-; all accessories; perfect order; £50.—Dalebrook, Burton-on-Trent. [4994

1915-16 Premier and C.B. Sidecar, 3-speed countershaft, speedometer, lamp set, accessories, new Dunlops; £75.—630, Lea Bridge Rd., Leyton. [4994

PREMIER 1913 3½h.p., 3-speed, B. and B., Bosch, good tyres, one new, fast, powerful; cheap for quick sale, £40.—Kinnard, Duke St., Tavistock. [5396

PREMIER, 2½h.p., Bosch mag., splendid running order; £19; may be seen any time after September 21st.—Gardiner, 24, Lathbury Rd., Oxford. [X2579

PREMIER, 3½h.p., 1912, Simms, Senspray, Klaxon, engine, tyres, and belt, sound; any severe trial; £35, no offers.—Douglas Brown, Tillingham, Essex. [X2679

3¾h.p. Premier Combination, original enamel and plating, splendid condition throughout, spare; trial; £65.—Overton, Postmaster, Docking, Norfolk. [4967

1914 Premier Motor Cycle and Ivy Coachbuilt Sidecar, dickey seat, 7-9h.p., splendid condition, ride away; £110; kick start.—Hiden, High St., Wem Salop. [4939

PREMIER 3½h.p., 3-speed, countershaft, chain-cum-belt, kick starter, take sidecar anywhere; £50.—James's Yard (next door Baths), High St., Wandsworth. [5401

1915 4h.p. Premier, coachbuilt sidecar, side door, 3-speed, kick starter, P.H. lamps, horn, new tyres, spare tyre, condition as new; £85.—Jagger, Oakleigh, Llangollen. [4948

3½h.p. Premier Conch Combination, 3 speeds, clutch, excellent mechanical condition, enamel, plating and tyres very good; any trial or examination; £58.—Stoddard, Biddulph. [X2880

1914 3½h.p. Premier C.B. Combination, 2-speed countershaft, clutch, Bosch, B. and B. speedometer, wind screen, storm apron, electric light, spares; 35 gns.; after 6.—35, Tudor Rd., Southall. [4726

PREMIER, 2¾h.p., water-tight, Bosch, B. and B. carburetter, nearly new tyres, extra belt, lamps, new condition generally, 1915; any trial given; £30.—50, Crookston Rd., Well Hall Rd., Eltham. [5227

P.V.

P.V. 2¼h.p., 2-speed, spring frame, mileage under 1,000, Lucas lamps, perfect; £60.—Rutter, Chemist, Sydenham. [4902

P.V. Combination, 6h.p., wicker sidecar, N.S.U. gear, perfect throughout, any trial, £90; also 8h.p. De Dion 2-seater car, just overhauled, £85.—Aero Engineering Co., 22, London St., Reading. [5098

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MOTOR CYCLES FOR SALE.

Quadrant.

QUADRANT Lightweight, 2¼h.p., everything good; £30.—Thomson, 85, Church Rd., Willesden. [5355

QUADRANT 3½h.p., Bosch mag., Whittle belt, 2 brakes; £16, or nearest.—143, Grove Lane, Camberwell, S.E.5. [4953

3½h.p. Quadrant, coil ignition, good running order; first £42 secures; bargain.—Turner, Church Lane, Sutton-on-Sea. [5030

QUADRANT Cancelet C.B. Combination, 3-speed, clutch, good condition; £65, solo £50.—66, High St., Tooting. [5261

3½h.p. Quadrant, Bosch, B. and B., good tyres; bargain, first money order £30.—Clarke, 78, Wellington St., Hertford. [5001

3½h.p. Quadrant, in first-class condition, B. and B., spring forks, mag.; £22.—Dudley, Fairfield Rd., Grove Park, S.E.12. [X3065a

1919 Quadrant 4¼h.p. Combination, B.S.A. 3-speed, clutch, new last month, condition as new; higher powered machine previously ordered; 102 gns., or best offer.—Rev. Coleman, St. Mark's, Bolton. [X3004

Radco.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Radco motor cycles; delivery commenced. [4017

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2923

RADCO 2-stroke, 1919, footboards, accessories, done 2,000 miles; £36; after 6.—Carr, 30, Millfields Rd., Clapton, E.5. [4947

Reading-Standard.

READING Standard Combination, 9-11h.p., real speedman's posh outfit, all chain, speeds, electric lighting, splendid exhaust, indistinguishable from new, original tyres, perfect; nearest £100.—38, Balfour Rd., Bromley, Kent. [5307

Regal.

REGAL-PRECISION Combination, 2 speeds, countershaft; £58.—6, Raddington Rd., Portobello Rd., Westbourne Park. [X1897

Rex

REX 3½h.p., perfect; £20.—Smith, 123, High Rd., Chiswick. [4918

1913 4h.p. Rex, 2-speed, handle start; £40.—4, Waterden Crescent, Guildford. [5109

REX 3½h.p., perfect running condition, overhauled; £25.—42, West Bar, Banbury. [5192

REX 3½h.p., perfect condition; offer.—4, Quested Rd., Cheriton, Folkestone. [X2862

5-6h.p. Rex Combination, 2-speed, good order; £75—Grover, Bletchley. 'Phone: 45. [4798

REX, nice order, 1912, free engine, little used; £35.—Geary, 155, Uxbridge St., Burton-on-Trent. [X2983

TWIN Rex 6-7h.p., Mabon clutch, coil ignition, good running order; £25; after 7.—3, St. Anne's Rd., Marshside, Southport. [X3005

5h.p. Twin Rex and Sidecar, 2-speed, handle start, been overhauled and 2 new cyls. and pistons fitted, very smart appearance; £50.—39, Church St., Padiham. [5346

6h.p. Rex Coach Combination, late 1913, hood, screen, lamps, etc., recently re-enamelled and plated, in excellent condition, appearance like new; £85, no offers.—41, St. Edmund's Rd., Northampton. [X2947

1913-14 4½h.p. Rex-de-Luxe, Bosch mag., enclosed new Dunlop tyres and belt, speedometer, lamps, generator, and horn complete, condition perfect; sacrifice £56.—Darnell, Sharnbrook, Bedford. [5561

1913 Rex 6h.p. Twin, handle start, Bosch, B. and B., C.B. sidecar, belt new, 2 speeds, lamps, horn, wind screen, tyres good, mechanically perfect; £70.—56, Smithies Rd., Plumstead, S.E. (6 p.m.) [5333

REX 8h.p. 1914 Coachbuilt Combination, A.J.S. countershaft 3-speed gears, hand controlled clutch, all accessories, splendid condition, just overhauled; 95 gns., or nearest.—Hollowny, 26, Linscott Rd., Woodseats, Sheffield. [X3007

REX De Luxe Coachbuilt Combination, 6h.p., late 1912, stored 4 years, condition as new—better, in fact; any trial; £65, or near offer; seen by appointment.—10, Eagle Mansions, Trumans Rd., Stoke Newington. [4827

6-8h.p. Rex, late 1913, 2-speed, F.E., unused during war, powerful engine, 1919 C.B. sidecar, new tyres, accessories, spares, fine outfit, splendid condition, 8 months' full policy; £85; evenings.—18, Northbrook Rd., Lee, S.E.13. [4087

OLD Rex Twin, in good condition and sound mechanical order, 2-speed and handle starter, sporting sidecar and Tansad pillion seat, lamps, spares, etc.; trial; seen any time; bargain, £45.—Thomson, 85, Church Rd., Willesden. [5352

BARGAIN.—3½-4h.p. Rex Tourist Trophy, very smart and in new condition throughout, new tool bag, lamp, stand, carrier, electric head light, horn, very complete and smart turnout, clutch, handle starting; £59.—Motor Supply Co., 14, Hood St., Newcastle-on-Tyne. [X2587

MOTOR CYCLES FOR SALE.

Rex.

REX Late 1913 6-8h.p. Twin Coachbuilt Combination, stored throughout war, handle start, 2-speed, B. and B., Bosch, lamps, horn, spare tubes, tool kit, luggage grid, brand new appearance, just overhauled, everything first-class; trial; £95.—74, Eastworth Rd., Chertsey. [4820

FOR Sale, 1914 6h.p. Rex combination motor cycle and sidecar, complete with lamps, speedometer, wind screen, and pillion seat, all in good condition, and fitted with brand new heavy tyres and tubes, good set of spares; £60.—Edwards, 67, Victoria Rd., Surbiton. [5162

Rex-Jap.

REX-J.A.P. 6h.p. Coach Combination, 2-speed, handle start, fast, powerful machine; trial evenings; £60. —205, South Croxted Rd., Dulwich, S.E. [5575

Roc

4h.p. Roc, 2-speed; £25.—131, Whipps Cross Rd., Leytonstone. [4732

4h.p. Roc, mag., 2 speeds, wants attention; £15.—84, George Lane, Wanstead. [4988

Rover

ROVER 3½h.p., 3-speed, clutch, any trial; £65.—Motor Mart, Sea Rd., Bexhill. [5179

ROVER 1914 3½h.p., 3 speeds, lamps, new condition; £60.—6, Manor Parade, Sutton, Surrey. [5186

ROVER 3½h.p., clutch model, splendid condition; £40.—C Lovell, High St., Oldlands, near Bristol. [4759

1914 3-speed, clutch, Rover coachbuilt combination, as new, with accessories.—Priest, Shaloon, Devon. [X2676

JONES' Garage, special agents for Rovers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2924

ROVER 3½h.p., clutch model, recently overhauled, new piston, good order; £40.—Ferris, 19, Derby St., Weymouth. [5405

ROVER 3½h.p., 3-speed, clutch, Rover coachbuilt sidecar, lamps, spares, splendid condition; £80.—26, Albert St., Banbury. [4755

ROVER, 1913, 3-speed, clutch, Bosch, 3½h.p., speedometer; £45.—Chas. Dowsett, 63, Studley Rd., Clapham, London, S.W.4. [5291

ROVER, 1912, Armstrong 3-speed and clutch, excellent order throughout; £55.—Morris, Modello Works, Eardisley, Herefordshire. [X2737

1914 3-speed Rover, take sidecar anywhere, good tyres and belt; 55, or near offer.—Stuart, School House, Hatfield Heath, Essex. [5101a

ROVER 1914 3½h.p. Coachbuilt Combination, 3-speed, clutch, good condition; £72; after 6 p.m. —70, Lansdowne Rd., Tottenham, N. [5579

1919 Rover 3½h.p. Combination, fully equipped, splendid order, new back tyre, really good thing; nearest £130.—Morton, 4, Pierrepoint, Acton. [4782

3½h.p. Rover Combination, 1914, C.B. sidecar, 3-speed, clutch, Bosch, B. and B., lampe, horn; 50 gns.—6, Boscawen Place, Devonport. [X2719

1918 T.T. Rover, Philipson, good tyres and belt, lamps, mechanical horn, splendid condition; £75.—Grover, Smith, and Willes, Basingstoke. [5250

1919 Rover-Jap Combination, 5-6h.p. twin, 5 weeks old, perfect; £147, or offers; genuine.—Jarvis, King's Rd., North Ormesby, Middlesbrough. [X2656

ROVER Combination, 1914, C.B. sidecar (Rover), 3½ h.p., 3-speed, clutch, lamps, horn, tools, luggage grid, good condition; £90.—66 Kingsway, Coventry. [X2819

3½h.p. Sporting Rover, 3-speed, T.T. bars, disc wheels, lamps, etc., fastest single in district; £75, or nearest; stamp, photo.—D. Norriss, Talbot, Mere, Wilts. [X2798

1917 Rover Combination, 3½h.p., 3-speed, countershaft, lamps, etc., as new; perfect condition; £100, or best offer.—58, Fowler's Walk, Brentham, Ealing. [5076

1919 3½h.p. T.T. Rover, as new, not done 1,500 miles, Philipson, spare valve, horn, rear lamp, etc.; £77/10, no offers.—Piegrome, 247, Camden Rd., N.7, after 6 p.m. [5280

ROVER 1919 3½h.p., 3-speed, countershaft, combination, little used, perfect condition, 3 lamps, horn, tools, wind screen; what offers?—141, Lordswood Rd., Birmingham. [X2909

ROVER 1914 3-speed C.B. Combination, perfect order, lamps, horn, speedometer, sidecar brake and stand, stored 4 years, low mileage; £80.—48, Derwentwater Rd., Acton. [5391

1913 Rover 3½h.p. C.B. Combination, 3-speed, clutch, outward appearance good; mechanical condition excellent, stamp, particulars, and photo; £43.—Box 387, c/o *The Motor Cycle*. [X2966

1919 (Aug. 21), 3½h.p. T.T. Rover, mileage under 300, Millers lamp set, Lucas horn, Watford trip speedometer, knee-grips, as new; £90; owner buying combination.—117, Mayfair Av., Ilford, E. [4776

ROVER 1916 3½h.p. and Montgomery sidecar, coachbuilt, all lamps, Watford speedometer, horn, new condition, very powerful; owner bought car; allow any trial; £100.—Estate Office, Slindon, Arundel. [4997

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can be won by the aid of our **"Posh" Sidecar Bodies.**

Unapproachable design and finish—any colour you like or don't like.

They are luxuriously upholstered in shades which blend perfectly with the coachwork. They are **deep**, and deliver the comfort that, at present, you only dream about. Equipped with two pockets, a shelf, capacious tool locker, and apron.

Above all, they are **now** and always will be **actually in stock**, i.e., for the very moderate sum of Ten Guineas you can take one away **when you like.** Don't forget we shut at 1 o'clock on Thursdays.

Come and see the above; they are unlike anything you have ever seen before.

We have a 1914 **TRIUMPH** at **£65** and a 1915 countershaft, 3-speed, and hand clutch model at **£80.**

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(See Miscellaneous columns for other machines.)

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MOTOR CYCLES FOR SALE.

Rover.

1915 3½h.p. Rover, clutch hub, Cowley speedometer, Lucas horn; following new, Dunlop tyres, belt, Miller's big set, pulley, engine bearings; overhauled, tip-top order; £60.—Gurry, Ditton, Cambridge. [5278

1919 (February) Rover 3½h.p., sidecar model, run about 1,500 miles, perfect condition, tyres unpunctured, insurance, spares; £100; seen by appointment; buying higher power.—Hubbard, 21, Earl's Court Sq., S.W.5. [4740

1919 4h.p. T.T. Rover, with flying Middleton sidecar, N.S.U. 2-speed gear and clutch, lamps, mileage about 600, fully insured; closest inspection welcomed; best over 105 gns.—Smith, Zaria, Finchley Rd., Westcliffe-on-Sea. [5226

ROVER, 3½h.p., T.T., 1916, Philipson pulley, machine and tyres as new, ridden about 1,500 miles, in store 2 years, full kit of tools, new spare tube and belt; privately owned machine, London district; no dealers; £70.—Box L4,223, c/o *The Motor Cycle*. [5481

ROVER Combination, 1914, 3½h.p., 3-speed, excellent condition, just been thoroughly overhauled by the makers, with wicker sidecar, horn, lamps, spares; £75, near offer.—Lt. Doelberg, R.N., at Squire's Garage, 86, London Rd., Forest Hill, S.E. [5080

1919 Rover Combination, 6h.p. twin, new March, complete with lamps, speedometer, spares, etc., special long exhaust and T.T. bars fitted, finish W.D. green, perfect condition; accept £140, or near; owner buying car; seen by appointment.—Brading, Cyprus, Chichester Rd., Croydon. [4780

ROVER 3½h.p. 1914 Coachbuilt Combination, stored during war, S.A. 3-speed, clutch, speedometer, 3 lamps, 2 acetylene generators, new hood and wind screen, plating and enamelling in good condition, spare belt, tools, very easy starter; after 6 p.m.—Allen, 187, Trinity Rd., Wandsworth Common, S.W. [5034

ROVER, 3½h.p. T.T., 1916 (late), with hand-controlled Philipson pulley, Senspray carburetter, largest P.H. head lamp fitted with Mangin lens, electric rear light, Klaxon horn, engine just overhauled by makers and specially tuned, enamel, plating absolutely as new; seen after 6.30 p.m.; price £75.—13, Arragon Gardens, Streatham Common. [5567

Royal Ruby

1916 Royal Ruby, 2¾h.p. J.A.P. engine, 2-speed, kick starter clutch.—Parker's, Bolton. [X3073

JONES' Garage, special agents for Royal Rubys, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2925

ROYAL RUBY, 1918, 2-stroke, 2-speed, free engine, fine machine; £40, first cash secures.—Ashton, Thornhill Edge, Dewsbury. [X2691

ROYAL RUBY 2¾h.p., 2-speed, countershaft, clutch, aluminium footboards, good running order; £47. —Houghton, Draper, Ely, Cambs. [X2816

ROYAL Ruby 2¾h.p., 2-stroke, Lucas lamps, horn, overhauled, good condition; £35; evening after 6. —King, 72, Albert Rd., Hendon, N.W. [5114

ROYAL RUBY 2-stroke 2¾h.p., in good condition, and perfect running order; £35.—Willis, 16, North Rd., Highgate, N.6. 'Phone: 457 Hornsey. [5173

A NEW Royal Ruby 2-stroke, with 2-speed gear, fitted with new lamp set and all accessories, splendid machine going cheap.—338, Coombe Lane, Bottom Copse Hill, Wimbledon, London. [5552

1919 Royal Ruby 8h.p. Combination, 28×3 tyres, delivery July, not done 700 miles, Grindley double sprung sidecar, wind screen, apron, lamps, horn, all tools; £170, nearest offer.—Rawlinson, 412, Audley Range, Blackburn. [X2881

Rudge.

RUDGE Multi 3½h.p., fast, good order; £45.—85, East Hill, Colchester. [5337

3½h.p. Rudge, Armstrong 3-speed; £42.—Tull, Falmouth, Kingsley Rd., South Harrow. [X8614

RUDGE Multi, late model, tip-top mechanical order; accept £63.—Grey, 57, Queen's Rd., Watford. [X2991

1913 Rudge Multi, 3½h.p., clutch, all accessories, reliable; £45.—Preston, Hawthorns, Berkhamsted. [X2729

RUDGE 3½h.p., clutch, splendid condition; £39/10; seen any time.—78, Springbank Rd., Hither Green. [5452

JONES' Garage, special agents for Rudge, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2926

1915 Rudge Multi Combination, 3½h.p., lately overhauled, mileage under 3,500; £85.—Lane, Abbots Leigh, Bristol. [5026

1917 Rudge Multi 3½h.p., clutch, Gradua gear, fine condition; £55.—499, King's Cross Rd., London, W.C.1. [5420

RUDGE Multi, 1913 3½h.p., perfect running order, new tyre and belt; £48.—Hickman, Wharncliffe Rd., Ilkeston, Derbys. [X2588

RUDGE Multi 1919 h. of M. Model, new condition; £105.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0481

THE MOTOR CYCLE
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Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
Telephone: 620 City.

Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

Colonial and Foreign Agents:
United States—The International News Agency, New York. Canada—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver: Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
Australia—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).
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Impressions of the Trials.

WITHOUT a doubt both men and machines received a severe test during the trial last week. Difficult conditions are inevitable if the failures of a year's touring are to be brought out in a week's trial, and this accounts for the inclusion of such hills as the Hirnant Pass, Plynlimon, and Caio, whose surface would be considered unrideable by the average motor cyclist. The A.C.U. are to be congratulated on a thoroughly successful and well organised trial. The hard work which falls to the share of the officials is seldom appreciated by competitors, and only their shortcomings are given prominence. For this reason, it is particularly satisfactory to note that the only serious grumble was caused by the consistent driving test, which once again introduces the rider's ability to conform to the reading of a stop watch as a deciding factor in a reliability trial. Theoretically, this is not so, for it was presumably intended that each rider should do his maximum and minimum speeds at the start and at the finish, and by this means a good idea would have been obtained of how much power each engine had lost after a week's really severe gruelling.

Human nature is such, however, that practically every rider rode to a stop watch and left himself plenty of reserve both in fast and slow climbs so as to be able to repeat the performance at the end of the trial. As a matter of fact, many of the marks lost on the second test were due to the riders' failure to drive to a stop watch rather than to inability of the machine to perform its task.

Engines and gears have caused comparatively little trouble, and there have been but few retirements from these causes. Good weather favoured exposed transmissions, and neither chains nor belts have caused much trouble; but belt drives become less and less frequent, and the impression that belt drive is losing popularity, in spite of its advantages, becomes more and more fixed. Modern belts, it should be added, are far superior to those of pre-war days.

With some few notable exceptions, sidecar chassis show no very definite improvement. From two to six points of attachment were used. There is a noticeable tendency to make for extreme rigidity both in chassis and in couplings, but we would commend the idea of tackling the problem from an entirely opposite point of view.

Frames have withstood the severe test almost without exception, and spring frames saved their riders much discomfort. There are solo riders, however, who still maintain that no spring frame is as steady on grease as a rigid frame.

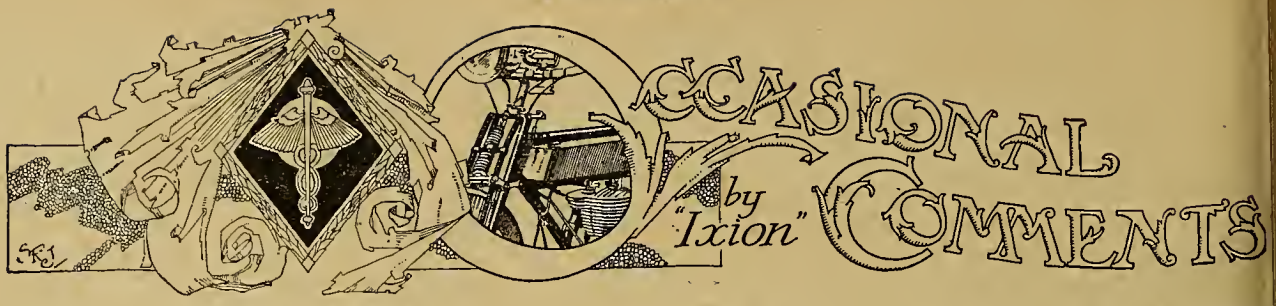
Perhaps the most unsatisfactory feature of the trial has been the prominence of tyre trouble. Admitting that the surfaces have been villainous, the amount of wear and tear at the conclusion of the trial and the number of bursts and punctures were particularly noticeable. True, all tyres cannot be tarred with the same brush, and one of the heavy combinations finished with its original covers in apparently almost new condition.

With regard to the capabilities of the complete machines, too much stress should not be laid on the number of failures on Bwlch-y-Groes. Surprisingly few riders knew the hill, and many displayed a lack of skill in handling their machines. It is certain that not one in a hundred machines in this country is ever put to a test even approaching the climb in severity.

One other important feature deserves more prominence. The A.C.U. Trials are intended to foster the best types of machines for public utility, and yet year after year some manufacturers fit special features, such as large tanks, improved brakes, larger tyres, and other items *to their competition machines only.*

We do not intend to raise the much-disputed question as to what comprises a standard machine, but surely some means could be devised to prevent the use of such extraneous fitments as deliberately nullify the object of the trial.

An Index to the advertisements in this issue will be found on the page facing the back cover.



King Charles's Head.

IN "David Copperfield" a weak but lovable character could never quite stop the martyr king's head from butting into his day-dreams. A reader recently hinted in our Correspondence columns that "accessibility" constitutes a parallel obsession in my own case. I wish that reader had been present in my garage this week. A wet spell inspired me to straighten a footrest which had been pointing to half-past seven ever since I forgot which way the throttle shut a few weeks ago. Blithely I tackled what, in my innocence, I mistook for a ten minutes' job (I have a vice, and had eke armed myself with a long piece of steel tubing, which looked a snuggish fit on the wayward spindle). When I got down to dots, I found that the back brake had to come off before I could dismount the footrest. Denouement No. 2 was the discovery that the exhaust pipe had to follow suit, which implied outing the crank case drain plug and a crank case bolt. I got the rest adrift at last, trued it up, and put it back, adding ten black marks against the 1919 designer concerned because a certain nut was so well fortified that I had to make a special spanner before I could shift it. The return journey absolutely exhausted my vocabulary, which represents a lifelong collection, acquired with much pains in several hemispheres. The only ways of getting the exhaust pipe right home were:

(1.) To bang it with a coal hammer.

(2.) To dismount the timing gear, and subsequently retime the engine.

The first method did not appeal to me, partly because the pipe was virgin as to its rotundity and cunningly plated; moreover, I intend to sell the machine shortly, and hammer dints on its pipe will provide buyers with a pretext for haggling with me. The mystery of the second method is accounted for by the fact that the pipe was a d.t.s. (trade term, "tight driving fit") between the magneto drive case and the crank case, and the rear half of the magneto chain case was cast in one with the timing cover. Have I justified my obsession?

One against Me.

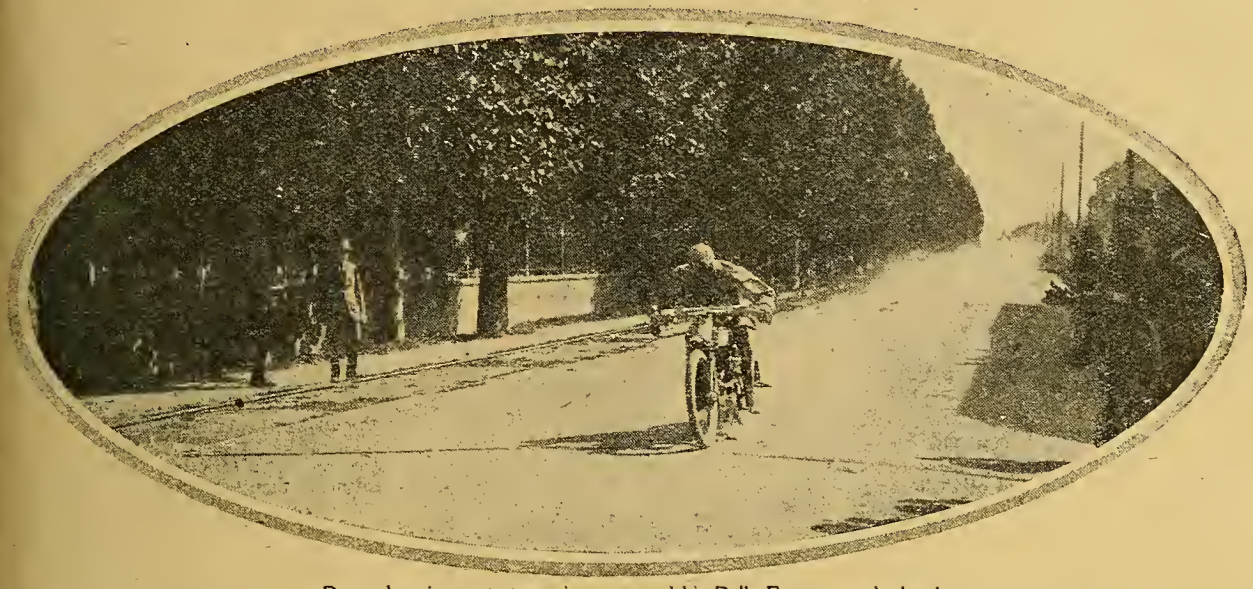
HOWEVER, the greatest of us have our temporary aberrations. During the heat wave my revbursts up-hill on public occasions were sometimes marred by the gear lever jumping into neutral. When one is doing fifty up a steep hill into a bottleneck of awed and respectful rubbernecks, nothing is more disconcerting than a sudden and violent deceleration of the road wheels, accompanied by a ferocious roar from the engine. So when it began well and truly to rain, I tackled this job also. I knew where the blame lay, or so I fancied. The selector rods of my gear box have hemispherical holes machined in them, one of which is chocked by a spring plunger when a gear is in. Each plunger spring is adjustable, so, methought, the mug who last fooled with my gear box had omitted to tighten up the second gear spring. Laying bare those springs is some job; the nuts on my gear box are as numerous as the rivets in a tank. When I got the accursed thing exposed, the spring was hard up, and the enthusiastic plunger had eaten its way clean through the head of its tunnel. This latter only affected me in so far as it raised the problem of reinserting the selector rod through a bearing which was now wholly blocked by an unleashed plunger. The real crux was that the locking device was not to blame for the gear jumping out. I slept on this problem. Wisdom came with the dawn. I must have coupled the gear lever to the selector in such wise that the second gear selector never registered its hemispherical hole with its spring plunger. And it was so. I need never have tampered with the gear box at all. Two turns of an external nut would have put things right. Further strains on my vocabulary.

Don't Worry the Trade.

I AM behind the scenes in some respects, and, therefore, appeal to readers not to bombard a maker with letters if an expected machine is far overdue for delivery. No words of mine can describe what firms have to put up with. I confess I can see no reason why steel and iron should be of inferior quality after the vast experience which the war gave us in producing these metals; but the fact remains that a great deal of stuff has to be rejected. When we come to partly or wholly manufactured components, stampings, forgings, tubing, castings, or parts bought ready for erecting, the case is widely different, for the suppliers have changed perhaps 50% of their labour since the Armistice, and many of the new hands have to be retrained. One concern was compelled to scrap 5,000 connecting rods last week. One can imagine what this implies, when thousands of pounds have been paid out weekly for eight months in wages, and for tools, material, and shop alterations, with never a farthing coming in. Just when mass erection is due to begin, and perhaps £10,000 a week should commence to replenish depleted coffers, the entire process of manufacturing is again held up. On the top of these troubles, the postman daily leaves a huge mail, most of which consists of vituperative enquiries about delivery, including one from a man who has ordered through a dealer unknown to the makers, who took three machines off a sub-sub-agent for a wholesale sub-agent, so that the firm has never so much as heard the name of either vendor or buyer. The only possible result of incessant importunity will be to tease honest firms into sending out unsound stuff rather than put up with these continued mortifications.

The Italian Motor Cycle Championship.

Lightweight and Mediumweight Events held Concurrently on the same Course. British Machine second in 350 c.c. Class.



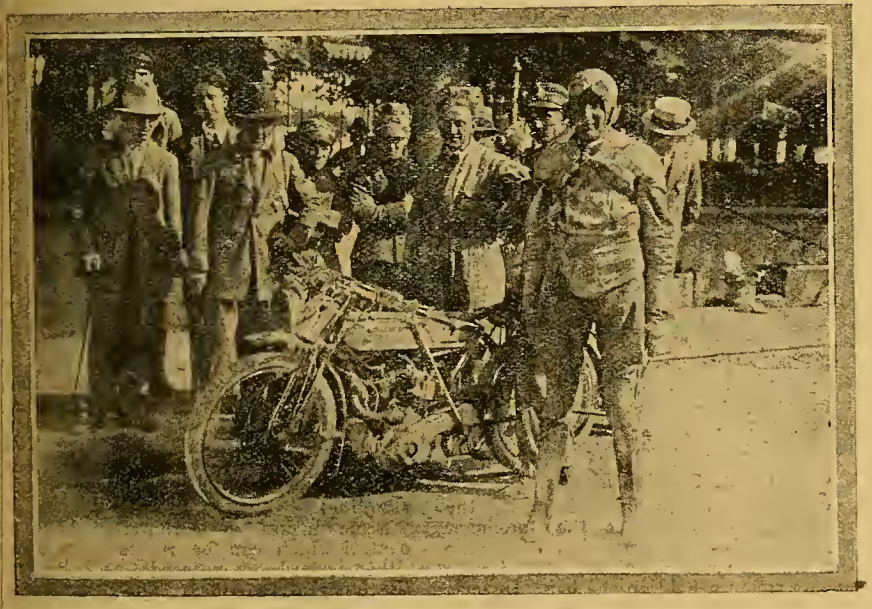
Dovo, the winner of the senior class, and his Della Ferrera, on the last lap.

THE Italian motor cycle T.T., the most important of the numerous races held yearly in that country, took place on September 7th, after five years' suspension, the last event having taken place in 1913, before the war.

The race was over the usual Cremona course, a triangle of straight, flat roads, the circuit of thirty-nine miles being covered five times, totalling in all 195 miles. The roads were not in very good condition, being very dusty. Dogs and chickens frequently strayed on the course, causing several spills, fortunately without serious consequences to the riders, but prejudicial to their chance of success. In other respects the race was well organised, and everything went well, sport being very good.

A Representative Entry

There were seven starters in the 350 c.c. class and 20 in the 500 c.c. class. The previous holders of the title for both classes—the Maffeis brothers—were both present, and hot favourites, although both rode in the senior class this time, but on different machines. The elder Maffeis (Bianchi) was eliminated in the first lap owing to belt trouble; and the other (riding a Motosacoche) dropped out in the second lap on account of his frame breaking, owing to the bad state of the roads, which caused many other retirements amongst the competitors.



The new record holder for the Cremona circuit: Dovo (Della Ferrera).

At 7.20 a beginning was made with the Junior class, the starters, at half-minute intervals, being as follows:

1. Sassi (Maffeis).
2. Bouasso (Douglas).
3. Baj Badino (Douglas).
4. Pozzi (Motosacoche).
5. Gianolio (Douglas).
6. Pregliasco (Douglas).
7. Antoniazzi (Douglas).

Pregliasco's Douglas was fitted with all-chain drive, but was not successful owing to transmission trouble.

After twenty-five minutes' interval the riders in the senior class were sent off, also at half-minute intervals, in the following order:

1. Bordino (Motosacoche).
2. Rossi (Motosacoche).
3. "Beppi" (Senior).
4. "Cinque" (Triumph).
5. "C.P." (Borgo).
6. Borgotti (Fongri).
7. Lt. Guzzeloni (Frera).
8. Dovo (Della Ferrera).
9. Merlo (Frera).
10. Sergt. Ruggeri (Sunbeam).
11. Gnesa (Motosacoche).
12. Groini (Maffeis).
13. Genzini (Triumph).
14. Acerboni (Frera).
15. Castagneto (Frera).
16. Nosenzo (Della Ferrera).
17. Maffeis, jun. (Motosacoche)
18. Sergt. Russo (Sunbeam).
19. Sergt. Amerio (Sunbeam).
20. Maffeis, sen. (Bianchi).

Maffeis, junior, made a very fast start, creating great enthusiasm amongst the concourse of spectators, as did Dovo, who rode a twin-cylinder Della Ferrera, of the four-speed, four-chain type. The gearing of this machine is curious, there being two chains from the engine to countershaft and two from countershaft to driving wheel, all enclosed in oil bath chain cases. Three despatch riders on Sunbeams were amongst the starters.

Twelve minutes after the last riders had been sent off, Pozzi (Motosacoche) arrived in fine style having completed his first lap in 48m. 31⅕s. This proved

The Italian Motor Cycling Championship.—to be the fastest lap of the day on the small machines, his speed being 48½ m.p.h. Baj Badino (Douglas), the favourite, lost much precious time on account of a rather bad fall caused by a dog.

Before all the competitors in the junior class had finished their first lap, the first starter of the senior class, Bordino (Motosacoche), had caught them up, and even passed some of them, despite the twenty-five minutes interval. This rider accomplished his first lap in 41m. 1⅕s., but barely had two minutes elapsed when, to everyone's great surprise, Dovo (Della Ferrera), who had started 3½ minutes after him, also passed at great speed, going in fine style. It seems a strange coincidence that in the two classes the eventual winners both secured the front position right at the first circuit, in which they both completed the fastest lap of the day in their respective classes. Dovo's time for the lap was 39m. 37⅕s., a speed of nearly 60 m.p.h.

Frame and Fork Breakages.

All the riders of the junior class completed the first lap, but two of the senior class dropped out. At the beginning of the second lap Maffeis's accident happened, and he had to be taken to the hospital, his hands and face being rather severely cut. One of the despatch riders also retired owing to his front forks breaking.

In the second lap another four riders retired; the pace and the bad state of the roads beginning to tell on both riders and machines. The position of the first four in each class remained the same, however.

The third lap began to see a few changes for the first places; the leaders remained the same, but Baj Badino (Douglas) had gained on Sassi (Maffeis) in the junior class, robbing him of second place, whilst in the senior class Gnesa (Motosacoche) from the thirteenth position, which he held in the first lap, gained consistently on all riders but the first, by running eighth in the second, and fourth in the third, taking the place of Merlo (Frera), who had been in that position since the start. Gnesa, who had been very unfortunate owing to various minor troubles in the first lap, made a splendid effort and arrived second.

He finished just a minute ahead of Borgotti (Fongri), who would have been second, as Bordino (Motosacoche), who had held that position for four laps, had dropped back, if he had not punctured in the last lap. This rider rode most consistently, keeping in third position for the whole race.

Leisurely Replenishments.

In the meantime two riders had dropped out in the junior class, and a further three in the senior class.

Between the third and fourth lap most of the competitors stopped for replenishments, but, contrary to British custom, no time-saving devices were employed to effect lightning refills of the tanks. In fact, most of the competitors seemed to find time to get themselves snapped by the photographer during the refilling operations.

Baj Badino (2¾ h.p. Douglas), who ran second in the junior class, approaching one of the level crossings.

The finish was anxiously awaited, and as the time went on comments were being made on the fine performance of the probable winner Dovo, and all eyes were strained down the road waiting for him to appear.

This he eventually did, finishing very fast. Bordino, who should have been the runner up, was expected about twelve minutes later, but in his stead, after some delay, Borgotti arrived, and looked like taking second place until Gnesa came along shortly after, having covered his last lap in five and a half minutes less than the previous rider, who arrived only four minutes in front of him. The former thus gained second place by approximately one minute, Bordino being fourth, and six others in the following order:

		h.	m.	s.
1.	Dovo (Della Ferrera) ..	3	32	34⅘
2.	Gnesa (Motosacoche) ..	3	58	52⅘
3.	Borgotti (Fongri)	3	59	59⅘
4.	Bordino (Motosacoche) ..	4	11	37⅘
5.	Merlo (Frera)	4	11	47⅘
6.	Acerboni (Frera)	4	13	14
7.	Grioni (Maffeis)	4	34	10
8.	Ruggeri (Sunbeam)	4	37	9⅗
9.	Castagneto (Frera)	4	38	27⅕
10.	Nosenzo (Della Ferrera) ..	4	58	44

The average speed of the winner was 55.25 m.p.h., beating the previous record for the course.

The results of the junior class were as follows:

		h.	m.	s.
1.	Pozzi (Motosacoche)	4	21	52⅕
2.	Baj Badino (Douglas) ..	4	29	17⅘
3.	Sassi (Maffeis)	4	34	0

The average speed of the winner in this class (44.85 m.p.h.) is lower than that made by Maffeis, jun., on a Douglas, who holds the existing 350 c.c. record.

The team prize in the senior class was won by the Frera team, who had three finishers' places as follows: fifth, sixth, and ninth. Merlo and Castagneto rode the usual single-cylinder model with side-by-side valves, whereas Acerboni had a special twin model.

Italian Machine Wins.

Dovo wins the Head Cup for the fastest time of the day, and his success in the most important Italian road race reflects great merit on his mount, the Della Ferrara, which, in spite of its speed, had been most unfortunate in competitions this year, owing to falls or minor troubles, which have nothing whatever to do with the excellence of the machine.

Borgotti did not ride the usual flat twin Fongri, but a special racing machine with a V twin engine. The two Maffeis machines, with Jap engines (one in the junior and one in the senior class), did very well, finishing third and seventh respectively. Baj Badino on his Douglas with better luck would have won in his class.

Everything considered, the event was very successful, and the entry the largest attained this year for any road race or hill climb.

Standardisation of Controls.

Should the Carburetter Levers open Inwards or Outwards?

FOR some years there has been a wide diversity of opinion and practice which exists in the arrangement of carburetter controls on the motor cycle handle-bar Undoubtedly it is desirable that carburetter makers come to some arrangement by which the controls are standardised so far as the direction in which they operate is concerned. Below are given some strong reasons in favour of levers made to open outwards, and the disadvantages of the "inward" movement are discussed.

Levers Opening Outwards.

The case for the control levers opening outwards when fixed on the right handle-bar is a very strong one, as the right thumb moves the levers outwards, and is amply strong enough to compress the control springs while the fingers retain a safe hold of the handle-bar. When closing the levers, the thumb holds the handle-bar, while the forefinger has a wide reach, and the movement is assisted by the relaxing of the springs.

Levers Opening Inwards.

When the levers open inwards, the reverse is the case, as the forefinger has but a limited range inwards, while the thumb, second, third, and fourth fingers retain a hold on the bar. In fact, it is difficult to open some levers inwards with the point of the forefinger: it has to be done by the first joint or even the knuckle.

The opening outward movement therefore appears to be anatomically correct, and this should certainly be taken into consideration by the designers of carburetter control levers. Standardisation should follow on anatomical lines, and should not be governed by previous mistaken practice, even of many years' standing.

Some makes of carburetter have a control which can be reversed, to open either inwards or outwards, according to the fancy of the rider. The Senspray is one of these. V.A.H.

A PROLONGED TRIAL.

Some Details of the Equipment of the Two Sidecar Outfits which are going through the A.A. 5,000 Mile Benzole Test.

At Towcester. The two Triumph outfits undergoing the A.A. 5,000 miles National Benzole Test. Very complete equipment is provided.

WHEREVER the two smart-looking 1920 chain-drive Triumph-Gloria outfits, with their black and yellow "5,000 Miles National Benzole Test" notices displayed, come to rest, an interested throng of spectators always gathers. Admiration is invariably expressed not only for the workmanlike finish of the machines themselves, but also for the completeness of the fittings and accessories.

Filling the tank with a measured quantity of benzole. A special graduated brass cylinder is employed for this purpose.

The severely practical part of the organisation of the run has largely devolved upon Mr. W. Smith, who is assistant to Capt. Allen, the fuels manager of the A.A., and it must be admitted that he has very thoroughly dealt with his task.

To Determine Consumption.

One of the first essentials was the provision of a means of accurately measuring the supply of benzole into the tanks. For this purpose a half-gallon brass cylinder fitted with a delivery tap at the base was made. This measure is graduated into half-pint divisions and arranged to receive a disc of filtering material at the mouth. Next to measuring the spirit is the necessity of ascertaining the actual distances covered. This is done by means of Smith speedometers, which appear to be more than ordinarily satisfactory, maintaining the needle steadily at normal speeds on all except the most "pot-holey" roads.

As a further precaution against incorrect estimation of fuel consumption, the tank filler caps are locked, the key being in the possession of the driver, so that no replenishments can be made without his knowledge. The locks are soldered on to the tank in such a way that the bolt passes sideways into the filler cap.

Lucas accumulator lighting sets are fitted to both outfits, and although it is not intended to do a great deal of night riding, an examination of the bulbs and accumulators at the conclusion of the total distance will be interesting.

In order adequately to secure the comfort of the observers, Easting windscreens are attached to both the sidecars, and but little increased wind resistance appears to result from their use.

A word may be added regarding the motor cycles and sidecar themselves.

These are both chain-driven 4 h.p. Triumphs, combined with Gloria sidecars. The test machine has the new type enclosed fork spring with damping device and a rigid wheel sidecar, while the tender is equipped with the normal type fork spring and the usual Gloria spring wheel.

The Motor Cycle in Portugal.

A Field for Development in Western Europe.

DURING the present period of trade re-establishment British manufacturers might well look towards an almost untouched market which is remarkably near home.

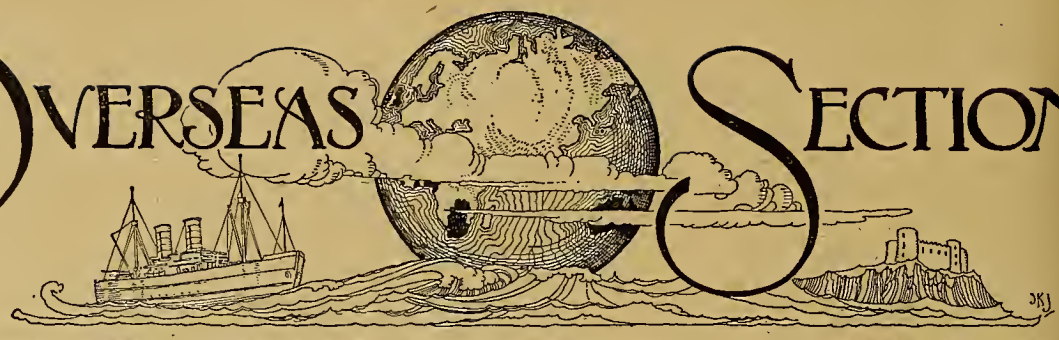
At present the local demand is inadequately met by American products, and there is a moderate and steady *clientèle* awaiting the opportunity of placing orders with any firms able to give satisfactory service. The country of which we write is Portugal, one of our Allies during the war, and always disposed towards us in a friendly manner. The following notes from an ex-officer of the British Army now resident in the capital there are of much interest:

"Portugal is wonderfully mountainous. Every day I ride over roads that make the average club trial look like an afternoon run round Piccadilly in a 'flivver,' and this fact must be remembered when considering what type of machine to send here. Considering the number of people of the class who buy them, motor cycles are extremely popular here, and were there sufficient machines available the existing number would be doubled and trebled. The Portuguese branch of the Vacuum Oil Co. is supplying ample petrol and oil for all purposes at a price about the same as that obtaining in England. Practically all the machines here are American big twins (Harley-Davidson, Excelsior, Indian, and Reading Standard in order of precedence). The sidecar is so popular that solo machines are, comparatively, rare, this being due, I think, to the excessive weight of U.S. machines for solo work and the absence of medium weight solo machines.

"I consider that there is a tremendous opportunity for British makers if represented by live agents. The following types should sell well: (1.) Medium weight three-speed and clutch solo machines, *e.g.*, Norton, Triumph, etc (2.) 6-8 h.p. sidecar outfits, *e.g.*, Matchless, A.J.S., Enfield, etc. The spare wheel on sidecars is not known here, and would prove a tremendous selling point. The Portugee likes folk to hear him coming, so plated T.T. exhaust pipes are greatly to his taste, while bright colours are also popular. All owners seem to be unmechanical, and very rough and ready drivers, so machines should preferably have automatic oiling systems and one-lever carburetters.

"This is a magnificent and little known country to tour—why cannot some of our salesmen come out and combine a little business with pleasure?—F. S. ROWE."

OVERSEAS SECTION



A Commentary based upon Practical Experience and a Study of Overseas Opinions.

Transmission Problems.

SPEAKING widely, three separate and distinct systems of transmission are in vogue in motor cycle construction to-day, viz., the all-chain, chain-cum-belt, and the unit construction by which the drive is conveyed from the engine to the countershaft by means of pinions, and thence to the rear wheel by single chain or belt. Each system has something to recommend it, though the latter appeals to the mechanical mind as the most thorough and permanent job.

All-chain drive is quite reliable, and, given a good clutch, it lacks little from an engineering point of view. Its installation, however, sometimes brings in its train objectionable features which are difficult, but not impossible, to obviate. These disadvantages are largely of an external character and may be summarised as follows: The chain from the engine to the countershaft must necessarily be enclosed, and in many instances the cases are unduly bulky or inaccessible, while annoying rattles often arise. Many Overseas riders dispense with them, thereby exposing to grit and water all sorts of comparatively delicate mechanisms which were not designed for such exposure. This may apply in the main only to the more shoddily made chain cases, though we have known the best of them to suffer sorely in trials of exceptional severity. Also there is the remote though ever present possibility of a broken chain resulting in a smashed case, it being borne in mind that the life of a chain is decided entirely by the speed at which it runs. For this reason the engine-shaft chains begin to show wear early, though being subject to less strain than the rear chain it does not follow that they are the first to break.

Under absolutely ideal conditions chains do not wear indefinitely, and if this system of transmission can be superseded by one which is permanent a very large step in the direction of perfection is accomplished, the cost of maintenance having at once been considerably reduced. There is no mechanical reason why the transmission of a motor cycle should not be as permanent as regards wear as the power unit. In the case of cars this is so; the days are gone when car owners were confronted with the expense of new chains every few hundred miles, this item being tacked on to such inevitable expenses as tyre renewals; and what applies to the car to-day will undoubtedly apply to the motor cycle five years hence.

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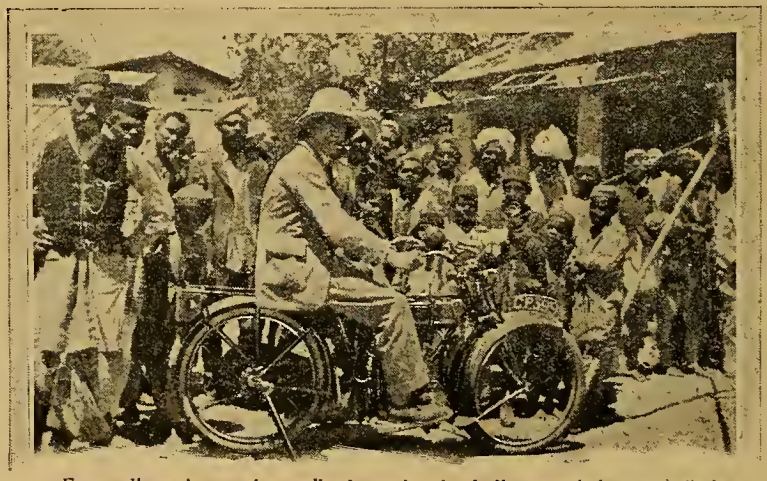
Virtues of the Belt.

THE unit system with final belt or chain drive is, then, to be highly commended as a step in the right direction. It eliminates the high-speed chain, and renders possible the use of a small rear wheel sprocket, so that, if an oil-retaining chain case be used, it can at any rate be of modest dimensions. The clutch, shock absorber, etc., are contained in an oil-tight housing behind the engine, always perfectly lubricated, presenting no unsightly protrusions, and economising space, while for those who object to the chain case the simplest type of chain shield would give reasonable satisfaction. It is possible for the rider to carry with him a complete chain which can be put on in a few seconds in case of breakage—a very favourable comparison with the case of a machine where such renewals entail the movement of both gear box and chain cases.

The unit system is not, of course, confined to the final chain drive, and has been adopted by one or two makers of lightweight machines in conjunction with belt drive to the rear wheel. For a light machine it would be difficult to devise a more ideal system. The belt is clean to handle, and its use obviates the employment of a shock absorber, which latter is not always an unmixed blessing. The final belt drive is cheap and simple—cheap not only in itself but also as regards



Extraordinary interest is usually shown by the Indian population generally in the motor cycle, and in the large towns there is a big market for a cheap machine. The photograph of the 2¾ h.p. A.J.S. was taken at the hill station, Raniket (United Provinces), 6,400 feet above sea level.

Overseas Section.—

tryes, though its limitations are confied to solo mounts, and preferably the lighter order of these. The old nuisance of belt slip, which alone accounts for the present popularity of the chain drive does not occur in the modern lightweight machine, proper precautions having been taken to shield the belt from oil and water, and we have ourselves ridden in the most strenuous trials, over terrifying gradients, and through truly appalling weather, on belt-driven lightweights, the transmission systems of which gave no trouble whatever throughout such adverse conditions.

Our summing up, then, is in favour of the unit system with final belt drive so far as the limitations of the belt extend, after which the final chain takes its place.

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Possibilities of the Shaft Drive.

THE shaft drive is, of course, the ideal, and one fails to see what is the real obstacle in the way of its sluggish development. The system is as old as the hills, and any experienced engineer could lay out a shaft drive design as silken and compact as any of our existing transmission systems, and infinitely more permanent. As to whether he could adapt it attractively to the orthodox type of motor cycle is quite a different matter, for one of the chief difficulties lies in obtaining the necessary alignment without producing a lop-sided and overhung effect and a corresponding lack of symmetry in weight distribution. Probably the chief reason why the shaft drive is not seriously tackled by the more influential manufacturers is because they possess a very good thing in their present designs, and an innovation of this kind would necessitate an entire departure from old and well-tried principles, *i.e.*, in adapting the shaft the majority of makers would be called upon entirely to remodel their productions and to depart from many of the principles which have played no small part in the making of their businesses.

One cannot help feeling, however, that the shaft drive will inevitably come when motor cycle engineers are ready for it, and until then the unit construction appeals to us as a very desirable step in the direction of ultimate perfection. Perhaps its advent will entail a revisal of engine design.

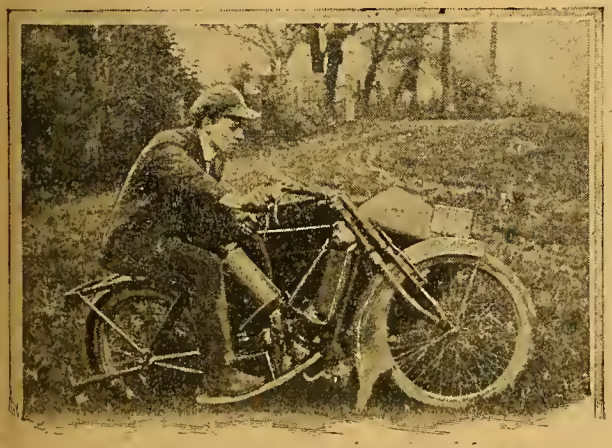
A Selection of Letters from Readers scattered all over the World.

British Motor Cycles.

C. F. GILL, writing from Rangoon, Burma, says: "I have seen people writing from time to time as to the superiority of foreign motor cycles over British. I have ridden considerably in India and Burma, over roads (!) of all degress of rottenness, and my experience has been that a British machine can stand far more hard wear than the products of other countries. There are many 1911 Triumphs here still going strong, and up country in a quite small village there is a Triumph 1911 engine being used for pumping purposes; while foreign motor cycles only two or three years old are well past their prime."

A 5 h.p. Mount on Scott Lines Wanted.

"R.M.," writing from Toronto, speaks highly of the Scott and Triumph: "The Scott combination, a photograph of which I am sending, has been running since 1913, and has given exceptionally good service. The only spare parts that have been fitted to the motor are two piston rings and new gaskets. I think this will take some beating. I am glad to tell you that the Triumph is going well. This machine, as you probably know, built up such a reputation that, after an absence of over four years, the Americans with their big twins could not freeze it off the market. I think it goes to prove that if the British machines were exploited properly there is no doubt that they could 'clean up' the field. My ideal machine would be a big Scott, big tyres (3in.), 28in. wheels, 5 h.p. motor, three-speed, and, if possible, a shaft drive and interchangeable wheels, and, last, some brakes that will stop the machine."



A Scott outfit which is giving good service in Canada (see letter from "R. M.")

Cultivate Indian Trade.

"C.E.F-M.," writing from Delhi, India, says: "As one of your readers abroad, I should like to thank you for the Overseas Supplement which appears from time to time. Might I make the following suggestions for the benefit, not only of your Overseas readers, but also of the manufacturers who advertise in your paper?

"First, it has always been a mystery to me why more English motor cycle manufacturers do not cater for Indian and Colonial trade. It cannot be said that the English motor bicycle is not suited for the Tropics. But it is a fact that there are not more than half a dozen different makes of motor bicycles in India. Before the war, even, one had to take what one could get when one wanted to buy a new motor bicycle. I have always longed to see, in the large garages in Bombay and Calcutta, two or three machines of different makes on show. One hears that these garages out here are agents for this or that machine, but they rarely have any machines in stock.

"Might I suggest, therefore, that the manufacturers might persuade their agents in India to keep up their stock so as to have one always on view? Also, it would improve trade if manufacturers would not only publish the names of their agents out East, but also publish the retail price of their machines in the various countries.

"I should be glad to hear that agents had been found for a large number of English machines which heretofore are unknown out here—A.B.C., Brough, Hazlewood, Norton, Matchless, Blackburne, etc.

"As regards the type of machine most suitable to these parts, if the following few points were embodied in any good English motor bicycle there would be no doubt about the suitability:

"(1.) Spring frame.
"(2.) Large size tyres.
"(3.) Easily detachable wheels.
"(4.) Simple engine, with its tappets, timing gear, and magneto accessible.
"(5.) In the case of the combination, detachable and interchangeable wheels, ample locker room for extra petrol and oilcans.

"I fear I have been somewhat long-winded, but am anxious to see more English motor bicycles out here and fewer foreign ones."

3,000 Miles on a Single Cylinder Sidecar.

Some Particulars of the Service of a Satisfactory and Hard-worked Outfit.

CAN anything but a big twin prove satisfactory as a sidecar propellent? How often in varying forms is this question asked? It reminds one of the old query, "Can a fellow live in Town on five thousand a year?" It all depends on the fellow. So it is with the single-cylinder motor cycle of reasonable dimensions. It all depends on the machine.

The following brief narrative will show that, as regards the Triumph, at all events, no fears need be entertained that the power of the 85 × 97 mm. (550 c.c.) single-cylinder engine is insufficient for serious sidecar work.

The 1919 Triumph 4 h.p. single-cylinder sidecar outfit, on which the writer has covered 3,000 trouble-free miles.

The Outfit.

It was a hard struggle last spring to get something to ride, and the writer was all the keener to get on the road, as he had just been demobiilsed from a non-motoring branch of the services which had claimed him for the previous three and a half years. But just before Easter he successfully extracted a 4 h.p. Triumph and Gloria sidecar from the Triumph Cycle Co., Ltd., and one, moreover, equipped with a Lucas accumulator-fed electric lighting outfit, which has proved as entirely satisfactory as one has the right to expect from products of that famous firm of lamp makers. The current is supplied by two large forty-amp. hour accumulators, carried in the boot of the sidecar in a polished box, and the lamps are a light car type head lamp, an egg-shaped sidecar lamp, and a red tail lamp on the cycle carrier. It has been found necessary to have the accumulators charged every six weeks, and if this is done a flood of light is available at any time. The relief from the messiness of acetylene is so great that once used it is impossible to conceive of anyone forsaking electric light. The rest of the special equipment consisted of a hand Klaxon—a far better road clearer than the ordinary bulb horn, and a Cameo windscreen, which has proved most useful when carrying a child in the sidecar, or in windy weather. Up to the time of writing, the outfit has had the extraordinary good fortune to have covered just over 3,000 miles without ever having been out on the road in a rainstorm.

Although the power unit is apparently the same as that supplied on the 1915 Triumphs, it is very evident to anyone acquainted with both models that a very great advance has been made in the way of giving greater power output, and the lessons gained by supplying huge numbers of machines to the War Departments of the Allies have evidently been put to practical use by the makers. Not only is the 1919 Triumph engine a good puller—it is also a rare sticker. In fact, if one was asked to name any particular virtue of the engine, it would be that on a run of two hundred miles on a generous throttle opening, the two hundredth mile would be covered as stoutly and as with as much determination as the first. A first-class twin is a delightful mount, but the writer has yet to meet with a twin-cylinder engine with quite the same ability to keep its tune under pressure as does a first-class single.

Fuel and Oil Consumption.

When delivered the Sturmey-Archer gear box was fitted with the early 1919 quadrant, but owing to the fact that every time the carburetter was flooded the lubricant in the quadrant was washed out, which meant constant renewal of the lubricant to ensure easy gear changing, the latest type of quadrant fitted high up just under the rear end of the tank was substituted, with marked improvement in the general convenience of the driver. For the first 2,000 miles a careful record of petrol and oil consumption was kept. The machine has covered the whole of its mileage with the sidecar attached, and has often carried three, and on some few occasions four, people. The fuel consumption (benzole was used whenever obtainable on the same carburetter setting as for petrol) for the first 2,000 miles worked out at exactly 71 m.p.g. The best results were obtained with a half and half mixture of benzole and petrol. Knocking was then impossible, and very easy starting and rapid acceleration were experienced. The last 1,000 miles was covered on a holiday jaunt from the Midlands to the far West of England and back, and no record of consumption was kept. Oil has always been used rather freely, Prices' Motorine C being employed, and a quart has invariably been consumed every 200 miles.

FIRST STAGE
WOLVERHAMPTON TO HEXHAM
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B6 *In answering this advertisement it is desirable to mention "The Motor Cycle."*

3,000 Miles on a 1919 Triumph Sidecar.—

Not a single involuntary stop has been made, and not a single adjustment to either machine or sidecar has been necessary. The cylinder and valves were deliberately not removed for 2,000 miles, when the makers took these down and reported that although there was considerable deposit, it was quite soft (chiefly owing to the large use of benzole), and that the valves and seatings and bearings were in perfect order. The writer continues to ask for and use it whenever obtainable. Extraordinary luck (or good service) has been experienced from the 26 × 2⅜ heavy studded Dunlops. Up to the present not even a solitary puncture has been experienced, though the post-war roads in many parts are hardly propitious to long tyre life. The back tyre is, of course, worn down past the studs, but the fabric appears perfectly sound and good for some miles yet. The general finish of the outfit is what one would expect from a combination of Triumph and Gloria companies, though one would fain, perhaps, have a little less glitter and consequently less to keep clean.

The hill-climbing powers are remarkable. Edge Hill can be climbed on second speed with an eleven stone passenger, and steep hills were taken on the run during the trip to the west of England. Indeed, it would appear that so long as the back wheel can obtain a grip, the hill must come off second best when attacked by a modern Triumph sidecar outfit.

The Triumph provides in abundance one quality which, after all, is the bed rock of motoring, that is reliability. M.S.

The Question of Spares and Replacements.

Notes contributed by the Repairs Manager of a Leading Motor Cycle Factory.

"GIVE us a good repair service." Such is the cry of the whole of the motor cycling world. The writer has had fourteen years' practical experience in controlling the repair service of one of the leading motor cycle concerns in this country, and will endeavour to deal with this all-important question both from the rider's and the manufacturer's point of view. It certainly seems that, in many instances, the manufacturer rather loses sight of the vital importance of this side of his business.

It is undoubtedly a great asset to the purchaser of a motor cycle to know that if anything *should* go wrong, it will be made good without any fuss or quibbling; and that the maker's guarantee is not a mere scrap of paper.

It behoves the manufacturer to place a liberal and fair interpretation upon his guarantee, and even if he should occasionally give the rider the benefit of the doubt, and thereby lose a few shillings, it redounds to the manufacturer's credit over and over again in creating an enhanced reputation for fair and dignified business methods, together with an augmentation of goodwill.

There is a type of individual—fortunately rare—who complains for the sake of complaining. But the manufacturer, or his representative, can readily discriminate and note the case for future guidance.

Insurance.

Most motor cycles nowadays are insured, and here again it is most important, in the interests of the trade generally, that manufacturer, agent, rider, and insurance company alike should act harmoniously and deal quite fairly with each other in handling the frequently recurring questions and claims which arise in connection with insurance matters. A few words of praise the writer feels constrained to express in regard to insurance companies. In the whole of his experience, extending over hundreds of cases, he has never known an insurance company to hesitate or quibble over any claim presented by the manufacturer in a fair and straightforward manner upon the rider's behalf.

A great deal of disappointment, delay, and unnecessary trouble can be avoided in many cases by riders taking care to be precise in the orders or instructions which they give manufacturers for spares or repair jobs. An order will arrive, for instance, reading "One fork spring." It is, perhaps, needless to point out that there are various types and patterns of fork springs appertaining even to one make of motor cycle; and, considering that manufacturers are continually striving after perfection, many alterations and changes take place within a comparatively short time. It is therefore essential for a rider to give supplementary information upon all occasions as to the type of machine he has—its number, and, approximately, the date or year of the model, otherwise a query must be raised entailing delay in attending to his requirements, or, at best, a mere guess only can be made.

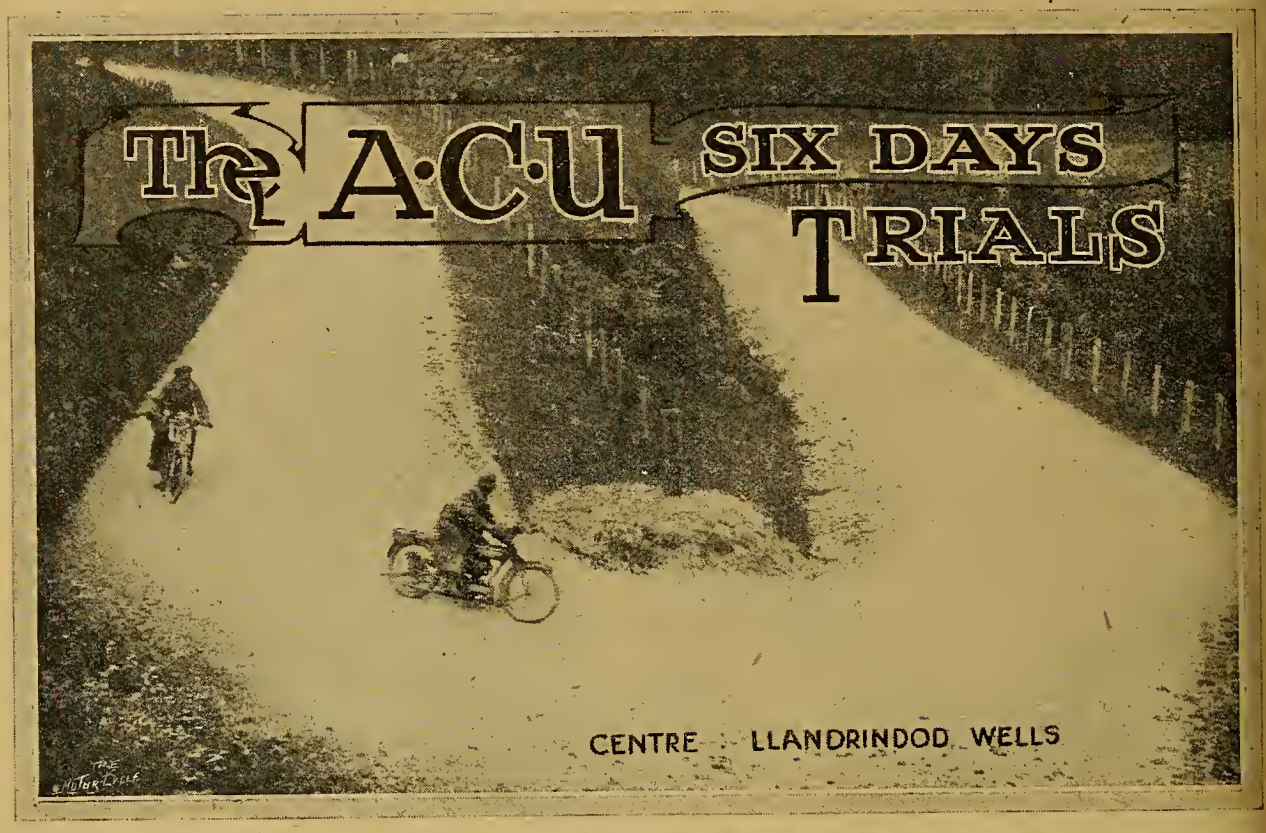
A Brass Band!

Upon one occasion, the writer recollects receiving an order for "one brass band." One felt disposed to ask facetiously "How many performers?" By the exercise of that wonderful amount of gumption which all manufacturers and their loyal staffs are expected to carry, he eventually divined that it was a phosphor bronze ring or band that was required; it being a hub component.

It is very necessary in every rider's own interest that he should endeavour to thrash out as many points as possible for the benefit of his own information. Such intelligence, when once gained, is frequently of tremendous assistance when out on the road or if momentarily "hung up"; but manufacturers generally exercise the greatest amount of patience and courtesy in answering questions.

There are certain firms in the trade who habitually deal with the repair and replacement question in a prompt and most business-like fashion. They never split straws over a few shillings, and one feels the utmost confidence all the time in strongly recommending their manufactures. Other firms one could name, while aspiring to great popularity, do not give the care and attention to the needs of the public.

Many manufacturers would do well to take a leaf out of the book of our American cousins in this department of their business F.C.J.



Capt. A. Lindsay (4 Norton) and T. Peck (3½ Ariel) negotiating a hairpin bend in Glen Elan.

IN last week's issue we described the first day's run of the Auto Cycle Union's Six Days Reliability Trials, with Llandrindod Wells as a centre over a course of 732½ miles, embracing most of the noted Welsh mountain tracks and precipitous hills. Monday's run consisted of a 98½ miles trip *via* Garth and Brecon to Abergavenny, the return being by way of Crickhowell, Talgarth, Erwood, and Builth.

The names of 115 competitors were given in the official guide, and of these only the following five competitors failed to start: J. R. Lane (2¾ Douglas), C. Hartwright (2¾ New Imperial), Lt. L. de Aranjo (7-9 Harley-Davidson), W. Elce (5 Zenith), and H. A. Leak (7-9 Harley-Davidson). E. W. Merrall (8 Morgan) was a late entry.

On Monday the first part of the consistent driving test was held on Panne Hill. This was repeated on Friday, the last day of the trial, Saturday, this year, being devoted to a careful scrutiny of the condition of the machines, an important point in the final classification.

The consistent driving test was not popular with the competitors, who considered that it was rather a test of the driver than the machine.

Of the 111 competitors, the splendid total of 110 survived the first day's trip, the absentee suffering an unfortunate collision on a bend with a Ford car. The lamp test on Monday evening from Abergavenny home (40¾ miles) caused little or no trouble, thus banishing the fears of some competitors—and some manufacturers—that possibly lamp failure might entirely spoil the otherwise good record of a machine. Quite a number of machines were fitted with dynamo lighting sets, including the new Lucas Magdyno, while dry battery and accumulator equipment were much in evidence.

The clock outside the official garage, with the competitors' numbers arranged around the dial, indicating their starting times.

TUESDAY'S RUN OF 160¼ MILES.

Llandrindod, Howey, Newbridge-on-Wye, Llanafan-fawr, Garth, Llangammarch, Llanfair-ar-y-bryn, Llandovery, Llanwrda (brake test), Llansawel, Llanbyther, Bronwydd Arms, Conwil Elvet, Newcastle Emlyn (lunch control). Newcastle Emlyn, Aberayron, Cross Inn, Ystrad Meurig, Yspytty Ystwyth, Head of Elan Valley, Rhayader, Llandrindod.

The best of weather again favoured the trial, and, thanks to excellent organisation, the competitors got away well up to time, and Llandrindod was left by the same road as on Monday, but a mile or two out, on the Builth road, an arrow directed us over a rough and rather greasy lane. Several short hills needed attention on account of their surfaces, and Danskin (3½ Rover) skidded but fortunately received no more damage than a cut knee and a dented mudguard. The first day's route was again met at Garth, but part of the way up the hill, which formed the consistent driving test, a sharp right-hand turn led along the base of the hills between Garth and Brecon. The mist was still lying in the valley, but was soon dispelled by the increasing power of the sun. Many single-figure gradients were encountered but there were no hills sufficient to test the powers of a modern machine, though the surface in places needed very careful negotiation.

The ascent of the Sugar Loaf in particular would be considered unrideable by the average tourist, as prolonged timber hauling had caused deep ruts

The Trusty Triumph to the fore.

In Trials—On Hill—At Speed.

M.C.C. Inter-Club Team Trial
"The Motor Cycle" Cup.

Coventry M.C.C. wins the Cup—the only team to put up a non-stop performance. 50% of the team on Triumphs.

York M.C.C. Hill Climb
Sutton Bank.

Class II. 275 c.c. Amateur—
A. Proctor, 2¼ Junior Triumph, FIRST.

Class III. 275 c.c. Open—
A. Proctor, 2¼ Junior Triumph, FIRST.

Brussels M.C.C. Championship
98 Kilometres.

4 h.p. Triumph won Championship, making fastest time of the day and beating all twins.

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"His machine appeared to be capable of tremendous acceleration, the exhaust making a smooth even note resembling an aero engine."

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7-9 h.p.	"	1	"	45 2/5 "
3½ h.p.	"	1	"	50 1/5 "
4 h.p.	"	1	"	57 1/5 "
6 h.p.	"	2	"	3 4/5 "
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The A.C.U. Six Days Trial.—

Near the top of this stretch J. G. Lowles (8 Sunbeam) retired, owing to magneto trouble. After Llandovery the earlier riders found an arrow missing, but this was put right on the spot by the official A.C.U. sidecar outfit. This arrow directed competitors to the brake test hill, but unfortunately there was a misunderstanding, which caused about half the entry to go astray; and much time was wasted, and many missed the test altogether. The omission was rectified, however, during the afternoon.

A Machine on Fire.

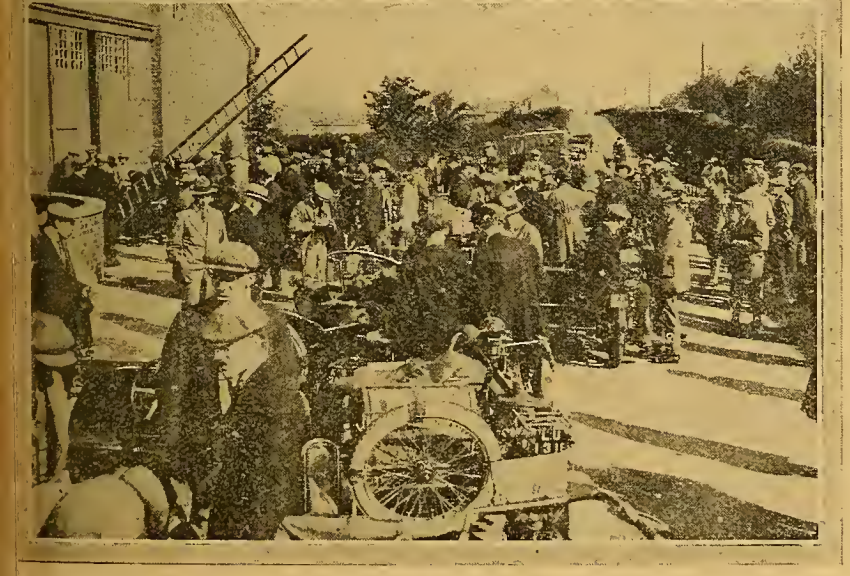
Near Llandovery, Hawkes (Morgan) was forced to retire with timing gear trouble. An arrow, some three miles from the lunch stop, had been torn down and replaced wrongly, but this was corrected before any serious harm could come of it. In fairness to the A.C.U., it should be repeated that the arrowing generally was perfect. The Emlyn Arms at Newcastle Emlyn was the appointed lunch stop, the machines being parked in a field behind the hotel. Here Watson's Ariel caught fire during the refilling process, but the flames were extinguished without damage. A sharp hill out of the town was lined with spectators, but beyond bumpy roads there was no very noticeable feature till the sea came into view during the long descent to Aberaron.

Over the Mountains.

After following the coast for a few miles, in the direction of Aberystwyth, a sharp corner to the right leads up a steepish hill with a left hand hairpin bend, but as the surface was good it caused no trouble. However, a long slope followed past the "Cross Inn," and in less than seven miles the 1,000ft. altitude had been attained from practically sea level. Then came a series of narrow lanes with one sharp loose-surfaced hill before the *pièce de résistance* of the day—a long hill near Aspytty Ystwyth was reached. This hill

The competing machines were housed in two large garages, the floors of which were divided into spaces bearing the numbers of the competitors.

is the worst encountered so far, but even so it is not very trying in dry weather, and only one short piece of steep gradient was included. Following the hill came a long stretch of moorland road, grass-grown most of the way, and including more watersplashes and cross gulleys than it is possible to mention. There were, however, only two splashes of any depth, and though these caused some momentary belt-slip, nothing more serious was recorded. At the head of Elan Valley real roads were again encountered, and a beautiful run by the side of the Birmingham Corporation reservoir led to Rhayader. The run in from this town was over perfect roads which came as a relief to everyone as the day's gruelling had more effect on the riders than on the machines.



The scene each morning outside the official garage (the Drill Hall, Llandrindod Wells) was very animated. The real interest of the general public was most marked.

NOTES.

Generally speaking, there was little trouble to report, such defects as occurred being confined to tyres and ignition. It is curious to note how this latter trouble cropped up in the first two days, though English magnetos are not to blame.

Tim Wood's number was 51. This was also his number in the T.T., and his brother has drawn the same figures in two trials. It seems to be a Scott lucky number.

Edwards (3½ Humber) was delayed with carburetter trouble, and was unlucky enough to get a puncture, which prevented his making up time.

At the finishing point, when Greaves's Morgan was being refilled, a quantity of water was inadvertently poured into the petrol tank. The whole tank had to be emptied as a precaution against future trouble.

The Blackburne team are going strong, the only trouble so far reported being the failure of Watson-Bourne's speed indicator.

L. A. Bees is pursued with bad luck, and his front spindle bearings did not look at all healthy at the finish of to-day's run.

The Scott team are running splendidly, and climb nearly all hills on top gear.

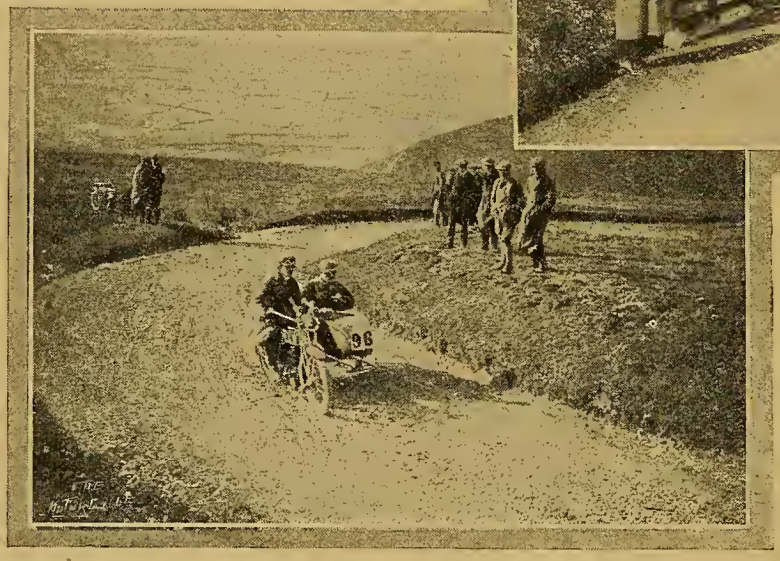
The numerous watersplashes did not cause the trouble which was anticipated.

What say Watson (6-7 Ariel sc.) and Greaves (Morgan) of their respective trials by fire and water?

The A.C.U. Six Days Trial.—

The Triumphs seem to have plenty of power in hand. The sidecar outfits are fitted with 28in. wheels and a new front brake. The cleanliness of the engines is also very noticeable.

Apart from Tuesday morning's misplaced arrow, something went wrong in the neighbourhood of Rhayader, where quite a number of car owners and motor cyclists alongside the reservoir patiently awaited the competitors who never arrived. It was never intended that the competitors should do more than skirt the head of the Elan Valley.



On Panne Hill during the first part of the consistent driving test on the first day of the trial. (Right) France's representative, the 5-6 G.L. sidecar, driven by F. Thorp (Left) C. R. Collier's 8 Matchless.

The remarkable result of 110 out of 111 completing the course on the first day was too good to be maintained, but it would have been even better had not Sumner, who retired so early, been the victim of an unfortunate accident, due to misunderstanding a policeman's signal.

The number of competitors who reported no-trouble runs on Tuesday was remarkable, despite the rough roads.

We saw G. Dance start on Tuesday, and he told us that his momentary stop on Panne Hill (what an appropriate name!) was due to running on to a patch of loose stones while he was intently examining his watch. He swerved and in so doing accidentally closed the throttle. Bad luck, indeed, for the Sunbeam team!

E. W. Merrall, who last rode in the 1911 trial on a P. and M., was travelling magnificently on his 1915 model Morgan-Jap.

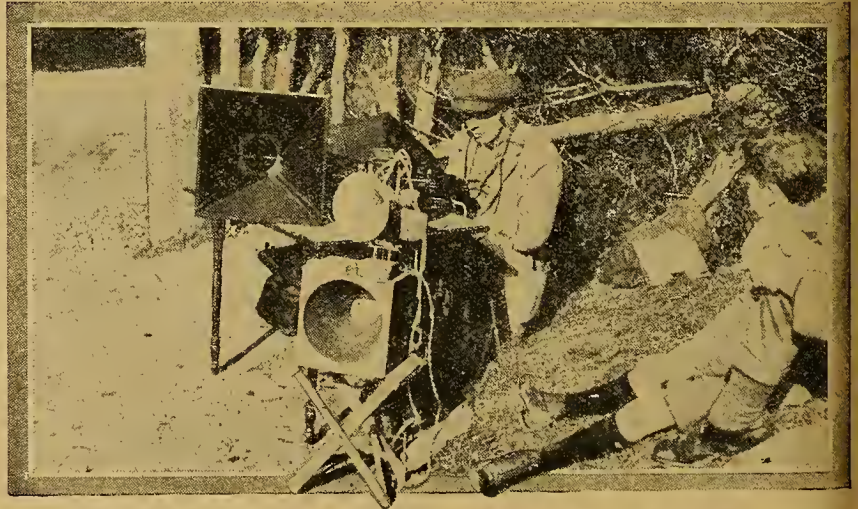
W. D. Hawkes retired on Tuesday morning with timing gear trouble near Llandovery. The same morning saw the retirement of R. H. Baxter (2¼ Radco) with tank trouble—not the first instance of faulty tanks—and J. G. Lowles, an amateur driver of an 8 Sunbeam-M.A.G. sidecar, who had timing gear trouble on Monday, and magneto trouble on Tuesday. In fact, on examination, it was found that a carbon brush was missing, and he is said to have told an observer that he recollected finding it after he overhauled his magneto a week ago!

WEDNESDAY'S RUN OF 152¼ MILES.

Llandrindod, Rhayader, St. Harmon Tylwch, Llanidloes, Stay-a-Little, Llanbrynmair, Cemmaes Road Station, Dinas Mawddwy, Bwlch-y-Groes, Bala (lunch control). Bala, Llanwddyn, Cann Office, Llanfair Caereinion, Newtown, Dolfor, Beguildy, Knighton, Bleddfa, Llandrindod.

In comparison with the two previous days' runs, Wednesday's trip, with the exception of Bwlch-y-Groes and the notorious Hirnant Pass, was voted comparatively easy. That was the consensus of opinion of the competitors; but we must say that the rough going in parts, the myriads of hairpin bends, coupled with the two steep ascents aforementioned, have made a lasting impression on our memory—and a temporary impression upon our anatomy. Why *do* makers hesitate so long with spring frames?

It was again fine, but a thick mist for the first forty miles or so prevented goggles from being worn. There was a considerably depleted list of starters this



A feature of this year's trial was the crediting of ten marks of the 200 total for "silence." On the first day each machine passed *en route* an audiometer invented and operated by Maj. A. M. Low.

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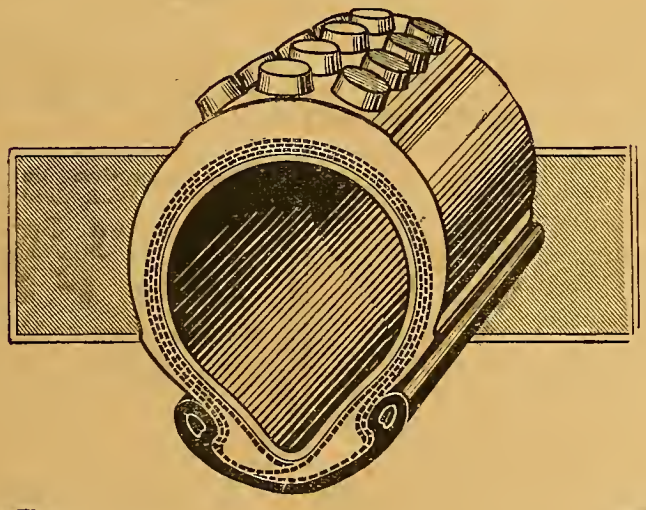

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The A.C.U. Six Days Trials.—

day, but the survivors travelled most regularly, a puncture here and there, or a throttle slide stuck being the trivial adjustments observed by the roadside. A northerly direction was followed on Wednesday to Llanidloes, some of the roads being so narrow that a sidecar almost brushed the hedges by the roadside. The climb at Tylwch, with the usual hairpin bend on a single figure gradient, was the only ascent of note. The arrows led the riders through magnificent scenery, past the lead mines, up Fan Hill to Stay-a-Little, which climb

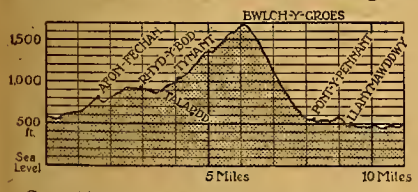
SCENE ON THE MOST SEVERE HILL OF THE TRIAL.

(Left) A general view of Bwlch-y-Groes, showing the imposing nature of the scenery. One of the Ariel riders making a good ascent. (Right) Hugh Gibson (8 Clyno sc.) passing a less fortunate competitor on the narrow part of the hill, where the road skirts the precipice. It was on this hill where, in an open trial some years ago, a press photographer went over the edge, his sidecar outfit falling some 200ft. into the valley. Fortunately nothing of a like nature happened in last week's event.

appeared easy, and, indeed, the protruding rocks and the tortuous course, a watersplash or two, as well as the little acclivities, sunk into oblivion compared to the tit-bit of the morning's run, viz., the ascent of Bwlch-y-Groes (The Pass of the Cross), which, commencing with an acute bend to the right on a single figure gradient, rises 1,790 feet in two miles.

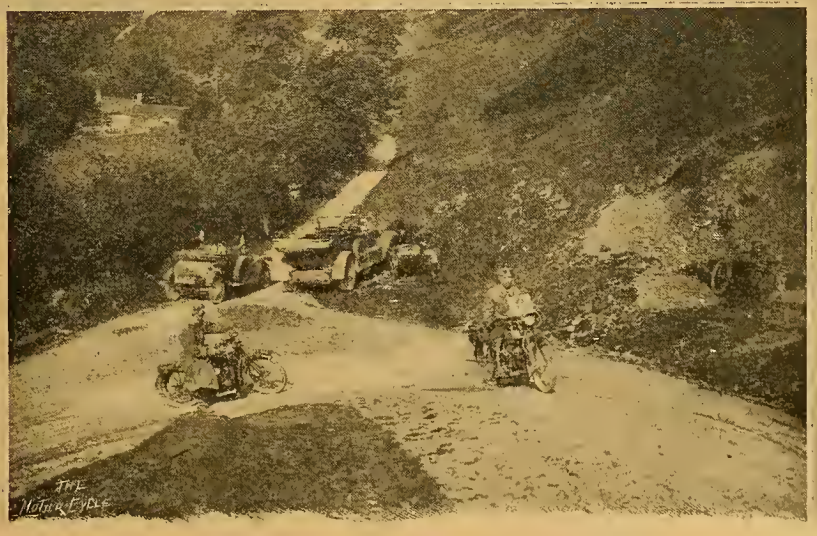
We arrived just ahead of the competitors, and were thus able to observe the whole of the performances from the top bend, which gives a wonderful panorama of scenery and a splendid view of the steepest stretch.

The official A.C.U. sidecar led the way and, as a foretaste of what the many spectators were likely to see, the engine jibbed after passing through the gate,



Some idea of the gradient of Bwlch-y-Groes one of the test hills of the trial, will be conveyed by the contour shown above.

and the driver dismounted and ran alongside—it should be observed that a very hot pace had been maintained from Llandrindod. F. J. Watson (6 Ariel sc.) led the way, followed by J. Emerson (3 A.B.C.), and both did well. Then several competitors were observed in the distance to come to a standstill, among them W. Drake (3½ P. and M.) and G. D. Hardee (8 Matchless), so that the P. and M. and Matchless teams lost marks. T. B. G. Vale (3½ Ariel) climbed very steadily, and Creak Davis (Chater-Lea sc.) received quite an ovation for the masterly way in which he avoided G. E. Stobart (5·6 James sc.) and E. F. Chidley (3½ P. and M.), who came to a standstill on the steepest stretch. D. Alexander (8 Enfield) stopped, restarted almost immediately, and finished well. Splendid ascents were made by T. Rutherford (3½ Sunbeam), who is riding most consistently, and the Scott team. The performances of the last-named riders have evoked much praise, their sure and silent climbing being a



The severe hairpin which precedes the long climb of Bwlch-y-Groes. F. C. Ball (2¾ Douglas is followed by a non-competitor on an Allon two-stroke.

The A.C.U. Six Days Trial.—

feature of the trial. J. H. Place (8 Dot sc.) stopped due to overheating, since after a brief rest he restarted and finished well. Victor Horsman (4 Norton) was notable for an impressive ascent, as also R. Lewis (3½ P. and M.) and F. Turvey (4¼ B.S.A.). E. F. Goodman (2¼ Velocette) found the hill too steep, but these baby machines are, nevertheless, gaining much credit for their reliable running. H. F. Edwards (4¼ B.S.A.) just got up, but F. W. Applebee, to the wonder of his *confrères*, climbed up quite easily and got a well-deserved ovation. P. W. Moffat (3½ Douglas) behaved as a veteran competition rider usually does, and seemed to have plenty in hand; de la Hay (3½ Sunbeam) and Harry Reid (8 Dot sc.) performing equally well. S. Parker on an 8 h.p. Enfield passed P. Pike (2¼ Levis) on the steepest gradient, and both performed excellently; but Merrall found the 1 in 4 stretch just too steep for his 1915 8 h.p. Morgan. Enticknapp (4 Blackburne) and H. Greaves (10 Morgan) in close company made excellent climbs, whilst Guise (8 Enfield sc.) stopped but restarted well.

Other good ascents noted were by F. W. Giles (6 A.J.S. sc.), Isaac (Rover), Wade (6 A.J.S.), and S. Hall (10 Morgan). Brown (5 Zenith) dismounted when apparently going well, and then hopped on to the footrest again. Hoult (8 Matchless sc.) made a good climb. In close company, Watson Bourne (4 Blackburne), Oliver (3½ Sunbeam), and Capt. Lindsay (4 Norton) made clean and sure ascents. Colliver (7 Indian sc.) made a fine climb. Peck (3½ Ariel) and Shemans (4 Triumph sc.) were side by side for a time, the Ariel rider forging ahead, Shemans dismounting when on the steepest stretch.

Dance (3½ Sunbeam) was quite fast, also Shillito on a similar machine. Cross (4 Triumph) did well, whilst Jones (3½ Ariel sc.) stopped and gave the spectators a thrilling five seconds when his machine commenced to run back, for a sheer drop awaited him on one side. He managed, however, to back his machine into the bank on the opposite side, colliding with a non-competitor's machine in the process.

A Useful Spectator.—

A thoughtful spectator with a huge telescope proved most useful in announcing the number of the competitors who stopped on the lower reaches. Townshend (4 Sunbeam), Collier (8 Matchless sc.), Strange (3½ James), Holroyd (8 Blackburne), James (8 Morgan), Ryecroft and Pattinson (4 Triumphs), Stordy, (2¾ A.J.S.), Noble (5 Rover), are others we noted for first-rate climbs.

When H. Fairley came up on the A.B.C. in good style, a spectator announced to all and sundry, "These are the machines which have never been made." Bottomley's Harley-Davidson sc. went up easily, whilst Lane (4¼ B.S.A.) had a sporting passenger, who, after pushing and running, finally took a flying nose dive into his seat again. Wills (6 Ariel sc.), Haggas (8 New Imperial sc.) (with Norman Longfield, the Scott rider, as passenger), Charlesworth (5 Zenith), Prytherch (7-9 Indian), and Wood (4¼ B.S.A.) did well, then, after a further crop of failures, Hugh Gibson demonstrated the hill-climbing abilities of the 1920 model 8 h.p. spring frame Clyno sidecar to advantage. Lt. Alan Hill (3½ Scott) was noticeable for a clean ascent, also Dudley and Newman (3½ Sunbeams), Choldcroft (4 A.J.S.), Heath and Collins (6 A.J.S.), Cooke (4 Triumph), and Mundy (8 Matchless). Edmond, with his 4 h.p. Triumph sc., had power in reserve.

At five minutes to one all the riders—now totalling less than 100—had passed Bwlch-y-Groes, twenty-seven riders failing on the hill. Thence followed a run to Bala for lunch, the homeward trip commencing with the difficult climb over the Hirnant Pass, notable for the scores of gulleys running diagonally across the road, to Lake Vyrnwy. Several riders failed on the ascent, which was too narrow to permit sidecars to pass one another without extreme danger. The descent was equally rough until the wild scenery gave place to a gorgeous view of the lake shimmering through the tall trees in its peaceful grandeur. Hereabouts we commenced to notice spanners, tyre levers, and spare parts, and, finally, the tool roll, strewn over the road, and stopped six times in the same number of miles to gather them. Our pockets bulging we sped on, and after many miles overtook Eric Williams (6 A.J.S.), whose toolbag we noticed unfastened. The owner of the tools was very grateful, but, unluckily, he stopped finally with gear box trouble, during the afternoon.

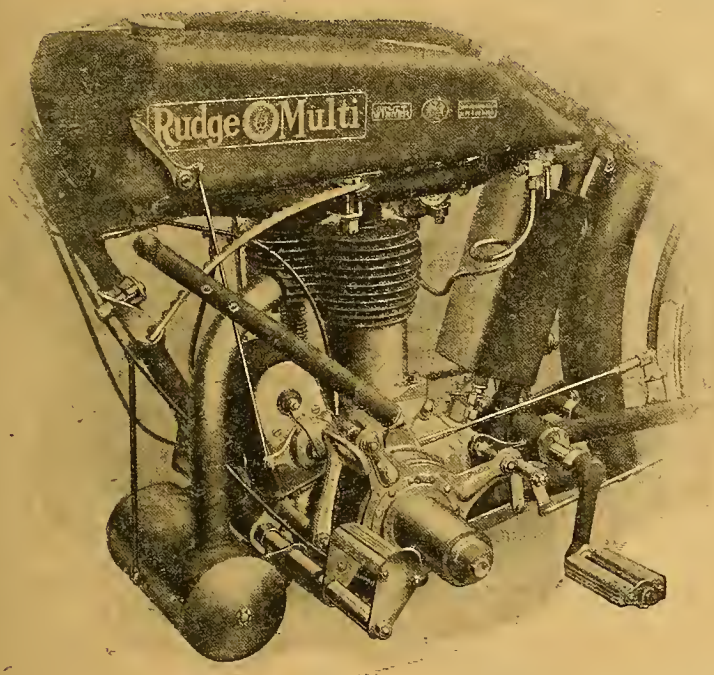
Easier Going.

On the hairpin between Lake Vyrnwy and Cann Office we saw Isaac (Rover) suffer a dry skid without damage to himself or machine, Applebee (4¼ B.S.A.) with his usual consistency neatly avoiding him. Through Llanfair Caereinion to Newtown there was nothing to trouble the competitors; indeed, from the crowds in the towns and villages, not to mention

Scenes on Bwlch-y-Groes (Wednesday's run). (Left) Charlesworth's Zenith emits clouds of smoke. (Right) J. Dosher (8 Enfield sidecar) steadily negotiating the loose surface.

RELIABILITY.

The gear that grips the gradient.



NOTCH BY NOTCH push the Multi lever forward up to the twentieth notch as the Rudge Multi gains speed along the level stretches and downhill, and

NOTCH BY NOTCH the Multi Lever is brought backwards as a stiff climb is negotiated, just as it is called for by the beat of the engine.

Lower the Multi gear soon enough.
Keep her "revving."

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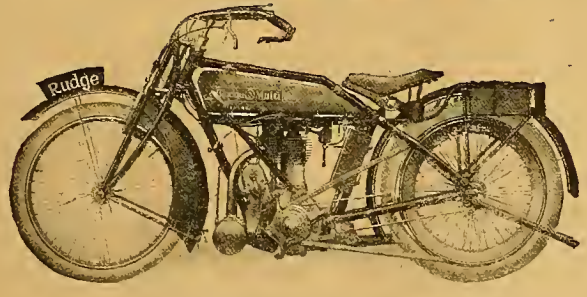
Rudge Multi



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THE Auto-Cycle Union's Six Days Trial is an event of vital importance to every motor cyclist and prospective rider. It is not a race, but is a recognised Reliability Test by means of which the general efficiency of motor cycles and cycle cars at present on sale to the public is determined.

ANY machine which comes through the Six Days successfully is, without doubt, a sound and reliable production; those which gain premier awards are certainly good investments to the potential purchaser. The trade and public alike have confidence in the classic A.C.U. Trial, knowing that is the great opportunity for design and construction to prove their worth. Weakness of any form in machines or accessories is bound to be revealed in this Trial.

THE Auto-Cycle Union, as the controlling body for motor cycling competitions, organises the Six Days Trial; making all the regulations, selecting the route, and determining the awards. The Trial has been held annually (with the exception of the War period) since 1903, and has done more than can be calculated to improve the Motor Cycle, and to make motor cycling safe, enjoyable, and economical for everyone.

YEAR by year new tests and more stringent regulations have been imposed, and the gradual elimination of weaknesses and limitations in every class of machine is practical proof of the value of the Trial.

TO-DAY, with the great revival and extension of motor cycling that Peace has brought, there is more need for the A.C.U. Six Days Trial than ever. The motor cycle is still capable of much improvement. The new tests imposed in this year's Trial indicate the directions in which the Union is assisting the trade to improve the machines that will be offered to the public next Season.

IF you would like to know more of the institution which safeguards and advances all your motor cycling interests write to:—

THE SECRETARY, . . .

AUTO-CYCLE UNION,
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In answering this advertisement it is desirable to mention "The Motor Cycle."

Over the mountains near Yspytty Ystwyth. G. A. Strange (3½ James) leading H. O. Wood (3¾ Scott) and H. Pattinson (4 Triumph). The illustration conveys a good idea of the scenery in this comparatively little known part of Wales

the school children who turned out in force, the riders received many a cheer.

According to a facetious remark in the A.C.U. programme the main road to Llandrindod Wells is so badly cut up (ye gods! what roads we have had already!) that a detour was made over the Kerry Hills to Knighton and Penybont. Near the end Stordy (2¾ A.J.S.) suffered a dry skid, and damaged himself so that he retired. Davies (2¼ Velocette) walked in with a flat back tyre, his engine propelling his machine. Place (8 Dot-Jap) elected to retire owing to a broken sidecar frame, but, in the main, competitors reported non-stop runs and an enjoyable day despite the hills and the dust.

NOTES.

The arrowing was excellent, but was only just accomplished in time. Mr. Loughborough received a telephone message at the last moment to say that there were no arrows from Knighton home. He rushed out on the Morgan and did the job just in time in spite of rolling off a front cover and shedding most of the tools.

Enticknapp (4 Blackburne) broke his throttle wire, but is going well with the air slide fixed open and the throttle slide connected to the air lever. Watson Bourne, on the other 4 Blackburne, suffered from carburetter trouble on Bwlch-y-Groes, but made a clean ascent.

Amongst new arrivals we noticed Mr. J. L. Norton, on a 4 Norton sc., who had come in *via* Bwlch-y-Groes without trouble.

Gordon L. Fletcher, an old trials rider, this year acting in an official capacity, is driving the report car round the course.

Shemans attributed his failure on Bwlch-y-Groes to an exhaust valve cap, which came unscrewed, and blew out just over the crest of the hill.

Capt. Lindsay (3½ Norton) had a curious accident. A piece of rag which he keeps tucked in a corner between the handle-bar fittings was jolted out and became mixed up with the countershaft sprockets. However, he managed to get home close on time.

Tim Wood, F. G. Ball, and Lt. Alan Hill punctured, and Ryecroft (Triumph) also had tyre trouble, and had to change a tube.

W. Leslie Guy (3¾ Scott) approaching the gradient after rounding the hairpin at the foot of Bwlch-y-Groes.

Danskin (3½ Rover) has been unlucky enough to crack his timing gear cover, but is carrying on well.

Perhaps gear box trouble is not surprising on the sidecar mounts, for the changes of speed must average over 100 per day. Clutches have improved wonderfully. One seldom hears of trouble in this connection.

THURSDAY'S RUN OF 159¾ MILES.

Llandrindod, Newbridge-on-Wye, Builth, Garth, Llangammarch, Llanwrtyd, Llandovery, Pumpsaint, Lampeter, Tregaron, Ypsytty-Ystwyth, Devil's Bridge (lunch control), Devil's Bridge, Aberystwyth, Bow Street, Machynlleth, Stay-a-Little, Llanidloes, Tylwch, St. Harmon, Rhayader, Llandrindod.

To-day's run has been characterised by a curious mixture of good and bad roads. There was no particular feature in the morning's trip, except a second ascent of Yspytty Ystwyth hill. A mile from the start Watson had trouble with his intake system, but was soon under way again. Good roads were the order of the day for the first forty miles, and a sharp hill between Builth and Garth caused no trouble, on account of its excellent surface. Near Garth, Creak Davis had trouble with his gear box, and was forced to retire—an unfortunate occurrence, as he had been running very consistently up to this point.

Hereabouts Ashby (2½ Connaught) was encountered with magneto trouble. Though his magneto would spark, he could get no power out of his engine for some mysterious reason, and he was therefore compelled to retire.

Some of the moorland hills in this section were long and exposed, and beautiful views would have been obtained had the atmosphere been clearer. From Pumpsaint to Lampeter the roads were

On a spur of Plynlimmon, which was climbed on Thursday afternoon. (Left) F. J. Watson (6-7 Ariel sc.). (Right) F. W. Applebee (4¼ B.S.A.)

rough and trying to the rider, but no further hills were encountered till Tuesday's route was joined near Yspytty Ystwyth. Capt. C. P. Wood (3¾ Scott) made the ascent of the hill on top gear in spite of a flat back tyre, and though he had but five minutes to spare to the lunch stop at Devil's Bridge he put in a new butt-ended tube in two and a half minutes and reached the Hafod Arms Hotel five minutes later. Emerson had a bad puncture just before lunch, but made up time—no easy matter—between Devil's Bridge and Aberystwyth, and changed both tube and cover.

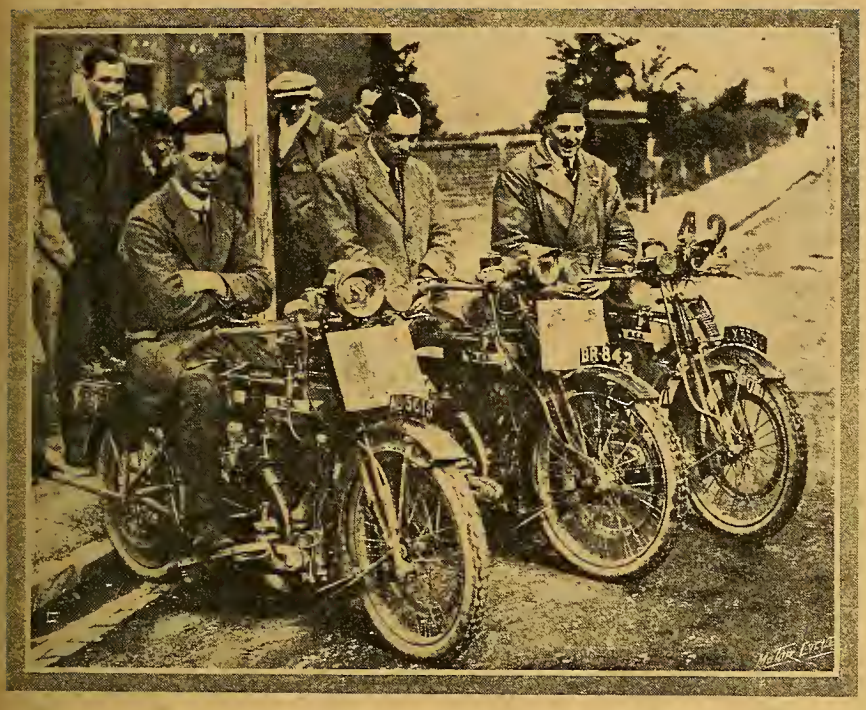
The road to Machynlleth is comparatively flat, but at this point the surface became rough, and a steady rise to the foot of Stay-a-Little hill is encountered. This hill is a spur of Plynlimmon, and has a rough and rocky surface for the first part and a very loose shale surface with a steep gradient at the finish. The distance from Machynlleth to the top of the hill is seven miles, and the difference in levels is approximately 1,700 feet. The surface, combined with heavy rain, caused some trouble, and several riders compared the climb to Bwlch-y-Groes for severity, in spite of the fact that there is nothing like the same length of severe gradient.

The early riders had the better conditions, for a slight drizzle turned to rain in earnest and the wind howled ominously. Such uncomfortable conditions had been unknown hitherto during the trial. Brown (3½ Sunbeam sc.) came to a standstill, Chambers (3½ B.S.A. sc.) dismounted and assisted his machine, though his engine continued to tug away manfully. When bunching occurred it was bad for all concerned, for the condition of the pass was such that it was often impossible for one machine to pass another. The Scotts and Zeniths in particular were noticeable for fast solo climbs, and generally the reliable running and wonderful top gear climbing of the Scotts has been something to marvel at. Applebee once again made a star ascent on his B.S.A., Shemans (4 Triumph sc.) and Sawer (4 Norton sc.) also making excellent showings. The Blackburne and P. and M. riders impressed us by their steady and sure ascents. Lane (4¼ B.S.A.) found the combination of steep gradient, loose stones, and gulleys too much for his mount, as did Kitcher (2¾ New Imperial). Among the very best passenger ascents were Colliver (Indian sc.)—who has ridden most consistently throughout—two Morgans, Edmond (4 Triumph), Giles (6 A.J.S.), and Stevens (4¼ James).

At the lunch stop (Devil's Bridge) on Thursday. H. Reed, who made a notable performance in completing the day's run with a damaged sidecar chassis.

A Piece of Hard Luck.

Charlie Collier, with H. A. in the sidecar, had bad luck, for in riding side by side with another sidecarist he was forced on to reefs of rock now thoroughly wet and slippery. Though neither driver nor passenger moved from their seats and the back wheel always continued to spin, the front wheel stopped momentarily, but a penalty ought not to be suffered on that account, since they moved away immediately by merely bumping the driving wheel. On the hill we chatted with James R. Haswell, the old Triumph rider in Six Days and Brooklands events, who was enjoying the fun as a spectator. The



The winning B.S.A. team: L. L. Sealey, F. Turvey, and H. F. Edwards. Their performance was remarkably consistent and the marks gained totalled 557.

terribly rough going brought many "remarks" from competitors as they passed us. Even after the gruelling ascent, the conditions did not improve, for the "road" wound round a ridge on the mountain side for miles past disused lead lines, over innumerable *caniveaux* of varying depth—some almost dangerous. No wonder sidecar frames gave trouble, few cars could survive such terrible going.

The descent of several of the previous day's test hills gave little relief on account of the protruding rocks and incessant twists.

Thenceforward the route consisted of a series of undulations more or less severe, and in the narrow lanes near Tylwch quite a bunch of competitors were held up by a flock of sheep, which had no room to pass. Beyond Llanidloes the road from Rhayader to Llandrindod is excellent, and gave plenty of scope for making up lost time to those who had been delayed. One of the unfortunates, however, was Danskin (3½ Rover), who broke a valve three miles from home, and was late in consequence.

Harry Reed broke his sidecar chassis, but put up a wonderful performance by bringing the damaged outfit home throughout the afternoon's run by means of roped sidecar supports. Every sportsman admired his grit. Nearing home we passed Fairley (3 A.B.C.), who owing to a broken oil pipe had a seized engine, and he was finally towed home behind a press car.

W. L. Guy (3¾ Scott) had two punctures, the last one just before lunch, which caused him to lose time. Stobart (5-6 James sc.) was going splendidly. The ranks of the riders were again somewhat seriously depleted. An unlucky incident occurred at the finish when a competitor who finished rather fast struck the rear of Sheman's Triumph sidecar outfit, and fractured the lug supporting the rear down tube. It was repaired by a blacksmith under official observation during the night, to enable the sidecar to finish. Rough luck indeed.

As showing the severity of Thursday's run, ten competitors retired, viz., S. T. Ashby (2½ Connaught), R. Creak Davis (8 Chater-Lea), E. Bottomley (7-9 Harley-Davidson), Capt. Oliver (3½ Sunbeam), H. L. Kitcher (2¾ New Imperial), H. Fairley (3 A.B.C.), E. F. Chidley (3½ P. and M.), H. Thorpe (4 Douglas), H. Reed (8 Dot), and W. R. Haggas (8 New Imperial).

NOTES.

Mr. Easting, maker of the Easting windscreen, who is among the many trade representatives at Llandrindod, experienced an accident on Thursday afternoon.

No rain was experienced until Thursday afternoon, so generally the conditions might have been even worse—but they have been bad enough in all conscience.

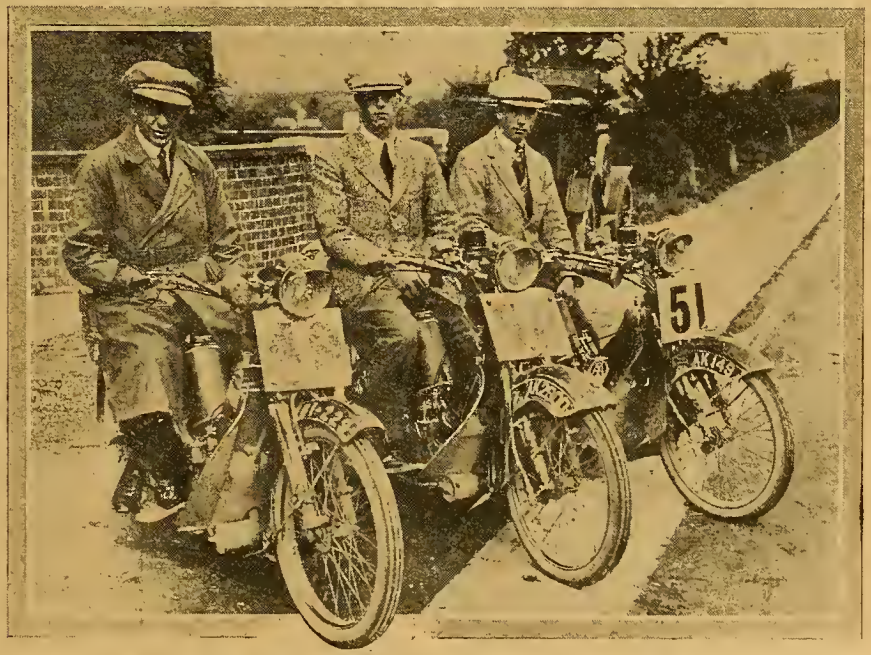
FRIDAY'S RUN OF 161¾ MILES.

Llandrindod, Builth, Garth, Beulah, Llanwrtyd, Llandovery, Llangadock, Pontardawe, Neath, Swansea (lunch control), Swansea, Pontardulais, Llanddarog, Llanfynydd, Abergorlech, Llansawel, Caio, Cilycwm, Llanfair-ar-y-bryn, Llangammarch, Garth (consistent driving test), Builth, Llandrindod.

The last day's run of the trial started on a showery morning, and from rumours current concerning the nature of the course, many competitors started with the idea that they had a difficult day before them.

In this they were correct, and the opinion was frequently expressed by solo riders that Friday afternoon's run was the most trying part of the whole trial.

The morning's run of 69¾ miles was easy, and beyond the fact that a secret check some two and threequarter miles from the town caught some competitors before they were even due to start—we personally blame the officials for that—the chief incident was the ascent of the Black Mountain from Llangadock—a lengthy climb over seven miles over a beautifully



The Scott team: W. Leslie Guy, Capt. C. P. Wood, M.C., and H. O. Wood. They were second in the running for the team prize, securing 539 marks

Scenes at the

(1) E. F. Goodman (2¼ Velocette) and P. Pike (Levis) on Ll
state of the road surface will be noted.

(2) J. D. Prytherch (7-9 Indian) passing through the waterspla

(3) J. Dudley (3½ Sunbeam) and W. B. Gibb (2¾ Dougla
portion of Bwlch-y-Groes.

(4) H. C. Heath (6 A.J.S.) followed by W. R. Eadington (3½
road near Llanybyther.

(5) R. Creak Davis (8 Chater-Lea) negotiating the hairpin at t

x Days Trials

The terrible

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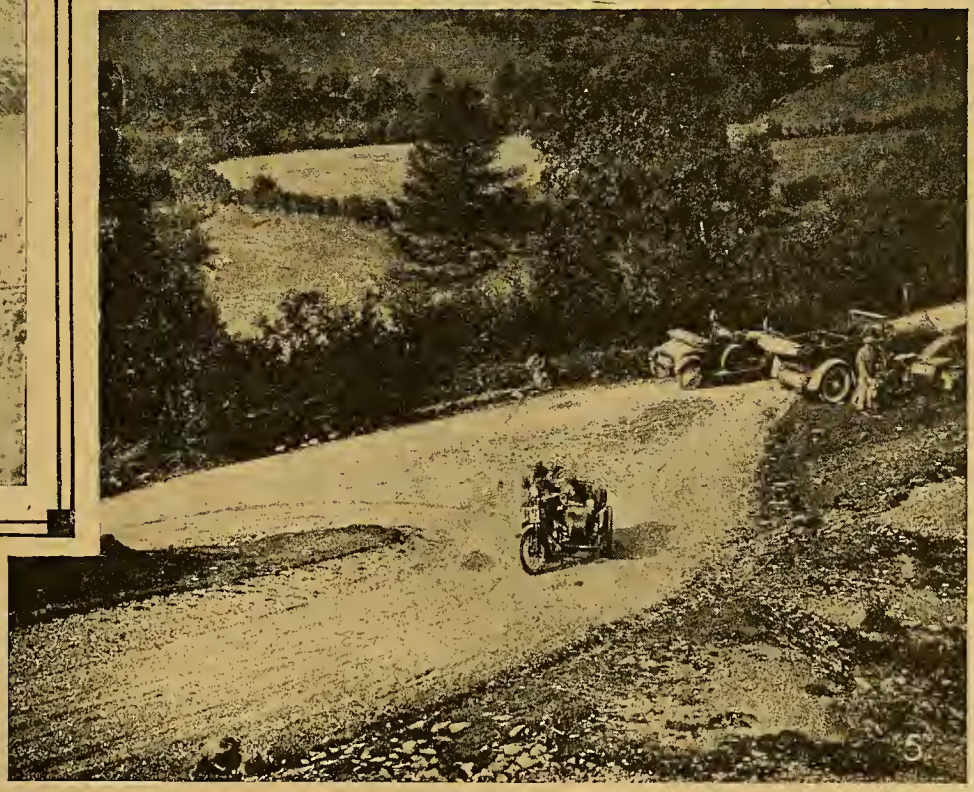


The A.C.U. Six Days Trials.—

graded road with excellent surface. Quite a crowd of spectators had gathered at the hairpin near the summit, but beyond a display of careful cornering there was little to be seen, the only failure being due to a solo rider, who misjudged the corner.

The descent of the mountain was as rough and muddy as the ascent was good.

On leaving Pontardawe quite a sharp hill out of the town was included in the route, and then came an easy run through Neath to Swansea.

A few more arrows in the town would have been welcome, and though only one or two competitors went wrong, the early arrivals were not too sure of their way to the lunch stop. Edmond (4 Triumph sc.) made a fine, but unnecessary, ascent of Constitution Hill before lunch. The Royal Hotel, where lunch was provided, was some distance from Brown's garage, where the machines were stored.

Almost immediately after the luncheon interval, Constitution Hill was encountered. This was a fine, straightforward test, the hill being straight with a good cobble surface, and a maximum gradient which we should estimate at 1 in 4.

A shower as the first competitors arrived did not spoil the surface, and most of the ascents were uniformly good, though the crowd stood all over the hill, and non-competitors chose this very inopportune moment for showing off, and one non-competing machine in particular was so noisy that it was not likely to add to the popularity of the motor cycle or the owner.

The Test Afternoon.

On leaving Swansea for the ninety-two mile homeward run, a stiff head wind gave extra work to the engines. Undulating roads continued to Pontardulais, where the first long ascent of the afternoon was tackled. Following the descent of the far side of this hill there came a mile and a half of really good climbing, but the gradient was not sufficient to worry the surviving competitors. A series of narrow and rough lanes was next negotiated and, though the rain had cleared off, the surface was in a treacherous condition. H. F. Edwards (4¼ B.S.A.) skidded completely round in one spot, and we found him examining himself and his machine. Fortunately, no harm was done. Close to Caio quite a deep watersplash had to be crossed, and soon after came a steep rocky hill the surface of which had been repaired with loose earth and turf. Then followed a villainous descent where timber waggons had formed such deep ruts that solo riders had all their time taken up to remain in the saddle, and a few failed in this endeavour. Amongst these was Horsman (3½ Norton), who took a nasty fall, but managed to continue, though his tank was damaged and petrol was leaking.

Near Cilycwm, Merrall (8 Morgan) ran over a dog and damaged his rear wheel, and this was the cause of continued trouble with chains which spoilt an otherwise magnificent performance on a 1915 model. There was just one arrow missing near this spot, which caused some delay and a considerable discussion, but matters ended satisfactorily. A deep watersplash heralded a stretch of greasy lanes in which it was impossible to keep a solo machine straight for any length of time, and the conditions over the 12 m.p.h. limit section were so bad that it was hard to maintain even that average. Ball's machine struck the root of a tree, and the rear brake was damaged, this causing him to lose time and incidentally thirty marks. This trivial incident was sufficient to spoil the chances of the Douglas team. A spring of Gibson's sidecar broke in this section—the only trouble encountered by the Clyno throughout the long trial.

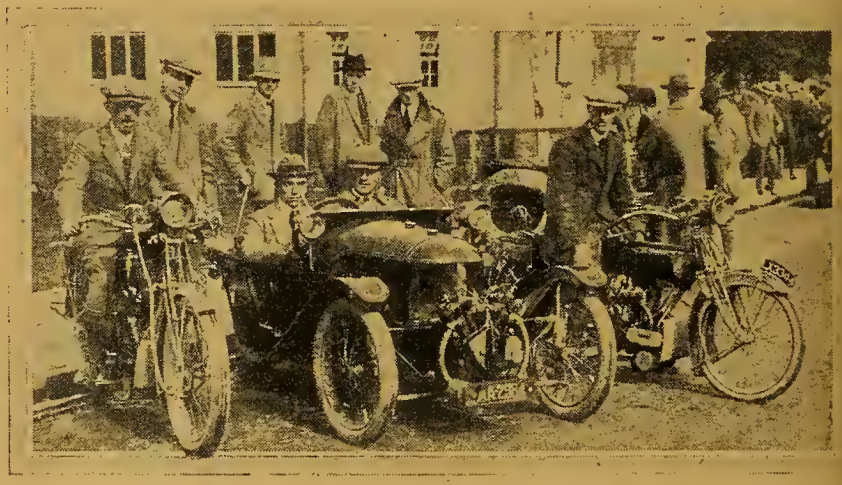
Driving Test Again!

The route was next varied by a long grass and boulder hill, the surface being so comparatively good that those who were behind time proceeded to make up a little. Towards the top, however, the bare rock became so pronounced that it was necessary to ease down somewhat; the descent of the opposite side also required careful driving. This and the following mile or two, of course, had been covered on Tuesday in the reverse direction. Near Llangammarch we came upon Hardee changing a wheel, and tyre troubles were prevalent during the remainder of the run. On reaching Garth a right-hand turn led to Panne Hill for the second stage of the consistent driving test.

Comparing the performances on Panne Hill on Friday with those of Monday, it can definitely be stated that, so far from a falling off in power being noticeable, the machines showed improved performances. Certainly the strong but cold wind blowing was in favour of the riders. Many had the hill so well in hand that they toyed with the gradient, adjusting their speeds as their watches showed that they were too fast or too slow compared to Monday's results. The passenger machine drivers in this connection were at a distinct advantage, since their passengers counted off the seconds, and announced the position loudly for the benefit of the driver. All things considered, the "consistent" driving test was not a success, introducing as it did the personal equation instead of confining the test to the qualities of the machine. A speed climb pure and simple would, in our judgment, have provided more interesting and valuable results.

Others who made fast ascents were Don (5 Zenith), Horsman (4 Norton), Baker (3¾ Scott), the brothers Wood (3¾ Scott), De-la-Hay (3½ Sunbeam), Morgan (10 Morgan), Noble (5 Rover), Applebee (4¼ B.S.A.), Giles (6 A.J.S. sc.)—who, by the way, had a non-stop run throughout the event except for a sooted plug when descending a hill—McGlasham (8 Matchless sc.), and Choldcroft (4 A.J.S.), whose watch stopped, so that he had nothing to guide him, and allowed his machine to romp up.

The end of the great trial of 1919 was at hand, but troubles were not over, for a lady standing in front of an important arrow on a corner caused several competitors to leave the course, including Colliver (Indian) and Baker (Scott). The former managed to return and catch up, but Baker had just encountered a crop of tyre troubles after a wonderfully consistent performance throughout the week. The canvas inside his rear cover had split, and was nipping inner tubes



By a coincidence three press representatives were propelled by Blackburne engines.

A large crowd has assembled to welcome the survivors home, a much depleted list, too, which is understandable considering the severe conditions, particularly the last day's terrible roads. Opinion was divided as usual as to the relative severity of the test. Some thought Scottish hills the more severe; others were equally emphatic that the Welsh terrors were as bad as anything yet included in a trial, and all were agreed that the trial was a sporting one and well organised, with the exception of the "C.D.T."

Saturday was devoted to a thorough scrutiny of the competing machines by the judges, with a view to "condition" marks being awarded. This year added importance was attached to the state of the surviving machines, and little or nothing escapes the eagle eyes of the judges. As the machines were examined "Done" was chalked on the saddles and they were wheeled out into the keeping of the riders. Most straightway started for home by road to all parts of the country.

A.C.U. SIX DAYS TRIAL, 1919.

CENTRE: LLANDRINDOD WELLS.

PROVISIONAL RESULTS:—

111 Starters. 81 Finished. 22 Gold Medals. 36 Silver Medals. 15 Bronze Medals. 9 No Awards.

In the Consistent Driving Test—the sum of the differences under 10 sec., 28%; under 20 secs. and over 10, 14%; under 50 secs. and over 20, 34%; over 50 secs., 24%.

Basis of Awards: marks credited at the start—200, made up as follows: Reliability 50, Silence 10, Hill-climbing 30, Acceleration 20, Maintenance of Efficiency 20, Brakes 10, Mudguards 10, Condition at finish 50. To secure awards competitors in the respective classes had to obtain the following marks: 250 cc. solo: Gold 150, silver 135, bronze 110. 350 cc. and 500 cc. solo: Gold 180, silver 165, bronze 140. 750 cc. and 1000 cc. solo: Gold 185, silver 170, bronze 145. 500 cc. sidecars: Gold 150, silver 135, bronze 110. 750 cc., 1000 cc. and over 1000 cc. sidecars: Gold 180, silver 165, bronze 140.

Competitor and Machine.	No. of Cyls.	Engine Capacity in c.c.	Weight in lb	CONSISTENT DRIVING TEST.								Total Error in secs.	Marks.	Awards
				Monday.				Friday.						
				Slow.		Fast.		Slow.		Fast.				
				Time.	M.P.H.	Time.	M.P.H.	Time.	M.P.H.	Time.	M.P.H.			
				m. s.		m. s.		m. s.		m. s.				
J. F. Lidstone (2¼ James)	1	226	220	7 25	8.1	4 17	14.0	8 38	6.95	4 35	13.07	91⅜	162	Gold medal
P. Pike (2¼ Levis)	1	211	176	6 49⅖	8.8	3 52⅘	15.5	6 37	9.05	4 0	15.0	20	175	Gold medal
R. H. Baxter (2¼ Radco)	1	211	170	5 11	11.55	4 32	13.25	– –	–	–	–	–	–	Retired Tuesday
L. C. M. Davies (2¼ Velocette)	1	220	180	7 14	8.3	4 17	12.55	–	–	–	–	–	–	Retired Wednesday
E. F. Goodman (2¼ Velocette)	1	220	196	4 52⅘	12.35	4 6	14.65	5 24⅘	11.1	4 43⅗	12.7	69⅘	174	Gold medal
T. J. Stordy (2¾ A.J.S.)	1	350	220	6 44	8.9	2 44⅗	21.90	–	–	–	–	–	–	Retired Wednesday
S. T. Ashby (2¾ Connaught)	1	293	210	7 41	7.8	3 54	15.4	–	–	–	–	–	–	Retired Thursday
F. G. Ball (2¾ Douglas)	2	350	252	6 47¼	8.85	3 2	19.8	6 50½	8.29	2 40	22.47	24	129	No award
W. B. Gibb (2¾ Douglas)	2	350	252	7 52⅖	7.6	3 49½	15.75	7 52⅖	7.6	3 49½	15.75	0½	163	Bronze medal
H. L. Kitcher (2¾ New Imperial)	1	292	216	8 8⅖	7.4	4 3	14.8	–	–	–	–	–	–	Retired Thursday
B. Kershaw (2¼ Verus)	1	293	238	8 24½	7.15	3 15	18.45	8 21	7.17	3 15½	18.4	4	165	Silver medal
J. Emerson (3 A.B.C.)	2	398	300	5 35⅗	10.75	6 43⅖	8.95	6 2½	9.95	3 14⅗	18.5	235⅜	130	No award
H. Fairley (3 A.B.C.)	2	398	280	8 4	7.45	2 39	22.65	–	–	–	–	–	–	Retired Thursday
T. Peck (3½ Ariel)	1	498	304	6 27	9.3	3 29⅗	17.15	6 55½	8.7	3 17⅖	18.24	38⅕	163	Bronze medal
C. W. Smith (3½ Ariel)	1	498	292	6 49⅗	8.8	2 57½	20.3	–	–	–	–	–	126	No award
T. B. G. Vale (3½ Ariel)	1	498	308	5 48⅖	10.35	3 14½	18.55	5 45	10.45	2 53½	20.78	24⅖	175	Silver medal
P. J. Entickuapp (4 Blackburne)	1	499	272	7 12⅗	8.3	2 56⅘	20.35	6 20⅗	9.45	2 51	21.02	57⅘	175	Silver medal
J. Watson Bourne (4 Blackburne)	1	499	316	9 14⅖	6 5	2 59⅖	20.05	8 7½	7.4	2 46⅘	21.62	79½	166	Silver medal
P. W. Moffatt (3½ Douglas)	2	491	328	7 31½	8.0	2 59⅕	20.65	7 31½	8.0	2 52⅖	20.35	1⅖	167	Silver medal
J. Edwards (3½ Humber)	2	496	304	7 32	8.15	3 54	15.40	–	–	–	–	–	–	Retired Wednesday
G. A. Strange (3½ James)	2	500	280	7 33⅖	7.95	3 25⅗	17.55	7 34½	7.9	3 32⅗	16.95	7⅘	170	Silver medal
E. F. Chidley (3½ P. & M.)	1	498	268	5 5½	11.8	3 45⅕	16.0	–	–	–	–	–	–	Retired Thursday
W. Drake (3½ P. & M.)	1	498	300	5 4	11.85	3 45	16.0	4 53½	12.25	3 12⅖	18.7	43⅖	127	Silver medal
R. Lewis (3½ P. & M.)	1	498	308	6 25⅘	9.35	3 21⅘	17.8	6 12	9.67	3 2⅘	19.7	32⅘	185	Gold medal
W. Danskin (3½ Rover)	1	499	304	9 7⅘	6.55	2 55⅖	20.5	7 9⅖	8.37	3 7⅘	19.17	130⅗	167	Silver medal
G. Featherstonhaugh (3½ Rover)	1	499	312	7 8⅘	8.4	2 47	22.35	7 7⅗	8.42	2 42⅕	22.17	2	179	Silver medal
M. Isaac (3½ Rover)	1	499	298	8 14	7.3	2 53⅖	20.75	8 17	7.25	2 42	22.2	14⅖	184	Gold medal
J. Baker (3¾ Scott)	2	532	276	6 45⅗	8.85	2 34⅖	23.25	7 12	8.55	2 14⅘	26.7	35⅘	–	Retired Friday
M. Davies (3½ Sunbeam)	1	499	292	6 11⅘	9.7	3 15⅕	18.45	7 55	7.54	3 3⅖	19.6	115	159	Bronze medal
W. R. Eadington (3½ Sunbeam)	1	499	290	8 29	7.05	2 39	22.65	8 6	7.4	2 18	26.07	44½	180	Gold medal
G. Dance (3½ Sunbeam)	1	499	314	6 40½	9.0	2 58½	20.15	6 39⅖	9.0	3 26⅕	17.45	28	167	Silver medal
J. Dudley (3½ Sunbeam)	1	499	298	6 11⅖	9.7	3 17⅘	18.2	6 29⅖	9.25	2 27	24.45	68⅘	177	Silver medal
F. C. De la Hay (3½ Sunbeam)	1	499	304	7 22⅖	9.15	2 48⅕	21.4	7 48⅕	7.64	3 2	19.77	39⅖	177	Silver medal
Capt. Oliver (3½ Sunbeam)	1	499	301	5 8⅖	11.65	3 3	19.7	–	–	–	–	–	–	Retired Thursday
J. A. Newman (3½ Sunbeam)	1	499	295	6 56⅕	8.65	3 6	19.35	6 52⅕	8.72	3 6⅘	19.28	4⅘	188	Gold medal
T. Rutherford (3½ Sunbeam)	1	499	304	6 22⅕	9.4	3 6⅖	19.3	7 15⅓	8.28	3 5	19.45	54	184	Gold medal
J. T. Shillito (3½ Sunbeam)	1	499	304	7 34⅓	7.9	3 11⅓	18.75	7 31⅖	8.0	3 10⅕	18.87	4⅓	122	No award
E. W. Choldcroft (4 A.J.S.)	2	550	336	7 19⅖	8.2	2 58	20.2	8 1	7.5	2 45⅕	21.76	51⅕	188	Gold medal
F. W. Applebee (4¼ B.S.A.)	1	557	308	7 13	8.3	3 0	20.0	7 14⅗	8.27	2 50⅖	21.1	11⅓	187	Gold medal
H. F. Edwards (4¼ B.S.A.)	1	557	296	8 55⅘	5.7	3 9	19.05	8 49⅕	6.8	3 19⅕	18.05	16⅖	191	Gold medal
L. L. Sealey (4¼ B.S.A.)	1	557	304	9 15⅖	6.45	2 48	21.4	10 52⅕	5.5	2 58⅓	20.14	107⅓	175	Silver medal
F. Turvey, jun. (4¼ B.S.A.)	1	557	292	6 1	9.95	2 58⅖	20.2	5 58⅕	10.05	2 58⅓	20.2	2⅖	191	Gold medal
A. E. Wood (4¼ B.S.A.)	1	557	268	8 41⅓	6.9	2 57	20.35	9 10⅕	6.52	2 43⅕	22.0	42⅖	157	Bronze medal
V. E. Horsman (4 Norton)	1	633	308	7 20	8.2	2 28⅖	24.25	7 11⅓	8.35	2 22⅓	25.22	13⅖	167	Bronze medal
A. Lindsay (4 Norton)	1	633	276	9 51⅖	6.1	3 7⅖	19.2	9 21⅖	6.4	3 10⅖	18.95	33⅖	174	Silver medal
D. H. Noble (5 Rover)	2	654	332	7 21⅓	8.15	2 44⅖	21.9	7 22⅖	8.15	2 43⅕	22.0	1⅖	189	Gold medal
W. L. Guy (3¾ Scott)	2	532	280	7 52⅓	7.6	2 36⅓	22.95	8 2⅖	7.47	2 32⅕	23.62	15	175	Silver medal
C. P. Wood (3¾ Scott)	2	532	294	9 14⅖	6.5	2 43⅕	22.05	8 20⅓	7.2	3 1⅕	18.32	86⅓	179	Silver medal
H. O. Wood (3¾ Scott)	2	532	292	8 3⅖	7.45	2 39⅖	22.55	8 3	7.45	2 35	23.22	5⅓	187	Gold medal
B. A. Hill (3¾ Scott)	2	532	291	7 19⅖	8.2	2 34⅗	23.25	7 22⅓	8.14	2 44⅕	21.92	12⅖	187	Gold medal
F. C. Townshend (4 Sunbeam)	1	556	304	9 27	6.35	2 38⅓	22.8	–	–	–	–	–	–	Retired Friday
C. Cather Conke (4 Triumph)	1	550	258	4 25	13.55	3 33⅖	16.85	4 29⅓	13.35	3 29⅖	17⅗	9	151	Bronze medal
E. Cross (4 Triumph)	1	550	256	8 15⅓	7.25	3 13	18.65	8 53⅓	6.75	2 48⅓	21⅗	62⅓	174	Silver medal
H. Pattinson (4 Triumph)	1	550	272	7 52⅖	7.6	2 58	20.2	7 20	8.17	3 12	18.75	46⅖	156	Bronze medal
M. Ryecroft (4 Triumph)	1	550	284	8 54	6.75	3 5	19.45	9 15⅓	6.47	2 44⅖	21.9	41⅓	178	Silver medal
E. W. Merrall (8 Morgan)	2	980	712	6 12⅓	9.65	3 19⅕	8.0	6 3⅖	9.9	3 47⅖	15.8	36⅕	–	Retired Friday
A. V. Sumner (5 Zenith)	2	654	324	– –	–	– –	–	– –	–	– –	–	–	–	Retired Monday
G. Browne (5 Zenith)	2	654	288	8 14⅓	7.3	2 35⅘	3.14	8 19⅖	7.2	2 23⅖	25.14	17⅗	175	Silver medal
R. Charlesworth (5 Zenith)	2	742	316	6 47⅕	8.85	2 29	24.15	6 18⅖	9.5	2 15⅖	26.55	42	177	Silver medal
Kaye Don (5 Zenith)	2	654	284	6 24⅓	9.38	2 59⅖	20.05	6 25⅖	9.35	2 57⅖	20.25	3⅖	178	Silver medal
J. W. Wills (6-7 Ariel)	2	735	336	8 10⅖	7.35	2 29⅖	2.05	7 39⅕	7.8⅖	2 11⅖	27.0⅘	49⅖	178	Silver medal
E. Bottomley (7-9 Harley-Davidson)	2	988	380	7 56⅓	7.55	2 32	2.37	– –	–	– –	–	–	–	Retired Thursday
F. E. Jones (3½ Ariel sc.)	1	498	444	7 59	7.5	3 28⅖	17.3	8 8⅖	7.37	3 21⅓	17.85	16	152	Silver medal
W. J. Chambers (3½ B.S.A. sc.)	1	499	542	6 37⅗	9.05	5 0⅖	12.0	6 0⅖	10.0	4 56	12.14	41⅖	148	Silver medal
R. Brown (3½ Sunbeam sc.)	1	499	461	7 10⅖	8.35	4 14⅖	14.15	–	–	–	–	–	–	Retired Tuesday
C. Collins (6 A.J.S. sc.)	2	748	527	5 58⅖	10.0	3 23⅖	17.65	–	–	–	–	–	140	Bronze medal
E. Williams (6 A.J.S. sc.)	2	748	572	6 40⅓	8.95	3 44	16.05	–	–	–	–	–	–	Retired Wednesday
O. Wade (6 A.J.S. sc.)	2	748	572	6 53⅖	8.7	3 23⅖	17.7	6 54⅖	8.67	3 19⅕	18.02	5	182	Gold medal
F. W. Giles (6 A.J.S. sc.)	2	748	584	6 41⅖	8.95	3 32⅖	16.95	6 41	9.0	3 31⅓	17.0	1⅓	185	Gold medal

PROVISIONAL RESULTS OF THE A.C.U SIX DAYS TRIAL, 1919 (Continued).

Competitor and Machine.	No. of Cyls.	Engine Capacity in c.c.	Weight in lb.	Consistent Driving Test. Monday. Slow. Time.	Slow. M.P.H.	Fast. Time.	Fast. M.P.H.	Friday. Slow. Time.	Slow. M.P.H.	Fast. Time.	Fast. M.P.H.	Total Error in secs.	Marks.	Awards.
				m. s.		m. s.		m. s.		m. s.				
H. C. Heath (6 A.J.S. sc.)	2	748	556	7 9	8.4	3 30⅘	17 10	7 58⅘	7.52	3 59⅕	15.05	78	174	Silver medal
W. Edwards (4¼ B.S.A. sc.)	1	557	464	6 5	9.85	9 15⅗	5.5	–	–	–	–	–	–	Retired Wednesday
H. R. Lane (4¼ B.S.A. sc.)	1	557	518	7 16⅘	8.25	4 52	12.35	3 50	15.65	6 12	9.67	280⅘	51	No award
H. Thorpe (4 Douglas sc.)	2	593	544	6 48½	8.8	4 3	14.8	8 10	7.35	3 53	15.43	91⅘	155	Bronze medal
F. Thorp (5-6 G.L. sc.)	2	635	532	7 46	7.7	3 36½	16.65	7 46⅘	7.7	3 55⅘	15.31	19⅘	167	Silver medal
T. Stevens (4¼ James sc.)	1	600	512	4 31½	13.25	4 3	14.8	6 37	9.05	4 46⅘	12.55	169⅘	115	No award
G. E. Stobart (5-6 James sc.)	2	662	544	3 29⅘	17.15	3 57	15.2	7 35	7.9	3 31	17.08	271⅘	154	Bronze medal
S. Sawer (4 Norton sc.)	1	633	472	7 12⅘	8.30	3 28⅘	17.3	5 47	10.35	3 15	18.45	99	169	Silver medal
F. G. Edmund (4 Triumph sc.)	1	550	491	8 38	6.95	2 41	22.35	8 32⅘	7.04	2 43	22.08	7⅘	180	Gold medal
G. Shemans (4 Triumph sc.)	1	550	524	8 18¼	7.2	3 19½	18.05	8 11⅘	7.32	3 26⅘	17.45	14⅘	87	No award
F. J. Watson (6-7 Ariel sc.)	2	790	488	4 57½	12.1	3 52⅘	15.5	6 49⅗	8.8	2 59½	20.04	164½	122	No award
J. L. Stocks (6-7 Ariel sc.)	2	795	512	7 45	7.75	3 50½	15.65	–	–	–	–	–	–	Retired Wednesday
J. S. Holroyd (8 Blackburne sc.)	2	998	664	7 19¼	8.15	3 37⅘	–	6 55⅘	8.65	3 51⅘	15.55	33	176	Silver medal
S. S. Debenham (6 Campioo sc.)	2	700	580	7 38½	7.85	3 26⅘	17.4	–	–	–	–	–	–	Retired Tuesday
R. Creak Davis (8 Chater-Lea sc.)	2	964	688	6 8½	9.8	3 44½	16.05	–	–	–	–	–	–	Retired Thursday
Hugh Gibson (8 Clyno sc.)	2	925	656	7 16½	8.25	3 26	17.45	7 20	8.2	3 29¼	17.15	7	165	Silver medal
H. Reed (8 Dot sc.)	2	980	544	6 58½	8.6	3 17¼	18.05	–	–	–	–	–	–	Retired Thursday
J. H. Place (8 Dot sc.)	2	980	564	7 0⅗	8.55	3 42⅘	16.15	–	–	–	–	–	–	Retired Wednesday
W.D.Fell Smith (7-9 Harley.-Davidson sc.)	2	988	644	8 17½	7.25	3 27¼	17.3	8 18¼	7.22	3 22½	17.8	6	182	Gold medal
E. A. Colliver (7-9 Indian sc.)	2	997	626	7 34⅗	7.95	5 16⅘	18.3	7 40⅗	7.82	3 13⅘	18.62	9⅘	156	Bronze medal
J. D. Prytherch (7-9 Indian sc.)	2	997	580	5 42	10.50	19 37½	3.1	7 46	7.72	2 43⅗	22.0	1137⅘	127	No award
L. A. Bees (7-9 L.M.C. sc.)	2	960	518	6 40⅗	9.0	6 6⅗	9.85	–	–	–	–	–	–	Retired Wednesday
C. R. Collier (8 Matchless sc.)	2	964	640	8 29⅗	7.05	3 51⅘	15.55	8 27¼	7.1	3 47⅘	15.82	5⅘	173	Silver medal
G. D. Hardee (8 Matchless sc.)	2	976	464	5 20⅘	11.25	4 33⅘	13.15	5 26⅘	11.05	5 9¼	11.65	41⅘	158	Bronze medal
J. A. Hoult (8 Matchless sc.)	2	976	630	6 33	9.15	4 24⅘	13.6	6 35½	9.1	3 48¼	15.75	38	176	Silver medal
G. C. McGlashan (8 Matchless sc.)	2	976	660	7 33½	7.95	3 54	15.35	7 22½	8.14	3 20⅘	17.95	44⅘	170	Silver medal
F. W. James (8 Morgan)	2	980	724	7 18⅘	8.2	2 51½	21.05	7 27	8.05	3 4	19.55	21⅘	174	Silver medal
H. F. S. Morgan (8 Morgan)	2	980	759	7 57½	7.5	2 55⅘	20.55	7 58⅘	7.52	3 3½	19.65	8⅘	185	Gold medal
N. Svanso (8 Morgan)	2	976	764	7 36½	7.9	3 59⅘	15.05	–	–	–	–	–	170	Silver medal
W. R. Haggas (8 New Imperial sc.)	2	980	648	8 2½	7.45	3 13½	18.65	–	–	–	–	–	–	Retired Thursday
J. Drew (8 New Imperial sc.)	2	964	516	7 21⅘	8.15	3 38⅘	16.45	–	–	–	–	–	–	Retired Tuesday
D. Alexander (8 Royal Enfield sc.)	2	976	552	8 52	6.8	3 22	17.8	8 29½	7.05	3 19⅘	18.05	25½	185	Gold medal
J. Dosher (8 Royal Enfield sc.)	2	976	560	9 37	6.25	4 3½	14.8	9 31⅘	6.3	3 59⅘	15.05	9½	169	Silver medal
D. C. Guise (8 Royal Enfield sc.)	2	976	560	8 44⅘	6.85	4 32	13.25	9 0⅗	6.67	4 27	13.47	21½	172	Silver medal
S. Parker (8 Royal Enfield sc.)	2	976	604	6 56½	8.65	3 26⅕	17.45	7 12⅗	8.55	4 10⅘	14.35	60⅗	161	Bronze medal
J. G. Lowles (8 Sunbeam sc.)	2	996	676	7 42⅗	7.75	–	–	–	–	–	–	–	–	Retired Tuesday
H. Jepson (8 Zenith sc.)	2	976	572	7 3⅗	8.5	3 7	19.25	–	–	–	–	–	–	Retired Wednesday
W. J. Barker (10 Henderson sc.)	4	1,168	588	8 4⅗	7.15	3 39⅘	16.4	–	–	–	–	–	–	Retired Tuesday
H. Greaves (10 Morgan)	2	1,096	756	9 32½	6.3	6 10⅘	14.4	10 4	5.97	5 91	11.65	90⅘	161	Bronze medal
S. Hall (10 Morgan)	2	960	780	6 58½	8.6	3 33⅕	16.85	7 –	8.52	3 52⅘	15.5	22	166	Silver medal
W. D. Hawkes (10 Morgan)	2	1,096	764	7 16⅘	8.25	3 10½	18.9	–	–	–	–	–	–	Retired Tuesday
R. G. Mundy (8 Matchless sc.)	2	976	629	8, 2⅘	7.45	3 3⅗	19.6	8 1	7.5	8 12⅗	18.7	10⅘	186	Gold medal

THE TEAM COMPETITION.

Winning Team: B.S.A. (Team A), 557 marks. Riders: H. F. Edwards, L. L. Sealey, and F. Turvey.

Other team scores: Scott, 539; Rover, 535; Enfield, 526; Sunbeam, 521; Blackburne, 519; Matchless, 507; Morgan, 498; Douglas, 459; Triumph, 445; and James, 439.

Zenith, Ariel, P. and M., A.J.S., New Imperial, and B.S.A. (Team B) failed to finish with all riders.

SPECIAL PRIZES.

Principality Prize (for Best Performance by Welsh Competitor).—M. Isaac (3½ Rover), 184 marks.

Special Benzole Prizes (for Best Performance in each Class by Riders using Benzole).

Class D.—H. O. Wood (3¾ Scott), 187 marks.
Class E.—J. W. Wills (6 Ariel), 178 marks.
Class G.—F. E. Jones (3½ Ariel), 152 marks.
Class H.—S. Sawer (4 Norton), 169 marks.
Class K.—Rex Mundy (8 Matchless), 186 marks.

NOTES.

P. Pike's performance on an entirely unprepared Levis is worthy of special mention.

To T. Rutherford, of the Cumberland Club, special credit is due. He was one of the few private owners to come through without trouble, and his Sunbeam finished in excellent condition.

Competitors agreed that the splendid attention given by Messrs. Tom Norton, Ltd., at their Llandrindod Wells garages was one of the most pleasing features of the trials week.

F. W. Applebee, or "Pa" as he is affectionately called, made probably the most creditable showing of the whole trial. He piloted his 4¼ B.S.A. machine up the roughest hills with never a falter, was always on time, and its condition at the finish—an all-important point—was wonderful. "F. W." is actually fifty-nine years of age, and he is as keen as ever.

Oliver (3½ Sunbeam) mended seven punctures on Thursday, and finally burst a cover which caused him to retire.

The consistent driving test was not at all popular with the competitors, and the committee recognised that the penalty laid down in the regulations for exceeding ten seconds was too severe. This was amended, one mark being deducted for every ten seconds or part of ten seconds in excess of a total of ten seconds up to a maximum loss of twenty marks.

The 6 A.J.S. sidecar ridden by F. W. Giles finished in magnificent order, though it had covered 6,000 miles before the start of the trial. It had a Millford sidecar with three-point attachment. The only trouble was a sooted plug when descending a hill with the gear engaged.

The winners of the team prize (Messrs. H. F. Edwards, L. L. Sealey, and F. Turvey, jun.) rode 4¼ B.S.A. chain-drive machines with minimum gear ratio of 5.1 and maximum ratio 13.2. The bore and stroke were 85 mm. and 98 mm. respectively, equalling 557 c.c. capacity. The machines were fitted with E.I.C. magnetos and Dunlop tyres, and were lubricated throughout the trial by Wakefield's Castrol.

"Maximum" Road Performances.

To show how the judges' examination affected the awards, we give below a list of riders who had "clean sheets" for running to schedule, climbing all hills, and who lost no marks in the consistent driving test. In other words, Saturday's examination by the judges led to the deduction of marks:

Rider and Machine.	Marks and Award.	
P. W. Moffatt (3½ Douglas) ..	167	Silver medal
G. Featherstonhaugh (3½ Rover)	179	Silver medal
*J. A. Newman (3½ Sunbeam)	188	Gold medal
*T. Rutherford (3½ Sunbeam)	184	Gold medal
D. H. Noble (5 Rover)	189	Gold medal
H. O. Wood (3¾ Scott)	187	Gold medal
F. W. Giles (6 A.J.S. sc.) ..	185	Gold medal
F. G. Edmond (4 Triumph sc.)	180	Gold medal
H. Gibson (8 Clyno sc.)	165	Silver medal
E. A. Colliver (7-9 Indian sc.)	156	Bronze medal
H. F. S. Morgan (8 Morgan)..	185	Gold medal

*Private owners.

CURRENT CHAT

Times to Light Lamps.

SUMMER TIME.

Sept.	25th	... ...	7.52 p.m.
,,	27th	... ...	7.48 ,,

GREENWICH TIME.

,,	29th	... ...	6.44 ,,
Oct.	1st	... ...	6.39 ,,

Police Activity.

We learn that the police are rigorously enforcing the observation of the ten-mile limit in Bushey on the London-Watford road.

Sheffield Registration Index.

The post-war growth of automobilism has necessitated the allocation of additional motor registration index letters to many provincial centres. Sheffield is the latest to require one, the new series of numbers being preceded by WA.

The Brussels Championship.

Belgium is quickly coming back to the realm of sport. The motor cycling championship of Brussels has just been decided over a ninety-eight kilometre course in the Bulwark State, in which many British and American machines competed. The result was a win for Eugene Taymens, on a 4 h.p. Triumph, and this despite the opposition from big twin machines.

Six Days Trial in France.

The French Six Days Trials will be held during the month of August, 1920. This event will take place in the neighbourhood of Grenoble, and will comprise runs over the Lautaret and the Galibier Passes, these being the highest mountain roads in France, and 10,000 feet above sea level. It will be remembered that the French Six Days Trials were originally planned for August, 1914. When war was declared a certain number of English riders were in the French Alps practising for this event, and they experienced the greatest difficulty in returning across France to the Channel ports and home. Next year's trials will follow the same lines as those interrupted by the war. Taking Grenoble as a starting point, there will be four distinct out and home trips, each one comprising very steep and difficult Alpine roads. The trials will be broken by one day's rest at Grenoble, when the machines will be on exhibition. It will be terminated by a two-day run from Grenoble to Paris. The French Six Days Trials will also include the International Tourist Trophy Trial for which national teams will be entered. The French event is open to all types of motor cycles and to cycle cars of 1,100 c.c. capacity. The rules, generally, are based on the English Six Days Trials. This event will be the most important motor cycle competition of the year, and probably the only one organised by the French Union Motocycliste.

The Bosch Patents.

A licence to work thirty-eight Bosch patents, of dates between 1908 and 1915, has been granted by the Custodian of Enemy Patents to the British Lighting and Ignition Co., Ltd. This licence does not affect the validity of the patents, nor does it mean that the above English company may work them without the obligation of paying royalties.

A Deliberate Theft.

While riding between Fenny and Stony Stratford on the night of the 27th ult., Cyril A. Hall, on a 1913 T.T. 6 h.p. Matchless, met with a serious accident, and lay unconscious until morning. On recovering, he went to a farm for assistance, and returned for his motor cycle shortly before 7 a.m. To his surprise it had disappeared, despite the fact that the front wheel was so badly damaged as to be unusable. The registered number was BH 4498, and Mr. Hall would be glad of any information which would throw light upon its present whereabouts. His address is 185, Church Street, Wolverton, Bucks.

Special Features.

OVERSEAS NOTES.
REPORT OF THE A.C.U. SIX DAYS TRIALS.
ITALIAN T.T.

Swimmer and Motor Cyclist.

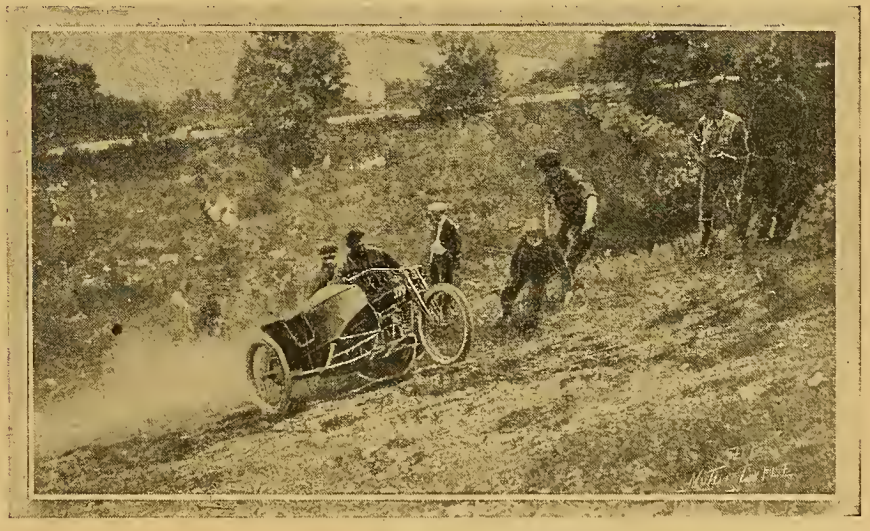
In the Ceinture de Paris Trial, which took place on the 13th inst., one of the competitors was Mademoiselle Y. de Graine, driving a Sunbeam and sidecar. Mademoiselle de Graine is the celebrated French lady swimmer.

Death of Mr. James Hazlewood, sen.

We regret to hear of the death of Mr. James Hazlewood, sen., the founder of Hazlewoods, Ltd., who passed away on the 12th inst. The late Mr. Hazlewood commenced the manufacture of bicycles many years ago in conjunction with Mr. Warman.

A French Amateur Event.

Quite an important list of entries, among them British and American machines, was received for the Grande Ceinture, an amateur event run by the Motor Cycle Club of France on Sunday, the 21st inst. A hill-climbing test was held on the Cœur-Volant in the afternoon, the finish being at Saint-Cloud. The official results are not yet available.



HILL-CLIMBING IN AMERICA.

Hill-climbing is becoming as popular a pastime in America as in this country, although in the majority of cases freak gradients are chosen, which often necessitate specially shod rear tyres. The photograph shows an outfit at Port Jervis, U.S.A.

Kilometre Races at Geneva.

A flying kilometre race and kilometre race with standing start were held at Geneva on the 14th inst. Robert (Moto-sacoche) won the flying kilometre with a speed of 61 m.p.h., beating the previous best made in 1917 by 3¼ m.p.h. The best time for the kilometre with standing start was accomplished by Tardin in 48s., equalling a speed of 46½ m.p.h.

The A.A. Benzole Test.

The two Triumph outfits completed the first 1,000 miles of their run near Paisley last Friday. They are, of course, using National Benzole entirely, and, so far, no troubles have arisen. The remaining 4,000 miles will be completed in returning to England, visiting various parts of Yorkshire, Lancashire, and the Midlands, and then journeying to Cornwall and Devon. Before finishing again in London a detour into the Eastern counties will be made.

A New Flying Club.

On Monday, September 15th, the London Flying Club was opened at Hendon. In view of the active interest taken by this journal in aviation during the war, it cannot be without interest to our readers to record the fact that a unique club on the lines of an American country club has been founded at Hendon, adjoining the Aerodrome, on the very ground where some 600 Service pilots were taught flying during the war. In his speech at the opening lunch, Lord Louth referred to it as a "wonder" club, and such it is. There are over eighty bedrooms, and members can not only fly, hire machines and pilot themselves, but may hire cars at a reasonable figure, and enjoy the delights of tennis, swimming, shooting, fishing, skating, and golf. After lunch free flights were given to many of the guests.

IMPORTANT DATES.

Paris Salon -	Oct. 9th to 19th.
Olympia Car Show	Nov. 7th to 15th.
Olympia Motor Cycle Show,	Nov. 24th to 29th.
Brussels Show -	Dec. 8th to 13th.

To Delay the Gear Change is Fatal.

On Wednesday, when the competitors in the A.C.U. Trials had to climb Bwlch-y-Groes, many drivers tried to travel too far on top or second gear, and also attempted to get back to top gear long before they were really up the hill.

The Silencer Regulations.

Two motor engineers were recently proceeded against in Lancashire for riding motor cycles which were without proper silencers. Both defendants urged that long exhaust pipes (exceeding 3ft. 6in. in length) complied with the regulations, and instanced various standard models supplied to the public so fitted. Some confusion as to the exact requirements of the law appeared to exist, and, in consequence, the defendants were ordered merely to pay the costs, and their licences were not endorsed.

French Trials Results.

The results of the Circuit des Quatre Departements, a French trial held in the vicinity of St. Etienne on the 14th inst., are: General classification. 1, Naas (Sunbeam); 2, Lavalette (Peugeot); 3, Theuriet (Sunbeam); 4, Bobby (Triumph); 5, Lapallud (Motosacoche); 6, Davis (Douglas).

A Douglas was first in the 350 c.c. class, a Motosacoche in the 500 c.c. class, and a Sunbeam in the 750 c.c. class. The Moto Club Parisien won the team prize

A Warning.

Motor cyclists are advised to exercise the greatest caution when passing through Knaresborough. A reader was recently fined 27s. and his licence endorsed for an obscured number plate.

From "Our Motoring Correspondent."

In a short description of the Six Days Trials a daily paper informs us that "a notable . . . failure was that of H. Fairly on a Horizontal, who opposed a B.C., a new type of machine which was a feature of much interest."

The Coventry Club Hill Climb.

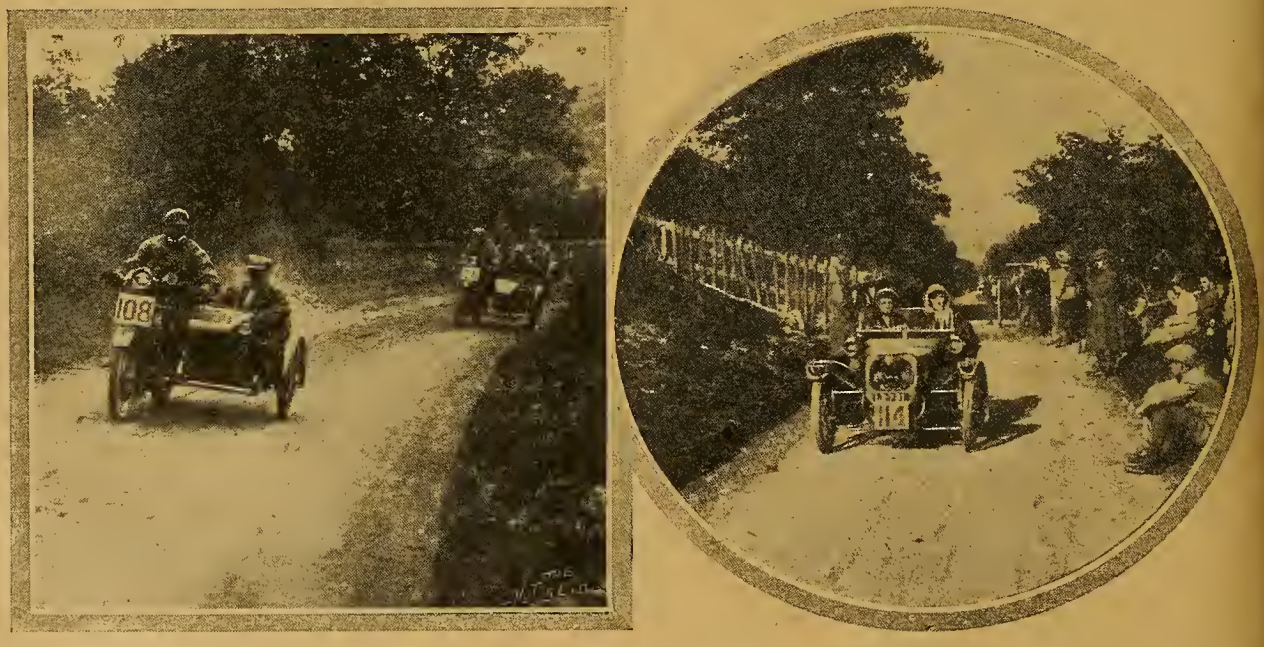
Owing to reasons over which the club has no control, it has been found impossible to hold the hill-climb which had been arranged for Saturday next. The event, therefore, has been abandoned this year.

A Mysterious Hill.

Many men who have climbed every competition hill in Scotland are afraid of Bwlch-y-Groes. One rider avers there is something unaccountable about the hill that tries the engines in a most peculiar manner. The road, he said, "cannot have a solid foundation, and the surface shakes like jelly when the machines pass over it, and it takes all the life out of an engine."

Energy.

A member of our staff witnessed the other day an incident which afforded proof of the unbounded energy of motor cyclists and the laziness of passengers. The rear tyre of a sidecar outfit punctured at the bottom of a fairly steep incline. It was expected the driver would unload his cargo, which consisted of the entire family, but he elected to push the lot up the gradient of about 350 yards to the nearest garage. None of the passengers offered to dismount.



THE A.C.U. SIX DAYS TRIAL.

(Left) Near Llandovery on the second day. The Colonial Model Enfield, driven by S. Parker, followed by T. Stevens (4¼ James sc.) and another sidecar competitor. (Right) The 8 h.p. Morgan, driven by W. D. Hawkes, passing Maj. Low's audiometer on Panne Hill, near Garth.

1920 MODELS

Indian

Motocycles.

We hope within the next few weeks to be in a position to give full particulars of our New Season's programme, together with illustrations and specifications of the

BIG 7 h.p. SPRING FRAME POWERPLUS MODEL WITH ELECTRIC EQUIPMENT,

and a

LITTLE 4 h.p. POWERPLUS MACHINE.

The 4 h.p. model has a large number of interesting features, and, we believe, will prove one of the most popular models we have yet introduced.

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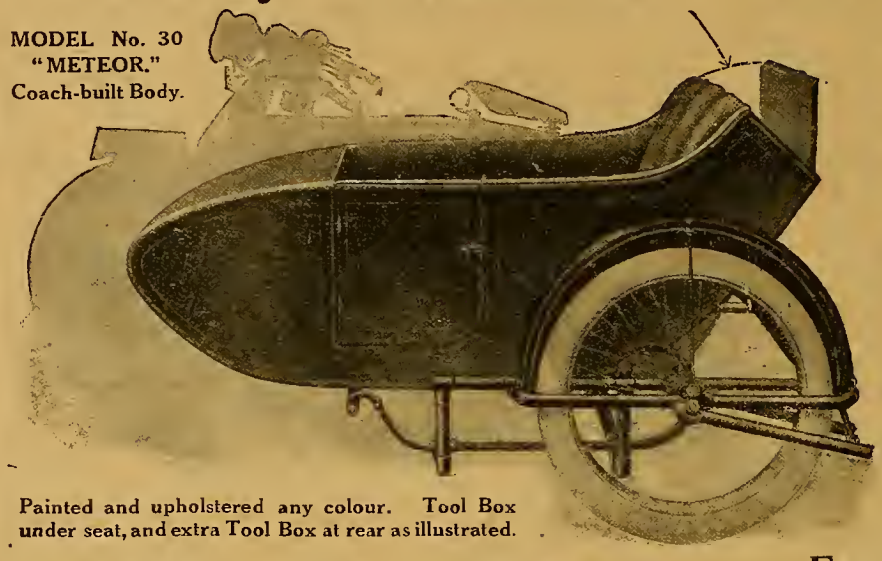
"Indian Motocycle" Hendee Manufacturing Co. LONDON

Burbury Sidecars and Sidecar Chassis

MODEL No. 30
"METEOR."
Coach-built Body.



Painted and upholstered any colour. Tool Box under seat, and extra Tool Box at rear as illustrated.

We are manufacturers of numerous models of Complete Sidecars for Touring and Racing, with Coach-built, Steel, Wicker, and Cane Bodies. Also Sidecar Chassis in 14 distinct models. Made to suit any make of Motor Cycle.

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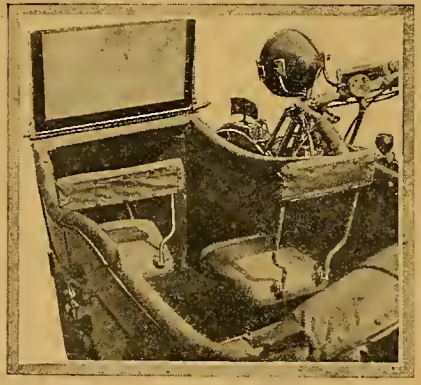
THE PATEY FAMILY SIDECAR



Interior of the family sidecar. The two small seats are easily removed, thus allowing plenty of luggage room inside the body when travelling with one passenger

Designed to carry in comfort one adult and two children or two adults. Can be fitted to any Motor Cycle.

Orders now being taken for Early Delivery.

Fit your A.M.A.C. Carburetter with a

W.S.R. PATENT VARIABLE JET ADAPTER.

⅞ths across thread.

WHAT IT DOES.

Gives You More Power—Higher Speed — Slow Running—More Mileage per Gallon — Greater Vaporization, Petrol emerging in Circular Spray.

Fitted in one minute to A.M.A.C. carburetters—simply unscrew plug holding jet and screw in the jet adapter.

This jet can be varied while running, giving a large jet for stiff hills down to a small one for ordinary running. No stopping to take out jet to clear obstruction—the W.S.R. can be cleared while machine is in motion.

State make of Engine, when ordering.

Half-size.

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Postage 3d.

What Users say about the W.S.R. VARIABLE JET ADAPTER.

"I received your Variable Jet Adapter. I think it is a wonderful little invention, and worth any amount. It should be of special use to riders living in large towns, where one often requires to travel at exceptionally low speed. I shall not hesitate to recommend it to all the motor cyclists I know."

"The Variable Jet Adapter you sent me is a great success. I fitted it to the carburetter and gave it a quarter turn, the engine runs much smoother and uses less petrol. This is a *very* hilly country, and on some hills (off the main roads) I had to jump off and run by the side. I can get up easily now. The machine is a 4 h.p. Douglas and sidecar. I shall certainly recommend it strongly."

We make a smaller size ⅞ths across thread for older type A.M.A.C. Carburetter, and also a short type for engines with little clearance between carburetter and chain case, such as the Villiers engine

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Fleet Street, BIRMINGHAM.

Horsham M.C. and C.C.

A new club has recently been formed in Horsham, Sussex, which already has a membership of over thirty. Local motor cyclists desiring to join the club should communicate with Mr. H. L. Gouldsmith, at the club's headquarters, King's Head Hotel, Horsham.

Glasgow Open Hill Climb.

Last week, on page 312, we were able to show photographs of two of the winners in the second open hill-climb promoted by the Western M.C. (Glasgow). The hill was Garshake in Dumbartonshire, and the event took place on the 13th inst. There were five classes, prizes being given to the winner in each, and five novices' prizes were also offered. A record entry of sixty-six was secured, and everything was carried out in good style. The hill is 650 yards long, and the gradient varies from 1 in 14 to 1 in 5. Results were based on the formula $\frac{W}{C \times T^{1.7}}$, and were read off immediately, timing being effected by field telephone and stop watch, an official with a slide rule being posted at the finishing tape. The results were as follows:

CLASS 1.—SOLO, NOT EXCEEDING 350 C.C.—1, Sorland Pitt (Velocette); 2, J. Montgomery (Douglas); novice prize, Borland Pitt.

CLASS 2.—SOLO, NOT EXCEEDING 600 C.C.—1, A. McCulloch (3½ James); 2, A. S. Brown (Alldays-Matchless); 3, J. W. Walker (Norton); novice prize, A. S. Brown.

CLASS 3.—SOLO, UNLIMITED.—1, J. W. Walker (Norton); 2, Jas. Wright (Indian); 3, A. McCulloch (James); novice prize, J. W. Walker.

CLASS 4.—SIDECARS, NOT EXCEEDING 600 C.C.—1, Jas. Spence (4 A.J.S.); 2, M. Simons (Triumph); novice prize, M. Simons.

CLASS 5.—SIDECARS, UNLIMITED.—1, Geo. Grinton (Harley-Davidson); 2, J. Barclay (6 A.J.S.); 3, M. Fraser (8 Enfield); novice prize, M. Fraser.

SPECIAL PRIZES.—McLean Challenge Cup, for best performance by a member, A. McCulloch (3½ James). Best performance by a private owner, A. McCulloch. Fastest time of the day, J. McKenzie (8 Enfield).

Future Events.

SEPT. 27.—WOLVERHAMPTON M.C.C. OPEN HILL-CLIMB AT STILE COP.
SEPT. 27.—SCOTTISH A.C.U. SPEED CHAMPIONSHIPS AT ST. ANDREWS.
Sept. 27.—Coventry and Warwickshire M.C. Hill-climb.
Sept. 27.—Essex M.C. Gymkhana.
Sept. 27.—Reading and District M.C. and L.C.C. Flexibility Hill-climb.
Sept 27.—Exeter M.C. and J.C.C. Trial.
SEPT 28.—THE SCOTT SPORTING TRIAL.
Sept. 28.—Rochester, Chatham, and District M.C. Consumption Test.
Sept. 28.—Reading and District M.C. and L.C.C. Run to Virginia Water.
Sept. 28.—Eastern Counties M.C. Afternoon Run to Harlow Bush.
Sept. 28.—N.M.C.F.U. (Leeds). To Scott Trials.
Sept. 28.—Ilkeston and District M.C.C. Run to Trent Lock.
Sept. 28.—Reading and District L.C. and M.C.C. Run to Virginia Water.
Sept. 28.—N.M.C.F.U. (Wolverhampton). Run to Crackley Bank, Wellington.
Sept. 28.—Manchester M.C. Closing Run.
Sept. 30.—Blackburn and District M.C.C. Reliability Trial.
Oct. 4.—Essex M.C. Hill-climb.
Oct. 4.—Birmingham M.C.C. Captain's Day.
Oct. 4.—Edinburgh and District M.C. Trial for Amateurs for Palmer Trophy.
Oct. 5.—Ilkeston and District M.C.C. Run to Belvoir Castle.
Oct. 19.—Ilkeston and District M.C.C. Run to Crick.
OCT. 25.—LIVERPOOL M.C. OPEN RELIANCE CUP TRIAL.
Oct. 26.—Ilkeston and District M.C.C. Run to Chatsworth.
NOV. 1.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR PALMER CUP.

Blackburn and District M.C.C.

We are advised that a reliability trial run, promoted by Blackburn and District Motor Cycling Club, has been fixed for September 30th. There will be ten classes for various kinds of machines. A cup is offered by Messrs. H. Collier and Sons, and gold medals by various officials and makers of cars. There is also a section for motor scooters. The event will take place on Waddington Fells.

Dunheved and District M.C.C.

Launceston has the distinction of having the only motor cycle club in Cornwall This is the Dunheved and District M.C.C., which was formed recently. Owing to the approach of winter it is not expected that many runs will be arranged this year, but the club is being put on a sound basis for next season. The membership already exceeds thirty, and, it is anticipated, will shortly be doubled. The hon. sec. is Mr. Maurice Prout.

Bath and West of England M.C.

Inaugurated only about a month ago, the Bath and West of England M.C. has soon got to work with competitions for its 125 members. On the 6th inst. the club held a successful hill-climb, for which twenty-eight entries were received.

Recently the above club held its second hill-climb, on Weston Lane. The results were based on time and formula, $\frac{C \times T^2}{W}$ being used.

The winner (on formula) of the solo class is A. S. Moon (3½ Norton), and he receives the Fuller cup. V. Smith (4 Norton sc.), in the sidecar class, was the winner of an electric lighting outfit. These prizes will be awarded at the inaugural dinner on October 11th.

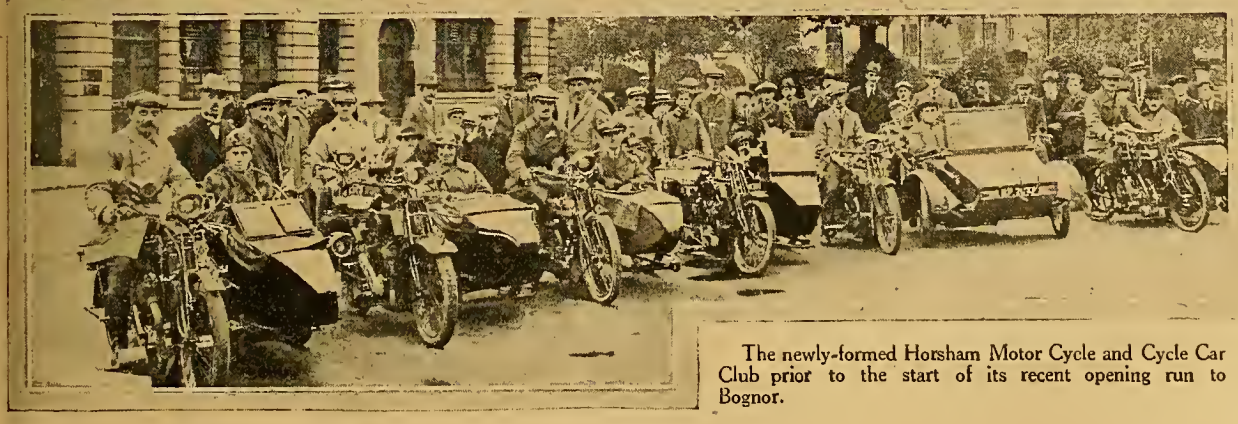
Figures of merit and times are given below:

SOLOS.

		Time.	Formula.
1.	A. S. Moon (3½ Norton) ..	1m. 19⅘s. ..	114
2.	E. Colmer (3½ Norton) ..	1m. 20⅘s. ..	121
3.	A. Simms (4 Norton) ..	1m. 18s. ..	128
4.	C. Anstice (4 Douglas) ..	1m. 32⅘s. ..	182
5.	E. Fery (2¾ Douglas) ..	2m. 27⅘s. ..	238
6.	I. L. R. Large (2¾ Douglas)	2m. 10s. ..	257

SIDECARS.

1.	V. Smith (4 Norton) ..	1m 31⅘s. ..	220
2.	A. Simms (4 Norton) ..	1m. 32⅘s. ..	227
3.	—. Whale (7-9 Harley-Davidson)	1m. 53⅘s. ..	426
4.	P. Bonnet (4 Douglas) ..	2m. 20s. ..	485



The newly-formed Horsham Motor Cycle and Cycle Car Club prior to the start of its recent opening run to Bognor.

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

A DANGEROUS CORNER.

Sir,—I would like to call your attention to the dangerous turn over the bridge at the Blacksmith's Arms, Swainby. The point is on the Northallerton-Redcar road. I have only been licensee here a fortnight and have seen a few spills, notably with sidecars.

Being a motor cyclist myself, I should like you to issue a caution to readers using the road. E. D. ELLISON.

AN ECHO OF THE TEAM TRIAL.

Sir,—In your report of the M.C.C. Team Trial, under "Notes on the Course" (page 286), it is stated "Dalby and Clulee were seen returning to the starter during the third lap." I wish to point out that Mr. Clulee did not ride in the trial; in fact, never left Birmingham; while I myself finished all three laps on time, along with Mr. Kershaw (Verus), being the two of the South Birmingham M.C.C. to do so. G. DALBY.

"CICETER."

Sir,—Regarding spelling and pronunciation of Cirencester, I have lived for many years in the neighbourhood of Reading (no great way from Cirencester), and the only rendering I have ever come across was Sissister! F. SIMPSON.

[Cirencester is pronounced as spelt, and also in the two ways given by our correspondents. Similar variations occur in many other names, *e.g.*, Uttoxeter should be Uxeter and Abergavenny Abergenny, but they are frequently pronounced as spelt.—ED.]

SPEED WOBBLE.

Sir,—I noticed a letter a week or two ago regarding speed wobble on a Rudge Multi. This happened to me once or twice after changing from a 1913 to a 1916 model, and seemed to be entirely due to holding the handle-bars too tightly, possibly owing to nervousness on the new machine. In any case, it has never occurred since I adopted a lighter grip, and the machine can be ridden "hands off" indefinitely at any speed from 25 m.p.h. upwards. J. H. H. GOODALL.

Sir,—I should say the wobbling referred to on August 21st was caused by the engine braking effect of closing the throttle passing through the belt to the rear wheel. Closing the throttle suddenly is almost equivalent to a sudden application of the rear brake. It may interest "G.E.S." to know that T.T. riders in the Isle of Man corner quickly and reduce speed suddenly by not only closing the throttle but by changing to a lower gear ratio. This is a system of braking and cornering that is most punishing to the transmission and engine, but is resorted to in the hope that the parts subjected to such brutal treatment will stand for the duration of the race. It is safer to do it with a belt than any other form of drive.

Coventry. W.G.

THE SIX DAYS TRIALS.

Sir,—For the present day machine I consider the course of the Six Days Trials a good joy ride. What is 700 odd miles in six days to a trade rider, for instance? Why, ten years ago, I did, many a time, 180 miles in a day on a 1¾ h.p. F.N. The same machine would climb the Cat and Fiddle hill without a stroke of the pedals, which I did in the Liverpool M.C.C. Trial. My name will be found in the motor cyclists' register, Mow Cop (Railway Inn), as I climbed up to it from the station. At that time only one car had ever climbed it—a six-cylinder Simplex. Mr. Philpott, Mr. Blake, Mr. Pohjoy, and Mr. Fehr—names familiar to you—will no doubt remember these performances on a 1¾ h.p. motor cycle if they cast their memory back to seasons 1908-09. I might add I have been a constant reader of your wonderful paper from Number One.

HENRY EVANS.

IRISH TOURISTS' BEST ROUTE.

Sir,—With reference to the letter by Mr. R. Martin headed "A Warning" on page 253 of *The Motor Cycle*, September 4th, the annoyance and inconvenience experienced by Mr. Martin may be obviated by travelling to Belfast *via* Liverpool, by which route I have repeatedly taken my Harley outfit, as it runs at less cost than that paid in the first instance by Mr. Martin. J. WILLEY.

A MOTOR CYCLE CLUB FOR THE ROYAL NAVY.

Sir,—The letters from Lieut. Evans-Greaves and others regarding a motor cycle club for the Navy have put forth quite a practical suggestion, which would be most welcome to a great many Royal Navyites, inasmuch as it would afford them much needed facilities for exercise after periods of strain and stress in the congested atmosphere of a battleship or destroyer. I shall be glad to add my name to that of your former correspondent to help in any way the furtherance of the project.

ALFRED KELCEY,
Engine Room Artificer.

THE VALUE OF AUTOMOBILE ASSOCIATIONS.

Sir,—I read Mr. Charles Brown's letter with interest after my own experience. I joined the A.C.U. in March. On August 23rd my 2¾ h.p. motor bicycle broke its frame one mile north of Cosham on my way to Portsmouth. A message was sent into Cosham by a passing motor cyclist, and a garage sent a car out and carried the machine and self to the nearest repair depot in Portsmouth.

In reply to my letter relating the above, the secretary of the R.A.C. replies: "The above scheme does not cover the conveyance of the cycle. It is only to provide means of conveyance for driver and passengers so as to prevent their being stranded by the roadside. We regret we are unable to meet the expense to which you refer."

The A.C.U. advertisement reads: "In case of breakdown or accident your machine is taken to nearest garage and a car is placed at your disposal," etc.

I only asked for expenses for carriage of the machine. I was willing to bear the expense of the rest of my own journey to the Isle of Wight. L. OLIVER.

Sir,—May I relate an experience of mine which shows the advisability of all motor cyclists joining the A.C.U.?

I was touring in the West of England, and at Weston-super-Mare was stopped by the police for having my head and rear light out. I communicated at once with the A.C.U., and a solicitor was appointed to watch the case on my behalf. Living in Sheffield, I did not intend to travel nearly 200 miles to attend the court. I have just heard from the solicitors that they were successful in getting the summons dismissed. Had I no legal representation, or had I to find a solicitor on my own, I might have been considerably more out of pocket than my subscription to the A.C.U.

Had the friend of "Fair Play" been represented at the court, as related in your issue of August 28th, he might not have had such an expensive awakening. Of course, it was an accident that delayed his appearance, and it is in just those accidents that the A.C.U. steps in with its valuable help. MEMBER A.C.U.

THE RELIABILITY

Of the J.A.P. ENGINE

BRITISH & BEST

IS AGAIN PROVED
IN THE

Scottish Six Days Reliability Trials

AWARDED

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SILVER MEDAL ALAN HILL 8 h.p. MORGAN

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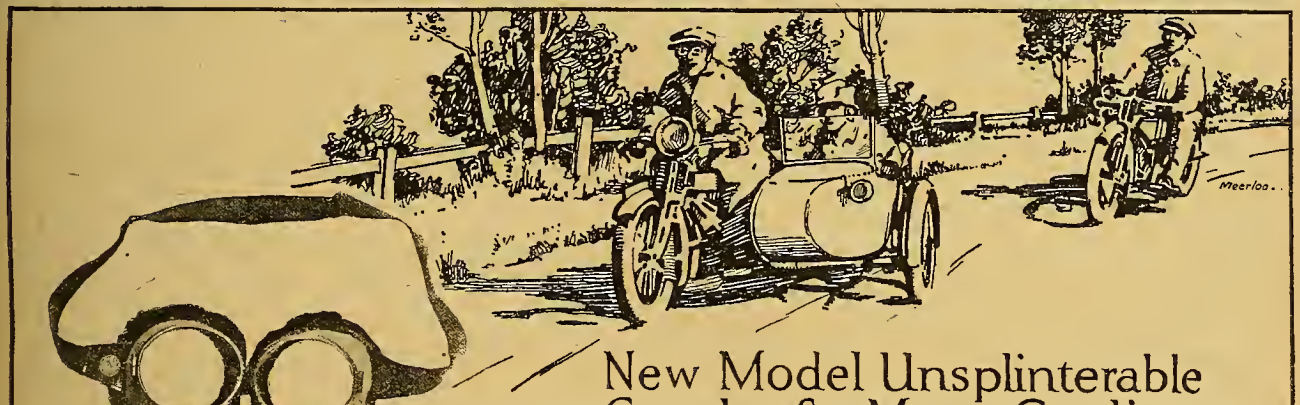

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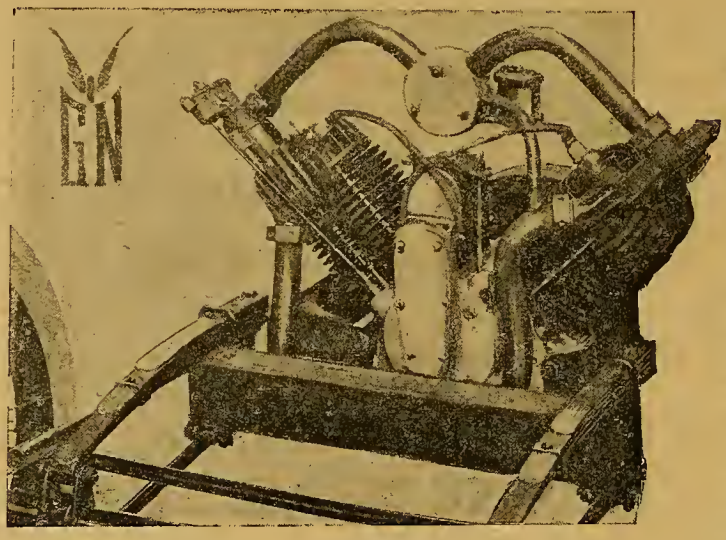

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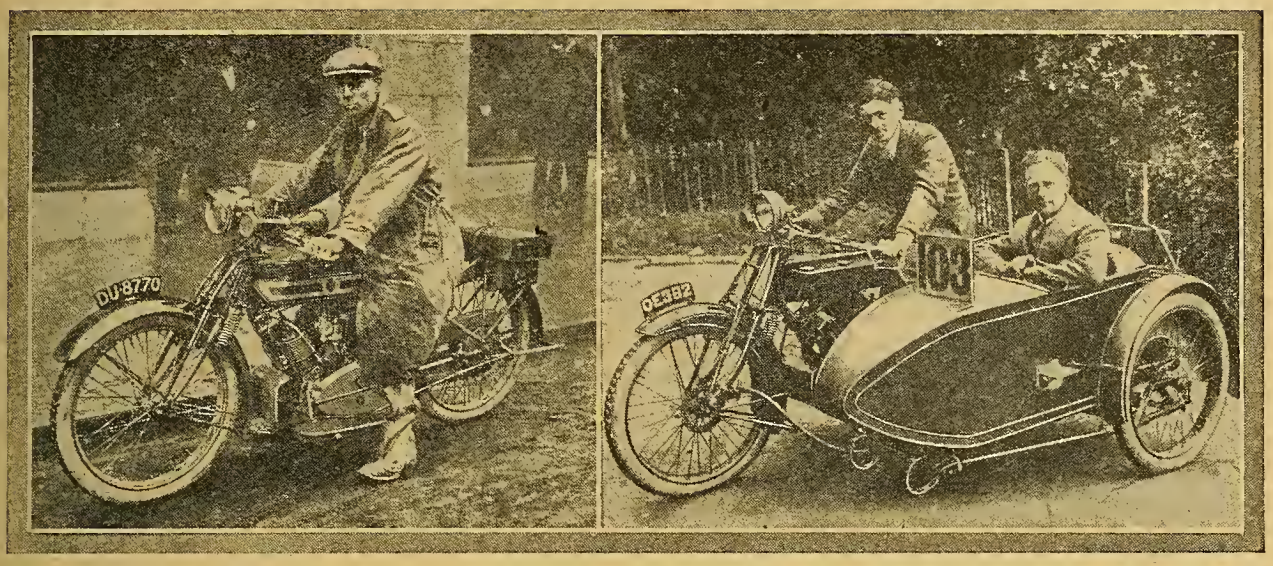

TWIN CYLINDER SOLO AND SIDECAR MOUNTS IN THE SIX DAYS TRIALS.

D. H. Noble and his 5-6 h.p. Rover, which embodies several features that will probably be standardised. These include wider mudguards and a chain guard in lieu of the enclosed case.

The 8 h.p. New Imperial with Henderson sidecar ridden by W. R. Haggas. A very complete accumulator lighting equipment was fitted to this outfit.

SPARE PARTS.

Sir,—I recently broke a pulley flange of my N.S.U. gear while on tour. A brazed repair kept me on the road, but the job was vilely done, and I considered a new flange necessary. This I tried to get in London from a firm which advertises its ability to carry out repairs to these gears. They quoted 12s. for a second-hand flange. I happened to have Messrs. Bradbury's list of parts, and found their price was 8s. 6d. A postal order sent on August 25th brought a card to the effect that the annual holiday was in being, but that my order would, etc., etc. Imagine my surprise when, on Friday, September 5th, the flange arrived, and my delight in finding it a perfect fit.

The fact that this firm at present makes the complete gear and supplies spare parts at reasonable prices does not appear to be generally known. A. H. NELSON.

Sir,—Having recently seen a number of letters in *The Motor Cycle* from readers who complain of unsatisfactory treatment by manufacturers, I wish to mention one firm at least who spare no pains to satisfy their customers.

I have an old Triumph, for which I required some small parts, and on writing to the Triumph Cycle Co. I received these in the course of a few days.

I had occasion to remove the pulley, and finding this very tightly wedged on, I wrote to the Triumph Co., asking their advice, as I was afraid to use force lest I might fracture the pulley.

I received by return an extractor and a courteous letter, and although I wrote asking what was the cost of the tool I was not charged anything for it.

I have always received a prompt answer to any enquiry for information, no matter how trivial the case, and I am not even the original purchaser of the machine, having bought it second-hand.

I think this admirable service is worthy of note, especially in these times, when material is scarce and the demand so great.

I have no interest whatever in the Triumph Co., beyond being a well satisfied user of their splendid machine.

Co. Wicklow. T.T.

Sir,—As there is often delay and inconvenience in the obtaining of spare parts, I think it advisable that we should make known the manufacturers who treat their customers well, even in small matters, and are prompt in their despatch. I had occasion a little while ago to send to the Rex Motor Manufacturing Co., of Coventry, for a new inlet valve cap for a 1908 Rex, and on receipt of cash they promptly forwarded the article; but unfortunately I sent the wrong date of machine, and consequently I received the wrong pattern. I informed them of this, so was asked to send the old cap along, which I did, and in the course of a few days I received the right cap with the old one returned, with an apology for the delay. Had I not made the mistake it would have caused me no delay whatever. I add the usual disclaimer. HAROLD H. LEY.

Sir,—Whilst touring in the South of England on a P. and M. motor cycle I had the misfortune to break the front forks through an accident. This occurred the Saturday afternoon before August Bank Holiday. A letter was sent to Messrs. Phelon and Moore the same evening, which was received by them on August Bank Holiday. The forks were despatched the same morning, and the machine was ready for the road on the following Wednesday afternoon. I have heard numerous complaints respecting the despatching of spares, but have always found Messrs. Phelon and Moore very prompt. C. A. PHILLIPSON.

WHO WAS TO BLAME? AN UNUSUAL EXPERIENCE.

Sir,—A few weeks ago I bought a 6 h.p. motor cycle second-hand (about 1914 date). The power output was very bad, and the first thing I did was to tune up the carburetter, a Binks three-jet. The late owner had got the jets somewhat mixed, and the sizes made me wonder if he had been using a stream of petrol to *wash* the inside of his engine. When I got this about right I removed the exhaust pipes, and went for a short run, with very gratifying results. I replaced the exhaust pipes, and went out for the afternoon. My surprise and disgust were great when I found the engine ran nearly as badly as ever! I selected a moderate hill on a deserted road and began testing. First I went up on two cylinders and then on each one separately, first with the exhaust pipes on and then without. This soon showed that when the back exhaust pipe was on that cylinder gave no power at all, so I drove home without it, and proceeded to look for carbon. Imagine my utter stupefaction when, on taking down all the piping, I discovered that the lug where the back pipe ran into the other was *solid!* The pipe simply came to a dead end inside the lug. And this after several years' use! No wonder the previous owner had been fitting big jets to increase the power—and then sold the machine. The puzzle is how it ever came to be running like that at all; surely the makers would never be guilty—and yet—well, I am left puzzling. At any rate, I do not think it was a practical joke, as the pipe had most obviously been fixed for a long time, and the state of the carburetter was additional proof.

Sheffield. C.S.

LUMINOUS SPEEDOMETER DIAL.

Sir,—As a constant reader of *The Motor Cycle* and an ardent rider myself I would suggest that a speedometer with luminous figures and pointer would be an enormous asset to those motor cyclists who of necessity have a considerable amount of riding to do at night.

Cannot some enterprising British firm undertake the production of these speedometers, instead of letting the Americans or, quite possibly, the Germans, do it for us?

As a type of speedometer, that with a black dial and white luminous figures and pointer would be most suitable I think, as the speed can then be read at a glance during the day as well as at night. Personally, I have tried a small electric light above the speedometer at night, but have never found it very satisfactory. I would like to add that from my entire absence of trouble whilst riding with a luminous wrist watch, the dial of the speedometer would be found equally reliable. DOUGLAS BROWN.

BENZOLE.

Sir,—I have read with some surprise that it is proposed to carry out a 5,000 miles trial of benzole. This trial appears to me to be a waste of time and money.

One of the objects of the trial is, I see, to test the effect of benzole on tank, engine, carburetter, etc., but as the trial will only last about a month it will be of little value. There must be scores of motor cyclists who have used benzole for tens of thousands of miles; their records and remarks if tabulated would be worth a dozen short trials.

I have ridden a 1913 F.E. Triumph practically every day for six and a half years, have covered over 75,000 miles on it, and from the first day I rode the machine I have always used benzole when obtainable. Like everyone else, for a period during the war I had to use piff water.

In the good old days I bought benzole in 50 gallon drums from a firm called Robinson Bros., West Bromwich, at about a shilling a gallon. Now one can buy it, at a price, at any roadside garage.

The original tank and carburetter are still on the machine, and both are still in perfect condition. I have had two new cylinders and five new pistons, these replacements being necessary on account of wear of the cylinder walls. I have ridden in all weathers including hard frosts, and have never found any objection to the use of benzole.

On a long run I can do 100 miles to the gallon on benzole, while on piff water during the war I hardly managed to get seventy-five. My experience proves that benzole has no ill effects on a Triumph.

It would be most interesting if confirmed benzole users who ride other makes of machines would give their experiences. A. W. TOMLINSON.

STEERING ON HAIRPINS.

Sir,—With regard to "Janey's" suggestions and queries *apropos* this subject in the Correspondence columns of August 21st, I do not think the pack carried on my Douglas during the Scottish Six Days trials in any way influenced my judgment concerning the steering of the machine, as it was carried only during the three days of the trial which found us changing hotels. What "Janey" says concerning the weight on the front wheel nevertheless affords food for reflection, though his opinion is entirely the reverse from that of many riders. I agree with him that the P. and M. and the Scott are two of the best machines for difficult corner work, and both, curiously enough, carry their weight well forward; yet experience with other makes produces such a chaos of contradictory evidence that one hesitates in giving an opinion. Nor does it follow that a machine which steers easily in the ordinary course of touring is going to prove all that might be desired for difficult corner work such as one encounters during the classic Scottish event.

What probably matters more than anything else is the position of the rider. There are some machines which one can "get hold of" so that rider and machine are part and parcel as regards weight distribution and balance; there are other machines which strike one as being little more than a framework of bony protrusions, which, at the best, one can merely sit on and steer. A natural and comfortable riding position, by which one's weight is sufficiently forward to impart an impression of maximum control of the front wheel, is perhaps the chief thing, and, given this, I do not think the weight centres of the machine matter to within a millimetre or two.

In case these remarks may be thought to cast a reflection on the steering of the new Douglas, let me add that the very slight discomfort I experienced on the most difficult corners was, I believe, entirely due to the fact that the riding position was adjusted to the dimensions of a rider less elongated of limb than myself. Had there been leisure for slight readjustments probably the defect would not have been noticeable. There is no doubt whatever that, as "Janey" infers, a heavy pack on the carrier does upset the extreme nicety of steering—probably more than does an experienced pillion passenger, from which fate deliver me!

CHINOOK.

CONCESSIONS TO DESPATCH RIDERS.

Sir,—I am afraid I must disagree with the latter part of "Ex-D.R.'s" reply to "Discharged Highlander" in your issue of the 11th inst.

About July 10th I went to the offices of the War Motors Association in High Holborn, and booked a conntershaft Triumph, paying a deposit of £10.

The gentlemen in this department were real good fellows, for in five days I was told I could fetch the machine from the depot at Slough.

I found it a 1918 model in tip-top condition, and I rode it back to my home at Dulwich.

The tyres were slightly perished, but I did 2,000 miles before I discarded them.

In August I made several long runs, travelling from Exeter to Margate in one day without the least trouble—a distance of 260 miles.

I think "Discharged Highlander" will find that he also can get a machine from the W.M.A. if he tries.

As regards price, this machine cost me 60 gns. plus 2½%. Hub gear Triumphs were about £25-£30. Surely these prices were bargain prices, and I for one have not been taken in over the deal.

I should advise "Ex-D.R." to go direct to the W.M.A., although now, no doubt, they have quite a waiting list.

Dulwich, S.E. A SATISFIED D.R.

Sir,—With reference to "Ex-D.R.'s" letter on Sept. 11th, *re* Government motor cycles and the War Motors Association, I may say that I ordered a 2¾ h.p. Douglas in July and got delivery early this month.

The machine, which is a rebuilt one, has been overhauled, re-enamelled, and all worn parts renewed by the makers, is in all respects equal to a new machine, and has given every satisfaction.

The delay in delivery is no fault of the W.M.A., but of the Government Department concerned. The price, 45 gns. plus 2½%, strikes me as extremely moderate, considering similar machines are advertised by dealers at about 70 gns.

The only criticism I would offer is that the W.M.A. make better provision at Grove Park for taking away the machines, as a grateful Government refuse to give one any petrol or oil, and unless fuel is taken it is necessary to push the machine to the nearest garage.

I understand that the concession is not confined to ex-D.R.'s, but that a motor cycle or car may be purchased through the W.M.A. by any ex-officer or man.

Richmond. ANOTHER EX-D.R.

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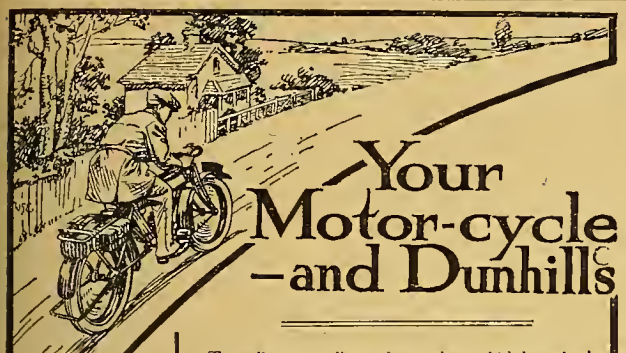

Your Motor-cycle —and Dunhills

IT is all very well to picture that whirl through the countryside as one long spell of unbroken pleasure, but it is more practical to reflect on the possibilities of mishap and to anticipate the troubles that may arise. It is still more practical to arm yourself with all those "Motorities" which add to the joy and enable you to deal promptly and effectively with "troubles." It is not good to find yourself in difficulty just as the shades of night are falling and you at a spot "miles from anywhere." Be a "road-wise" motorist and equip yourself fully and efficiently at Dunhills.

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"The Book of the Motor Car" is full of invaluable information on all problems of driving and repairing a car, instructions being given for all possible difficulties in language that can be understood even by the most unmechanical mind. The following are a few of the subjects dealt with: Cylinders, valves of all kinds, different types of engines, carburetters, ignition, silencers, gear and clutches, radiators, cooling systems, brakes, lubrication, lighting systems, wheels, tyres, fuels and how to use them, tools, and repair appliances, etc., etc.

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TO WHICH IS ADDED THE EXPERIENCE GAINED IN THE MANUFACTURE OF AEROPLANE ENGINES DURING THE WAR

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A poor belt will fail to grip the pulley ; it will not let your engine get fair play. The

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That was the service a Brand New Pedley ¾-in. Belt recently gave on a 2½ h.p. "Levis," which completed the London to Edinburgh run, and then was driven to Exeter, making a total distance of 900 miles. The rider tells us that the Belt gave no trouble whatsoever on the road, and when taken off was found to be in perfect condition.

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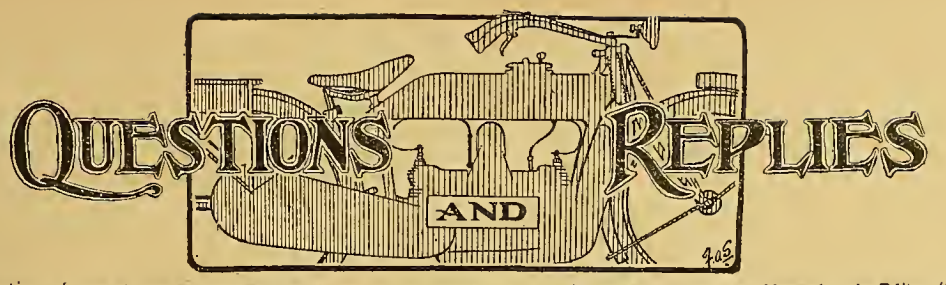

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

A Broken Timing Cover.

The timing cover of my motor cycle having cracked across the centre, I would be very grateful if you would let me know how to repair it. I have tried solder, but it will not hold on aluminium.—F.G.

What you must do is to have the timing case cover welded. You cannot solder aluminium by ordinary means. Aluminium solder might be used, but welding is better.

Converting a Triumph.

I should be very much obliged if you would let me know if a 1914 Triumph engine can be fitted into a Triumph frame of present design, *i.e.*, one made to carry the countershaft gear?—C.S.B.

The 1914 Triumph engine could no doubt be fitted in the later pattern frames, but we are not at all certain that the main shaft bearing will stand up to continued work on account of the overhang of the drive, if used with the countershaft gear.

Irregular Running.

I have a 1913 New Hudson, fitted with B. and B. carburetter and Bosch magneto. The engine usually runs perfectly, but lately, at irregular intervals, does not develop its usual power. The engine gives the writer the idea that it is "pulling back," instead of all the power being used to drive forward. The machine will be running smoothly when, without any touching of the controls or ignition levers, a decrease in the speed will suddenly occur, and will last for about twenty or thirty yards. It will then return to the original speed and run for about the same distance, and then will again slow up. This goes on alternately. The whole time the engine appears to be running quite well and not misfiring, and nothing is noticeable except for the loss and gain of speed. Usually, on advancing the ignition, the speed of the machine is at once increased, but if the spark is advanced while the above loss and gain of speed is taking place, it has no effect. The cylinder is very clean, the piston rings are in good order, the compression is excellent, the jet clear, and the ignition is perfect.—R.W.M.

The only solution we can suggest is that there is a temporary stoppage in the jet due to some floating obstruction, which temporarily impedes the flow of petrol.

Magneto Switch.

I have a 1919 Levis with an E.I.C. magneto to which I have fitted a magneto cut-out. On switching it off when out in a heavy shower, I received an electric shock. (1.) What is the reason for this? (2.) Is the switch in any way bad for the magneto or engine?—J.F.B.H.

(1.) The reason for this is that owing to the wet there was a leakage of electric current, a by no means uncommon occurrence on a motor cycle. (2.) The switch in no way affects the magneto, but indiscriminate use of ignition switches for controlling speed throws very sudden and severe strains on engine and transmission.

Clutch Slip.

My 1917 B.S.A. sidecar outfit has a tendency to clutch slip when climbing fairly steep hills. This only occurs when it is necessary to change down to middle and bottom gears. If I can get a fair start, it will climb the same hills on top, but if checked for any reason, and it is necessary to change down, the clutch commences to slip. I have had the gear box down, but am unable to find any means of adjusting the clutch for wear. (1.) Will it be necessary to renew the springs? (2.) Or the clutch plates? (3.) Also must I renew the whole of the plates, or would it be sufficient to add several new plates?—C.W.R.E.

With regard to the lubrication and care of the gear, we should recommend you to bear the following hints in mind: The gear must not be filled with grease. Use only B.S.A. special lubricating oil (not thick engine oil), injecting this liberally whilst the engine is running, with the high gear in and the clutch out. To do this, remove the four nuts and spring washers on the inspection cover and lift this off the studs, taking particular care that the washers or nuts do not drop into the gear box. At least every 1,000 miles thoroughly flush with paraffin (the engine should be running), meanwhile working the clutch lever in and out and changing gears. Carefully drain by means of the plug provided and relubricate. When leaving the machine after use always let the clutch *in* to relieve spring pressure. Do not slip the clutch unnecessarily. It is necessary occasionally to test the adjustment of the clutch control. The small screw in the control nut is provided for this purpose. This should be adjusted to allow a slight back lash to be felt when the clutch is in, otherwise the full spring pressure will not be operating on the plates. (1 and 2.) If this procedure does not remedy the matter, then you must try renewing the springs or fitting new clutch plates. (3.) It is impossible to say. It seems as if a complete set might be necessary, but you might try one or two extra ones.

An Old Engine.

I have purchased a motor cycle, Chater-Lea frame, but the crank case has cast on it the initials P.F. It is a twin-cylinder with a bore of 3$\frac{1}{8}$in. and stroke of 3$\frac{3}{4}$in. (1.) Is the engine a Peugeot? (2.) What is its h.p.? (3.) What is the address of a firm likely to supply spares? (4.) How must I set the valves (exhaust)? The inlet valves are automatic.—W.E.F.

(1.) The engine is a Peugeot. (2.) It is about 7 h.p., 943 c.c. (3.) Spare parts for these engines are practically unobtainable. (4.) Time the exhaust valves so that they close just before the piston reaches the top of the stroke.

Completion of Purchase.

I bought a second-hand motor cycle from a small garage owner, giving a cheque for £85 in return. I did not take possession at once, owing to some small repairs which were being done on it. On further examination, while waiting, I discovered a badly cracked frame member, whereas the machine had been described as perfect with the exception of the aforementioned small repairs necessary. I immediately walked out of the garage and wired to my bank and stopped the cheque. I did not inform the garage owner of what I had done, and he did not know till he found the cheque stopped four days later. During that time, apparently, he had enquiries about the machine, but replied "sold." Now, he has sold the machine for £80, and holds me liable for the £5 difference. Am I liable? I shall be very grateful if you would give me expert advice, as I cannot afford to pay the costs if I lose the case in the courts, and would settle it outside, therefore, preferably to losing it.—B.C.L.B.

Having given a cheque to cover the price of the machine, you are liable to complete the purchase, even though you have stopped the cheque, unless, of course, you can prove definitely that there was some misrepresentation on the part of the dealer.

Lighting from Magneto.

? I have a B.L.I.C. aeroplane magneto which I am converting into a lighting set for my Morgan. I have removed the high-tension (secondary) winding from the armature, and also the condenser, and have filled up the space with low-tension wire. I now want your advice about the shunt coil. I have an old medical coil and wonder if I introduce the coil in the circuit—removing the make and break, of course—whether this will function as a governor to keep the voltage nearly constant. I do not intend, of course, to charge accumulators, as it is an H armature.—T.W.E.B.

We do not quite follow your meaning as to a "shunt" coil; the shunt coils of a generator in the ordinary sense being the field-magnet coils, which in this case are non-existent, permanent magnets taking their place. What you probably have in mind is a "choking coil," as sometimes used in an alternating current circuit to regulate and steady the voltage. We presume you only think of using the primary circuit of the old medical coil, but we do not think it would be successful, as the effect would not be powerful enough, while the high-tension winding would be too fine for the purpose. You can, however, make the experiment without much trouble. On account of the permanent field and the armature reaction at high speeds, the voltage of such a generator will keep fairly constant without any other regulation.

READER'S REPLY.

Consumption on Two-strokes.

Re the letter signed "H.M.," in the issue for September 11th, "Questions and Replies," as a rider of (presumably) the same mount—1919 2½ h.p. Sparkbrook-Villiers—I can give my own experience of this model. I cannot understand the latter part of his first statement. How does he mean the engine stops? Is it when he first starts to wheel it, or after he has wheeled it a few feet? Anyone knows that the low gear requires a good deal more turning round than the high gear; therefore if it is at the commencement of the performance that the stoppage occurs it is probably belt or tyre slip which is responsible. If the machine runs under power all right on low gear there is obviously nothing the matter with the gear. Referring to his remark about a stop sometimes occurring while running when he changes down, I should say it is because he shuts off the mixture too much, which, added to the upsetting of the regular explosions by the lifting of the decompressor, necessitates a few engine revolutions before normal internal conditions in the engine are established again. The only slight difficulty I have ever had was to get the low gear to engage without undue pressure; but by means of adjusting the lever and frequent usage this has now disappeared. I have ridden this machine some 2,500 miles, have never had a stop due to mechanical trouble, and have only had one due to puncture. Its hill-climbing powers are remarkable. I used to look with contempt upon a 2½ h.p. two-stroke, but have revised my opinion. I have ridden other well-known makes, but prefer the Villiers engine. As regards his petrol consumption, there is something radically wrong. I have never touched my carburetter—a B. and B. top feed—it is just as fitted at the works, and I have always had more than double his miles per gallon. Your statement that two-strokes are more extravagant than four-strokes is probably correct, given identical carburation efficiency, but my experience is that the whole problem of miles per gallon is much more a question of carburetter design than engine design, and that it is a problem that even our foremost experts have by no means exhausted. I used to think 75 m.p.g. quite good. When I got 100 miles of Yorkshire touring out of two and a half quarts I opened my eyes. Regarding oiling, surely "one drop every three minutes" is not serious? Should it not be "one drop every three seconds"? It would be much nearer. "H.M." should adjust his drip between 1½ and 2 on the register—nearer the latter in normal weather, and rather over in really cold weather. This is equivalent to what you instruct.—H. F. MOHUN.

EXPERIENCES WANTED.

Speed, reliability, and running cost of the Morgan Runabout in a very billy district over bad roads, *e.g.*, N. Devon. —A.L.C.

RECOMMENDED ROUTES.

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Leeds, Huddersfield, Staleybridge, Stockport, Altrincham, Northwich, Chester, Mold, St. Asaph, Abergele, Llandudno.

HUDDERSFIELD TO IPSWICH.—J.D.E.

Huddersfield, Barnsley, Doncaster, Bawtry, E. Retford, Newark, Sleaford, Swineshead, King's Lynn, Thetford, Ixworth, Stowmarket, Ipswich.

WARWICK TO WEYMOUTH.—J.W.

Warwick, Stratford, Evesham, Cheltenham, Painswick, Stroud, Nailsworth, Bath, Radstock, Shepton Mallet, Castle Cary, Queen Camel, Sherborne, Cerne Abbas, Dorchester, Weymouth.

IPSWICH TO BOURNEMOUTH.—G.H.

Ipswich, Colchester, Braintree, Stortford, Hertford, St. Albans, Watford, Rickmansworth, Uxbridge, Colnbrook, Staines, Basingstoke, Andover, Amesbury, Salisbury, Fordingbridge, Ringwood, Christchurch, Bournemouth.

LEEDS TO FRAMLINGHAM.—H.W.P.

Leeds, Pontefract, Doncaster, Bawtry, Retford, Tuxford, Newark, Grantham, Stamford, Wansford, Huntingdon, Cambridge, Newmarket, Bury St. Edmunds, Stowmarket, Stonham, Framlingham. Approximately 190 miles.

LONDON (Kensington) TO HASTINGS.—C.J.P.

Kensington (Church Street), Earl's Court Road, Redcliffe Gardens, Wandsworth Bridge Road, Wandsworth Bridge, Wandsworth, Trinity Road, Wandsworth Common, Tooting Bec, Streatham, Croydon, West Wickham, Farnborough, Sevenoaks, Tonbridge, Lamberhurst, Hurst Green, Battle, Hastings.

TWO HIGH-POWERED SIDECARS IN LAST WEEK'S BIG TRIAL IN WALES.

R. Creak Davis on his 8 h.p. Chater-Lea. Note the transverse exhaust outlet.

H. Reed with the new 8 h.p. Dot-Jap sidecar, a smart machine finished in red.

MOTOR CYCLES FOR SALE.

A.J.S.

1919 A.J.S. Combination, delivered end May, spare wheel, hood, screen, Lucas lamps and horn, as new; £165; fully insured.—Clare, 58, Broad St., Barry, Glam. [X3651

A.J.S. 6h.p. M.M. Combination (Sunbeam sidecar), apron, tools, pump, bought new end August, privately owned; £170.—Seen, Elce, Bishopsgate Av., Camomile St., E.C. [6234

6h.p. A.J.S. 1918 Combination, excellent condition, hood, lamps, wind screen, luggage grid, horn, interchangeable spare wheel, complete; any trial.—Robb, Market Sq., Chester. [5792

A.J.S. 1914 6h.p. Combination, hood, screen, speedometer, electric light, tools, spares, first-class outfit; £105; seen by appointment only.—Haigh, 35, Heathfield Gardens, Chiswick, W.4. [6057

A.J.S. Military Model, new August 30th, 1919, Lucas head lamp, generator, and horn, many spares, including extra solo sprocket; 120 gns. lowest. —Penlee, Palmer's Av., Grays, Essex. [5865

1919 A.J.S. Combination, not done 250 miles, horn, screen, spare wheel and Terry pillion seat; owner buying car; good as new; price £175, with transfer of insurance policy.—Eames, Hope St., Wrexham. [X3622

1919 6h.p. A.J.S. Combination, spare wheel, speedometer, Lucas lights, horn, wind screen, hood and side curtains, spare chain, and tools, little used, and ready to drive away; price £170.—Carney, Morrab Rd., Penzance, Cornwall. [X3781

1917 A.J.S. Combination, 4h.p., hood, screen, side curtains, special storm apron, spare wheel complete, spare outer covers, tools, Lucas lighting set, in top-hole condition; £160, will drive 50 miles to purchaser.—Jackson, 182, King St., Fenton, Staffs. [X3576

Alldays.

ALLON.—Caflyns, Ltd., Eastbourne, for delivery shortly. [0017

ALLON 2¾h.p., 2-stroke, good condition; £40.—F. Ireland, 46, Lesbourne Rd., Reigate. [X3436

NEW Allday's Allon, just in, delivery from stock. —Main, 36, The Parade, Leamington. [X3587

ALLON, 1919, 2-speed clutch model, indistinguishable from new.—Parker's, Bradshawgate, Bolton. [X3684

ALLON 2-stroke Single Speed Motor Cycle, in excellent condition; £45.—Strange, Printer, Eastbourne. [3775

1914 Alldays Matchless, 3½h.p., 3-speed countershaft, stored since 1915, perfect order; £60.—Box 420, c/o *The Motor Cycle*. [X3584

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2931

ALLON 1917 2¾h.p., 2-speed, first-class order and condition, 120 m.p.g.; £45; after 7.—21, Leamington Gardens, Seven Kings. [6260

ALLDAYS Matchless 4¼h.p. Combination, 3-speed, clutch, etc.; £75, or near for quick sale.—Side door, 30, Pelly Rd., Plaistow. [6048

ALLDAYS Matchless, fitted with new 3½h.p. engine, lamps, horn, condition equal to new; £55.—257, Cavendish Rd., Balham, S.W. [6266

ALLON 1917 2¾h.p., 2-speed, first-class order and condition, 120 m.p.g.; £45; after 7.—21, Leamington Gardens, Seven Kings. [5908

1916 Alldays Allon, 2-speed clutch model, tip-top condition throughout, fully equipped; £55.—Parker's, Bradshawgate, Bolton. [X3685

1917 Allon, top-hole condition, appearance as new, lamps, horn, etc.; £48, no offers; trial.—Lurcock, Boston Rd., Hanwell, W.7. [6189

ALLDAYS Allon 2-stroke, 1915, 2-speed, fully equipped, enamelling and plating as new; £45. —145, Blackhorse Lane, Walthamstow, E. [X3708

ALLON 1919 2¾h.p., brand new, actually in stock. —F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead, N.W. (near Hampstead Tube). 'Phone: 3752. [6331

ALLDAYS Matchless 2¾h.p., enamelling and plating perfect, tyres excellent, 2 belts, lamp, horn, pump; £43; after 6 p.m.—141, Crofton Park Rd., S.E.4. [6428

FARMER Has 3-speed Allon for sale, 2¾h.p., lamp, generator, pump, tyres nearly new, trial given, purchased hay time; lowest, £48/10.—Box 429, c/o *The Motor Cycle*. [X3604

ALLDAYS Allon, 1917, 2¾h.p., 2-speed, E.I.C., Amac, lamps, mechanical horn, etc., done 500, very good condition, take 2 anywhere; price with Tan-Sad, £62.—Lane, 20, Romford Rd., Stratford, E.15. [5639

ALLDAYS Matchless, 1917, 2¾h.p., 2-stroke, single-speed, Amac, Dunlop tyres, complete with lamps and horn; appearance like new; in perfect condition; £35, no offers.—Owens, Bridge St., Newcastle Emlyn. [X3614

ALLDAYS Allon 1916 2¾h.p., 2-stroke, 2-speed, E.I.C., Amac, splendid condition, little used, Dunlop and Clincher Dreadnought, nearly new tyres; £50.—26, Bryanstone Rd., Crouch End, N.8 (near Clock Tower). [6183

NEW Alldays Allon Model de Luxe, 2-speed and clutch, in stock for immediate delivery; extended payments if desired.—Harrods Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [5707

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MOTOR CYCLES FOR SALE.

Ariel

ARIEL C.B. Combination, 3½h.p., 3-speed C.S.; £82. —Ross, 86, High Rd., Lee, S.E. [5772

ARIEL 3½h.p., condition, appearance, and tyres perfect; £36.—175, Merton Rd., Wimbledon, S.W. [6292

JONES Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

2½h.p. Ariel, less mag., £25; ditto, less mag. and other parts, £8.—Particulars, Thomas, Little Mountain, Summerhill, near Wrexham. [X3454

1919 Ariel Combination, Ariel sidecar, new 21/6/19, lamps, horn, full tool kit, splendid condition; £150.—Ellis, Ogle Terrace, South Shields. [5838

ARIEL 1914 Twin, 5-6h.p., C.B. combination, 3-speed, countershaft, K.S., lamps, tools; £98, or offers; 6.30 p.m.—21, Musgrove Rd., New Cross, S.E. [X3653

1914 3½h.p. Ariel (Wicker) Combination, 3 speeds, decompressor, lamps, horn, carrier, fast machine, splendid condition; £65.—111, Ransom Rd., Foleshill, Coventry. [X3408

1919 Ariel 6-7h.p. and Phœnix Sidecar, delivered May, lamps, speedometer, accessories, and valuable spares, perfect order; 140 gns.—Porter, Paxdene, Fitzalan Rd., Finchley, N.3. [6148

ARIEL 3½h.p., 1915 (date guaranteed), engine No. 7779, 3-speed countershaft, clutch, coachbuilt sidecar, horn, Lucas head lamps, excellent running order; £82.—McConnachie, Clarilaw, Hawick. [X3206

Arno.

ARNO 4h.p., 1915, Sturmey countershaft, special sidecar; £65, or better.—61, Curzon Rd., Muswell Hill. [6069

1916 Arno, 3½h.p., speedometer, lamps, horn, just overhauled, thoroughly sound; any trial; 45 gns.; after 6, or week-ends.—The Dairy, 46, Mornington Crescent (Hampstead Tube). [5674

Auto-Wheels.

AUTO-WHEEL, good condition except tyres, stored 2 years; £10.—Burrows, Clatford, Andover. [X3782

WALL Auto-wheel, Model de Luxe, splendid condition; 12 gns.—G. Mariner, 19, Monmouth Place, Bath. [X3777

AUTO-WHEEL, B.S.A. de luxe, run 200 miles, guaranteed perfect; £12.—Gunn, Queen Anne's Gate, Windsor. [5937

AUTO-WHEELS.—Several in stock, from 10 gns.—C. H. Parkes and Co., 27, High St., Notting Hill Gate, W.11. 'Phone 3882 Park. [5985

AUTO-WHEEL (Wall), 1914, stored 4 years, hardly used; £13; seen any time.—Nisbet, Easington, Weygridge, Station, Walton-on-Thames. [5943

WALL Auto-wheel, superior condition, new Dunlop heavy tyre, complete, with shock absorber; seen any time; £15.—122, Deacon Rd., Willesden Green, N.W. [6358

AUTO-WHEEL de Luxe, 2-speed, free engine gear, attached to gent's Raleigh 3-speed cycle, all as new, guaranteed perfect; will separate.—Linley, 100, Addey St., Sheffield. [X3779

Bat.

BAT-J.A.P., 8h.p., countershaft, spring frame; £58; after 6.—K., 9, Beversbrook Rd., Tufnell Park. [6092

BAT-J.A.P. 5h.p., powerful and fast, new tyre; £35. —26, Portman Mews North, Portman Sq., W.1. [5734

6h.p. Bat-Jap Combination, 2-speed, countershaft, clutch, kick starter, good running order; £60.—Scott, 45, Irish St., Whitehaven. [X3804

BAT-J.A.P. 6h.p. Combination, clutch, 2-speed, kick start; £75, or nearest; Wall auto-wheel, nearly new; £12.—117, Bensham Lane, Croydon. [6450

BAT-J.A.P. 4h.p., Crado gears, Bosch, B. and B., new tyre, new belt, lighting set, fast; £32 secures; also sidecar complete; £4.—Bartlett, Milford-on-Sea, Hants. [X3510

BAT-J.A.P. 6h.p., large C.B. sidecar, seat for child, screen, nearly new tyres, speedometer, 3 lamps, horn, pillion, luggage grid, overhauled; fine outfit; 95 gns.—186, Greenford Av., Hanwell, W. [6030

6h.p. Bat-Jap, 1912, 2 speeds, countershaft, clutch, K.S., waterproof Bosch, spring frame, Dunlops, perfect running order; bargain, £45; underslung torpedo sidecar, £8.—14, Phœnix St., Euston Rd., N.W. [6054

BAT-J.A.P. 8h.p., luxurious combination, French grey, 3-speed clutch, kick starter, special sprung saddle and sidecar wheel, mechanically perfect, excellent appearance; any trial or examination.—Parker's, Bradshawgate, Bolton. [X3686

T.T. Bat, 8-10h.p. J.A.P., built for racing, lately rebushed throughout, re-enamelled Indian red, complete with lamps, horn, ready for road; it is "it"; first remittance £65 secures; inspection invited, but two days' notice required, as will be away.—Denne, Doddington, Sittingbourne, Kent. [6304

MOTOR CYCLES FOR SALE.

Bat.

1913-14 4h.p. Overhead Valve Bat-Jap, B.B., Bosch, Lycetts, drip feed, new back Dunlop, tubes unpunctured, just overhauled, new piston and valve, enamelling and plating as new, full spares and tools, horn and pump; any examination or trial; ride away; take £35, or nearest.—Mr. H. Harding, 75, Southey Rd., South Tottenham, N.15. [6335

BAT-J.A.P. 6h.p. Twin, road racing model, speed 6 to 75 m.p.h., condition up to date and new, Bosch mag. specially fitted, Amac carburetter, extra heavy Dunlops, good lamps, tools, etc., hand brakes, double long exhaust, round tank, extra sprung forks, a really fast and sporty mount, enamelled grey; sole reason for selling, owner going abroad.—Taylor, The Cottage, Quickby Lane, Chorley Wood, Herts. [5655

Blackburne.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [4016

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

1919 Blackburne 4h.p., countershaft, lamps, horn, tools, pump, condition new, ridden 1,500 miles; £80.—Thomas, Southgate, Chichester. [6440

BLACKBURNE 3½h.p., 1914, 3-speed, mechanical condition perfect, special blue finish, rustless rims, small mileage; £55.—C/o Newsona Garage, 23, Palace Rd., N.8. [5710

Bradbury.

LATE 1914 3-speed Bradbury Combination; £75.—Chandler, Reyre and Williams, Hitchin. 'Phone: 165. [6001

BRADBURYS.—New 2-speed models from stock; immediate delivery.—Wauchope's, 9, Shoe Lane, London. [6377

BRADBURY 4h.p., 1913, clutch, needs adjustment, otherwise perfect, new tyres; £43.—2, Salop St., Bridgnorth. [X3506

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5606

BRADBURY 4h.p., lamps, horn, clutch, fast, condition new; £43; overhauled.—Golledge, Vine Lodge, Cottenham Park Rd., Wimbledon. [5796

4¼h.p. Bradbury, Sturmey-Archer C.S., clutch, K.S., excellent order, for higher power.—Stock, 107, Coningham Rd., Shepherd's Bush. [6297

BRADBURY 4h.p. Combination, 2-speed countershaft, chain drive, clutch, K.S., new sidecar; £65.—Bray, 1a, Larkhill Lane, Clapham. [6191

BRADBURY 6h.p. 1915 Combination, lamps, Klaxon, speedometer, exceptionally fine condition; £120.—Freeman, 24, Africa Gardens, Cardiff. [6402

BRADBURY 4h.p., genuine, 1913, Bosch, lamps, excellent condition; £45; also 1915 Rudge; £65.—195, Romford Rd., Stratford, E. [5811

BRADBURY 4h.p., 1913, C.B. sidecar, 2 speeds and free, guaranteed perfect, new tyres and belt; £55.—Brown, 2, Albany Rd., Hersham, Surrey. [X3713

1919 Bradbury, 6h.p., 3-speed, hand and foot clutch model, magnificent black and gold sidecar fitted, complete turnout brand new.—Parker's, Bradshawgate, Bolton. [X3687

BRADBURY, 1915, new 1919 6h.p. A.J.S. engine, not done 500 miles, C.B. sidecar; a splendid combination; bargain, £100.—R. F. Fuggle, Ltd., Edgwars. [5805

1919 4h.p. Bradbury and Middleton Sidecar, 3-speed, K.S., tools, pump, perfect condition; best offer over 108 gns.—Laight, 31, Market Place, Boston, Lincolnshire. [X3617

BRADBURY 4h.p. Coachbuilt Combination, all-chain, handle controlled clutch, Senspray, good tyres, plating and enamelling excellent; offers.—Venn, Bromsash, Ross, Herefords. [X3431

4h.p. Bradbury Wicker Combination, Bosch mag., B. and B., N.S.U. 2-speed, rebushed, overhauled, plated, enamelled, new belt July, tyres very good, footboards, perfect running order; £65; seen after 6 p.m.—75, Lavender Hill, Battersea, S.W.11. [5936

6h.p. Twin 1914 Bradbury Combination, 3-speed countershaft, chain drive enclosed in aluminium cases, hand controlled clutch, Bosch, B. and B., Terry's spring links, coachbuilt sidecar with wind screen, electric lighting and horn, gears and timing wheels just renewed, tyres good, bearings good, tools and spares, mechanically sound and smart appearance; trial by appointment; £125.—Welch, Covadonga, Freelands Rd., Bromley, Kent. [X3432

Brough.

BROUGH 6h.p. Twin, Bosch, B. and B.; £60; after 6 p.m.—Forman, 53, Brownhill Rd., Catford. [5946

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., Official Dealers, Liverpool and Manchester. [7039

BROUGH, 1915, speedometer, lamps, T.T., 2-speed, very fast, first-class condition; 75 gns.—Whitehead, 4, Montague Mews, Crawford St., Baker St., W.

BROUGH, 1915, Model H, 3½h.p., 2-speed, disc wheels, large exhaust, lamps, mechanical horn, hot stuff; £55, or near offer.—Brigden, Gyldernscroft, Marlow. [6138

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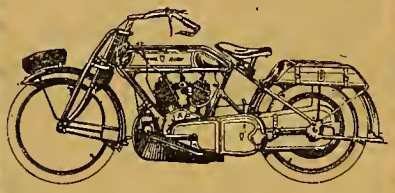

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HARLEY-DAVIDSON, 1916, Model F	£150
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BROWN 3½h.p., re-enamelled, B.B. carburetter, mag., ride away; nearest £25.—Jones, Crossway, Coleford, Bath. [X3524

BROWN 4h.p. Combination, Sturmey-Archer 3-speed, excellent condition; £55.—Janes and Adams, East Finchley. [6071

BROWN 3h.p., Bosch, B. and B., Grade, free engine, and sidecar; £20.—Brown's Spring Grove Motor Works, Isleworth, S.W. [6303

3½h.p. Brown Motor Cycle, Bosch mag., etc., perfect running order; price £30.—Apply, 3, Scrutton St., Castle St., City Rd., E.C.2. [5980

BROWN 3½h.p., newly enamelled, Bosch mag., B. and B. carburetter, ready to ride away; a bargain, £29.—Phillipson, Scriven Rd., Knaresbro', Yorks. [5906

BROWN Combination, 4h.p., Sturmey-Archer 3-speed, clutch, lamps, accessories, etc.; any trial; £45, or offer; any time.—C.S., 14, Swaton Rd., Bow, E.3. [6353

BROWN 3½h.p., Bosch, B. and B., lamps, horn, complete, good Dunlops, easy starter, good order and condition; must sell; best offer by Monday.—Write, 4, Prince of Wales Terrace, W.8. [5839

B.S.A.

1919 B.S.A. Combination, No. 2 sidecar; £135.—83, Empress Rd., Loughborough. [6488

B.S.A. 4¼h.p., 1915, 3-speed, all-chain, excellent condition; £75.—Goodsells', Pulborough. [5826

1919 B.S.A., 3-speed, run 300 miles; offers.—Clegg, 1, Broad St., Teddington. [6104

1916 B.S.A., 3-speed, kick start; £67/10.—J. Smith and Co., 16, Hampstead Rd., N.W.1. [6495

B.S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5602

B.S.A. Combination, 3 speeds, S.A., clutch, pedal starter; ride away; £63.—85, Suffolk St., Poplar, E. [5787

B.S.A., 3½h.p., T.T. clutch model, condition as new; any trial, examination; £55.—Smee, 41, Baker St., Reading. [X3788

1915 B.S.A. 4¼h.p., 3-speed, countershaft, Lucas lamps, horn, tools; £65.—Thomas, 8, Market St., Whitland. [X3757

1915 B.S.A. Combination, absolutely perfect; £98/10.—Jones, 4, Woodside Parade, North Finchley, N.12. [5053

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2919

B.S.A. (bargain), 4¼h.p., countershaft, chain drive, C.B. combination; £90.—19, Southwark Park Rd., Bermondsey, S.E. [5833

1916 B.S.A., thoroughly overhauled, 3-speed, kick start, foot clutch; £65.—J. Smith and Co., 16, Hampstead Rd., N.W. [6504

B.S.A. 4¼h.p., coachbuilt sidecar, 3-speed, etc., new tyres throughout; £95, or near offer.—Parks, 23a, George St., Croydon. [5952

1915 B.S.A. 4¼h.p. C.B. Combination, 3-speed, K.S., lamps, horn, tools, etc., nice turnout; £88.—Pumping Station, Hadley Rd., Enfield. [6093

B.S.A., 4¼h.p., 1915, 3-speed, kick starter, all chain, nearly new Phœnix sidecar, lamps, horn, spares, etc.; £95.—Westfield House, Gloucester. [X3452

1917 4¼h.p. B.S.A., 3-speed, all chain, Stewart horn and speedometer, carefully used, perfect; £76, or near offer.—27, Pier Rd., Erith, Kent. [5621

B.S.A. Combination, 4¼h.p., 3-speed, countershaft, perfect running condition; £85.—E. H. Mitchell, Engineer, The Square, Carshalton, Surrey. [6497

4¼h.p. B.S.A. Combination, C.B., 3-speed, kick start, clutch, perfect mechanical order; £90, or near offer.—Edwards, 19, Wormholt Rd., Shepherd's Bush, W.12. [5663

B.S.A. 4¼h.p. 3-speed C.B. Combination, everything perfect as new, wind screen, lamps, storm apron, and every accessory; £107.—Parker, 191, Mount Pleasant, Redditch. [5854

B.S.A., 1916-17, 3-speed countershaft, overhauled, chain-cum-belt, excellent condition; 70 gns.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [4684

1919 4¼h.p. B.S.A., all chain (delivered June), with Corvette sidecar, wind screen, Tan-Sad, Klaxon horn, lamps, as new; best offer over £135.—Lyonmouth, Clay Lane, Coventry. [X3458

1916 B.S.A. Combination, 4¼h.p., all chain, 3-speed gear box, Lucas set (as new), speedometer, complete kit; £90; any trial.—81, Southwark St., S.E.1. Hop 2362. [6079

B.S.A. The Birmingham City Agents and B.S.A. Specialists, County Cycle and Motor Co., 307 and 308, Broad St. All replacements in stock. Tel.: Comocyco, Birmingham. [6311

B.S.A. April, 1919, 4¼h.p. Combination, countershaft, couch sidecar, special chassis, speedometer, 3 lamps, as new; £125; appointments Sunday.—19, Shanklin Rd., Crouch End. [5732

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS 2¾h.p., all good except cracked cyl.; nearest offers £25.—Box L4,357, c/o *The Motor Cycle*. [5841

DOUGLAS, 1911, single-speed, splendid running order; £30.—16, Southdean Gardens, Southfields. [5927

1915-16 2¾h.p. Douglas, 2-speed, excellent condition; 50 gns.—81, Leavesden Rd., Watford, Herts. [5602

DOUGLAS 1919 2¾h.p. W.D. Model, fully equipped, 300 miles; offers.—Tintern, Norman Rd., Sutton, Surrey. [X3465

DOUGLAS, 2¾h.p., 1915, splendid condition, all accessories; £55.—Massey and Rossiter, Ripley, Surrey. [5642

DOUGLAS 4h.p., 3-speed, 1916, C.B. sidecar, all accessories, splendid condition; £107.—54, Coval Rd., Mortlake. [X3381

DOUGLAS, late 1915, original tyres, laid up since 1916, has not done 1,000 miles.—27, West Hill, Highgate. [5845

4h.p. Douglas Combination; £100; perfect condition, spares.—20, Ospringe Rd., Tufnell Park (near tube). [5923

DOUGLAS 1914 2¾h.p., 2-speed, excellent condition, disc wheels; £50.—16, Belmont Rd., Maidenhead. [X3787

DOUGLAS 2¾h.p., 1914, hardly used, complete kit of spares; £60.—17, Stracey Rd., Stourbridge Park, London, N.W. [6376

1915 W.D. Douglas, perfect condition; £58.—Chandler, Reyre and Williams, Hitchin. 'Phone: 165. [6003

2¾h.p. W.D. Douglas, 2-speed, less mag.; bargain, £28.—Speechley, 1, Gunnersbury Lane, Acton Hill, London. [6163

1915 Douglas, thorough mechanical order; £60.—Chandler, Reyre and Williams, Hitchin. 'Phone: 165. [6002

1915 2¾h.p Douglas, 2-speed, perfect in every respect; £60.—Jones, 4, Woodside Parade, North Finchley N.12. [5050

DOUGLAS 2-speed, electric light, excellent running order and appearance; £55.—Ford, Watchmaker, Redhill. [6343

DOUGLAS, late 1916, 2¾h.p., 2-speed, very fast, first-class order, horn, etc.; £58.—Box L4,391, c/o *The Motor Cycle*. [6485

£55, near offer.—Douglas, 1914, 2-speed, long exhaust, belt, tyres good, perfect, all on.—Bell, 67 Pimlico Rd., S.W. [6180

1917 Douglas 2¾h.p., 2-speed, new tyres, fully equipped, overhauled; £58/10.—R., 5, Victoria Av., Surbiton. [X3662

4h.p. Douglas Combination, fined order, C.B., late model, about 1917-18; cheap, £90.—200, High St., Tooting, S.W. [6323

LATE 4h.p. Douglas Combination, £85; also Douglas sidecar chassis, with tyre, £6/10; must sell.—31, Cowper Av., Sutton. [6215

DOUGLAS, 1915, 2¾h.p., in excellent order; 50 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4685

A 1915 Douglas, 2¾h.p., 2-speed; £50; gradual payments accepted.—Letters only, Plummer, 6, Myddleton Rd., Bowes Park. [6471

SINGLE-SPEED T.T. Douglas, ready to ride away, bought 1914; best offer over £40 gets it.—Box 430, c/o *The Motor Cycle*. [X3559

2¾h.p. Douglas, 2 speeds, semi-T.T. bars, footboards, knee grips, lamps, horn, etc., nice order; 49 gns.—3, Parker Lane, Burnley. [X3737

DOUGLAS 1916 2¾h.p., just overhauled, all accessories, low mileage; £59.—Clarke, Hurst, St. Helen's Downs, Hastings. [6231

CHEAP; late Douglas, speeds, overhauled, enamelled, as new; worth £65, best over 40 gns.—37, Bury Rd., Thetford, Norfolk. [6209

2¾h.p. Douglas, 1914, 2-speed, excellent condition, lamps and horn; £50.—Mallam, Heathfield, Keston, near Bromley, Kent. [X3486

DOUGLAS Combination, 4h.p., 1919, new, just delivered; best offer over £130 secures.—33, Wilton Grove, Merton Park, S.W.19. [5981

DOUGLAS, 1919, 2¾h.p., W.D., 2-speed, footboards, lamps, Lucas horn, Watford speedometer, spares; £78.—Brown, Park St., Falkirk. [X3475

DOUGLAS 1916 2¾h.p., 2-speed, excellent condition throughout, ready ride away; 55 gns.—10, Bonner Hill Rd., Kingston-on-Thames. [6211

COLONIAL Douglas 2¾h.p., 3-speed, lighting set, mechanical horn, spares and tools, condition as new; 60 gns.—25, Colville Rd., Leytonstone. [5823

DOUGLAS Combination, 1915, 4h.p., 3 speeds, etc., in exceedingly smart condition; £100.—Loweth, 6, Mount Pleasant Rd., Ealing, W.5. [6123

DOUGLAS 2¾h.p., good condition, including tyres and belt; £28.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead, N.W. (near Hampstead Tube). 'Phone: Hampstead 3752. [6326

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28 × 3 Extra heavy 3-ribbed	72/6	90/6

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All makes in stock at special prices.

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We have a large motor tyre stock and shall be pleased to quoted on receipt of postcard.

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MOTOR CYCLES FOR SALE.

Douglas.

1915 Douglas, 2-speed, 2¾h.p., complete and careful overhaul, as new; £58.—Robertson, North, 65, Broad Bridge St., Peterborough. [5870

DOUGLAS Brand New 1919 4h.p. Combination, latest new pattern clutch, just arrived; £140.—Ward, 14, Fernbank Av., Harrow. [X3013

1919 4h.p. Douglas Combination, just delivered from works, new type clutch, perfect; £135, or offer.—18, Parkshot, Richmond, S.W. [X3701

2¾h.p. Douglas, W.D. model, just out of crate, only 24 been tested; first cheque £72/10 secures.—Johnson, c/o Labour Exchange, Louth. [6319

DOUGLAS 4h.p., 3 speeds, clutch, W.D. model, with box sidecar, easily convertible into 2-seater; £90.—199, King's Cross Rd., London, W.C.1. [6054

DOUGLAS 1916 2¾h.p., 2-speed, fast, reliable, very good order, new belt, tank blue and aluminium; £50.—Box L4,392, c/o *The Motor Cycle*. [6486

4h.p. Douglas, solo and combination, £75 to £95; 2¾h.p. Douglas, 1915-1916, £58 to £62.—Clapham (Motors), King George St., Greenwich. [5525

GIBB, Douglas specialist, Gloucester, solicits your enquiries for anything concerning Douglases; try him for the part you require. 'Phone: 852. [6340

1919 4h.p. Douglas, done under 500 miles, perfect condition; good reason for selling; best offer over £95.—Skinner, Courthope House, Wimbledon. [5604

DOUGLAS 1914 2¾h.p., 2-speed, good tyres, horn, lamps, long exhaust, ride away; first £50 secures.—5, Lexham Gardens, Kensington, S.W. [6140

DOUGLAS 4h.p., 2-speed, believed 1915, recently overhauled and good order, nearly new extra heavy tyres; £75.—H. Haycock, Great Glen, Leicester. [5700

DOUGLAS 2¾h.p., W.D., all-weather, not run 100 miles, just uncrated, complete with lamps, long copper exhaust; 75 gns.—Chelsea Lodge, Bognor. [X3379

4h.p. Douglas and Sidecar, W.D. model, completely overhauled by makers, lamps, spare belt and tube, picked machine; £110.—Sanctuary, Bridport, Dorset. [4814

DOUGLAS 1911 2¾h.p., 2-speed, recently overhauled and enamelled; £35; bargain.—E. H. Mitchell, Engineer, The Square, Carshalton, Surrey. [6498

DOUGLAS 1917 4h.p. Combination, overhauled and in fine running order; 95 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4686

SEVERAL Douglases, 1915 and 1916, 2¾h.p., from £50; call and inspect stock.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [4687

1916 2¾h.p. Douglas, 2-speed, enamelling, plating, and tank as new, perfect in all details; £65.—Jones, 4, Woodside Parade, North Finchley, N.12. [5051

DOUGLAS W.D. 2¾h.p., 2-speed, new heavy Dunlops, and horn, just uncrated and tried, excellent condition; at Stamford.—Box 413, c/o *The Motor Cycle*. [X3382

1919 4h.p. Douglas Combination, absolutely as new, spare tyre, 2 complete valves, etc.; £130; will deliver 100 miles.—Box L4,325, c/o *The Motor Cycle*. [5688

2¾h.p. Douglas, Bosch, splendid condition and appearance, fast, tyres and belt as new; gift, £26; ride away.—Smith, 98, Merton Rd., Wimbledon, S.W. [6345

DOUGLAS, 2¾h.p., 2-speed and clutch, very late 1914, new tyres and belt, appearance as new; £60.—Mylam, 197, London Rd., Croydon. 'Phone: 2379. [5762

1919 (June) 4h.p. Douglas Combination, perfect running order, complete with horn, tools, unused spare parts for touring; £136.—D. Cawley, Ravenscrag, Buxton. [X3425

1919 Douglas Combination, new August 1915, done 200 miles, speedometer, Klaxon, etc., improved clutch, trial arranged; £143.—74, Malpas Rd., Brockley, S.E. [6147

1911 Douglas, re-enamelled and bushed, new tubes, new tyre on back, nearly new belt, long exhaust pipe; first P.O. over £25.—32, Leicester Causeway, Coventry. X3629

DOUGLAS 2¾h.p., W.D., makers' colours, Mead and Denham light sidecar, both as new, lamps, tools; £95; bargain.—Wombwell, Abling Bridge, Chertsey. [6073

DOUGLAS, 2¾h.p., 1915, Colonial, 3-speed, speedometer, lamps, horn, tyres, machine new condition, stored 3 years; £65.—Green, Chemist, Brackley, Northants. [6126

DOUGLAS (believed 1913) 2¾h.p., 2-speed, free engine, heavy Palmer tyres, footboards, lamp, etc.; cheque accepted £35.—Mr. Irwin, Leavesden Rd., Watford. [6261

1919 Douglas 4h.p. Combination, delivered August 12th, mileage under 500, lamps, mechanical horn, spares; best offer secures.—Letters, 10, Wellington Sq., Chelsea. [6205

DOUGLAS 2¾h.p., 1914, 2-speed, clutch, kick start, beautiful condition, 128 miles to gallon; best offer over £60.—Turner, 85, Lyall Mews West, Lyall St., Eaton Sq., S.W. [6309

DOUGLAS 2¾h.p., 2-speed, Cowey speedometer, horn, Bosch, footboards, just overhauled, new forks and springs, tyres good, engine perfect; 52 gns.—Emerton, Chequers, Stevenage. [X3190

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

MOTOR CYCLES FOR SALE.

Douglas.

19 19½ Douglas 2¾h.p., engine No. 40269, T.T. and touring bars, condition absolutely as new; any trial; owner buying combination; 78 gns., or best offer. —32, High St., Watford. [6296

DOUGLAS 1914 2¾h.p., 2-speed, Bosch, lamp and generator, very fast, overhauled fortnight ago, in splendid condition; £56.—Geo. Hunter, Late Lime Pit Inn, Brotherton, Yorkshire. [X3196

DOUGLAS, 1914, 2¾h.p., 2-speed, excellent condition, lamps, horn, tools, spares; will deliver by road to highest offer in Great Britain.—Calderwood, Devondale, King's Av., Bromley, Kent. [X3682

4 h.p. Douglas Combination, 1916, stored during war, just been thoroughly overhauled, owner engineer officer going overseas; 90 gns; letters only.—Morley, Rose and Crown, Tonbridge. [X3730

DOUGLAS 2¾h.p., 1913, 2-speed, clutch, kick starter, ride away, £45; also Douglas, 1912, new belt, tyres, and lamps, £35.—Call, or write, W. S. Scott, Wybunbury, Nantwich. [5955

FOR Sale, Douglas, 1915, 2¾h.p., T.T. bars, recently overhauled, new parts, very good condition; seen any day 1 to 4; 55 gns.—Eycott Martin, Hardwicke, Lindfield, Hayward's Heath, Sussex. [6132

2¾h.p. W.D. Douglas, brand new; one or two early deliveries at £72, plus carriage; pamphlets with particulars.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles.—Below.

4 h.p. 1919 Type Douglas Combination, with improved type of clutch; one or two early deliveries at £123, plus cost of crate and carriage; pamphlets with specification.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles.—Below.

DOUGLAS 4h.p. Sidecars, with storm apron, door, 4 attachments, very low and sporty, brand new, in stock; £28, crate and carriage.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [6442

DOUGLAS 4h.p. Combination, 3-speed, clutch, kick start, recently overhauled, re-enamelled, complete with lamps, Klaxon horn; seen after 7 o'clock; price £110.—19, Ensor Mews, Cranley Gardens, S.W.7. [5821

1919 Douglas Combination, July, perfect, carefully driven 800, Lucas lamps, horn, Cameo, spares, engine 8107; taking delivery prior order higher power; £150, or near.—Read, Westbourne Terrace, Lancaster. X3798

DOUGLAS 2¾h.p., W.D., as new, fitted with lamps, horn, complete set of tools, aluminium disc wheels, Tan-Sad pillion seat; owner going abroad; what offers.—Jackson, 351, Coldharbour Lane, Brixton. [5902

1915 2¾h.p. Douglas, 2-speed, brand new Miller lighting set, new tyres, footboards, very smart appearance, just overhauled and mechanically perfect; £63.—Write, W., 18, Queen's Parade, Muswell Hill, N.10. [6374

1919 Douglas 2¾h.p., post-war model, electric lighting, Klaxon, tools, small mileage.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead, N.W. (near Hampstead Tube). 'Phone: Hampstead 3752. [6327

DOUGLAS W.D. Model, 2¾h.p., 2-speed, in excellent condition, well kept, good appearance, new tyres, spares, lamps, horn, etc., guaranteed sound; £62, or nearest offer.—Frost, Bridport News Office, Bridport Dorset. [5824

1919 2¾h.p. Douglas (makers' certificate with date shown), fitted with running boards and specially long exhaust, horn (no lamps), very little used, perfect throughout; price £70.—Mullin, 19, Denmark Rd. Reading. [X3198

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0966

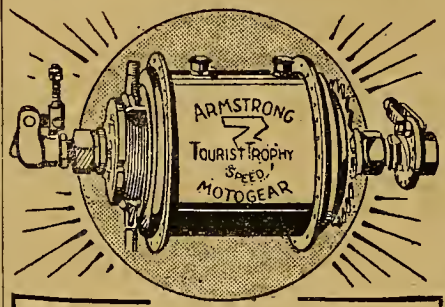
NEW 4h.p. Douglas 1919 Combination, complete with storm apron, immediate delivery; extended payments if desired.—Harrods Motor Showrooms, 116-118, Brompton Rd. (opposite Main Buildings), London, S.W.1. [5705

DOUGLAS 1915-16 Colonial Model, 3 speeds, T.T., just overhauled, and in perfect order, been stored 3½ years, complete with lamps, horn, tools, and spare belt, etc., excellent condition; 62 gns.—Hodgkison, 33, Florendine St., Amington, Tamworth. [X3501

1919 4h.p. Douglas Combination, received from works 3 weeks, latest dry plate clutch, driven 400 miles, absolutely perfect condition, complete with Klaxon, speedometer, and spares; any trial; £140; write for appointment.—Fuller, 3, Stanhope Av., Finchley, N.3. [5860

STOP! Read this. Some good stuff here.—Douglas, 1915, 2¾h.p., 2-speed, one of the fastest Dugs on the road, good appearance and condition, T.T. bars, horn, lamps; any inspection, any trial; £60; after 6 p.m.; will ride 100 miles to purchaser.—20, Treen Av., Hoggers Corner, Barnes. [6248

DOUGLAS 4h.p. Combination, 1919 (June), 3 electric lamps, 40 a.h. accumulator and 3 dry batteries, speedometer, horn, watch, etc., tools and spares complete, extra heavy Dunlop, in perfect order in all respects; trial any time; examination invited; £150.—18, Station Rd., Cambridge. [X3755



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1. It is advisable to send complete wheel.
2. It is essential that outside fittings such as axle nuts, gear or clutch operative parts, washers, etc., are NOT sent.
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6 h.p. Douglas 1918 Combination, demonstration model (see photo in "Motor Cycle," June 19th), all-chain drive, 3 speeds, beautifully upholstered, spring wheel sidecar, hood, screen, speedometer, lamp, and accessories, all wheels interchangeable; open for best offer over £135.—William Goode, 19, Clifton Rd., Rugby. [X3848

1919 4h.p. Douglas Combination, as new, special luxurious sidecar, painted blue, with coachbuilt fine extension and wind screen, black disc wheels, luggage carrier, Stewart horn, Watford speedometer, trip, large head lamps, 1in. belt and spare, also spare tube and accessories, runs perfect; £160; write appointment. —Rowe, 19, Cambridge Av., Kilburn, London, N.W.6. [5697

DOUGLAS 2¾h.p., 2-speed, late 1915, W.D., fitted with new mag., brand new carburetter (Amac), new 120 candle-power nickel plated head lamp, aluminium rear lamp, also new Clincher back tyre, belt, and plugs, bike in splendid condition and hot stuff; open to any expert examination and trial; price £69; call or 'phone for appointment, City 8575.—Bresler, 23, Chatsworth Rd., Brondesbury, N.W.2. (2 minutes from Kilburn and Brondesbury Met. Station). [5840

Edmund.

SPRING-FRAME Edmund, 1918, 2¾h.p. J.A.P., Enfield gears, 2-speed and clutch; £60.—8, Meadway, Golders Green. [6090

Enfield.

1919 Enfield, 3h.p., new July, ridden 500 miles, 80 gns.—Hillside, Sedgley. [X3581

BRAND New 8h.p. Enfield Combination; £160.—Box L4,393, c/o *The Motor Cycle*. [6489

ENFIELD 1916 6h.p. C.B. Combination; 110 gns.—Smith's, 10-16, Haverstock Hill, N.W. [5593

2¾h.p. Twin Enfield, 2-speed, very good condition; £40.—166, Chase Side, Old Southgate. [X3174

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2920

1917 Enfield, 3h.p., 2-speed, kick start, clutch, in splendid condition; £59.—Carter, Bryn Terrace, Carndiffaith, Pontypool, Mon. [6370

6 h.p. Enfield Combination, 1914 model, fitted with coachbuilt 2-seater sidecar; price £87/10.—Wauchope's, 9, Shoe Lane, London, E.C. [6386

ROYAL ENFIELD 3h.p., 2-speed, kick start, in good running condition; £42.—Robertson, North, 55, Broad Bridge St., Peterborough. [5871

6 h.p. Royal Enfield Combination, 1917, in excellent condition; owner returning to India; £115.—F. E. Bull 112, Lexham Gardens, W.8. [6108

ENFIELD, 3h.p., T.T., 2-speed, tyres new, horn, in good order, fast, economical; £56 lowest, no offers. —Hinde, 24, Harsnett Rd., Colchester. [6235

ENFIELD 2¾h.p. Twin, 2-speed, free, tyres and engine perfect, chain drive; 37 gns.; after 6.—Titford, 135, Stoke Newington Rd., N. [6333

1918 6h.p. Enfield Combination, good condition, overhauled by makers, D.A. equipment, horn; £140.—Freeman, 50, Brighton Rd., Redhill. [6023

1917 3h.p. Enfield, 2-speed, F.E., K.S., thoroughly overhauled, new tyres, guaranteed perfect; any trial; £65.—Hodson, Easton St., High Wycombe. [5717

ENFIELD 6h.p., Burbury sidecar, 650×65 tyres, glass screen, Miller, Lucas, etc.; £95, or close offer.—Sutton Royal Garage, Sutton Coldfield. [X3710

ENFIELD 3h.p. Twin, 2-speed, kick starter, lamp, heavy Dunlops, enamel and everything good condition; best offer over £55.—Mayers, Christleton, Chester. [X3417

ENFIELD 1919 6-8h.p. Combination, small mileage, lamps, Easting windscreen, Premier horn; £165.—Fisher, Brewery House, Newcastle, Staffs. [X3637

ENFIELD 6h.p. Combination, 1916, all accessories, perfect running order; £130; stored 2 years, good as new.—47, Beaumont Rd., Bournville, Birmingham. [X3675

ENFIELD 1914 6h.p. Coachbuilt Combination, perfect order, excellent appearance, nearly new tyres; trial; £96.—4, Stockwell Park Crescent, S.W.9. [6337

ENFIELD 2¾h.p. Twin, 2 speeds and clutch, new chains, enamel perfect, lamp and horn; £37.—Derrington, 31, Malden Rd., New Malden, Surrey. [6270

1919 Enfield Combination, 6h.p., bought July, F.R.S. electric lighting, hood, Klaxon, condition as new; £155.—Marshall, 9, Wandsworth Bridge Rd., Fulham, S.W. [X3489

ENFIELD Late 1913 6h.p. Combination, engine recently thoroughly overhauled; any trial or examination; roomy sidecar.—Parker's, Bradshawgate, Bolton. [X3688

1914 6h.p. Enfield Combination, perfect order, new chains and sprockets, engine recently rebushed and overhauled, good tyres; 70 gns.—Griffiths, Bilson, Cinderford. [X3184

MOTOR CYCLES FOR SALE.

Enfield.

1918 Enfield 3h.p., 2-speed, kick starter, chain drive, heavy Dunlops, all accessories, little used; £70; no offers.—Write, 81, Wallwood Rd., Leytonstone, E. [6277

ROYAL ENFIELD Combination, Lucas dynamo lighting, electric horn, speedometer, watch, mirror, wind screen.—139, Wood End Rd., Erdington, Birmingham. [X3747

1916-17 6h.p. Enfield Combination, perfect condition, horn, triple screen, hood, speedometer, mirror, spare chain; £140.—Osborne, 177, New Park Rd., Brixton. [6095

1916 Enfield Coachbuilt Combination, 6h.p., head lamp, horn, tools, oversize tyres, condition like new; private owner; £116.—J. Chapman, Corlton, Middleham, Yorks. [X3690

ROYAL ENFIELD 2¾h.p., single gear, chain drive. Bosch, B. and B., horn, and tools, been thoroughly overhauled, ready ride away; £34.—Pittman, 1, Jersey Rd., Gloucester. [X3553

ENFIELD 6h.p. Combination, 1912-13, 3 acetylene lamps, speedometer, horn, good running order owner driven, recently overhauled; £95.—O. Wilkins, Boot Stores, Edgware. [5670

6h.p. Enfield Combination, 1914, complete with lamps, speedometer, horn, etc., Bosch watertight mag., hardly scratched, and ready to ride away; £125.—139 St. Michael's Hill, Bristol. [X3208

2¾h.p. Twin Enfield, shaft driven, enclosed Bosch, overhead feed B. and B., new Dunlop belt, tyres and enamelling good condition; £29; after 6 p.m.—Poultney, 59, Sumatra Rd., W. Hampstead. [5657

1916 Twin Enfield, 3h.p., new appearance, beautiful condition, lamps, horn; seen any time; Worcestershire; £65, or exchange 7-9h.p. Indian, spring frame, in good condition.—Box 414, c/o *The Motor Cycle.* [X3377

ENFIELD 1915 6h.p. Coachbuilt Combination, speedometer, lamps (electric), all accessories, tools and spares, in excellent condition; £125 any trial.—Write, Barton, 2, Roxborough Rd., Harrow. [6146

1919 Royal Enfield Combination, 6h.p., well equipped, lamps, horn, Easting wind screen, sidecar step, leg shields, 74 m.p.g.; £165; owner buying car.—17, Mill St., Brierley Hill, Staffs. [X3803

ROYAL ENFIELD Combination, 1916, 6h.p., perfect condition, coachbuilt sidecar, with hood, screen, and apron, lamps and all new tyres; £135.—Goodall, Gahledene, Eskdale Av., Chesham, Bucks. [6036

1917 Enfield, luxurious, powerful combination, 6h.p., hood, screen, speedometer, electric lighting, luggage grid, mirror, etc., etc., ultra-perfect condition; £145; after 6 p.m.—Pickett, 7, Rowan Rd., Bexley Heath, Kent. [5683

ROYAL ENFIELD 6h.p., July, 1916, guaranteed, any trial, new back and front tyre, new chain, all tools, spare tyre, tube, 2 lamps, sidecar used 7 times, as new, machine mileage 1,500; what offers?—Box 426, c/o *The Motor Cycle.* [X3556

ROYAL ENFIELD 3h.p. Twin, 2-speed, hand control, recently overhauled; painted, and plated by makers, new tyres, tool bags, acetylene lighting, speedometer, etc., excellent condition; £50, or nearest offer.—Watson, Whitecroft, Forest Row, Sussex. [X3626

ENFIELD 6h.p. Combination, special C.B. enclosed sidecar, wind screen, newly re-covered hood, 2 lamps, horn, pump, tools, recently overhauled, powerful, and perfect condition; £110, or first cash £105 secures.—Carver, 2, Factory Lane, Station Rd., Doncaster. [6416

ENFIELD 6h.p. Combination, 1917, as new, 3 lamps, horn watch mirror, hood, screen, apron, pillion seat, luggage carrier, new 700×80 Palmer on back, spare chain, tube, tools, etc.; in splendid running order; £150.—6, Radley Rd., Bruce Grove, Tottenham, N. [6029

ENFIELD Combination, 6h.p., late 1915, 1916 improvements, engine and gears perfect, new front cylinder, Palmer light car tyres, back new, others fairly good, spare chain, speedometer, lamps, mirror, mechanical horn, pillion seats, 2 spare valves and springs; 100 gns.—99, Clapham Rd., Lowestoft. [5784

ENFIELD 6h.p. 1914 Combination, complete with wind screen, Tan Sad seat, large P. and H. head lamp, new speedometer, full kit of tools and spares, etc. This outfit has covered very small mileage, is well tyred, and in exceedingly good order generally; £105.—The Layton Garages, Bicester, Oxon. 'Phone: 35. [3795

1915 8h.p. Enfield Combination, engine, mag., and gears recently overhauled by makers, also new mudguard, chain, inner tubes, and heavy Dunlops all round, 3 lamps, generators, and horn (Lucas), tank re-enamelled, all in splendid condition, did recent tour of 750 miles without slightest trouble; 135 gns.—Inesoa, Longfield, Heckmondwike, Yorks. [X3665

6h.p. Enfield, 1913, C.B., repainted and gold-lined by coachbuilder, engine recently overhauled, Bosch mag., fitted electric accomulator, variable resistance to head oil and rear lamps, driven only by owner, an engineer and officer R.A.F., stored during service in France and Egypt, speedometer, complete set of spares, tools, chains, and tube, etc., the whole in excellent condition; owner going overseas; £90.—Page, 13, Gordon St., W.C.1. 7248 Central. [5699

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1914 Enfield Coachbuilt Combination, 700×80 tyres, good condition, 3 lamps, speedometer, mechanical horn, apron, full kit tools and spares, splendid running order; £100.—Morgan, 53, Spey St., Poplar, E.14. [6307

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1916 American Excelsior Combination, mag., dynamo lighting, hood and screen; £120.—86, High Rd., Lee, S.E. [5773

BRITISH Excelsior, 2½h.p., 2-stroke, disc wheels, lamps, etc., perfect condition; 35 gns.—57, Anerley Park, Anerley. [6362

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

EXCELSIOR, 4½h.p., with coachbuilt sidecar, 3-speed, 1914 model, very good order, complete, lamps, speedometer, etc.; £80, no offers.—Cecil Francis, West Pinchbeck, Spalding. [5676

1916 American Excelsior, 7-9h.p., sporting C.B. sidecar, dynamo lighting, tyres and chain as new, splendid condition, all accessories; £135; or offers.—Read, Orleans, Esher. [6145

AMERICAN Excelsior 7-9h.p., 1916, little used, clutch, 3-speed, splendid coachbuilt sidecar, lamps, mechanical horn, tools; £110.—Holmes, 14, Delvino Rd., Parsons Green, S.W.6. [6115

AMERICAN Excelsior Combination, 7-9h.p., 1915, stored 2 years, just re-enamelled, R.H.K.S., excellent condition, with prize design sporting sidecar, lamps and spares; £120.—114, Westbury Av., Wood Green, London. [6101

Fafnir.

FAFNIR 3h.p., B.B., new Clincher tyres, Whittle belt, recently overhauled; trial; bargain, £12.—31, Graysbott Rd., Clapham Junction. [5910

3½h.p. Fafnir, mag., B. and B. carburetter, free engine clutch, good tyres; ride away; hargain, £12/10.—152a, Swaby Rd., Earlsfield. [5634

F.N.

F.N. 5-6h.p., single gear, good condition, £28; lamps, horn, £2.—Westcott, 29, Brook St., Luton. [6187

F.N. Lightweight, lamp, generator, horn, new tyres; any trial; £20; Cowes district.—Box L4,327, c/o *The Motor Cycle.* [5690

F.N. 4-cyl. Motor Cycle, clutch model, good running order; £30, hargain.—Murray, 378, Charles St., Hattou Garden, Holborn. [X3503

F.N. 2¾h.p., mag., B.B., h.h.c., adjustable pulley, good running order, recently overhauled; £15.—14, Sun Lane, Catton, Norwich. [X3389

F.N., 6h.p., 4-cyl., 2-speed, clutch, Binks 3-jet carburettar, etc., just overhauled at works; £60.—A.D.V., 64, Junction Rd., Andover. [X3183

F.N., 4-cyl., 1912, 2 speeds and clutch, engine overhauled; £48, or close offer.—Earl, Athenæum Works, The Vale, Hampstead, N.W.3. [6219

F.N. 4-cyl., Bosch, B. and B. variable jet, in good running order, with parcel delivery sidecar; £27.—Motor Cycle, 9, Edith Grove, Chelsea, S.W.10. [6393

F.N. 1914 2½h.p., 2-speed, clutch, kick starter, lamps, horn, pump, stored during war; going abroad; £35.—13, Claremont Gardens, New Rd., Seven Kings. [5813

F.N., in good condition, Bosch mag., lamps, etc., T.T bars; £36; seen any time after 4.—Timons, 64, Station Rd., Old Tupton, near Clay Cross Station. [X3578

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F.N., 5-6h.p., 4-cyl., shaft drive, clutch model, new tyres, perfect condition, very powerful machine, ridden engineer; £45; seen 6.30-9.—O2, Jackson Rd., Holloway, N.7. [6365

F.N. 5-6h.p., 2-speed, clutch, Bosch, wicker sidecar, speedometer, lamps, horn, in good condition; ride away; bargain, £48; evenings after 7; no dealers.—N., 32, Lampton Rd., Hounslow. [5736

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HARLEY Combination, 1916, electric model, top condition; £125.—17, Abbey Rd., Croydon. [5958

HARLEY-DAVIDSON, 1914, with Montgomery sidecar, speedometer, lamps; £85.—Brown, 8, Kirtleton Av., Weymouth. [5916

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Harley-Davidson

PLACE your orders now for Harley-Davidsons.—Horswill, Castra Motor Cycle Garage, 42, Bridge St., Chester. 'Phone: 943. [2143

1918 Harley-Davidson, with sidecar on off side, mag. ignition and lamps; £145.—P. Collyer, Peppering, Arundel, Sussex. [5967

1915 Harley-Davidson Combination, 9-11h.p. twin, sidecar, lamps, etc., excellent condition.—Apply, O.B., 82, Priory St., Colchester. [5972

1914 Harley-Davidson, Mills-Fulford sidecar, in perfect running order; must sell; bargain, £85.—Sharman, H.M.S. Erin, Portland. [5755

HARLEY Combination, 7-9h.p., splendid running order; £160; seen by appointment.—18, Viewmount Drive, Mary Hill, Glasgow. [X3661

1915 Harley Combination, 3-speed, clutch, Bosch mag., tyres and chains new, lamps; £125.—Blake, 216, Westbourne Grove, W.11. [6012

1915 Harley-Davidson Combination, 3-speed, clutch, with hood to sidecar, thorough running order; £135.—P. Pike and Co., St. Thomas, Exeter. [5835

1915 Harley-Davidson, cane sidecar with dickey seat, splendid condition; £90, no offer.—Coupland, 1, Hazeldene Villas, Clayton Rd., Hayes, Middlesex. [X3193

HARLEY-DAVIDSON Combination, 1917, 7-9h.p., mag. model, good condition; price £160.—Call or write, No. 6, Knoll Gardens, The Crescent, Sandgate, Kent. [6302

HARLEY-DAVIDSON Combination, 1915, Millford sidecar, hood, screen, lamps, horn, splendid tyres, new condition throughout; £115.—132, Lillie Rd., Fulham, S.W. [5827

HARLEY-DAVIDSON, 1915, 7-9h.p., coachbuilt sidecar, with extra 5½ gallon pressure supply; £95 cash, and ride away.—Write, Dod, 5, Earl's Court Gardens, S.W. [6245

HARLEY-DAVIDSON, 1917, and sidecar, standard model, excellent condition, 2 tyres new, fast and reliable.—Letters only, Greig, 6, Worcester Gardens, Sutton, Surrey. [5653

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HARLEY-DAVIDSON, 1916, mag. model, and Mills-Fulford 1919 Corvette sidecar, lamps, etc.; any trial, Saturday or Sundays; £125 nett.—Brooker, Edinburgh House, Matlock Bath. [X3519

HARLEY-DAVIDSON Combination, 1917-18, electric model, speedometer, tools, 2-seater sidecar, 2 wind screens, luxurious outfit, take 5 anywhere; nearest £178.—54, Bounces Rd., Lower Edmonton. [5661

HARLEY-DAVIDSON Combination, bought August, 1916, mag. model, 3-speed, band and foot clutch, hood, screen and spares; stored 2 years; in perfect condition; £120.—Spencer, 63, Caldy Rd., Aintree, Liverpool. [5920

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1917 (Sept.) Harley-Davidson Combination, electric horn, head, side, and tail lamps, and Lucas horn, commodious sidecar, locker at back, wind screen, brand new Dunlops, tools and spare chains, magnificent outfit; £180.—80, Streatham High Rd., S.W.17. [5684

HARLEY-DAVIDSON 1916-17 Combination, 7-9 h.p., mag. model, Gloria 1A coachbuilt sidecar, wind screen and apron, Tan Sad, horn, spare tyre, and plugs, tools, not done 4,000 miles; best offer over £160.—Turland, 95, Derby Rd., Stapleford, Notts. [X3751

HARLEY-DAVIDSON Combination, 1916, 3 speeds, clutch, kick start, chain drive, wind screen, lamps, hood, horn, speedometer, tools, de luxe sidecar, overhauled, perfect order, ride away, any trial; £147/10.—Taylor, Kingston Cross Dairy, Portsmouth. [6040

HARLEY-DAVIDSON Combination, late 1916, mag. model, electric lighting, in splendid condition, new sidecar and chassis, hood, screen, and pillion seat, smart turnout; £150, no offers.—Forsandor, 43, Oxford St., W. [6305

HARLEY-DAVIDSON Mag. Model, electric lighting set, brand new Palmer cord tyres, roomy coachbuilt sidecar, in absolutely new condition, enamel unscratched; 130 gns; real bargain.—Whitehead, 4, Montague Mews, Crawford St., Baker St., W. [6272

HARLEY-DAVIDSON, 1917, dynamo, hood, triple screen, specially fitted with Triplex glass, clock, spare horn, and bulbous back sidecar, very little used, handsome, fast, and powerful outfit; £180.—Seen any time Else's Garage, off South Parade, Turnham Green Station. [5638

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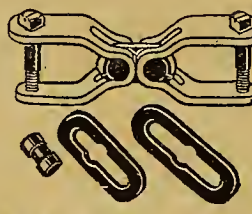

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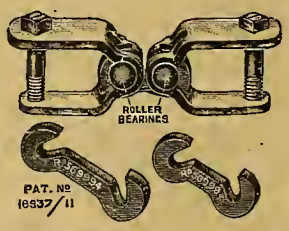

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HARLEY Electric Combination, late 1916, re-enamelled khaki by makers, speedometer, volt and ammeter, 44 act. amp. hours C.A.V. accumulator, 2 head, 1 side, speedometer and inspection lamp, 3 key switches, hood and screen, fine condition; £160.—Seen at Oyler's Garage, Upper Marylebone St., W.1. [6055

Hazlewood.

HAZLEWOOD 4-5h.p. 3-speed Countershaft Combination, believed 1916 model; £79; first cheque secures.—47, Newland Av., Hull. [X3541

1914 Hazlewood Combination, 5-6h.p. J.A.P., Bosch mag., kick start, coachbuilt sidecar, 3-speed, only done 3,000 miles, stored 3 years; £85; seen after 6.—Lancaster, 15, Ormond York, York St., London, S.W. [6239

1915 Hazlewood-Jap 5-6h.p., motor cycle and sidecar, engine and gear box recently overhauled by makers; price £100; owner bought car.—Can be seen at A. C. Bishop, Ltd., 135, Bartholomew St., Newbury. [X3509

Henderson

HENDERSON Combination, 10h.p., 2-speed, Phœnix sidecar, excellent condition; £130.—Oaklands, Sanderstead, Surrey. [X3478

PLACE Your orders now for Hendersons.—Horswill, Castra Motor Cycle Garage, 42, Bridge St., Chester. 'Phone: 943 [2142

1914 Henderson Combination, electric lighting, in fine condition; £115.—Chandler, Reyre and Williams, Hitchin. 'Phone: 165. [6000

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co. Official Dealers. Liverpool-Manchester. [7036

1919 Henderson, 10h.p., like new, mileage under 1,500, complete with F.R.S. lamps; price 185 gns.—Capt. M. S. Fryar, Pendragon Hotel, London Rd., St. Albans. [5769

Hobart.

HOBART 2-stroke, single speed; £36.—Chandler, Reyre and Williams, Hitchin. 'Phone: 165. [6005

HOBART-VILLIERS, 1916, 2¾h.p., 2 speeds, in very good order; £46.—H. Carr, Hexby Bridge, York. [6359

4h.p. 1913 Twin Hobart, 3-speed Sturmey-Archer, clutch, Lucas lamp set, good running order; £35.—Oswell, Hadley, Salop. [X3582

HOBART-VILLIERS, 1917, 2¾h.p., 2-speed, just been overhauled, perfect condition, lamps, horn, new tyres; £50, or nearest offer; after 6.30.—206, Lordship Rd., Stoke Newington. [6197

Humber

HUMBER 3½h.p., free engine, handle start, new tyres, lamp £38.—327, Hor St., Walthamstow. [6074

HUMBER 2¾h.p. twin, 3 speeds, free engine, in very good order; £45.—Heighton, Elton, Peterboro'. [X3636

HUMBER Lightweight, 2h.p., in good condition; £33.—Robertson, North, 55, Broad Bridge St., Peterborough. [5872

HUMBER 1913 3½h.p., 2-speed, rebushed, all accessories; what offers?—Byott, Snakes Lane, Woodford, Essex. [6441

HUMBER, 3½h.p., 2-speed, and good sidecar, engine perfect, a most reliable outfit; £50.—Hall's Garage, Ltd., Stevenage. [5758

1912 Humber 2¼h.p., mag., good tyres, round tank, very smart; £25.—Blake, 216, Westbourne Grove, W.11. [6013

HUMBER Lightweight, Bosch, B.B., accessories, new tyres, sound and excellent condition; £26.—40, Southpark Rd., Wimbledon. [X3459

HUMBER 3½h.p., 2 speeds, good tyres, new belt, splendid coachbuilt sidecar, good order; bargain, £50.—Banks, South View, Matlock (via Gellia). [5938

3½h.p Humber Combination, coachbuilt sidecar, countershaft, 2-speed, free engine, kick starter, lamps, horn; £60.—Richardson, 380, Kingsland Rd., E.8. [5809

6h.p. Water-cooled Humber, Millford sidecar, hood, screen, lamps, horn, in brand new condition; nearest offer to £150.—15, Stanley Rd., Earlsdon, Coventry. [X3021

HUMBER Lightweight, appearance as new, engine good, Bosch, B. and B., new Dunlop back tyre, ride away; £27.—Walker, 83, Ham Park Rd., Stratford, E.15. [5603

2¾h.p. Humber Twin, 3-speed, horn, speedometer, good condition and running order, £45; also Baby Levis, 1912 model, £28, or offers.—Artro House, Llanbedr, Merioneth. [X3482

HUMBER 3½h.p., 1914, 3-speed, clutch, K.S., decompressor, new piston, semi T.T., excellent appearance, wicker sidecar; £56.—32, Balfern Grove, Chiswick Lane, W.4. [6139

HUMBER Lightweight, M.L., Amac, tyres, enamel, etc., in new condition, good order throughout; bargain for quick sale, £23; after 6 p.m.—73, Derwent Rd., Palmer's Green, N.13. [6058

HUMBER 1914 3½h.p., 3-speed hub gear, coachbuilt sidecar, wind screen and hood, new tyres all round, smart turnout; £75.—Godfrey's Garage, Cranbrook Rd., Ilford. 'Phone Ilford 83. [5628

MOTOR CYCLES FOR SALE.

Humber.

HUMBER, 3½h.p. engine, Bosch mag., Roc 2-speed wheel, front wheel, spring forks, tank, tyres and tubes, one new Palmer cord, good condition; £18.—68, Cromwell Rd., South Bank, Yorks. [X3490

3½h.p. Humber, 2-speed, free engine, with grey enamelled coachbuilt sidecar, beautifully sprung, stored during war, in perfect condition, any trial; £78.—Fairhurst, 28, Clarence Place, Newport, Mon. [5942

Imp.

IMP 2½h.p. Lightweight, 1919 model, fitted with Villiers engine, C.A.V. mag., smart finish, complete with lamp, horn, pump, and set of tools; price £60.—Messrs. Coppen and Vanzandt, 60, Mortimer St., W.1. Museum 3689. [5719

Indian.

7-9h.p. Indian, W.D. model, good running order; £60; trial.—White's Garage, Hinckley. [X3480

INDIAN, 1914, T.T., 7-9h.p., stored 3 years; £60. —17, Ranelagh Rd., South Ealing. [6431

1914 Indian Combination, 7-9h.p., stored 3 years; £100.—Badham, Zion, Begelly. [5963

1916 Powerplus Indian Combination, hood and screen; £120.—Ross, 86, High Rd., Lee, S.E. [5774

1919 7-9h.p. Indian, delivered last week; best bid over £160.—Box L4,380, c/o *The Motor Cycle*. [6474

7-9h.p. Indian Combination, perfect condition; £65, or exchange Levis with cash.—3, Charles St., Reading. [X3470

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport. Mon. [0032

INDIAN Coachbuilt Combination, red, excellent condition, 2-speed gear, powerful; £110.—Southgate, 91, High St., Hythe, Kent. [5651

1916 Indian Combination, Powerplus electric model; £120.—The Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7. [0041

INDIAN 7-9h.p. 1914 Combination, just overhauled, very little used, any examination; £120.—Heighton, Elton, Peterboro'. [X3635

INDIAN, 1913, clutch, 5-6h.p., stored during war, suit fast rider; bargain, £45.—105, Langdale Rd., Thornton Heath, Surrey. [6198

7-9h.p. Indian Combination, in perfect condition; a bargain, £70; room wanted.—Bass, Colham Cottages, Hillingdon, Uxbridge. [5812

1914 Indian, 7-9h.p., spring frame, coachbuilt combination; £80.—The Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7. [0040

1916 Powerplus Indian, sporty sidecar, 3-speed, clutch, long exhaust, tyres good; £120.—Blake, 216, Westbourne Grove, W.11. [6011

1919 Indian (Sept.) Powerplus Combination, dynamo lighting, fully equipped, unscratched; £195.—Birch, 8, West Parade, Lincoln. [X3461

INDIAN 5h.p., with sidecar, complete, in perfect condition; £80.—Chas. Venables and Co., Ltd., Taplow Paper Mills, near Maidenhead. [5290

INDIAN 7-9h.p. 2-speed Coachbuilt Combination, lamps, horn, etc., overhauled; £98.—Mylam, 197, London Rd., Croydon. 'Phone: 2379. [5763

1916 7-9h.p. Indian, in brand new condition, 3 speeds, clutch, kick start, spring frame, aluminium discs; £92.—Hill Cottage, Farnborough, Kent. [6407

7-9h.p. Indian Coachbuilt Combination, spring frame, electric lamps and horn, speedometer; £105.—7, Bonneville Gardens, Clapham Park, S.W. [X3175

1916 Powerplus Indian, Swan floating sidecar, 5,000 miles; £135; seen any day after 21st.—Farmer, Woodbank, Bexley Rd., Erith. [5623

INDIAN 7-9h.p., 2-speed, spring frame model, original paintwork almost as new; £65 for quick sale.—184, Pentonville Rd., King's Cross, N. [5885

1915 3-speed 7 9h.p. Indian Combination, just over hauled in perfect running order; £110.—Jones, 4, Woodside Parade, North Finchley, N.12. [5052

INDIAN 7-9h.p., not ridden for 4 years, been thoroughly overhauled, now equal to new; £70, or near offer.—57, Loughborough Park, S.W.9. [6453

LATE 1915 5-6h.p. Indian Coachbuilt Combination, 3 speeds and kick starter, wind screen, etc., nice condition; big soup, £98.—3, Parker Lane, Burnley. [X3735

INDIAN 1915 5-6h.p., 3-speed, clutch, just overhauled, splendid condition, lamps, etc.; £65.—Brock's Piano Factory, Northwold Rd., Clapton, E. [6264

INDIAN 5-6h.p., 3-speed, K.S., C.B. sidecar, all accessories, in splendid condition, as new; £95, or offer; any time.—C.S., 14, Swaton Rd., Bow, E.3. [6353

1914 7-9h.p. Indian Combination, coachbuilt sidecar, spring frame, 2-speed clutch, electric lamp; £87/10.—Wauchope's, 9, Shoe Lane, London. [6378

INDIAN 7-9h.p. Combination, 2-speed, clutch, kick start, good tyres and condition; nearest £90.—Turner, 85, Lyall Mews West, Lyall St., Eaton Sq., S.W. [6308

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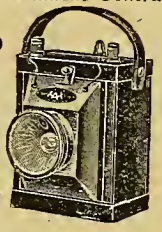

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INDIAN Red Combination, C.B. sidecar, 1916 5-6 h.p., 3 speeds, kick start, hand and foot clutch, lamps, horn, etc.; 85 gns.—44, Sun St., Waltham Abbey. [6290

INDIAN Combination, 7-9 h.p., 3-speed, clutch, speedometer, hood, screen, lamps, all accessories, in perfect order; £120.—123, Crescent Rd., Wood Green. [6102

1916 Indian, 7-9h.p., T.T. clutch, long exhaust pipes, engine, chains, sprockets, tyres perfect, very fast; exchange lower power; £75.—43, St. Matthews St., Ipswich. [6236

7-9h.p. Indian and Millford Sidecar, in perfect condition, electric lighting, horn, Easting wind screen, under 5,000 miles; £130.—Thomson, Auctioneer, Southall. [5884

1916 Indian Combination, 7-9h.p., 3-speed, K.S., 3 lamps, tools, luggage carrier, 2 lockers in sidecar, numerous spares, under 5,000 miles; £115.—Tooth, R.A.F., Boston. [X3163

INDIAN 7-9h.p. Coachbuilt Combination, 3-speed, 1915 model, in perfect condition; price £110; too Swift for present owner.—92, North Albert St., Fleetwood, Lancashire. [X3485

7-9h.p. Indian, all spring frame, Canadian model, 2-speed, hard and foot operated clutch, just been overhauled; £83.—Robertson, North, 55, Broad Bridge St., Peterborough. [5873

1919 Indian Powerplus Combination, 3 speeds, practically new, run 1,000 miles, imported from Africa; owner buying car; appointment.—Fish, 32, Lancaster Rd., Finsbury Park. [5720

RED Indian with sidecar, 7-9h.p. twin, Bosch, 2-speed countershaft, clutch, lamps; any trial; gift, 59 gns.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [6312

INDIAN 1916 5-6h.p., new Millford coachbuilt sidecar, 3-speed, clutch, kick, Dunlops unsoiled, spare chain, stored 3 years; nearest 100 gns.—38, The Vineyard, Richmond, S.W. [6154

INDIAN, 7-9h.p., clutch, 2 speeds, brand new tyres, repainted, excellent order throughout; £62.—Call after 6 p.m., or write Knight, 58, Faroe Rd., Blythe Rd., Kensington, W.14. [X3728

INDIAN 1914 7-9h.p., 2 speeds, clutch, spring frame, speedometer, new 3in. Kempshall, appearance and mechanical condition faultless; £60.—75, Warwick Rd., Bowes Park, N.11. [6188

1914 7-9h.p. Indian, 2-speed, K.S., clutch, C.B. sidecar, luggage carrier, speedometer, lamps, horn spare tyre, splendid condition; 100 gns.; after 7 p.m —64, Balloch Rd., Catford. [6047

1914 Indian 7-9h.p., spring frame, 2-speed, clutch coachbuilt combination, nearly new tyres, new chains, overhauled; £85.—Derrington, 31, Malden Rd., New Malden, Surrey. [6269

INDIAN 7-9h.p., 1915, 2-speed, clutch, kick start, spring frame, British controls; 70 gns.; seen by appointment.—R. V. Harrison, Quadrant Chambers, Lichfield St., Wolverhampton. [X3693

INDIAN 5-6h.p., 1915, 3-speed, clutch, kick starter, Klaxon, tyres almost new, first-class order throughout; £75 for quick sale.—Allen, Suffolk House, Duppas Hill, Croydon. [6179

PLACE your orders for Indians now; don't be left; will northern county customers note the new address.—Horswill, 42, Bridge St., Chester. Castra Motor Cycle Garage 'Phone 943 [2141

1915 Indian, 5-6h.p., 3 speeds, Phœnix 2-seater sidecar, equipped with hood, screen, lamps, etc., exceptionally fine turnout; price for quick sale, 100 gns.—Gibbs and Co., Fawcett St., York. [5649

5-6h.p. Indian Combination, 1916-17, cane sporting sidecar, speedometer, and lamps, first-class condition, finish French grey, mileage about 4,000; best offer over £90.—Platt, Printer, Skipton. [X3529

1916 Indian Combination, 7-9h.p., 3 speeds, kick start, clutch, electric lighting, magnificent sidecar; £105, or exchange pianoforte and furniture.—Oakdene, Holliday Rd., Erdington, Birmingham. [X3173

1914 Indian 7-9h.p., 2-speed, electric model and sidecar, dynamo lighting, electric starter; £80, or near offer.—Green, 1, Hollingbourne Gardens, Ealing, W.13. Close to terminus of 105 'bus. [6084

1919 Indian, delivered last Saturday, electric dynamo model, special sidecar, hood, etc., smart and fast combination; £190 lowest; owner will sell 2-seater car or the above.—48, Plympton Rd., Brondesbury. [5624

INDIAN, 7-9h.p., T.T. clutch model, speedometer, lamps, horn, complete, new Dunlops, excellent condition; £70; exchange good furniture or anything useful.—Greene, Constguards, Queenhorough, Sheppey. [5652

INDIAN 1915 Combination, 5-6h.p., kick starter, hand and foot clutch, speedometer, watch, compressed gns cylinder, overhauled, good condition; complete £115. —Seen after 7 p.m., 38, Emmanuel Rd., Balham. [X3424

1919 Indian, 7-9h.p. Powerplus model, full electrical equipment, dynamo, ammeter, spring frame, 3 speeds, kick starter, purchased this month, too powerful for owner.—Offers to Godfrey, 5, Cox St., Coventry. [X3723

INDIAN 7-9h.p. Combination, late 1915, 3-speed, clutch, kick starter, electric horn and lamps, speedometer, spare tyre, coachbuilt sidecar, splendid running order; 115 gns., near offer.—Lieut. Stephenson, Danes Camp, Dover. [6403

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INDIAN 7-9h.p. Combination, 1915, 2-speed, clutch, kick start, brand new 35 gn. Mills-Fulford touring sidecar, machine has done 2,000 miles, solo only; £100; owner has purchased car.—175, Camberwell Grove, S.E.5. 'Phone: Brixton 286. [6021

INDIAN Combination, 1914, 7-9h.p., Sparton horn, new cameo screen, hood, with side curtains and cover; whole outfit in fine condition and not had much wear; original tyre on front; 95 gns.; after 6, or appointment.—20, Woodville Rd., Leytonstone. [5930

7-9h.p. 2-speed Clutch Kick Start Spring Frame Red Indian, and coachbuilt sidecar, with spare tyres, tubes, new sprockets and chains, with lamps and Stewart speedometer, mechanical horn; the lot in perfect condition; £120.—Scragg, 16, Union St., Crewe. Tel. No. 113. [5749

INDIAN 7-9h.p., late 1915½, T.T. clutch model, stored 3 years, engine recently overhauled by makers, lamps, tools, mechanical horn, discs, good tyres, several spare parts; the whole in excellent condition; any trial; £75.—Greenwood, Moresby, Ambleside. [5818

7-9h.p. Indian Powerplus, 1916-17, used 1919 only, 3-speed, dual control, Millford sporting coachbuilt sidecar, disc wheel, screen, etc., excellent condition throughout; expert investigation invited; nearest 125 gns., unquestionable bargain.—Box L4,381, c/o *The Motor Cycle.* [6475

INDIAN Combination, 5-6h.p., late 1915, 3-speed, K.S., clutch, 3 lamps, speedometer, horn, tools, spare chains, Cameo wind screen, original tyres, just replaced at cost £10, everything in exceptional condition; £130.—Showell, Hadlow, Bridle Rd., Purley, Surrey. 'Phone: 463 Purley. [X3715

7-9h.p. Indian, 2 speeds, cane sidecar, new tyres, running order, £56; 7-9h.p. V.S., 2 speeds, Bosch, Binks, needs pulley wheel and back tyre, £22; 2 new Goodrich tyres, 750×85, £2/5 each; 2 new car pumps, 16/- each, with gauge; self-starting magneto, £6.—Rogers, 5, Cottage Green, Camberwell. [6118

1916 Indian Powerplus Combination, electric lighting and horn, also Klaxon, 3-speed, kick start, hand and foot clutch, touring or T.T. bars £115, or nearest; owner would consider exchange for I.O.M. Sudee or Norton B.S.—Edmunds, Confectioner, Eva St., Eleverth, near Sandbach, Cheshire. [X3704

INDIAN, 1914, stored through war, 2-speed, clutch, and kick starter, 4h.p. single-cyl. model, spring frame, electrically equipped, head lamp, rear lamp, horn, engine perfect condition, enamel and plating as new, comprehensive insurance policy covering all risks; £67.—5, Palewell Park, East Sheen, S.W. [6255

INDIAN 1915 7-9h.p., 3 speeds, spring frame, and Gloria No. 5 coachbuilt sidecar, with spring wheel, all running spares and tools; appearance and running condition both excellent; £130; can be seen by appointment, or Saturday after 2 p.m.; 'phone: Sydenham 920.—Thorp, 22, Beckenham Rd., Kent House, Beckenham. [5933

INDIAN 7-9h.p. Powerplus Combination, 1917, guaranteed, dynamo lighting set, speedometer, electric horn, new tyres, luxurious family sidecar, specially built to take wife and 2 children, Cameo wind screen, special side curtains, all in perfect condition; first cheque £150 secures.—Thomason, 48, Oxford Rd., Acock's Green, Birmingham. [X3678

LATE 1916 Powerplus Indian Combination, 3 speeds and kick starter, Schebler carburetter, dynamo lighting, 2 head lamps and tail lamp, electric horn, ammeter, switchboard, speedometer, tools, etc., Mills-Fulford luggage grid, new Dunlop extra heavy back cover, condition excellent; buying car; £165, or near offer.—Mayers, Stoak Farm, near Chester. [5899

1915 5-6h.p. Indian, 3-speed, hand and foot clutch, kick starter, Canoelet sidecar, laminated springs, beautifully upholstered dark red, apron, mat, petrol can carrier, extra heavy Dunlops, Lucas lamps, Corbin rear driven speedometer, mechanical hooter, tools, spare tyre, valve, etc, extremely smart, unscrstched, indistinguishable from new; £120; after 4.30.—63, Solon Rd., Brixton. [6192

Invicta.

1919 Invicta, 2¾h.p. J.A.P. engine, 2-speed, electric lamps, new condition; first cheque £60 secures; owner wants higher power.—Box 435, c/o *The Motor Cycle.* [X3724

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IVY 2¾h.p., 2-stroke, 1916, good condition, U.H. mag., Senspray; £33.—Holmes, Lime Tree Cottage, Bookham, Surrey. [X3434

IVY.—For the earliest possible deliveries, book your order now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [5603

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1919 Ivy 2-stroke de Luxe All Purpose Model, 2-speed, lamps, horn, tools, spares, under 500 miles; £65, quick sale; after 5.30.—18, Fellows Rd., N.W.3. (Chalk Farm Tube.) [6080

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1914 Ixion, 2-stroke, 2 speeds, overhauled, stored during war, splendid condition; £32.—Write, or call evenings, Dixon, 20, Cleveland Rd., S. Woodford, E.18. [5745

James.

3½h.p. Twin James, 3-speed, kick start; £70.—Pickering, Mardol, Shrewsbury. [X3809

1919 James, 2¼h.p., 2-speed, 2-stroke, mileage 1,200; £52/10.—Stringer, 40, Bishop St., Coventry. [X3677

JAMES Combination, 4¼h.p., countershaft gear; £80.—C. Cook, 1, Springfield Rd., Guildford. [6434

JAMES 1917 3½h.p. T.T. Twin, splendid condition, not much used, 3-speed; cheap, £90.—Rector, Nash, Stony Stratford. [6437

1919 James 5-6h.p. Combination, complete with screen, lamps, not War Department; £150.—27, St. John's Rd., Putney. [6157

1915 James Combination, 3-speed gear box, Lucas dynamo lighting set; first cheque £90 secures.—Elkin Weston Rd., Stafford. [X3660

1915 4¼h.p. James Combination, 3-speed countershaft gear and kick starter, grand condition; 80 gns.—3, Parker Lane, Burnley. [X3736

1919 5-6h.p. Twin James Combination de Luxe, as new, kick start, 3-speed, clutch, horn, lamps; £128.—10, Cope's Av., Tunstall, Staffs. [X3772

1914 James Combination, 4¼h.p., 3-speed, clutch, K.S., not used 2 years, recently overhauled; trial; £75.—Gammon, North St., Guildford. [6202

JAMES 1916 Combination, Canoelet, 4¼h.p., lamps, 3 speed, K.S., speedometer, Klaxon, splendid condition; £98.—48, Prince George Rd., Dalston, N. [6067

1919 James 4¼h.p. Combination, screen, Lucas lamps, all accessories; any trial; as new; £150, or near offer.—1, Kidbrook Park Rd., Blackheath, S.E.3. [6301

1919 James 5-6h.p. Combination, De Luxe sidecar, F.R.S. electric lighting set, Klaxon, scarcely soiled, engine 929; £160.—Campion Garage, London Rd., Derby. [6016

6h.p. James, sidecar, screen, grid, head lamp, 28in. wheels, very powerful, under 1,000 miles; best offer over £140; appointment.—Rev. Thatcher, Shustoke, Birmingham. [X3744

JAMES 5-6h.p., war model, 3-speed, Klaxon horn, head and tail lamps, with new Rover sidecar, not ridden 200 miles, condition as new; £160.—J. A. McNeil, George St., Axminster. [6357

1914 3½h.p. James Combination, coachbuilt sidecar, 3-speed and clutch, electric lighting, new tyres, in good running order.—A. Williams, sen., New Inn, Johnstown, Wrexham, N. Wales. [6243

JAMES 3½h.p. Twin, 1915, 3 speeds, clutch, Bosch, P. and H. lamp and generator, all chain, Klaxon, passenger spring seat; machine equal to new; £80.—7, Creswell Place, South Kensington. [6320

1915 James 3½h.p. Twin Combination, 3-speed, clutch, kick start, all chain drive, tyres as new, in practically new condition throughout; £85.—Watson, 132, High St., Aldeburgh, Suffolk. [6130

1919 James 2¼h.p., 2-stroke, complete with P. and H. lamps, Lucas horn, spare belt, inner tube, and other accessories; nearest offer to £60.—Address, Motor, 8, Church St., Colmore Row, Birmingham. [5828

1916 4¼h.p. James Combination, all-chain drive, 3-speed, clutch, kick starter, all lamps, tools, horn, tyres as new, hike been stored nearly 3 years; price £110.—3, Albert Rd., Regent's Park, London, N.W.1. [6404

JAMES 4¼h.p., 1914, 3-speed, countershaft, all chain, hand and foot clutch, kick starter, recently overhauled and re-enamelled by makers, lamps, horn, speedometer; 68 gns.—27, Cranborne Rd., Barking. [6435

1917 James Combination, very little used, perfect condition, ready to drive away; £125.—Vivian Hardie and Lane, Ltd., 24, Woodstock St. (off Oxford St.), New Bond St., London, W.1. 'Phone Mayfair 6559. [6399

JAMES 1919 5-6h.p. Combination, bought new August, not run 500 miles, complete with Klaxon and Lucas lighting set, etc., in perfect condition; best offer over £150.—May be seen at 198, King St., Hammersmith, W. [5743

4¼h.p. James, Canoelet sidecar, 3-speed countershaft, kick start, enclosed chain drive, good tyres, 3 lamps, horn, kept in good condition, smart, runs perfectly; seen any time; trial evenings; £80, lowest. Lee Green 1234.—1, Winn Rd., Lee. [6229

J.A.P.

6h.p. J.A.P., 1915 Coach Combination, 3-speed, K.S., screen, etc., perfect; £110.—82, Caledonian Rd., N.1. [6356

J.A.P. 2¾h.p., condition as new, decompressor, drip feed, tyres excellent; sacrifice, 40 gns.—Jones, Crossway, Coleford, Bath. [X3522

J.A.P. 6h.p. Twin, 2-speed, clutch, chain drive, Bosch, Amac; neglected condition; offers.—Henshall, 19, Greenvale Rd., Eltham, London. [6911

8h.p. J.A.P., clutch, new heavy Dunlops, discs, electric lighting, horn, tools; any trial; £50; Cowes district.—Box L4,326, c/o *The Motor Cycle.* [5689

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
Telephone: 620 City.

Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

Colonial and Foreign Agents:
United States—The International News Agency, New York. Canada—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
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Competitions in 1920.

IT is undoubtedly true that this year's competitions, on the whole, have not been too well supported, and probably the reason for this lies in the fact that motor cyclists have not been able to get delivery of new machines. Next year it is to be hoped there will be an abundance of new motor cycles, and in consequence competitions should have ample support. The Auto Cycle Union has already settled on its programme provisionally, and announces four main events for 1920, *e.g.*, the Tourist Trophy race in May, the Six Days Trial in August, a lightweight event at a date to be fixed later, and a scooter trial.

The Auto Cycle Union organises trials for a serious purpose: not to provide sport and pleasure for the entrants, but in order to discover the weak points of design in the shortest possible time, the object being to indicate to manufacturers (who generally are apt to be a little too well satisfied with their products before entering these knock-out competitions) just where their weakness lies, so that their next year's models may undergo the desired improvements.

In a lesser degree the competitions organised by the local clubs seek to do likewise, and while local enterprise in this direction should be encouraged, the trade must not be hampered by a glut of competitions. This is a point which must be guarded against next year if we do not wish to see a repetition of pre-war years, when every week end was filled up with events in all parts of the country which lasted all day and, figuratively, far into the night, and their value discounted by their abundance. Competitions must be kept within reasonable bounds, and the A.C.U. has, in its wisdom, decided to grant only twenty permits to affiliated clubs to hold open competitions. These events are to be evenly divided among various districts, and if too many applications are made in any one area, and the local clubs are unable to settle the matter among themselves, a ballot to decide the number of events in that locality will be held to decide the question. This leads up to another important point. The trade has no desire to have to support an unlimited number of motor cycle events, and has left it to a committee of the Cycle and Motor Cycle Manufacturers' and Traders' Union, Ltd., to decide what events should receive trade entries. Unfortunately, this body has not hitherto shown remarkable discretion in the particular events which should be supported, and we may quote as instances the Tourist Trophy races in 1912 and the Scottish trials in 1919, both most deserving events which were held successfully despite the withdrawal of the patronage of this institution. Surely it would be better to seek the advice of the governing body before deciding what competitions to support.

A Lightweight Trial.

The Motor Cycle has urged the A.C.U. to organise a lightweight trial. The Six Days Trials are supposed to embrace all types of motor cycles, and yet we see that, in the recent event at Llandrindod Wells, the lightest motor cycle scaled over 170 lb.! This tends to show that motor bicycles are not being developed along the right lines. Weight grows apace, though the exact opposite should be the final aim. Up to the present, comfort and the go-anywhere attribute every motor bicycle has to possess have not been attainable without weight.

The migration of solo riders to passenger machines so noticeable this year is due in some considerable measure to the dearth of light and handy mounts, designed wholly and solely for solo riders and for everyday use. Until we get genuine lightweights which require no exertion to start and handle, and which may be lifted up ordinary steps without undue effort, the greater part of a huge potential market is being neglected. Scooters promise to fill the gap for a time, but in range of action and in the comfort provided they are not to be compared with an efficient lightweight motor bicycle.

An index to the advertisements in this issue will be found on the page facing the back cover.

Conking Out on Hills.

ONE of Kipling's seafaring men, so far as I remember, when some unprofessional action was suggested to him, cocked a fierce eye at his interlocutor and remarked savagely, "McRimmon, what's her virginity to a lassie?" "The warld an' a', the vara warld an' a'!" was the answer. I may be mad, but I am just as jealous on behalf of the honour of motor cycles, and Secretary Loughborough, with certain aid from chosen riders and designers, has stirred me into one big blaze of indignation. In the Six Days, the entered machines were set to ride up Panne Hill slowly and then fast in a stunt known as the "consistent driving test." A number of them failed, or, as the papers naturally put it, overheated, and conked out. The resultant publicity will do serious and, to my mind, gratuitous injury to the industry, sport, and hobby which I love. I proceed to develop this thesis in the succeeding paragraphs.

Baleful Publicity.

LAST Thursday a lady, who is not destitute of technical knowledge, hailed me, "Hullo, 'Ixion,' I thought you were saying last night that the modern motor cycle could climb any hill and never overheated?" I eyed her sourly, foreseeing that some concatenation of circumstances and fools had once more proved me a liar. "Well," I replied sulkily. "*The Times* says most of the Six Day men conked out from overheating on one of the Welsh hills, and that only the official Rolls-Royce got up." When we got down to dots, the Thunderer had, of course, said nothing of the kind; but her version shows how intelligent and unprejudiced people may easily pervert a matter in which they are not intensely interested. Ignorant and prejudiced gossipers will present the hill failures in Wales in far more lurid colours. It is a pity those failures occurred. Let us next enquire why and how so many entrants succumbed on one or more hills.

The Causes.

IN any trial there are a certain percentage of hill failures, due entirely to the chapter of accidents. One man punctures. Another skids. A third shuts his throttle in his excitement when he intends to close off a little air. A fourth changes up into top instead of down into bottom. A fifth has his locking selectors too loosely adjusted, and his gear lever springs into neutral. Another perhaps soots a plug. All such failures are pure accidents: we cannot eliminate them, and we need not worry about them, because, with an entry largely composed of decent riders, they are too few in number to matter, and are overshadowed by the fine climbs which the rest of the men register. Such failures were excessively numerous in the Six Days, perhaps owing to lack of practice and the special excitement which the trial created. But the consistent driving test was directly responsible for the chief *débâcle*, which has spread rumours all over the country to the effect that motor cycles are inefficient hill-climbers. When the riders were set to climb slowly and then accelerate—a trick which very few of us ever essay in normal riding—some of them evinced great clumsiness, and in some cases they brought into high relief certain flaws in the design of their machines.

The A.C.U. Guiltless?

I AM not going to denounce the A.C.U. for importing this trick driving test into a classic trial, and so innocently breeding a host of misconceptions in ignorant minds. I do not, personally, care for the stunt. Its main weakness has already been shown up, as indicated. On the other hand, it is a praiseworthy policy to put a premium on maintenance of tune; and it is difficult to conceive of an alternative test on this point so long as Brooklands is closed; *otherwise a full speed mile on the first morning and the last afternoon are an obvious substitute.* Furthermore, the A.C.U. are possibly right in putting a special value on slow climbing. After all, every machine has to climb slowly when it negotiates a hilly street on cattle market day, if slow climbing on the open road is never necessary. So I do not blame the A.C.U. for smirching the fair fame of the modern motor cycle.

Two Alternatives.

CLEARLY, either the riders were to blame for handling good machines clumsily, or else designers were to blame for entering machines which could not crawl indefinitely on a severe gradient without beginning to conk, when asked for much increased speed as the grade grew invisibly steeper. In either case, the guilt is heavy. I cannot apportion the blame, for I do not know all the engines and riders with sufficient intimacy. But the rider who plays the fool in a classic trial is a public nuisance, especially when there are enough of him to mar the average performance. In several instances sheer bad driving was to blame, and the culprits ought to be ashamed of themselves for not practising beforehand. There is even less excuse for the designers, if the responsibility is theirs. I admit the test was novel, but they had ample warning of it; and it is easy to fake a machine so that the biggest duffer can take it up any gradient at an imperceptible creep. For example, I have a machine in my garage which I dare not have entered for this particular test in its present condition: it will climb any hill in Great Britain fast—indeed, much faster than is safe—but it will not—in its present adjustment—go up a real freak hill slowly. I can make it climb 1 in 5 at a creep any day—merely by timing the ignition rather later, making a small adjustment to the carburetter, and putting on a sidecar sprocket in lieu

Occasional Comments.—

of the solo sprocket. This would have been done as a mere matter of routine common sense if I had entered for the Six Days. On the other hand, I have another machine which is five years old, and has never conked in its life; it has climbed the test hill at Brooklands far more slowly than any machine climbed the Welsh timed hill. If I were a maker who burned to shine in the Six Days, it would have been an engine of this type that I should have entered, rather than one of the sensitive and fiery variety. The task is perfectly childish. We know how to rule out distortion. All we need is a low compression engine with a rational ignition timing and a wide range of ratios, embodying a speed climbing ratio and a genuine emergency ratio. These obvious precautions were not taken. So, the combination of a rather dubious test, a number of not too skilful riders, and the entry of some slightly unsuitable machines, have led to the production of a lamentable impression. Not four people in ten who are aware of the hill failures in Wales understand that the machines could have stormed up the hill if they had been permitted to select their own speed.

A Question of Alignment.

RECENTLY I assisted a friend to reassemble a fairly modern machine after a pretty radical overhaul, and we were horrified to discover that it was impossible to get the engine and gear box sprockets into line without ruthless faking of the frame. The designer had adopted the principle that neither the ordinary owner nor the ordinary garage can be implicity trusted to align a chain. To relieve them from the risk of making blunders he built his gear box into the frame so solidly that it could not be adjusted in any direction. The engine is similarly immovable laterally, but can be slid longitudinally in its cradle. In other words, the alignment of the chains is fixed, but the longitudinal engine adjustment allows the tension of the front chain to be reset. Offhand, this principle seems sound—the snag which we hit was the fact that the chain alignment was very badly out indeed. The engine required to be swung slightly anti-clockwise and the gear box clockwise, both directions being from a plan view; neither adjustment was practicable, short of rebuilding the frame. If we filed the gear box cradle, the gear box would cease to be rigidly held; if we packed the engine slightly lopsided in its cradle we threw illegitimate stresses on the frame. Moreover, skewing the gear box would require the rear wheel to run out of track with the front wheel.

Unfortunately, the most interesting data were not available. In particular the owner cannot say whether the frame was ever true or not; the whole trouble may be due to faulty original construction. I am inclined to favour this explanation, since the mal-alignment was in the reverse direction to that which the pull of the engine might conceivably produce in a weak frame; and on the other hand the owner states that the machine has never been in an accident or sustained a heavy fall. The moral of the incident is clear. First-class design must work on one of two systems. *Either* adjustments must be provided to cope with every conceivable loss of alignment (in which case the gear box must never be rigidly and finally located); *or* else the frame must be very carefully O.K.-ed for truth before issue. It would be interesting to hear the experiences of a first-class overhaul foreman on the point. My poor friend is at present wavering between returning his frame to the makers, and seeing how the short front chain will last when running askew to the tune of rather more than 3/8in. Almost invariably we blame the chain makers for broken chains. Are we justified?

Great interest was displayed in the Six Days Trials by the inhabitants of the various towns through which competitors passed. Kaye Don (5 h.p. Zenith) on left, and R. Creak Davis (8 h.p. Chater-Lea) on right, passing through Builth.

ECHOES OF THE SIX DAYS TRIALS.

Varied Observations and Impressions of the Annual A.C.U. Event.

A SPUR OF PLYNLIMMON, NEAR MACHYNLLETH—the outstanding test of Thursday afternoon's run. Stanley Parker (6 h.p. Enfield sidecar) leading three other riders over the loose shale surface, gradient approximately 1 in 5.

A PRACTICAL RIDER'S DEDUCTIONS.

HOWEVER well organised a trial may be, and however concisely the results are tabulated, it is not always easy for the average motor cyclist to gain a correct impression of the actual performances of a given make of machine.

The question of luck is ever present, and an arrow partially concealed by a spectator, a series of tyre troubles, an unlucky skid or a stop on an observed hill due to a piece of awful road surface, may all help to lose a gold medal. The personal factor, also, is difficult to eliminate, and in addition to the consistent driving test, which caused a good deal of grumbling on the part of the competitors, it must be remembered that a piece of clumsy driving on the part of an amateur driver may be sufficient to spoil the chances of a team.

The A.C.U. took all reasonable precautions to save such misrepresentations in the case of the Six Days Trials, and yet more than one record was spoiled by sheer mischance in the last twenty miles of a very strenuous 730 miles run.

Success of the Two-strokes.

It was so hard, even for those who were present at the event, to gain a true perspective that anyone who relies entirely on published results is very apt to be misled. One of the outstanding features of the trial is the success of two-stroke engines. The Scotts performed with the utmost consistency, and attracted the admiration of all spectators by the manner in which they purred up nearly all hills on top gear, and by their admirable qualities with regard to holding the road. The excellent running of these machines was not confined to the team only, for B. Alan Hill also procured a gold medal, and Jesse Baker was one of the unfortunates who had severe tyre trouble and lost his way on the last day. Pike's little Levis, with a single-cylinder engine of but 62×70 mm., made a most wonderful performance, and even the ascent of Bwlch-y-Groes did not trouble the tiny power unit, though the low gear ratio 15 to 1 is no lower than that of many larger machines. The Levis was a standard machine except for gear ratios, and had seen hard service before the trial, being impressed at the last moment on account of tank trouble which occurred on the new model. Scarcely less wonderful were the performances of Goodman's Velocette and Lidstone's James, both of whom well deserved their gold medals.

These results should do much to popularise the two-stroke, and to encourage the growth of real lightweight motor cycles, for which such engines are admirably suited, for the Six Days Trial is no joy-ride, and any machine which completes the course to time may be considered as an eminently roadworthy article.

G. E. Stobart (5-6 h.p. James sidecar) climbing Constitution Hill, Swansea.

It was rather a disappointment to find so little real novelty in design exhibited by competing machines. The A.B.C. is one of the few newcomers to competition work, which has got out of the pre-war groove. The design of these little machines is excellent, and they are most compact. All detail work is carried out well, and is designed to be part of the machine, instead of being tacked on in a haphazard way wherever there happens to be room. It is particularly unfortunate, therefore, that the two representatives of this firm should have been dogged by bad luck. Emerson was pursued by tyre trouble, and, in spite of his plucky efforts, was unable to save his time, and Fairley suffered a broken oil pipe, which eventually caused an engine seizure.

Weight and Frame Springing.

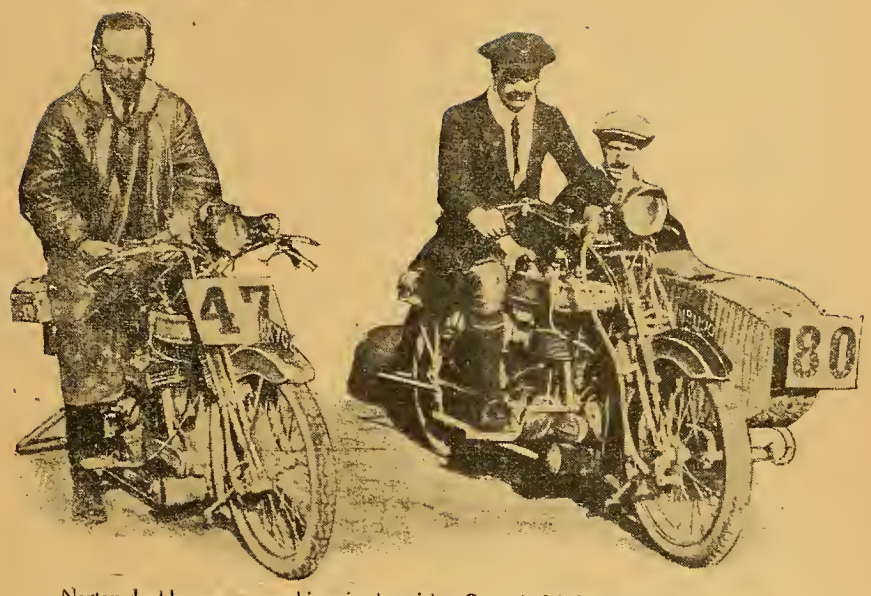
The weights of machines equipped for the road will cause a surprise to those who follow catalogue figures, and there is much room for improvement in this respect. There are many solo riders in this country, and it seems surprising that some enterprising firm does not specialise in a machine for solo purposes only. The main reason against this suggestion is probably that it is impossible to prevent the buying public from attaching a sidecar or carrying an additional passenger on "the bracket." Nevertheless, it is generally agreed amongst enthusiasts that solo machines have been spoiled by being constructed for passenger work, and there would probably be a big sale for a purely solo mount not exceeding 5 h.p.

Spring frames had a moderate representation, but, if this year's riders have a say in the matter, there will be a big increase in numbers in the near future. As might be expected, there were no

Echoes of the Six Days Trials.—

failures with regard to springing systems, and only two on rigid frame machines, but the failures of sidecar chassis were very noticeable.

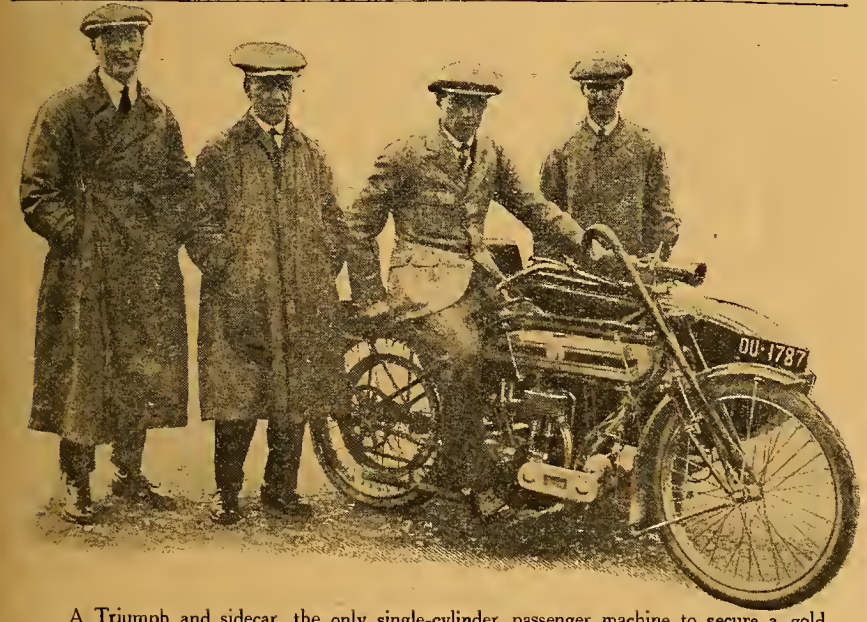
Perhaps the most interesting feature of the sidecar outfits was the number of attachments used. Alexander's Enfield had but two fixings, yet the combination came through successfully; on the other hand, sidecars with up to six points of attachment competed, and in some cases failed to withstand the execrable surfaces encountered during the trial. This points to the fairly obvious fact that it is not wise to attempt too rigid a construction, and, though it is improbable that the old flexible sidecar will return to favour, it is more than likely that some less rigid form of coupling than is at present in use will be devised before long. A well-sprung sidecar wheel may, however, solve the problem. With regard to the success achieved by various types of engine, the following table is illuminating, and though the remarks at the beginning of these notes must be borne in mind, as some of the failures were due to bad luck, and stops close to a check, an idea may be obtained from the figures quoted.



Norton double purpose machines in the trial. Capt. A. Lindsay solo, and S. Sawer with sidecar. They secured gold and silver medals respectively.

ANALYSIS OF TYPES.

	Started.	Gold.	Silver.	Bronze.	No Award.	Retired.
SOLO						
2-stroke lightweight	6	3	–	–	–	3
1-cylinder 4-stroke, up to 350	3	–	1	–	–	2
2-cylinder 4-stroke, up to 350	2	–	–	1	1	–
2-cylinder 2-stroke	5	2	2	–	–	1
1-cylinder 4-stroke, up to 500	20	5	9	–	4	2
1-cylinder 4-stroke, up to 750	12	5	4	4	–	1
2-cylinder 4-stroke, up to 500	5	–	2	–	1	2
2-cylinder 4-stroke, up to 750	6	2	3	–	–	1
2-cylinder 4-stroke up to 1,000	2	–	1	–	–	1
SIDECARS						
1-cylinder 4-stroke, up to 500	3	–	2		–	1
1-cylinder 4-stroke up to 750	6	1	1	–	3	1
2-cylinder 4-stroke, up to 750	9	2	4	2	1	2
2-cylinder 4-stroke up to 1,000	24	3	7	3	2	9
4-cylinder 4-stroke over 1,000	1				–	1
RUNABOUTS.						
3-wheelers	7	1	3	1	–	2



A Triumph and sidecar, the only single-cylinder passenger machine to secure a gold medal. F. G. Edmond, the successful driver, is seen on the extreme left, with (reading left to right) G. E. Stanley, head of the Triumph Experimental Department; J. Cocker, a pre-war record-holder; and H. Green, of the testing staff.

In spite of rough roads and cross gulleys an inspection revealed but few dented rims, and wheels and spokes seem to have improved from the rough rider's point of view. There is a general tendency to increase the sizes of tyres, though tyre performances were, on the whole, disappointing. Colonial models were in evidence, a fact which is indicative of an effort to recapture some of the Overseas trade which has passed into other hands during the war.

Fittings and accessories have improved, and though a few broken mudguards and stays were noticeable at the conclusion of the trial, there was not that tendency to distribute, promiscuously, nuts, bolts, and small fittings, which has been apparent in years gone by.

Accessories.

There was rather more magneto trouble than there should have been, but perhaps this will be corrected when British manufacturers have had more time to settle down to motor cycle work, for it is an undoubted fact that better magnetos are made in this country than were obtainable before the war from foreign sources. Carburetters were the cause of but few lost marks, though one or two riders complained of the necessity of incessant tap twiddling. Many motor cyclists like an air lever to correct the mixture, but the notion of the automatic carburetter is gaining more and more favour, and it is interesting to note that a new single lever instrument is about to be marketed by one of the best known carburetter manufacturers.

With one exception, tank trouble was conspicuous by its absence, and tank fittings also showed no signs of falling off. Cable controls were thoroughly satisfactory, and though there was one instance of a wire pulling out at the nipple, and one or two of magneto controls jamming, the former may be taken as an exception, and the latter as a proof that magneto controls are seldom used.

Echoes of the Six Days Trials.—

THE WEIGHTS OF MACHINES ANALYSED.

THERE can be scarcely any doubt that the list of weights published exclusively by *The Motor Cycle* last week caused some surprise, and probably the majority of makers, too, found food for thought. There can be no denying that weights show a tendency to increase, and since design generally is not materially altering, one concludes that the small percentage of broken frames among the competing machines is due to the use of stronger and heavier material rather than any improvement in design.

For years past most makers have overcome frame breakage troubles by adding more and more metal in the lugs and stronger gauge tubing, and while this increases the safety margin, it is not good engineering. Had bridge builders followed the same lines the many magnificent engineering edifices throughout the world would not have been possible. In other words, there is a limit to increasing metal with the idea of obtaining extra strength, and, if carried far enough, a structure becomes so heavy that it will break under the load of its own weight. Adding weight to a frame necessitates strengthening the wheels and hubs in proportion, and this can be carried on indefinitely, increased weight requiring larger engines, heavier transmissions, etc.

Ten years ago the average 3½ h.p. machine weighed under 180 lb. The development of the type and adding three-speed gears and other refinements, have brought about an increase in weight of fully 50%.

Machines Under 200 lb.

Very few machines, even in the smallest lightweight class, weighed less than 200 lb., the lightest machine in the trial being the 2¼ Radco 170 lb.; with Pike's Levis second, 176 lb.; Davies's Velocette third, 180 lb.; Goodman's machine of the same make being 196 lb. The 2½ Connaught, ridden by Ashby, was 210 lb., and the 2¼ James 220 lb.

If ever scooter designers required an argument in favour of their miniatures the list of weights of competing machines in the Six Days Trial provided it. While nothing lighter than 170 lb. is available, there will always be an opening for designers of machines considerably lighter, and, at present, only the scooter and the auxiliary attachment represent the genuine lightweight, which for several years we have been urging manufacturers to consider.

Classification by Weight.

When one considers that the 211 c.c. two-stroke of 1919 weighs as much as the 3½ h.p. single gear machine of 1910 one is almost justified in concluding that reliability trials have done little to encourage designers to produce lighter machines. In every trial machines have been classified according to the size of their engines, and in the case of a lightweight it would appear that classification by weight is more desirable if development of design is the main object; but, unfortunately, the opposite view is generally taken and classification used merely for purposes of handicapping. Of course, it could not be expected that a 200 c.c. machine could equal the performance of one fitted with a 400 c.c. engine; but the main object of a small engine is economy in the points of initial cost, petrol consumption, and weight. Present prices and results show that there is very little difference on the first two counts between machines fitted with engines of the two sizes mentioned, while on the point of weight a good example is shown in the weights of competing machines in the Six Days Trials. Stordy's A.J.S. 2¾ machine, with a 350 c.c engine, weighed 220 lb., the same as the 250 c.c. two-stroke James.

From the above it may be deduced that classification by weight instead of by engine capacity should be considered by the A.C.U. Competitions Committee when they are framing the regulations for the next big trial.

Medium-powered Solo Machines.

Probably the greatest surprise in connection with weights was that provided by the A.B.C. machines. When the Sopwith Aviation Co. announced the new model at a luncheon in December it was estimated that the machine would weigh 150 lb. Emerson's machine in the Six Days Trial weighed 300 lb., and the sister mount 280 lb. It was expected that the unconventional A.B.C. would weigh less than this, although it is difficult to say exactly where weight can be reduced to any great degree. The machines were fitted with dynamo lighting sets, which probably accounts for 20 lb. It will be noted that there is 20 lb. difference in the weights of the two machines, which may be accounted for by the fact that one was an experimental machine and the other a production model, but in this respect there are very marked differences in the weights of other makes where sister machines were entered. The Sunbeam 3½ machines varied from 290 to 314 lb., the P. and M.'s from 268 to 318, the 1919 Scotts from 280 to 294 lb., a 1914 model ridden by Jesse Baker being 276 lb. Triumphs varied from 256 to 284 lb., 5 Zeniths from 284 to 324 lb., and 3½ Rovers from 298 to 332 lb.

The Sidecar Classes.

Sidecar machines on the whole were heavy, but perhaps not so heavy as many thought. By a little deduction one may in some cases find the approximate weight of sidecars without the machines.

The lightest sidecar outfit was the 3½ Ariel entered by F. E. Jones, which weighed 444 lb. Chambers's 3½ B.S.A. sidecar was 542, no less than 78 lb. heavier than the 4¼ machine driven by W. Edwards, from which one must assume that the sidecars differed considerably in type. Taking the average weights of the solo machines as applying also to those fitted with sidecars, it will be seen that the sidecar fitted to the Ariel weighed 144 lb., while the 3½ B.S.A. attachment by the same rule would be approximately 242 lb. There are several such interesting comparisons between solo and sidecar machines of the dual purpose type which throw light upon the weights of present-day sidecar attachments. Some of these are given on the following page:

L. Rutherford (3½ h.p. Sunbeam), of Cumberland, whose highly creditable showing secured him a gold medal

Echoes of the Six Days Trials.—

	Average solo.	S decar.	Assumed weight of sidecar alone.
3½ Ariel	301 lb.	444 lb.	143 lb.
4¼ B.S.A.	293 lb.	508 lb.	215 lb.
4 Norton	292 lb.	*472 lb.	180 lb.
7-9 Harley-Davidson	380 lb.	644 lb.	224 lb.
3½ Sunbeam	300 lb.	461 lb.	161 lb.
4 Triumph	265 lb.	507 lb.	242 lb.
6-7 Ariel	336 lb.	†512 lb.	176 lb.

* S. Sawer's Norton was fitted with a Millford cane sidecar—the only cane body in the trial.

† F. J. Watson's sidecar had the standard coach-built body.

The Twin Sidecars.

The smallest twin sidecar in the trial was the 4 Douglas driven by H. Thorpe, which weighed 544 lb., 12 lb. heavier than the French G.L. (532 lb.). The Campion, which, with its 700 c.c. engine, may be regarded as being in the same class as the G.L., weighed 580 lb., while the average weight of the A.J.S. machines was 562 lb.

In the larger class, fitted with 8 h.p. engines, the heaviest machine was the 8 Sunbeam, driven by J. G. Lowles, which weighed 676 lb., but one each of the New Imperials and Royal Enfields, the Chater-Lea, Clyno, Blackburne, and all the Matchless machines exceeded 600 lb. The 8 Dots were nearly 100 lb. lighter.

American Twins.

It may come as a surprise to learn that the four-cylinder Henderson, generally regarded as a very heavy machine, weighed but 588 lb. with a French G.L. Sidecar. The two Indian outfits weighed 626 and 580 lb.

Of the seven three-wheelers in the trial, Greaves's Precision-engined Morgan weighed the least (756 lb.) of the 1919 models, but Merrall's 1915 model weighed only 712 lb.

There were very few pre-war machines competing against their 1919 sisters, but two examples again show the tendency for weights to increase. Baker's Scott was a pre-war model, and weighed 276 lb. as compared with the average of 290 of the 1919 machines of the same make.

Between the 1915 Morgan and the average weight of the 1919 model there is a difference of about 50 lb.

WEIGHTS OF THE MACHINES IN THE TRIAL.

THE weights given below are considered accurate within 4 lb., and include fuel, oil, water, tools, and spares—but without driver and passenger.

SOLO MOTOR CYCLES.

Machine and competitor.	*Weight in lb.*
‡7-9 Harley-Davidson (E. Bottomley)	380
‡4 A.J.S. (E. W. Cholderoft)	336
‡6-7 Ariel (J. W. Wills)	336
†3½ Rover (D. H. Noble)	332
*3½ Douglas (P. W. Moffatt)	328
‡5 Zenith (A. V. Sumner)	324
†3½ P. and M. (R. Lewis)	318
†4 Blackburne (J. Watson-Bourne)	316
‡5 Zenith (R. Charlesworth)	316
†3½ Sunbeam (G. Dance)	314
†3½ Rover (G. Featherstonhaugh)	312
†3½ Ariel (T. B. G. Vale)	308
†4¼ B.S.A. (F. W. Applebee)	308
†4 Norton (V. E. Horsman)	308
†3½ P. and M. (E. F. Cbidley)	308
†3½ Ariel (T. Peck)	304
†4¼ B.S.A. (L. L. Sealey)	304
*3½ Humber (J. Edwards)	304
†3½ Rover (W. Danskin)	304
†3½ Sunbeam (T. C. de la Hay)	304
†3½ Sunbeam (T. Rutherford)	304
†3½ Sunbeam (J. T. Shillito)	304
†4 Sunbeam (F. C. Townshend)	304
†3½ Sunbeam (Capt. Oliver)	301
*3 A.B.C. (J. Emerson)	300
†3½ P. and M. (W. Drake)	300
†3½ Rover (M. Isaac)	298
†3½ Sunbeam (J. Dudley)	298
†4¼ B.S.A. (H. F. Edwards)	296
†3½ Sunbeam (J. A. Newman)	295
‖3¾ Scott (C. P. Wood)	294
†3½ Ariel (C. W. Smith)	292
†4¼ B.S.A. (F. Turvey, jun.)	292
‖3¾ Scott (H. O. Wood)	292
‡3½ Sunbeam (W. Davies)	292
†3½ Sunbeam (W. R. Eadington)	290
‡5 Zenith (G. Browne)	288
†4 Triumph (M. Ryecroft)	284
‡5 Zenith (Kaye Don)	284
‖3¾ Scott (B. Alan Hill)	281
*3 A.B.C. (H. Fairley)	280
‡3½ James (G. A. Straage)	280
‖3¾ Scott (W. L. Gay)	280
†4 Norton (A. Lindsay)	276
‖3¾ Scott (J. Baker)	276
†4 Blackburne (P. J. Eaticknapp)	272
†4 Triumph (H. Pattison)	272
†4¼ B.S.A. (A. E. Wood)	268
†4 Triumph (C. Catber-Cooke)	258
†4 Triumph (E. Cross)	256
*2¾ Douglas (F. G. Ball)	252
*2¾ Douglas (W. B. Gibb)	252
§2½ Verus (B. Kershaw)	238
†2¾ A.J.S. (T. J. Stordy)	220
§2¼ James (J. F. Lidstone)	220
†2¾ New Imperial (H. L. Kitcber)	216
§2½ Connaught (S. T. Ashby)	210
§2½ Velocette (E. F. Goodman)	196
§2½ Velocette (O. L. Mowley Davies)	180
§2¼ Levis (P. Pike)	176
§2¼ Radco (R. H. Baxter)	170

SIDECAR MACHINES.

Machine and competitor.	*Weight in lb.*
‡8 Chater-Lea (R. Creak Davis)	688
‡8 Sunbeam (J. G. Lowles)	676
‡8 Blackburne (J. S. Holroyd)	664
‡8 Matchless (G. D. Hardee)	664
‡8 Matchless (G. C. McGlashan)	660
‡8 Clyno (Hugh Gibson)	656
‡8 New Imperial (W. R. Haggas)	648
‡7-9 Harley-Davidson (W. A. Fell-Smith)	644
‡8 Matchless (C. R. Collier)	640
‡8 Matchless (J. A. Hoult)	630
‡8 Matchless (R. G. Mundy)	629
‡7-9 Indian (E. A. Colliver)	626
‡8 Royal Enfield (S. Parker)	604
¶10 Henderson (W. J. Baker)	588
‡6 A.J.S. (F. W. Giles)	584
‡6 Campion (S. S. Debenham)	580
‡7-9 Indian (J. D. Prytherch)	580
‡6 A.J.S. (E. Williams)	572
‡6 A.J.S. (O. Wade)	572
‡8 Zenith (H. Jepson)	572
‡8 Dot (J. H. Place)	564
‡8 Royal Enfield (J. Dosher)	560
‡8 Royal Enfield (D. C. Gnise)	560
‡6 A.J.S. (H. C. Heath)	556
‡8 Royal Enfield (D. Alexander)	552
‡8 Dot (H. Reed)	544
*4 Douglas (H. Thorpe)	544
‡5-6 James (G. E. Stobart)	544
†3½ B.S.A. (W. J. Chambers)	542
‡5 6 G.L. (F. Thorp)	532
‡6 A.J.S. (C. Collins)	527
†4 Triumph (G. Shemans)	524
†4¼ B.S.A. (H. R. Lane)	518
‡7-9 L.M.C. (L. A. Bees)	518
‡8 New Imperial (J. Drew)	516
‡6-7 Ariel (J. L. Stocks)	512
†4¼ James (T. Stevens)	512
†4 Triumph (F. G. Edmond)	491
‡6-7 Ariel (F. J. Watson)	488
†4 Norton (S. Sawer)	472
†4¼ B.S.A. (W. Edwards)	464
†3½ Sunbeam (R. Brown)	461
†3½ Ariel (F. E. Jones)	444

RUNABOUTS.

Machine and competitor.	*Weight in lb.*
‡10 Morgan (S. Hall)	780
‡10 Morgan (W. D. Hawkes)	764
‡8 Morgan (N. Svanso)	764
‡8 Morgan (H. F. S. Morgan)	759
‡10 Morgan (H Greaves)	756
‡8 Morgan (F. W. James)	724
‡8 Morgan (E. W. Merrall)	712

* Flat twins.
† One-cyl. four-strokes.
‡ Two-cyl. four-strokes.
¶ Four-cyl. four-strokes
§ One-cyl. two-strokes.
‖ Two-cyl. two-strokes.

Weighing the machines was one of the first items of the Six Days Trial. This was carried out at Llandrindod Wells Goods Station under the supervision of Mr. A. W. Torkington, the newly-elected chairman of the Auto Cycle Union.

Echoes of the Six Days Trials.—

SILENCE TESTS BY AUDIOMETER.

IT is probably true that the marks lost by many of the competitors in the silence test caused more surprise than any of the figures given in the provisional results. The published figures gave many results exactly the reverse of independent opinions, and suggest that Dr. Low's apparatus registered noises which either are not caught by the average ear or the wrong interpretation was put upon the meaning of the term "silence."

We were afforded an opportunity of discussing this point with Dr. Low, who invented the audiometer with which he measured the so-called "silence" of the competing machines. He told us that the even purr of a multi-cylinder engine appeared less irritating to the ear than the less frequent exhaust of a single, but after a time the ear becomes just as tired of this particular speed of air vibration.

Before measuring the noises emanating from motor cycles it was necessary to define what it was intended to measure. It is possible to measure *(a)* sound, meaning periodic disturbance; *(b)* noise, which is irregular oscillation of the air; or *(c)* a combination of the two, which accounts for the offensiveness of the total influence.

The Audiometer Described.

To test the amount of "defined noise" directly by the ear, without interposing any apparatus or diaphragm, appears to be a safe method, and in Dr. Low's audiometer one ear of the observer is connected to a trumpet having two taps, the amount of cut off required to produce silence being, obviously, a measure of relative silence. When the machines pass quickly this method is not entirely reliable, so another instrument, which can be made very delicate, is used.

A diaphragm is sprung tightly in a holder, having a trumpet attachment, and is balanced on one side by a coil spring and on the other by a toggle wire, the tension of which is variable, and affects a mirror on a plain knife edge. A beam of light is thrown on to this mirror, and the reflection on to a plate, film or ground glass, so that the mirror's magnified movement is recorded.

In order that high-speed "clatter" as well as low-speed air shock may be noticed the diaphragm is stretched to a high natural period, and is electrically damped by a magnet, which can be put into operation by a sound-operated relay, thus giving both measurements.

The apparatus used by Dr. Low was comparatively simple, and a record was taken on a tape machine, which, Dr. Low claimed, ensured impartiality.

Grades of Silence.

Marks were deducted according to the records obtained on several tests, and by grading the machines according to these lost marks some very interesting groups are obtained. In some of these groups machines which are not known for their quiet running figure alongside others generally regarded as among the "most silent" mounts.

TWO MARKS.—E. F. Goodman (2¼ Velocette) and Kaye Don (5 Zenith).

THREE MARKS.—B. A. Hill (3¾ Scott).

FOUR MARKS.—W. Drake (3½ P. and M.), H. O. Wood (3¾ Scott), G. Brown (5 Zenith), O. Wade (6 A.J.S.), F. W. Giles (6 A.J.S.), and S. Hall (10 Morgan).

FIVE MARKS.—J. F. Lidstone (2¼ James), J. Emerson (3 A.B.C.), T. B. C. Vale (3½ Ariel), J. Watson Bourne (4 Blackburne), G. A. Strange (3½ James), J. A. Newman (3½ Sunbeam), T. Rutherford (3½ Sunbeam), V. E. Horsman (4 Norton), W. L. Guy (3¾ Scott), C. P. Wood (3¾ Scott), H. Pattinson (4 Triumph), R. Charlesworth (5 Zenith), J. W. Wills (6-7 Ariel), F. Thorp (5 G.L.), G. E. Stobart (5-6 James), J. A. Hoult (8 Matchless), H. F. S. Morgan (8 Morgan), D. Alexander (8 Enfield), H. Greaves (10 Morgan), and G. D. Hardee (8 Matchless).

SIX MARKS.—P. J. Enticknapp (4 Blackburn), R. Lewis (3½ P. and M.), W. Danskin (3½ Rover), M. Isaac (3½ Rover), M. Davies (3½ Sunbeam), G. Dance (3½ Sunbeam), J. Dudley (3½ Sunbeam), T. C. De la Hay (3½ Sunbeam), J. T. Shillito (3½ Sunbeam), L. L. Sealey (4 Triumph), A. E. Wood (4¼ B.S.A.), F. F. Jones (3½ Ariel), C. Collins (6 A.J.S. sc.), S. Sawer (4 Norton sc.), F. J. Watson (6-7 Ariel sc.), H. Gibson (8 Clyno sc.), W. A. Fell-Smith (7-9 Harley-Davidson), C. R. Collier (8 Matchless), G. C. McGlashan (8 Matchless), J. Dosher (8 Royal Enfield), and P. W. Moffatt (3½ Douglas).

SEVEN MARKS: P. Pike (2¼ Levis), F. G. Ball (2¾ Douglas), T. Peck (3½ Ariel), C. W. Smith (3½ Ariel), G. Featherstonhaugh (3½ Rover), E. W. Choldcroft (4 A.J.S.), F. W. Applebee (4¼ B.S.A.), H. F. Edwards (4¼ B.S.A.), F. Turvey (4¼ B.S.A.), A. Lindsay (4 Norton), D. H. Noble (5 Rover), E. Cross (4 Triumph), H. C. Heath (6 A.J.S.), T. Stevens (4¼ James), F. G. Edmond (4 Triumph sc.), G. Shemans (4 Triumph sc.), J. S. Holroyd (8 Blackburne sc.), E. A. Colliver (7-9 Indian sc.), R. G. Mundy (8 Matchless sc.), F. W. James (8 Morgan), and D. C. Guise (8 Enfield).

EIGHT MARKS: W. B. Gibb (2¾ Douglas), B. Kershaw (2¼ Verns), W. R. Eadington (3½ Sunbeam), C. Cather Cooke (4 Triumph), M. Ryecroft (4 Triumph), W. J. Chambers (3½ B.S.A. sc.), H. R. Lane (4¼ B.S.A.), H. Thorpe (4 Douglas sc.), D. Prytherch (7-9 Indian sc.), and S. Parker (8 Enfield sc.).

Notes.

SUMMARY: Two marks, 2; three marks, 1; four marks, 6; five marks, 20; six marks, 21; seven marks, 21; eight marks, 10.

From the above summary it will be seen that the great majority lost five or more marks, and if we fix the present standard by those who lost five, six, and seven marks (62 out of 81), one must conclude that Goodman's Velocette and Kaye Don's Zenith were very quiet, B. A. Hill's Scott almost as good in this respect, and the machines in the four marks' group better than the average, while, on the other hand, the machines in the last group were more noisy than the average.

It will be noted that the "most silent" sidecars were the two A.J.S. machines, which were included in the four marks' group with a P. and M., a Zenith, a Scott, and a Morgan. The P. and M., on this showing, was the quietest 3½ single in the trial.

Major A. M. Low, D.S.C., A.C.G.I., with his audiometer, the apparatus with which he measured the noises of the competing motor cycles during the Six Days Trials.

VARIED ROAD CONDITIONS IN THE SIX DAYS TRIALS.

(1) L. C. Davies (2¾ h.p. Velocette) taking the hairpin bend on Bwlch-y-Groes. (2) G. E. Stobart (5-6 h.p. James sidecar). (3) H. Thorp (4 h.p. Douglas) passing through one of the many watersplashes. (4) O. Wade (6 h.p. A.J.S.) on loose shale near Plynlimmon. (5) E. W. Merrall, who made a good performance on his 1915 Morgan, approaching Stay-a-Little. The road on which the photograph was taken is a bare virgin rock track. Merrall, who has been in the Cameroons since 1911, was formerly a P. and M. rider. (6) Capt. A. Lindsay (4 h.p. Norton) crossing one of the scores of watersplashes on the way to Hirnant Pass. (7) S. W. Moffatt (3½ h.p. Douglas) and R. Lewis (3½ h.p. P. and M.) on Llangammarch Hill. (8) W. Pike (2¼ h.p. Levis) on the hairpin at the bottom of Bwlch-y-Groes.

Echoes of the Six Days Trials.—

C. W. Smith (3½ Ariel) had a clean sheet up to sixteen miles from the finish on Friday—then came magneto trouble.

Before leaving Llandrindod Wells, Newman's Sunbeam was again looking like a show model, thanks to the efforts of his wife, who spent the morning cleaning and polishing it.

Of the fifty-eight best performances in the consistent driving test, thirty-six were on solo machines.

It was amusing to see Tim Wood reverse his engine on the switch and try to drive backwards.

The Goodyear tyres on Colliver's Indian were in excellent condition at the finish. Even the knife-edge bridges between the diamond-shaped studs on the front wheel were untouched.

The switchboard in the sidecar of Haggas's New Imperial is reminiscent of a power station.

Broken control wires and leaning sidecars suggest at least two points for improvement in new models.

It was generally agreed that Edmond's performance on a single-cylinder machine with a heavy sidecar was deserving of every praise. He secured 180 marks, entitling him to a gold medal.

H. Reed (8 Dot sc.) had the misfortune to break his sidecar chassis. He gamely carried on, and, arriving very late at Llandrindod, was loudly cheered by sympathetic competitors.

Two of the competing Morgans, driven by H. Greaves and H. F. S. Morgan, had four speeds, a gear box being fitted on the shaft. The other three had the standard two-speed gear.

There is no unanimity among sidecar manufacturers on the point of the number of connections. Among the competitors' machines were sidecars fitted with two, three, four, five, and six connections. The first mentioned machine survived the trial, and obtained a gold medal, proving our oft-repeated contention that the more or less flexible sidecar is not likely to break its chassis as the entirely rigid type.

Mr. J. L. Norton was a hard working helper on the course, and for several hundred miles carried his father, who is seventy-seven, as his passenger.

Several pre-war trials exponents were in evidence at Llandrindod Wells, some of whom were maimed in the war, including W. Pratt, J. N. Longfield, and J. Cocker.

The only air-cooled Morgan to secure an award was the Precision-engined four-speed machine driven by H. Greaves.

The tail of Hall's Morgan came adrift early in the trial, but he succeeded in making a neat repair with the aid of two chain adjusters.

NOTES BY THE WAY.

F. J. Watson (6-7 Ariel sc.) had fitted a Canoelet sporting sidecar which he had rebuilt, raising the back part and increasing the comfort of the passenger, and adding a convenient tool locker at the rear. He had also arranged his tools in the side of the body.

Frank H. May, the pre-war A.J.S. rider, now a captain in the Army of Occupation, obtained leave to be present at the Six Days Trial as an observer.

It was particularly noticeable that a number of manufacturers were present, and that they appeared to take a keen interest in other people's machines. This is a good augury for the future, and we hope to see beneficial results in 1920 models.

Haggas, who withdrew his New Imperial sidecar at Machynlleth on Thursday, had driven throughout with the greatest consistency, Norman Longfield occupying the sidecar seat. Due to a broken throttle lever, the passenger had to do the trick holding the throttle wire in his hand, but such going, over a most difficult stretch of the course, was found to be too risky, and thus an entirely clean sheet was spoiled.

A stripped second-speed pinion caused the retirement of R. Creak Davis and his Chater-Lea on Thursday, seventeen miles from the start. The damage really occurred on Wednesday, but he managed to carry on for a time. His was also a perfect record until the gear box trouble occurred.

As usual, the A.J.S. machines ran most regularly throughout, until one of the team members, Eric Williams, retired with gear box trouble on Wednesday afternoon. A soft gear had worn entirely away.

A word of appreciation is due to the obliging Postmaster and Post Office officials at Llandrindod.

Featherstonhaugh (3½ Rover) hit a rock with his silencer and broke it off, consequently he had to finish with a free exhaust.

Design is a difficult subject to consider in allotting marks, but the surviving spring frame machines should certainly receive some special form of recognition in future events.

The Zenith climbed marvellously, considering that the lowest gear ratio was in the neighbourhood of 8 to 1. Mundy's Matchless sidecar, too, had higher ratios than usual, the low gear being 12 to 1.

Collier's Matchless outfit finished looking as if it had just come out of a showroom. Those who took the trouble to clean their machines before the finish probably impressed onlookers, but the judges were not likely to award extra marks for condition in such cases.

T. Stevens's 4¼ h.p. James, one of the few single-cylinder sidecars in the trial, passing Major Low's audiometer, which recorded the sounds made by the machine.

Even experts disagreed as to the best manner to climb Bwlch-y-Groes. Some charged as far as possible on the middle gear, others dropped into low at the foot, and went up steadily with a tiny throttle opening.

The gates at the level crossing in Builth were shut, and caused delay on several occasions, particularly on the last evening's run.

Enticknapp (Blackburne) fell in Swansea in trying to avoid a child. A dented mudguard, however, was the chief damage done.

Dynamo lighting outfits are on the increase.

Club News

Lincoln A.C.

The results of the Scamblesby hill-climb are now announced as follows :

CLASS 1 (FOR MACHINES UP TO 350 C.C.).—1, F. C. Cotton, Lincoln (2¾ Douglas); 2, G. M. Cooper, Lincoln (2¾ Omega-Jap).

CLASS 2 (FOR MACHINES UP TO 500 C.C.).—1, R. Holland, Boston (3½ Norton); 2, H. A. Baskcomb, Grimsby (3½ Norton).

CLASS 3 (FOR MACHINES UP TO 650 C.C.).—1, C. H. Allen, Grimsby (4 Triumph); 2, J. Plastow, Grimsby (4 Triumph).

CLASS 4 (UNLIMITED).—1. A. W. Grocock, Boston (8 Zenith); 2, A. A. Hodgson, Louth (7-9 Indian).

Manchester M.C.

The results of the recent successful hill-climb organised by the Manchester M.C. are as follow :

SOLO CLASS.

	Time, Sec.	M.P.H.	Formulæ Merit.
1. *E. Smith (4 Triumph) ...	32	56	97
2. †H. Andrews (2¾ A.J.S.) ..	34¼	53	94
3. P. Platt (3½ Norton)	29⅝	61	88
4. J. Smith (3½ Triumph) ..	30¼	60	76
5. ‡C. E. Naylor (2¾ Douglas).	35⅝	51	65
6. O. E. Carter (2¾ Levis) ..	49	37	50
7. L. Ballinghall, (2¾ Ruby) .	51⅝	35	40

SIDECAR CLASS.

1. *P. Platt (3½ Norton)	34¼	52	94
2. †E. Smith (4 Triumph) ...	35⅝	50	88
3. J. Smith (3½ Triumph) ..	37⅛	48½	85
4. H. Bottoms (6 Bradbury) .	38⅝	47	79
5. H. Taylor (6 Bradbury) .	37	49	77
6. ‡O. E. Carter (3½ A.B.C.) .	43⅝	42	67
7. A. J. Hitchcock (5 Indian)	46¾	38	62
8. A. Bridgens (4 Douglas) .	44¼	40	57A
9. F. A. Eltoft (4 Douglas) .	46⅛	39½	57B
10. G. B. Walker (6 R. Enfield)	44	41	54
11. T. Williams (3½ New Imp.)	—	—	—

CYCLE CARS.

1. A. Horrocks (10 Morgan) .	32	56	—
2. H. H. Smith (8 Humberette)	—	—	—

* Gold medal. † Silver medal. ‡ Novice gold medal.

Essex M.C.

A members' hill-climb will be held by the Essex M.C. on Saturday, the 4th, and will include classes for 350, 500, 750, and 1,000 c.c. motor cycles, passenger machines, a ladies' class, and for cycle cars. The results will be decided on the motor cycle formula $\frac{C \times T^2}{W}$ (C cubic capacity, T time, W weight).

Cork and District M.C.C.

In the recent secret course trial organised by the Cork and District M.C.C. the following competitors lost no marks and secured gold medals :

S. R. Hosford (4 Triumph).
C. M. Ryan (8 New Imperial).
M. J. Hegarty (2¾ Douglas).
F. R. Dixon (3½ Sunbeam).
A. Jackson (4 Triumph).
F. T. Morehead (3½ P. and M.)
J. Mendelson (3½ Sunbeam)

The following also finished : A Townsend (Triumph), V. Browne (Triumph), J. Hohns (A.J.S.), J. Gibbins (B.S.A. sc.), J. Healy (B.S.A.), F. Burns (A.J.S.), Cagney (Triumph), and D. Duggan (Norton).

Future Events.

Oct. 4.—Essex M.C. Hill-climb.
Oct. 4.—Birmingham M.C.C. Captain's Day.
Oct. 4.—Edinburgh and District M.C. Trial for Amateurs for Palmer Trophy.
Oct. 5.—Stalybridge and District M.C. Reliability Trial.
Oct. 5.—Ilkeston and District M.C.C. Run to Belvoir Castle.
Oct. 5.—Glasgow M.C.C. Run to Biggar.
Oct 5.—M.C.C. Run to Biggar.
Oct. 11.—Cardiff City and District M.C.C. and L.C.C. Consistent Driving and Reliability Trial.
Oct. 11.—Wolverhampton M.C.C. Members' Reliability Trial.
Oct. 11.—Birmingham M.C.C. Social Run.
Oct. 19.—Ilkeston and District M.C.C. Run to Crick.
OCT. 25.—LIVERPOOL M.C. OPEN RELIANCE CUP TRIAL.
Oct. 25.—South Birmingham M.C.C. Trial for Sangster Cup.
Oct. 26.—Ilkeston and District M.C.C. Run to Chatsworth.
NOV. 1—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR PALMER CUP.
Nov. 8.—Birmingham M.C.C. Closing Run.

Stalybridge and District M.C.

The above club will hold a reliability trial on the 5th, starting from Bower Fold at 10 a.m.

Cardiff City and District M.C.

On Saturday, the 11th, a consistent driving and reliability trial will be held by the above club. The start will be from the Grand Hotel, Westgate Street, Cardiff, at 2.15 p.m. Competing members should communicate with the hon. secretary, Mr. E. C. Pascoe, 100 Llanfair Road, Cardiff.

Blackburn and District M.C.C.

The results of the hill climb held on the 20th ult. are announced as follow :

CLASS 4 (UP TO 350 C.C.).—J. Duxbury (2¾ Douglas), 1m. 36s.; S. A. Marks (2¾ Douglas), 1m. 36⅘s.

CLASS 5 (UP TO 560 C.C.).—H. Hebden (3½ Norton), 1m. 17s.; S. A. Marks (2¾ Douglas), 1m. 22⅘s.

CLASS 6 (T.T. UP TO 580 C.C.).—H. Hebden (3½ Norton), 1m. 18s.; S. A. Marks (2¾ Douglas), 1m. 23s.

CLASS 2 (LIGHT CARS UP TO 1,500 C.C.).—A. Morton (Little Midland), 2m. 55⅘s.; J. Hartley (Little Midland), 5m. 20s.

CLASS 3 (UP TO 270 C.C.).—W. Stanworth (2½ Connaught), 2m. 50s.

CLASS 7 (UP TO 750 C.C.).—H. Smethurst (3½ Norton), 1m. 10⅘s.; H. Hebden (3½ Norton), 1m. 17s.

CLASS 8 (ANY CAPACITY).—W. Lyons (7-9 Harley-Davidson), 1m. 10⅘s.; S. A. Marks (7-9 Harley-Davidson), 1m. 13⅘s.; H. Smethurst (3½ Norton), 1m. 16⅘s.

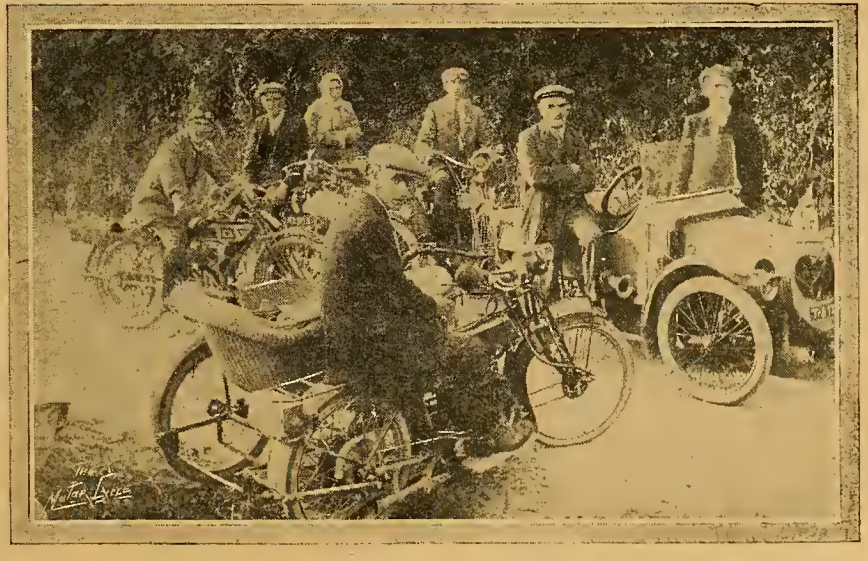
CLASS 9 (PASSENGER MACHINES UP TO 560 C.C.).—H. Hebden (3½ Norton), 2m. 15s.

CLASS 10 (SIDECAR, ANY CAPACITY).—B. Houlding (7-9 Harley-Davidson), 1m. 26s.; J. Holden (7-9 Harley-Davidson), 1m. 44⅘s.

The fastest time was made by W Lyons (7-9 Harley-Davidson), the fastest single being Smethurst's 3½ Norton, which was only ⅘s. slower.

Lancashire, Yorkshire, and Cheshire Clubs.

Mr. Eltoft, hon. secretary of the Manchester M.C., is desirous that all secretaries of Lancashire, Yorkshire, and Cheshire clubs should communicate with him as he has information to impart to them in connection with the A.C.U. meeting early in 1920.



THE ONLY MOTOR CYCLE CLUB IN CORNWALL.
Members of the Dunheved and District M.C.C. of Launceston. The machines shown are : James, Bradbury, Triumph, and a Morgan.

Current Chat

Times to Light Lamps.

GREENWICH TIME.

Oct.	2nd	... ...	6.36 p.m.
,,	4th	... ...	6.32 ,,
,,	6th	... ...	6.27 ,,
,,	8th	... ...	6.22 ,,

Police Trap.

We are informed that a police trap is working on the Duffield Road, Derby.

Next Year.

The first important French speed trial of 1920 will be the Circuit de Fontainebleau.

Average Second-hand Prices.

The second-hand market is at the moment a reflex of general trade conditions. In compiling the present list it was very noticeable that those makes in most demand remained at a steady figure or showed a slight upward tendency, while those whose scarcity had diminished, either by increased effort on the manufacturers' part or by the slightly greater freedom of import, show a decided drop in price.

Again, the models of the last few seasons have been grouped, since they mostly show neither dissimilarity of specification nor price.

A.J.S. (1914) 6 h.p., sidecar	£100
,, 1916 and later	£152
Ariel, 6-7 h.p., sidecar	£145
Allon, 2-stroke, 2-speed	£60
Bradbury, 4 h.p., single-speed, solo	£45
,, 6 h.p., sidecar	£98
B.S.A., 4½ h.p., 3-speed, sidecar	£107
Calthorpe-J.A.P., 2¾ h.p., 2-speed	£44
Clyno, 2-stroke, 2-speed	£43
,, 5-6 h.p., 3-speed, sidecar	£117
Douglas, 2¾ h.p., W.D.	£60
,, 4 h.p., 3-speed, sidecar	£120
Enfield, 2¼ h.p., 2-stroke	£57
,, (1918) 3 h.p., twin, 2-speed	£70
,, 6 h.p., sidecar	£140
Harley-Davidson, 3-speed, sidecar	£134
Humber, 3½ h.p., 2-speed, sidecar	£54
,, 3½ h.p., flat twin, solo	£95
Indian (1914) 7-9 h.p., 2-speed, sidecar	£94
,, (1916) 7-9 h.p., 3-speed, sidecar	£124
Levis, 2¼ h.p., single-speed	£39
Levis, 2¼ h.p., 2-speed	£43
Matchless M.A.G. sidecar	£149
New Hudson, 2¼ h.p., 2-stroke	£41
,, (1914), 3½ h.p., 3-speed hub, and sc.	£67
New Imperial, 2¾ h.p., 2-speed	£44
Norton, 3½ h.p., T.T.	£88
,, 4 h.p., 3-speed, sidecar	£122
P. & M., 1919, 3½ h.p., solo	£85
,, 1919, 3½ h.p., sidecar	£115
Rover (1918-19), 3½ h.p., T.T.	£76
,, (1914) 3½ h.p., 3-speed hub, and sidecar	£72
,, (1918), 3½ h.p., 3-sp. c/shaft, and sidecar	£120
Rudge-Multi, 3½ h.p.	£75
,, 5-6 h.p. and sidecar	£90
Scott, solo	£82
,, sidecar	£88
Sunbeam (1915-18), 3½ h.p., solo	£112
,, 3½ h.p., and sidecar	£146
Triumph, 3½ h.p., single-speed	£42
,, 3½ h.p., 3-speed hub	£54
,, 4 h.p., 3-speed countershaft, solo	£89
,, 4 h.p., 3-speed countershaft sidecar	£138
,, 2¼ h.p., 2-stroke	£55
Zenith, 6 h.p., solo	£102
,, 6 h.p. (countershaft), and sidecar	£122

An Amended Award.

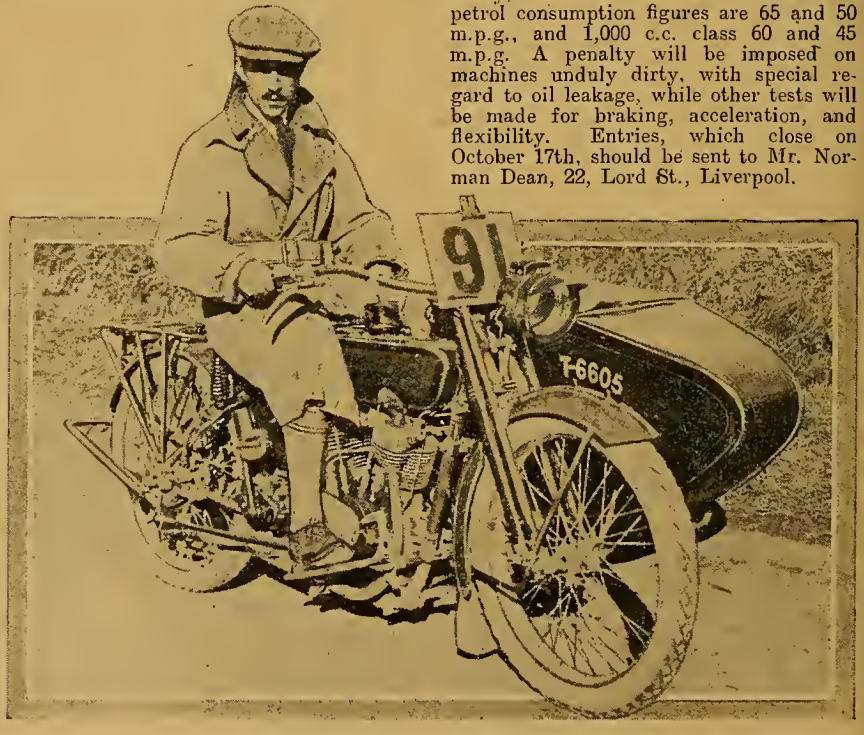
Jesse Baker (3¾ h.p. Scott), who was reported as having retired on the last day, has been allowed by the A.C.U. Committee to be recorded as having completed the trial.

Home Produced Fuel.

The interesting film entitled "Coal: Its Waste and Possibilities," prepared by the Automobile Association in conjunction with Messrs. Gaumont, in order to show how vast quantities of home-produced motor fuel—benzole—can be extracted from coal, is now being exhibited throughout the country.

A Single Gear Test.

One of the most acutely argued points among experienced riders during the Six Days Trials was whether the development of the sidecar machine has tended to provide flexible engines. We suggest a single gear trial, to be held next year, regarding which we shall have more to say next week.



THE SIX DAYS TRIAL.

One of the most consistent performances by "big twin" sidecars was put up by W. D. Fell-Smith on a Harley-Davidson. His total error in the consistent driving test was 6 sec., the least among sidecars in the 1,000 c.c. class. He secured 182 marks, and was awarded a gold medal.

Special Features.

ECHOES OF THE SIX DAYS TRIALS.
SOUTH AFRICAN T.T. CLUB TRIALS.

Special Road Warning.

The Automobile Association is informed of complaints by the residents of Henley-on-Thames concerning the high speed of motor vehicles through the borough, in which there are several narrow streets. Unless vehicles are driven at a reasonable speed, application for a speed limit Order may result.

Liverpool Open Trial.

Several features will be included in the Liverpool M.C. open trial, on the 25th October, over a Welsh course of 165 miles, including Dinas Mawddwy. Five marks will be deducted for failure to pass a petrol consumption test, in which 350 c.c. solo machines will be required to do 75 m.p.g., or, with sidecar, 55 m.p.g. In the 500 c.c. class 70 and 55 m.p.g. are the figures for solo and sidecar respectively, while in the 750 c.c. class the petrol consumption figures are 65 and 50 m.p.g., and 1,000 c.c. class 60 and 45 m.p.g. A penalty will be imposed on machines unduly dirty, with special regard to oil leakage, while other tests will be made for braking, acceleration, and flexibility. Entries, which close on October 17th, should be sent to Mr. Norman Dean, 22, Lord St., Liverpool.

The Railway Strike.

As is usual when the transport problem becomes acute, the motor cycle was much in evidence immediately the railway came to a standstill.

Ariel Prices Up.

One more firm of manufacturers have been compelled to raise the prices of their machines, this is Messrs. Ariel Motors, Ltd., whose prices are now as follow: 3½ h.p. model £95, with sidecar £125; 6-7 h.p. model £110, with sidecar £140.

A.A. Benzole Test.

On Monday last the Triumph engine, which had then run approximately 2,400 miles of the A.A. Benzole Test, was dismantled under the observation of Mr. Smith, of the A.A., and ourselves at the Triumph Works for decarbonising. We may say that even we were surprised at the small amount of carbon present, and at the condition of the engine generally, regarding which we shall have more to say later. The test is now half completed.

Racing in Spain.

The recent big Spanish event—the "Compeonato de Santander" was held over a course of approximately 120 miles. The result was a clean sweep in the three solo classes for British machines:

350 c.c. CLASS.—1, Ignacio de Arana (2¾ Douglas).
500 c.c. CLASS.—1, Ignacio de Arana (2¾ Douglas).
750 c.c. CLASS.—1, Justo Somonte (4 Douglas).

Arana's machine was a well-used 1913 model. The first prize in the 350 c.c. class was a silver tea service presented by H.M. the King of Spain.

Amalgamation of Motor Cycle Clubs?

The fact that the A.C.U. has decided to grant only twenty permits to clubs to hold open competitions in 1920 has once more brought forward the suggestion that the several clubs in some districts should amalgamate and form strong organisations worthy of their cities. So far, only the Liverpool clubs have seen the great advantages of such arrangements, and, it will be recalled, they amalgamated under the title of the Liverpool M.C. at the time when all clubs were undergoing reconstruction. At the recent meeting of so many prominent clubmen at Llandrindod Wells, Mr. Alec Ross made an impassioned appeal to officials of clubs in large cities to form stronger clubs by amalgamation, and such reconstruction schemes probably will be considered in many districts. Mr. R. Vernon Brook, the well-known Midland motorist, who contributes the motor cycle notes to the *Birmingham Daily Mail*, is advocating such an amalgamation on the part of the many Birmingham clubs, and suggests "The Midland Motor Cycle Club" as a suitable title. Personally, we have always been in favour of fewer and stronger clubs, rather than a large number of weaker bodies, and we hope the officials and members of the Midland clubs will give the matter careful consideration. A meeting has been called to-morrow (Friday) at 7 p.m., at the Birmingham Chamber of Commerce, and we hope shortly to hear that similar movements have been started in other large motor cycling centres.

IMPORTANT DATES.

Paris Salon	Oct. 9th to 19th.
Athens Motor Show	Oct. 13th to Nov. 14th.
Olympia Car Show	Nov. 7th to 15th.
Olympia Motor Cycle Show,	Nov. 24th to 29th.
Brussels Show	Dec. 8th to 13th.
Paris Aero Exhibition	Dec. 19th to Jan. 4th.
New York Show	Jan. 3rd to Jan. 10th.
Birmingham British Industries Fair	Feb. 23rd to March 6th.

New Sheffield Index Mark.

The identification letters W.A. have been allotted, in respect of motor vehicle registration, to the county borough of Sheffield. Formerly, the identification letter was W.

Petrol—the Key to National Life.

Due to the railway strike, there has been an amazing amount of motor traffic on the roads, the greater amount of which is engaged upon distribution of food, newspapers, etc., while it was evident that many sidecars were being used by their owners to transport provisions and stranded friends. It does not require a great deal of imagination to conjure up a vision of the results of such a strike had it taken place even ten years ago.

Deputation re Imported Motor Vehicles.

Last week a deputation of commercial motor manufacturers waited on Sir Auckland Geddes, at the Board of Trade, with a view to bringing before him the need for a certain measure of protection during the transitionary period while the manufacturers are engaged in producing new designs. Sir Auckland Geddes in reply announced very flatly and definitely that the Government had no intention of altering the present import duties.

The M.C.C. Annual Dinner.

The annual dinner of the Motor Cycling Club will be held on Saturday, December 6th, at the Adelaide Gallery, Charing Cross, London, W.C.2. Ladies are cordially invited. As this is the M.C.C. Victory dinner, and the presentation of prizes will take place on that occasion, there is little doubt that the event will be well supported by both members and their friends.

Petrol Economy.

Last week-end the Government made an urgent appeal to all users of petrol to limit consumption to the lowest possible amount, and once more motorists were told that "every gallon of petrol used needlessly means less food for the people."

The commandeering of petrol at the depôts last week-end, at first caused some consternation among motor cyclists who had arranged week-ends awheel, but it is questionable whether such trips would have been undertaken when the seriousness of the strike was appreciated.

The Scott Trial: Our Representative's Strenuous Day.

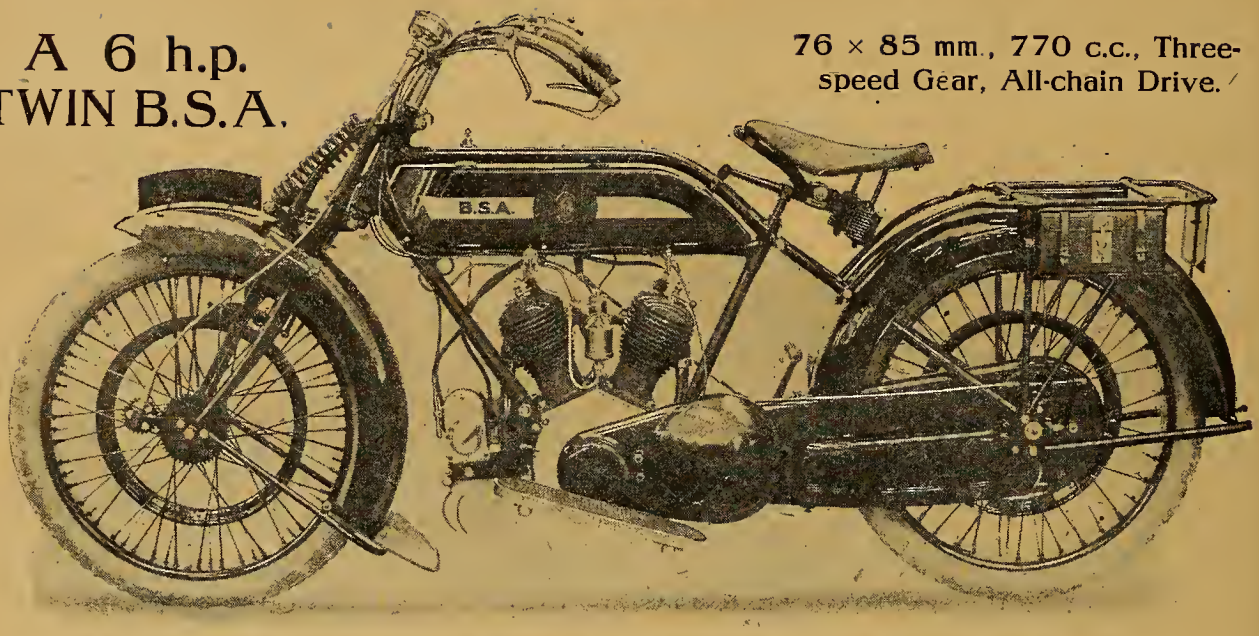
The disorganisation of transport caused some anxiety to the pressmen who were reporting the Scott Sporting Trial. Our representative intended returning partly by rail and partly by road. At the last moment he was compelled to make hurried preparations to return to Coventry by road, despite having covered almost a hundred miles in observing various hills and obstacles in the trial. Loading his Scott with suit case, petrol can, carbide, and a heavy photographic outfit, he rode throughout the night, journeying from Burnsall in Wharfedale to Coventry betwixt sunset and sunrise.

In spite of repeated carburetter troubles the rider was up to time with "copy and illustrations."

Where the competitors had to cross the River Nidd in the Scott trial last week-end a large crowd assembled, despite the inaccessibility of the place. A Triumph rider has just passed over.

A 6 h.p. TWIN B.S.A.

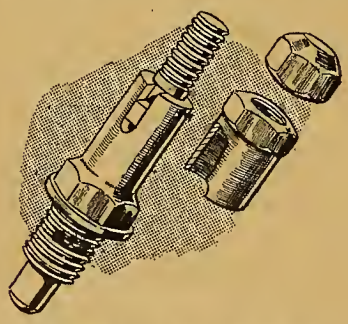
76 × 85 mm., 770 c.c., Three-speed Gear, All-chain Drive.



Transmission side of the new twin B.S.A., illustrating the wide guards, neat chain cases, and general clean appearance.

THE products of the Birmingham Small Arms Co. have always been well known for their strength and sound manufacture, so that it is not surprising to find these characteristics displayed in a marked degree in their new twin-cylinder motor cycle.

Hitherto the firm have confined their efforts to single-cylinders, which have gained a world-wide reputation, and their successes culminated in the capturing of the A.C.U. Six Days Trial team prize. The twin-cylinder is, therefore, a departure from all previous models, though, as various features have been tried out



The adjustable tappets are so designed that they exclude grit and are particularly simple to manipulate.

for a period of nearly three years, it cannot be looked upon as an experimental or untested machine.

A cursory examination gives one the idea that the design was carried out by experienced riders, and this impression was distinctly strengthened by close inspection of detail work.

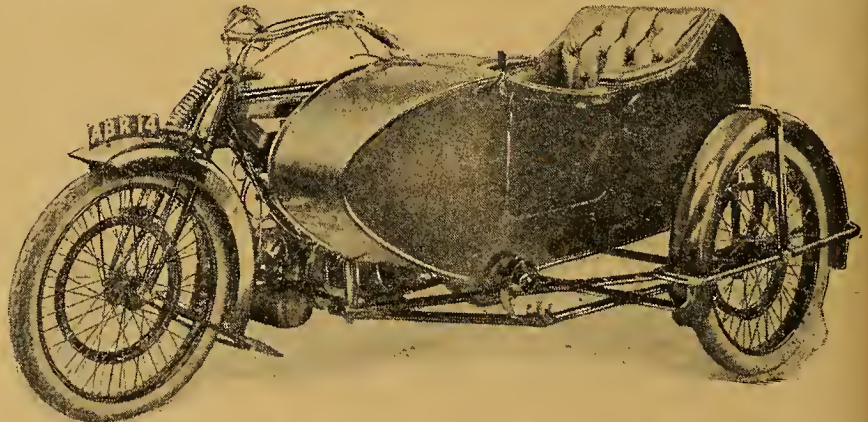
Engine Details.

Externally the engine displays no very novel features, except that it is more than usually clean in appearance, being devoid of excrescences and dust-retaining crannies. The cylinders, which are set at 50°, are distinctly reminiscent of B.S.A. single-cylinder engines. Integral heads and cylinder barrels are used, and the radiating fins are of sensible proportions. This point deserves special mention, as of late years there has been an entirely mistaken tendency towards very thin ribs, with roots too light in section to carry away the heat from the walls. All valves are interchangeable, and the ports are extremely well designed. Valve operation for both cylinders is by means of rockers actuated by a single inlet and exhaust cam, the intervening tappets being well worth a short description. Each tappet has lugs or ears, which engage with corresponding slots in the hardened steel guide. This prevents the spindle from revolving, and consequently eliminates the use of a third spanner for adjusting purposes. The lower or lock-nut for the tappet head has a skirt sliding over the outside of the tappet guide, which effectually protects the slotted portion from dust and grit. The tappet head, which is concentric with the valve stem, is reduced in weight as much as possible.

Mechanical Lubrication.

Inside the timing case is a second two to one wheel, which serves the double purpose of forming the primary drive for the magneto and rotating a pair of worm gears, whose duty is to drive the mechanical oil pump.

This pump is of the oscillating plunger type, and has the advantage of eliminating all spring loaded valves. Oil is sucked from the tank through an adjustable sight feed lubricator, and is thus pumped to a distributer placed between the cylinders. The purpose of this distributer is to divert a certain proportion of the lubricant on its way to the crank case, and to direct it into a well surrounding the base of the front cylinder, into which the skirt of the piston dips; in addition, the baffle plates are only



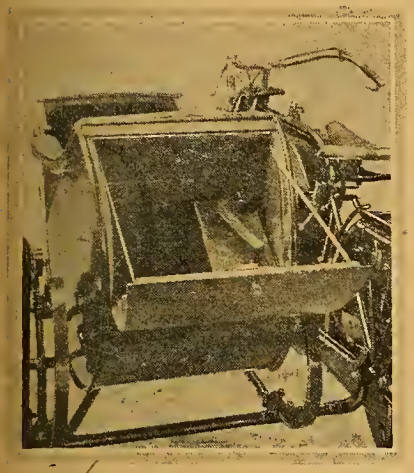
The sidecar is exceptionally large, and is of substantial construction, embodying four-point attachment.

A 6 h.p. Twin B.S.A.—

present in the case of the rear cylinder, and, consequently, even lubrication is assured. A normal hand pump is fitted for emergencies.

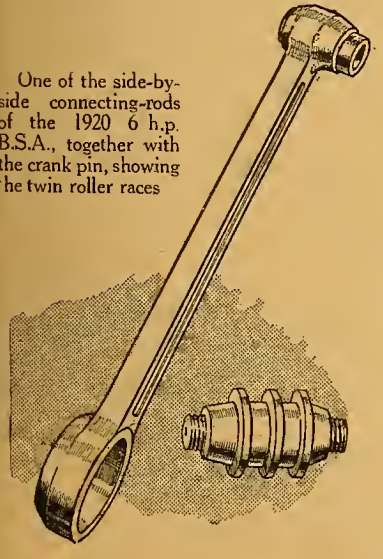
Chain drive is employed for the magneto, or a Magdyno may be fitted if desired. The long pistons carry two narrow rings at the top and two oil grooves at the bottom, a spring ring fixing being employed to secure the hollow gudgeon pin.

Phosphor bronze small end bearings are fitted to the H section connecting rods, the latter being slightly off-set to permit the use of side-by-side roller bearing big ends. Large diameter flywheels impart a steady turning motion to the ball bearing crankshaft, and felt retaining washers prevent the escape of oil from the mainshaft bearings.

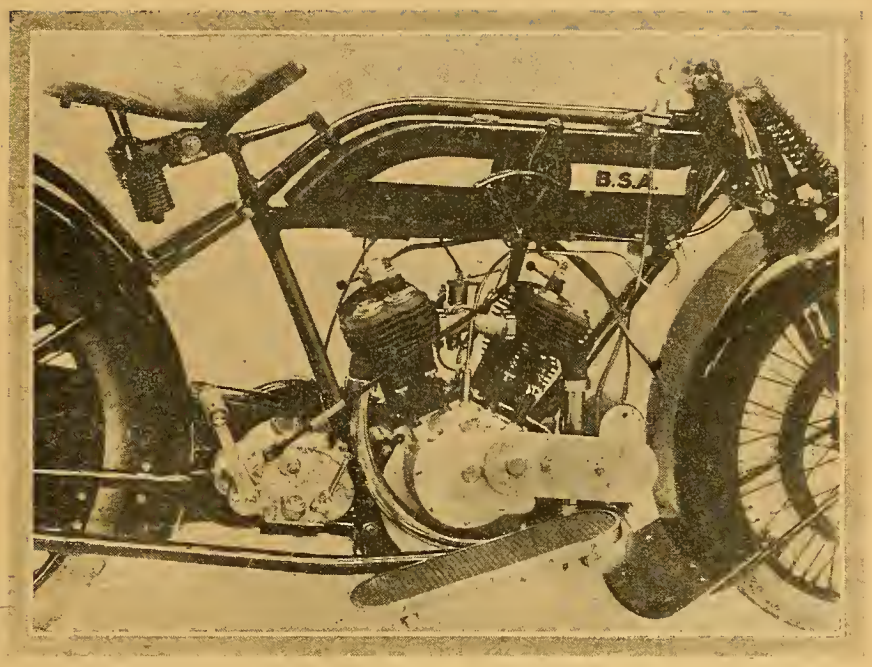


A capacious rear locker is a feature of the new B.S.A. sidecar.

In order to ensure accurate machining, there are no blind holes in the timing cover, the exposed spindle ends being covered by special caps. One other feature of the engine, the inlet pipe, deserves special mention. It is cast with a view to eliminating all sharp corners.



One of the side-by-side connecting-rods of the 1920 6 h.p. B.S.A., together with the crank pin, showing the twin roller races



The timing side of the B.S.A., showing the new and accessible gear box and the spring seat-pillar.

One flange is secured to the inlet port by a screwed ring and a similar fixing is utilised for the second flange, but, before this is screwed home, all chance of air leakage is avoided by the use of a special sleeve screwed into the inlet port which can be adjusted outwards to meet the flange.

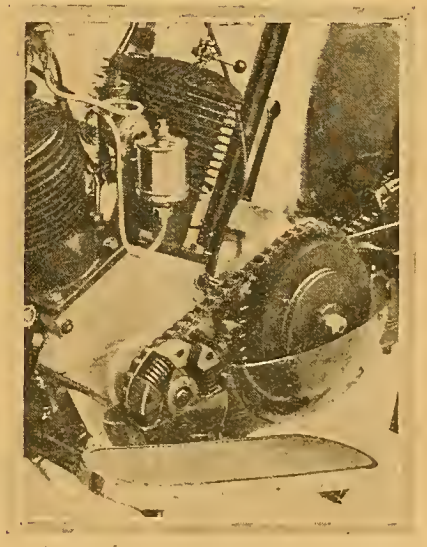
New Type of Clutch.

Transmission is by $\frac{5}{8}$in. × $\frac{3}{8}$in. chain throughout, the B.S.A. cush drive being incorporated with the engine sprocket, and an internal expanding brake with the rear driven sprocket.

A seven-plate Ferodo-faced clutch transmits power to the gear box, which has been redesigned in detail. The kick-starter mechanism is now entirely enclosed, a spring tooth ensures easy engagement, and the pedal is returned by an enclosed clock spring. The gear striking mechanism is also enclosed and embodies a simple quadrant, locked by a spring plunger which positively ensures correct gear mesh at all times. Another refinement is the fitting of an oil filler hole at such a level as to prevent overfilling of the gear box. It should be added that all gears are constantly in mesh, the change of ratio being effected by dog clutches.

One of the neatest features of the machine is the system employed for obtaining detachable and interchangeable wheels. Taking the rear wheel as the most interesting example, the combined sprocket and brake drum is mounted on the chain adjusting mechanism, and rotates on a roller bearing entirely separate from the wheel hub. The drive is transmitted through serrations on the drum, which engage with internal serrations in the hub, a distance washer taking up the lateral motion necessary for detaching the wheel when the spindle is withdrawn. A small point indicative of careful design is instanced by the construction of the chain adjusters, which are of exceptional strength and spigoted into the forked lug in such a manner that it is impossible for them to drop out. All wheels are shod with 28in. × 3in. Dunlop extra heavy tyres, or Palmer light car tyres, in each case fitted to flat base rims.

Both cycle and sidecar wheels are interchangeable, and for this reason a dummy rim, to suit the inverted front brake, is fitted in each case.

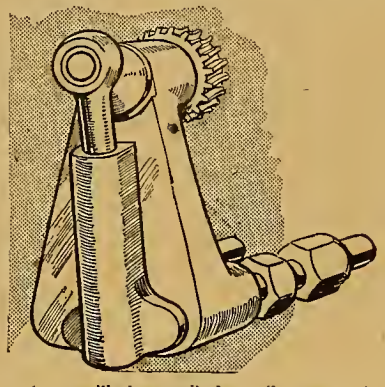


There is no unanimity among designers regarding the position of the shock absorber. Those responsible for the new B.S.A. favour the engine-shaft.

A 6 h.p. Twin B.S.A.—

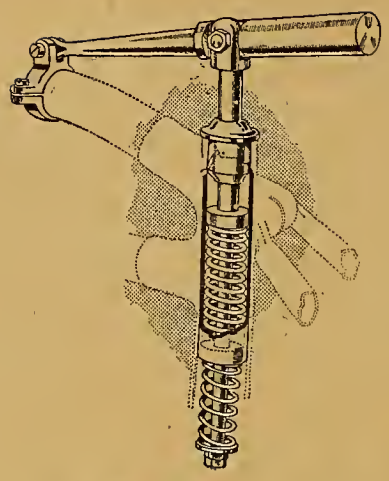
Every care has been taken to render the machine weatherproof, and 8¼in. flat guards are used both in front and rear. These guards have special valances, rolled over internally to provide channels to conduct liquid mud to the lowest point of the guard, and a special front mud shield forms an additional protection for the engine and rider.

Cast aluminium cases, made in four parts entirely enclose both driving chains, and, in spite of the fact that they are very readily detachable, special facilities for lubrication and drainage are provided.



An oscillating cylinder oil pump is employed to circulate the lubricant, and is enclosed in the timing gear cover.

The two outstanding features of frame construction are the new spring forks, in which the rebound spring has given way to a considerably longer and more flexible compression spring, and a very neat and simple spring saddle pillar. This latter consists of a beam hinged at the front end to the top tank tube, and carrying the saddle at the rear. The centre of the beam is supported by a coil spring, in compression with, in addition, a rebound spring. The whole of the spring mechanism is enclosed and protected by the saddle tube, though it is easily removable for inspection or lubrication.

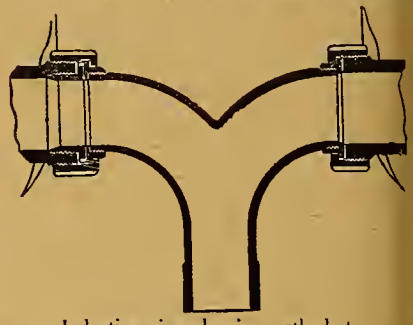


Spring seat-pillar on the new twin-cylinder B.S.A. It will be noticed that the springs are completely enclosed in the saddle tube of the frame.

The tank holds over two gallons of fuel and three pints of oil. Sidecar lugs are, of course, incorporated with the frame. With regard to fittings and finish, it is only necessary to remark that these are well up to the B.S.A. standard of excellence.

Amongst the various items which give proof of careful and practical design, the large aluminium silencer may be mentioned. This is so arranged that the gases from the cylinders enter at one corner of a rectangular receptacle, and are led round a baffle plate, finally leaving the chamber by means of a long tail pipe attached to the same side as the entry pipes. A large inspection plate on the end opposite to the pipe bosses enables the chamber to be inspected or cleaned, but it should be emphasised that there are no narrow slots or holes to become choked by oily exhaust gases.

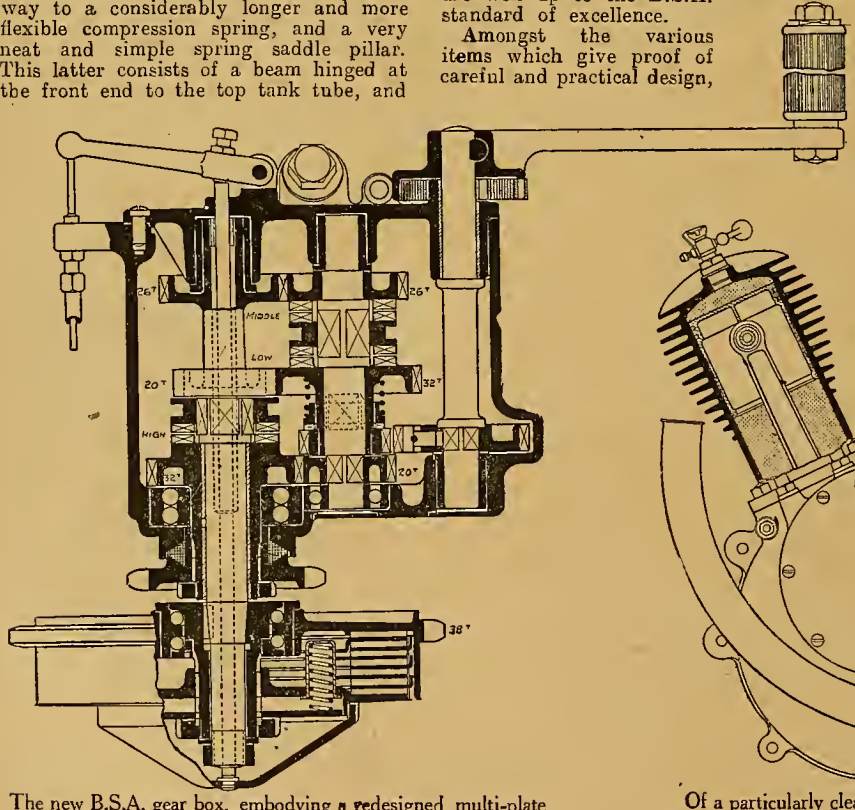
All the exhaust valve lifting mechanism is enclosed in the timing gear case, the cable attachment projecting from the top of the cover in such a manner as to prevent oil leakage, and the timing cover plate is spigoted for the greater part of its periphery. In fact, every possible precaution has been taken to render the engine clean and oil-tight.



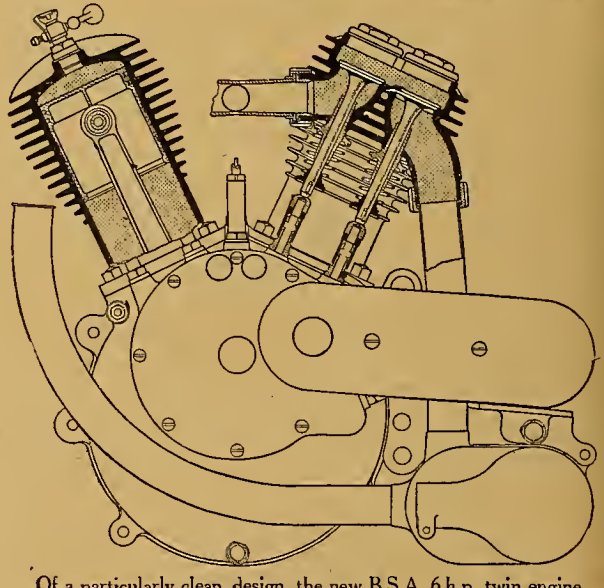
Induction pipe, showing method of obtaining air-tight joints.

A special sidecar has been constructed to suit the machine; the lines are pleasing, and the body is particularly roomy and well sprung, leaf springs being fitted in front as well as at the rear. Four points of attachment are provided.

It should be noted that, although this new model will be exhibited at Olympia, delivery will not commence before next February. A limited number of demonstration machines will, however, be in the hands of B.S.A. agents a little earlier.



The new B.S.A. gear box, embodying a redesigned multi-plate clutch. Engagement of gears is by dog clutches.



Of a particularly clean design, the new B.S.A. 6 h.p. twin engine has many features revealing road experience.

FAST SPEEDS AT STILE COP.

Well-contested Events at Wolverhampton M.C.C.'s Open Hill-climb.

FAST times were again recorded on Saturday at Stile Cop. The Wolverhampton M.C.C.'s hill-climb is usually a very sporting affair, and last Saturday's event, in spite of the fact that the number of representative makes of motor cycles was rather limited, provided some fine sport.

Before the times were announced, it was obvious that Dance's 3½ h.p. Sunbeam was the fastest machine there. In the class for solo machines, single or twins up to 600 c.c., he made the best time of the day, roaring up and literally bounding across the tape at 56½ m.p.h.

In the lightweight classes the performances on the Levis were consistently good, especially R. E. Pugh on his 2½ h.p. mount. The majority of the machines of this particular make were 2¼ h.p., and, although good times were made on these, the slightly larger bore of the former made a bigger difference than might have been expected. There was a variation of 7s. in the times of Pugh and Butterfield in Class 3, and both machines were in remarkable fettle. H. Taylor on his 2½ h.p. Diamond, in spite of physical disability, made good time. Class 4 for solo machines up to 350 c.c. afforded conclusive evidence that a two-stroke can hold its own against the four-stroke type. Entered in this class there were two particularly "hot stuff" singles in Dance's 2¾ h.p. Sunbeam and G. E. Boston's 2¾ h.p. A.J.S., and against them was pitted Kuhn's 2¾ h.p. Levis, incidentally the same bore and stroke as the Sunbeam—75 × 79 mm. Although there was a difference of 8s. between Dance's and Kuhn's time, it must be conceded that the Levis did remarkably well. Dance's 51⅘s. was actually faster than many of the 3½ h.p. machines. In fact, with the exception of De la Hay on his 3½ h.p., no other rider excelled this speed. The healthy roar of the Nortons as they came up the hill was audible evidence that the Sunbeams had formidable competitors to deal with. H. S. Noakes and C. Sgonina were the fastest on this make, the former, in Class 6a, making good time against the invincible Dance.

In Class 7 (expert and general), O. Wade, on a 2¾ h.p. A.J.S., was only 7⅖s. behind De la Hay's 3½ Sunbeam—a good performance.

The first and second places in the unlimited solo class (experts barred) were taken by Nortons, Noakes crossing the tape in 53⅖s.

G. Dance (3½ h.p. Sunbeam) making fastest time of the day in Class 6a.

O. Wade, who gave a good performance on his 2¾ h.p. A.J.S.

RESULTS ON TIME (HILL ABOUT THREE-QUARTERS OF A MILE.)

CLASS 1.—SCOOTERS.

Walk over.	O. G. Beman (Autoglider)	81⅘s.

CLASS 2A.—SOLO. 275 C.C.

1.	A. Butterfield (2¼ Levis) ..	70s.
2.	H. Newey (2¼ Levis)	127⅗s.

CLASS 2B.—EXPERTS BARRED.

1.	W. Savage (2½ Sun-Villiers) ..	74⅘s.
2.	A. Butterfield (2¼ Levis) ..	85s.

CLASS 3A.—SOLO, 300 C.C.

1.	R. E. Pugh (2½ Levis)	60⅘s.
2.	W. H. Butterfield (2¼ Levis) ..	67⅘s.

CLASS 3B.—EXPERTS BARRED.

1.	A. Butterfield (2¼ Levis)	68⅖s.
2.	W. Savage (2½ Sun-Villiers) ..	72⅖s.

CLASS 4A.

1.	G. Dance (2¾ Sunbeam)	51⅗s.
2.	G. Kuhn (2¾ Levis)	59⅗s.

CLASS 4B.—EXPERTS BARRED.

1.	G. E. Boston (2¾ A.J.S.)	58⅗s.
2	H. L. Heath (2¾ A.J.S.)	61s.

CLASS 5A.—SOLO, 500 C.C.

1.	G. Dance (3½ Sunbeam)	46⅕s.
2.	T. C. De la Hay (3½ Sunbeam)	51⅘s.
3.	H. S. Noakes (3½ Norton) ..	54⅕s.

CLASS 5B.—EXPERTS BARRED.

1.	H. S. Noakes (3½ Norton) ..	54⅘s.
2.	C. Sgonina (3½ Norton)	56s.
3.	G. E. Boston (2¾ A.J.S.)	58⅗s.

CLASS 6A.—SOLO, 600 C.C.

1.	G. Dance (3½ Sunbeam)	46s.
2.	T. C. De la Hay (3½ Sunbeam)	52⅗s.
3.	H. S. Noakes (3½ Norton)	54⅗s.

CLASS 6B.—EXPERTS BARRED.

1.	H. S. Noakes (3½ Norton)	53s.
2.	G. W. Walker (3½ Norton) ..	57⅘s.
3.	H. C. Heath (2¾ A.J.S.)	58s.

CLASS 7A.—SOLO, UNLIMITED.

1.	T. C. De la Hay (3½ Sunbeam)	49⅘s.
2.	G. Dance (2¾ Sunbeam)	55⅕s.

CLASS 7B.—EXPERTS BARRED.

1.	H. S. Noakes (3½ Norton) ..	53⅖s.
2	C. Sgonina (3½ Norton)	54⅗s.

CLASS 8.—SIDECARS, 500 C.C.

1.	G. Dance (3½ Sunbeam)	59⅗s.
2.	R. Brown (3½ Sunbeam)	72s.

CLASS 9.—SIDECAR, 600 C.C.

1.	G. Dance (3½ Sunbeam)	58⅕s.
2.	J. Dudley (4 Sunbeam)	59⅕s.

CLASS 10.—SIDECARS, UNLIMITED.

1.	G. Dance (3½ Sunbeam)	58⅘s.
2.	J. Dudley (4 Sunbeam)	59⅗s.

All three sidecar classes were won by G. Dance on a 3½ Sunbeam, and, as a grand finale to an afternoon's "deck-sweeping," he probably gave in Class 9 his best performance of the day. Whether this was adjudicated by the committee as the best performance, however, was not known at the time of writing; but to have taken a sidecar and passenger up Stile Cop, at over 44 m.p.h. on a 3½ machine, was unquestionably a fine feat—a fitting climax to the day's sport.

C9

THE SCOTT SPORTING TRIAL.

A Ceaseless Succession of Abnormal Gradients, Surface, and Watersplashes.

The Ilkley team (J. E. Walker, W. Moore, H. W. Sellers) all mounted on 3¾ h.p. Scotts, riding in close company on a typical stretch of moorland road They secured the amateur team prize.

NEVER within our long experience of North-country trials has a purely local event excited so much interest and received such ready support from all comers as the Scott sporting trial, which took place this week-end, with the Red Lion Hotel, Burnsall village, as general headquarters. We arrived at Burnsall the night before the trial, and discovered we were fortunate in having booked sleeping quarters, as not only the hotel, but every available bed in the village, were booked up by the various patrons of the event.

Meeting Mr. Dovener, secretary of the Scott Motor Cycle Co., at the hotel, we were informed that there was some possibility of a team of scooters competing, but this did not materialise. An entry of seventy-four competitors had been received by the organisers, out of which over fifty started. We were also informed by Mr. Dovener that Pathé Frères were to immortalise the titbits of the course, including Dob Park watersplash and the Scar, and, this being so, the many competitors who failed at these points at any rate have the doubtful satisfaction of knowing that their failures will afford amusement to many.

Troubles Begin.

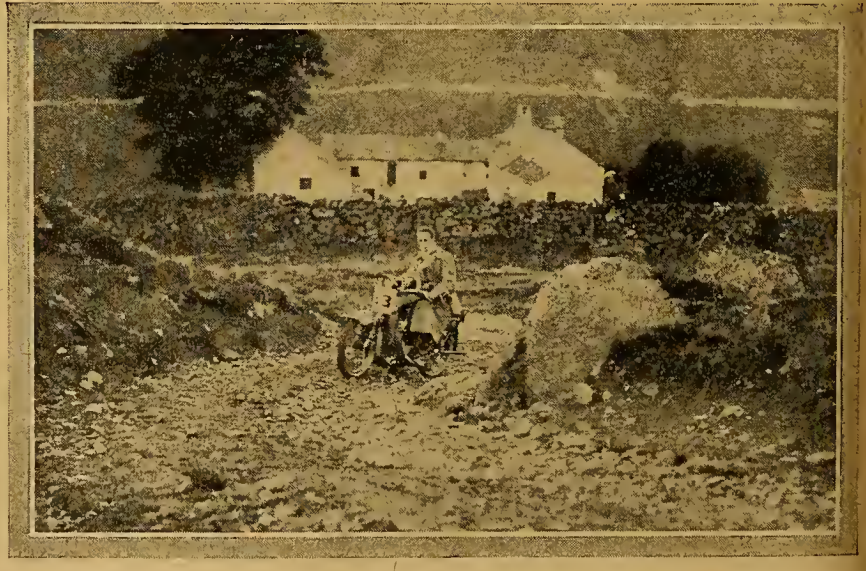
A touch of frost and a cloudless sky greeted us on the morning of the trial. Arriving at Churchtown, just outside Bradford, we found a large number of competitors already assembled, the many interesting and attractive machines drawing a surprisingly large crowd of spectators. The first man was started dead on time, and, leaving Otley, our troubles very early commenced. Approaching Dob Park all semblance of a road speedily vanished, and one of the titbits of the day—Dob Park watersplash—was immediately encountered. A huge crowd was assembled here to see the fun, and fun it assuredly was. An observer with a red flag was posted to prevent jamming, and competitor after competitor stuck in mid-stream. The water was perhaps 9in. in depth, the bed consisting of boulders, mostly about the size of a man's head, and emerging from these impossible conditions one was instantly greeted by rough cobbles on a 1 in 3 gradient. A truly appalling test hill of over a mile in length followed, and included several difficult corners, while the surface consisted of sods, sand, and stones.

Dob Park Watersplash.

The best idea as to the nature of the splash can be obtained from the fact that forty-one competitors, including many T.T. and old competition riders, failed, in so far as they lost marks either by falling off in mid-stream, jamming among the rocks, or being compelled to dismount.

The following made clean crossings and obtained full marks: C. R. Hardaker (Scott), Dosher (Enfield), Bentley Rigg (Scott), Capt. Hardy (Triumph), Mortimer Batten (P. and M.), W. E. Wasling (Coulson B), W. Townshend (P. and M.), and W. Drake (P. and M.).

Let it be clearly understood that the route presented throughout not only freak hills and watersplashes, but freak surfaces of the most difficult kind, and some miles of sheep tracks now conveyed



Jesse Baker (3¾ h.p. Scott) approaching an especially appalling surface concealed behind the bend

Hey Slack watersplash. The rider is H. Mortimer Batten (3½ h.p. P. and M.), who was one of the few who successfully negotiated the spot.

us *via* Blubberhouses to Pock Stones Moor. Another watersplash at Hey Slack followed by a stunning little rise caused many to lose marks. Here twenty competitors failed completely, while only fourteen obtained full marks.

The way over Pock Stones Moor consists of about six deep ruts overgrown with rushes, which obscure swamps and loose boulders, and many competitors fell during this difficult part of the run. Gradually the going improved, however, and arriving eventually at Burnsall we were greeted by a very excellent and welcome supply of sandwiches and hot coffee served in the bar room of the hotel.

After leaving Burnsall a competitor collided with a car, and the next man, Capt. G. Walker (4 Triumph), with the true sporting spirit infused by the Scott organisation, promptly retired in order to assist the unfortunate one.

An Alpine Route.

From Burnsall the route lay by Malham, up the steep rise across Ewe Moor to Dambrook, which was the next observed hill on the route. This hill is a grass rise about a mile in length, including two hairpins presenting the usual sheep track difficulties. Fortunately, the ground was dry, and very few failed, but arriving at Park Rash, *via* Kettlewell, any number of competitors who had clean sheets hitherto now met their Waterloo. Park Rash itself is a really terrible hill, the gradient being about 1 in 4 for 200 yards with two right-angled bends, while the surface consists of loose stones on a shifting bed of more loose stones. A possible track of about 8in. in width exists, but once bounced off this the rider has no chance whatever of making a clean ascent. Duxbury, on a Triumph, made a good and clean climb, and was the first to arrive; W. Smith (Scott) fell; "Tim" Wood collided with the wall, but restarted well; Bentley Rigg (Scott) was baulked, and had much difficulty in getting under way again; H. Hill (Scott) ran gallantly; W. Atkinson (Triumph) konked out; as also did C. Hart (P. and M.).

The following made clean ascents: J. Duxbury (Triumph), Capt. Hardy (Triumph), J. E. Walker (Scott), W. Moore (Scott), E. Wikes (Scott), Mortimer Batten (P. and M.), W. H. Clough (Scott), H. Langham (Scott), L. Gay (Scott), G. Hill (Triumph), W. Townshend (P. and M.), and J. Baker (Scott). George Wray (3½ Triumph) made his usual dramatic ascent, skidding broadside most of the way.

Miles of fly-crawls and river beds followed. The roads were the old pack roads of a departed age, long since deserted by man, or, if not, they remained as a last surviving relic of a once flourishing mining industry, for which these bleak heights were noted. Gates, stones, sheep, ruts, heather, and more stones, were the outstanding features, and branching to the right at Arkleside we experienced about nine miles of concentrated jolting and skidding, followed by what were assuredly the titbits of the day—the River Nidd and the Scar.

The latter is a freak hill, which even surpasses Park Rash in the way of the impossible. George Wray made a wonderful ascent, though he nearly committed suicide by vanishing over the precipice at one point—a most impressive performance.

Glorious weather favoured us. The event was splendidly organised owing to the unfailing energy of the Scott Motor Cycle Co., and the unstinting manner in which they ran the whole affair.

The following is a list of the competitors who started:

*A. Coupland (Scott)
J. E. Walker (Scott)
W. Moore (Scott)
H. W. Sellers (Scott)
*C. R. Hardaker (Scott)
J. Dosher (Enfield)
*E. C. Ecroyd (Triumph)
*B. Dewhirst (Triumph)
*G. Wray (Triumph)
*B. Rigg (Scott)
*C. Hart (P. and M.)
E. Wilkes (Scott)
E. Jones (Norton)
*W. Smith (Scott)
*R. W. Stanfield (Scott)
*W. H. Clough (Scott)
T. E. Oliver (Scott)
J. Duxbury (Triumph)
G. Walker (Triumph)
W. E. Haddon (A.J.S.)
D. Moore (Scott)
*Capt. Hardy (Triumph)
*W. Atkinson (Trinmph)
*G. Hill (Triumph)
H. Hill (Scott)
H. M. Batten (P. and M.)
J. Baker (Scott)
G. Dickinson (Scott)
E. S. Brittain (Triumph)
E. B. Leech (Scott)
*H. O. Wood (Scott)
*L. Guy (Scott)
*H. Langman (Scott)
W. Westwood (Triumph)
*E. Wasling (Coulson B)
*F. E. Wasling (Coulson B)
*G. A. Reed (Coulson B)
*W. E. Grange (A.J.S.)
W. Atkinson (Bat)
S. Ashby (Scott)
*T. Hargreaves (Scott)
*W. Townshend (P. and M.)
*W. Drake (P. and M.)
J. Wraith (Scott)
E. Woods (Velocette)
C. Froggatt (Scott)
—. Haggas (Scott)
*C. Wood (Scott)
Capt. Frost (Scott)
A. Grimshaw (Scott)
E. Sykes (Triumph)
C. E. Bean (Douglas)
F. W. Midwood (Omega)
J. W. Wills (James)
H. Pattison (Triumph)

* Trade rider.

RESULTS.

THE SCOTT STAFF CUP (TRADE).
(Best Solo Performance Trade Rider.)
Geoffrey Hill (4 Triumph).

THE KENNINGTON CUP.
(Best Amateur Solo.)
J. E. Walker (3¾ Scott).

THE SCOTT CHALLENGE TROPHY AND GOLD MEDALS (AMATEUR).
(For Best Team of Three Machines of Same Make.)
Ilkley M.C. (Walker, Moore, and Sellers), all on Scotts.

MYERS CUP AND GOLD MEDALS.
(Best Trade Team of Three.)
Scott team. (Wood, Guy, and Langman.)

FASTEST TIME OVER COURSE (82M.).
Geoffrey Hill (Triumph).

On the Yorkshire moors. One of the many sections of rock-strewn track encountered in the course of the run. The rider is G. Wray (4 h.p. Triumph).

Scottish Speed Championships Meeting.

EXCELLENT weather prevailed at St. Andrews, Fife, last Saturday, for the Scottish Speed Championships, and conditions generally were favourable for fast times. There was a large entry for the various events which were witnessed by a good number of spectators. As usual, the Alexanders and the Brothers Brash were well to the fore. Owing to the railway strike, photographs and a full report of the meeting were held up, but we are able to give a list of the results which are as follow:

CLASS 1.—LIGHTWEIGHT CHAMPIONSHIP.
1. D. S. Alexander (2¾ Douglas).
2. J. R. Alexander (2¾ Douglas).
3. A. E. Wills (2¾ Douglas).

CLASS 2.—MEDIUMWEIGHT CHAMPIONSHIP.
1. G. W. Glen (3½ Triumph).
2. A. Lindsay (3½ Norton).
3. O. G. Braid (3½ Norton).

CLASS 3.—HEAVYWEIGHT CHAMPIONSHIP.
1. F. W. Dixon (7 Indian).
2. D. M. Brash (7 Harley-Davidson).
3. A. T. Brash (7 Harley-Davidson).

CLASS 4.
1. A. Wills (2¾ Douglas).

CLASS 5.
1. G. W. Glen (3½ Triumph).
2. C. Duncan (3½ Norton).

CLASS 6.
1. R. Boyade (7 Bat-Jap).
2. A. B. Fairley (8 American Excelsior).

RELAY RACE.
1. Edinburgh.
2. Leven and East of Fife.
3. Glasgow.

CLASS 9.
O. B. Braid (3½ Norton).
J. A. Wood (3½ Rudge Multi).

CLASS 10.
F. W. Dixon (7 Indian).
D. M. Brash (7 Harley-Davidson).

CLASS 13.
F. W. Dixon (7 Indian sc.).
D. M. Brash (7 Harley-Davidson sc.).

The New Auto Cycle Union Chairman.

AT a committee meeting of the Auto Cycle Union held at Llandrindod Wells it was decided to elect Mr. A. W. Torkington, the hon. treasurer, chairman of the Union.

In filling this post, Mr. Torkington is well aware that a very difficult and arduous task has fallen upon him, all the more so as the late Mr. Nisbet was an ideal chairman, and his successor will have to occupy a vacancy which will be exceedingly difficult to fill.

We have known Mr. Torkington in connection with Auto Cycle Union work for the past seven years, and we know that he will do his best for the principal motor cyclists' organisation, and that the Committee would have had difficulty in finding a better man to take up the post.

During a recent interview, the new Chairman replied to our request for his views: "I want to make the Auto Cycle Union a really national institution, and that was my object in holding the general committee meetings in various parts of the country. This has, so far, proved a great success, and these provincial meetings have been heartily appreciated by local motor cyclists in the districts in which they were held."

"How long," we asked, "have you taken an active interest in motor cycle matters?"

"If you remember," replied Mr. Torkington, "I joined the Auto Cycle Union in 1912, and took up the vacant treasurership, and have since been, and am still, the Union's treasurer, though, of course, I must now vacate that post."

It was in 1912 that the Auto Cycle Union took on a new lease of life. Mr. T. W. Loughborough was appointed secretary, while Mr. Torkington took over the treasurership. At that time the A.C.U. was badly in need of reform, and these two gentlemen and other willing helpers have brought the Union to the high position it now holds.

"Naturally, the war must have kept you pretty busy?"

"Yes," replied Mr. Torkington, "the secretary, you will recollect, was a major in the Volunteers, and chief of his local special constables, and this necessitated his being away from the office for a long time, so practically the whole of the work of the A.C.U. devolved upon Mr. Otto Thomas and myself, and lately on Mr. Nisbet and myself. In addition to that, I have served three years with the Headquarters, Central Detachment of the Special Constabulary, and am still one of its members. I attended forty-six emergency calls, and was out in every air raid."

Reverting to the late chairman, we asked Mr. Torkington if the A.C.U. had any plan as to perpetuating his memory.

Mr. A. W. Torkington, chairman of the Auto Cycle Union.

"Yes," replied Mr. Torkington, "we have thought of a totally new idea. The Union has enough cups and trophies, and the last time Mr. Nisbet and I dined together he expressed his admiration of the marvellous grit and endurance displayed by motor cyclists in the arduous trials and races in which they took part, and said how valuable these attributes were in the motor cyclists who so promptly responded to their country's call, and in war, as in peace, they showed their ability to get through their task at all costs, no matter how great the danger and difficulty. We, therefore, propose to institute an award in the Senior and Junior T.T. races, which will be given to the man who finishes the race under the most untoward circumstances, and after overcoming almost insuperable difficulties. His judges are to be his fellow competitors, following the lines adopted in the Royal Navy when a man is recommended for the V.C. It is suggested that the man shall not be allowed to continue if he is suffering from severe personal injury."

Mr. Torkington has certainly started his chairmanship in the right spirit. His heart and soul are in his work for the A.C.U., and this is, of course, what matters most. He has served the Union well in the past, as he has not only been treasurer, but a member of the Finance Committee on the R.A.C. Associate Scheme, Chairman of the National Motor Cyclists' Fuel Union, which is affiliated to the Auto Cycle Union; he has represented the R.A.C. on the Advisory Committee of the National Benzole Association, and is a member of the Standing Joint Committee of the Road Transport Association, so we do not doubt for a moment that Mr. Torkington will serve the Union equally well in the future, and we wish him all success in his new position.

A Precision Motor Cycle.

FOR some time we have known that ultimately Messrs. F. E. Baker, Ltd., would produce a complete motor cycle of unique design. We have seen the machine, and can prophesy that the design will attract considerable attention. The construction, which embodies cantilever springing, is considerably in advance of present-day practice; but more we are not permitted to say at the moment.

Concurrent with the announcement that this unique machine will be placed on the market under the Precision name, comes news of more than usual interest concerning the business of F. E. Baker, Ltd. An arrangement has been made whereby a large shareholding interest in the company has been acquired by Beardmore Aero Engine, Ltd., a company allied with the famous Scottish shipbuilding and engineering company of William Beardmore and Co., Ltd. Additional capital has been provided for extensions and the adoption of a large programme of production.

The board of the company will include Sir William Beardmore, as chairman of directors, Messrs. J. C. Goodwood, C.A., and F. M. Luther, of Beardmore Aero Engine, Ltd. Mr. F. E. Baker, founder of the Precision business, continues as managing director

The Johannesburg-Durban Race.

A South African Tourist Trophy over a Difficult 421 Miles Course.

A British Lightweight Wins.

AFTER a lapse of five seasons the great event of the South African motor cyclists' year has again been held, and received enthusiastic support. The course over which the race takes place is the road (so-called) between Johannesburg and Durban, a distance of 421 miles.

Although in somewhat better condition than previously, the road in many places degenerates into a mere bush track, and several competitors suffered broken frames and similar troubles.

The start was made from City Deep Mine, Johannesburg, at 8 a.m. on the 24th ult., and the arrangements, carried out by the Rand M.C.C., were excellent; thousands of spectators witnessed the start of the forty-six competitors on their long journey.

Handicapping Equalises all Types.

The motor cycles entered were of representative makes, and of all types, and, in consequence, a careful system of handicapping had been evolved, which proved very satisfactory.

The limit man was J. P. Booth (2¼ Junior Triumph), who had 4h. 43m. start, the scratch man being P. Lawrence (7-9 Indian). Great interest and enthusiasm were manifest at various points of vantage on the route, and several exciting incidents were noted. Wolsen (3½ Hazlewood) had a bad fall near the start, but was able to continue. Dave Owen (3½ Indian) retired near Volksrust with a burst tyre, as did Carrol (4 Bradbury). Beard, riding a 4 Bradbury, broke his frame at Heidelberg.

C. H. Young (4 Triumph), when halfway, became involved in an altercation with a horse, with the result that his back forks were broken. Patching up the damage with materials obtained from some near-by iron fencing, the rider completed the course, and arrived second, averaging 36.3 m.p.h., a fine performance, under the circumstances.

Owing to the difficulty of procuring new machines, many old models were entered, one being a 1910 Bradbury, which the rider, F. Nissen, successfully piloted to the conclusion, maintaining an average of 28.9 m.p.h.

T.T. race in the Transvaal: competitors on the road near Heidelberg

British Machines Successful.

Despite the popularity gained by the products of other countries during the war, British motor cycles were predominantly successful in the event, five of the first six places being gained on them. Of the thirteen competitors who finished, ten were mounted on representative British mounts.

Percy Flook, the winner, rode a 1915 2¾ Douglas (3h. 18m. start), and completed the course of 421 miles at an average speed of 32.5 m.p.h. Flook is a well-known rider, and represented South Africa in the 1913 T.T., when he rode a Triumph. The fastest time in the race (constituting a record for the course) was made by R. Blackburn (7-9 Harley-Davidson), who averaged 36.8 m.p.h.; this speed was closely approached by C. H. Young (4 Triumph), who, with 1h. 8m. start, ran into second place, maintaining an average of 36.3 m.p.h., despite the accident and frame breakage described above.

In addition to the machines mentioned in the schedule below, the entries included many other British motor cycles, among which may be mentioned Royal Enfields, Hazlewood, Zenith, James, P. and M., Norton, and an assembled machine known as the Hilda.

C. H. Young (4 h.p. Triumph), who ran second in 11h. 17m. 20s. His average speed was 36·3 m.p.h.

Percy Flook, who won the Johannesburg-Durban handicap race on a 2¾ h.p. Douglas.

FINISHERS' TIMES AND SPEEDS IN THE JOHANNESBURG-DURBAN HANDICAP.

		Start on Handicap. h.	m.	Actual Riding Time. h.	m.	Average Speed. m.p.h
1.	P. Flook (2¾ h.p. 1915 Douglas)	3	18	12	45	32·5
2.	C. H. Young (4 h.p. 1919 Triumph)	1	8	11	25	36.3
3.	R. Blackburn (7-9 h.p. 1917 Harley-Davidson)	–	5	11	15	36.8
4.	I. H. R. Scott (3½ h.p. 1915 Rudge)	1	18	12	51	32·5
5.	J. P. Booth (2¼ h.p. 1919 Triumph)	4	43	16	30	25.1
6.	F. A. R. Zurcher (2¾ h.p. 1914 Douglas)	3	21	15	39	26.5
7.	A. Long (4 h.p. 1912 Bradbury)	1	6	13	26	30.7
8.	T. H. Nicholl (2¼ h.p. 1918 Indian)	4	13	16	54	24.6
9.	H. R. Willcocks (3½ h.p. 1915 Indian)	1	19	14	0	29.6
10.	W. A. Reckenberg (3½ h.p. 1915 B.S.A.)	1	18	14	3	29·5
11.	J. W. Price (2¾ h.p. 1915 Douglas)	3	18	16	6	25.8
12.	F. Nissen (4 h.p. 1910 Bradbury)	1	6	14	18	28.9
13.	N. Wolson (3½ h.p. 1914 Hazlewood)	1	19	14	51	28.0

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

CICETER.

Sir,—While on tour in the Cotswolds last week, I entered a shop in Cirencester. The tradesman, who has been a resident in that town for sixty years, told me that the correct pronunciation is Syrencester.

FITZWATER WRAY.

WESTON SPEED TRIALS.

Sir,—May I point out that I have no connection whatever with the motor trade, and that the overhead valve steel cylinder fitted to a B.R.S. model Norton, and illustrated in your issue of September 4th, was entirely of my own design and manufactured by myself?

I may say that the whole conversion was an experiment, and has proved entirely satisfactory. C. SGONINA.

MOTOR CYCLE SPEEDS.

Sir,—Being a regular reader of your paper, I happened to notice in your issue of May 15th a question asking the fastest speeds of a car and a motor cycle.

You state the cycle record at 93.48 m.p.h., and accomplished by S. George. I should like to state that an American Excelsior, officially timed, has obtained a speed of over 100 m.p.h., and until recently was the only machine to attain such a speed.

Also in the issue for May 8th you state that Ray Creviston attained a speed of 92½ m.p.h. This was his speed while attempting to lower Lee Hummston's road record of 94.47 m.p.h., accomplished in 1912—a year which could not boast of many fast machines. Hummston's record was also made possible by the help of an Excelsior motor cycle. I have ridden an Excelsior for the past three years, and find that it is an ideal machine for overseas work. J. C. KYLE.

New Zealand.

[The record to which we alluded is the British record made on Brooklands, and passed by the B.M.C.R.C.—ED.]

PROFITEERING.

Sir,—With reference to the steps that it is understood the manufacturers propose taking to prevent profiteering by agents of their motor cycles or light cars, it has occurred to us that a section of the public are almost as bad in this respect as the agent.

Our experience is that when customers are advised that the motor cycle or light car to their order is ready for delivery, we find in some cases the following week an advertisement in one of the public journals offering this particular machine or car for immediate delivery at either a very high premium, or inviting offers over a certain figure.

To overcome this, we would suggest that the manufacturers bind the agent to sell their productions at the makers' list price, and the agent, in his turn, bind the purchaser not to resell, under a penalty, within three months of date of purchase. We think if a plan of this kind were adopted that the real user would be able to purchase his vehicle or motor cycle at the makers' price, and would help to put a stop to the inflated prices that are at present obtained.

We recently advertised a number of military models of a certain make at the makers' list price, but soon found that these were being purchased by private people presumably for their own use, but really to resell at a greatly increased figure. To stop this, and so that the genuine user should get the benefit of the machine at the makers' price, we submitted an agreement whereby the purchaser agreed, under a penalty of £25, not to resell under three months from date of purchase without first giving us the option of purchasing back the machine at the price paid for it. This was much appreciated by the genuine user, but greatly objected to by the private profiteer.

We do not know why the manufacturer could not embody a clause of this kind in his agreement to the agent, and that the agent obtains an undertaking similar to the above from the ultimate purchaser. We should very much like to have the views of your readers on this matter, as we feel it is a question which should be thoroughly threshed out.

H. TAYLOR AND CO., LTD.,
H. TAYLOR.

STANDARDISATION OF CONTROLS.

Sir,—Having read your article on the standardisation of controls for motor cycles, particularly those of the carburetter, I think it is quite time manufacturers did something of this sort.

I do not agree, however, with one of your correspondents that throttles should open inwards, as a moment's consideration will show him that striking the handle-bars on that side would at once open up the engine.

My father last week had an accident on a Rex-Jap fitted with an Amac carburetter, through striking the throttles against a wall in turning a corner. He had an empty sidecar, and it lifted on turning to the left. On shutting off the engine (outwards) and turning to the right to bring the car down, the throttles grazed the opposite wall and opened, starting the engine, throwing him, and smashing the sidecar to pieces against another wall.

Perhaps some other of your readers have experienced the same trouble, and would also write against it.

Camborne. OUTWARDS.

COURTESY ON THE ROAD.

Sir,—I beg to draw attention to something which has almost disappeared during the war. This something is courtesy and comradeship on the roads.

Before the war one could set out assured of the fact that should he have trouble he would receive at least an offer of assistance from any passing motor cyclist.

Broken down in 1914 in the snow, as a cavalry trooper, I received assistance from a brigadier-general and a lady who were passing in a sidecar outfit. This will illustrate the extent to which pre-war comradeship of the road was carried.

Two recent experiences of mine. Coming across a soloist in trouble on a wet Sunday afternoon, I pulled up and offered assistance. Upon examination of his mount I concluded the plug was at fault. He had no spare and I lent him a new aero plug. Having no kick-starting device, he pushed his machine along, and rode off without a word. I could have followed him, of course, but my feelings can better be imagined than described. Later on, in a town, I came upon a soloist arranging himself after a spill. I called out the customary "all right?" got no answer, and came off on the tramlines. While I was getting up, the other fellow rode off. Bitten twice in one afternoon!

As one of the older school of motor cyclists I am getting disgusted. No one can afford to be selfish and ride by an unfortunate comrade with his nose in the air The machine that never breaks down has yet to be made. Upon reflection, I am not so sure that we are comrades, for we are friendless and cold enough goodness knows, almost hostile at times.

A few words on the subject from a more able writer than myself would be appreciated very much by LU 2601.

THE A.B.C. AT WESTON-SUPER-MARE.

Sir,—We have been requested by the manufacturers of the magnetos fitted to the A.B.C. motor cycle to correct an impression that was conveyed in your report on the Weston-super-Mare speed trials, contained in your issue of September 4th.

In this report, and referring to the acceleration capabilities of the A.B.C. machine, you stated, "Unfortunately, a defective magneto spoilt all chances of Emerson in this event, and practically all the running was done on one cylinder."

Subsequent tests of the two different magnetos that were tried have proved that they were perfectly satisfactory for the conditions under which they were designed, *i.e.*, all classes of touring work; but, in the conditions under which they had to perform in this speed trial, wherein a high compression ratio was used, and fairly wide plug points, the spark was found to take place across the safety gap instead of across the plug points.

With the safety gap slightly increased to suit the high compression ratio in the cylinders, the magnetos functioned perfectly at all speeds within the range of the engine.

A.B.C. MOTORS, LTD.,
GRANVILLE BRADSHAW, Engineer and Manager.

SPARE PARTS.

Sir,—Your correspondent, A. Bevan, has my sympathy. The public is constantly being lectured on the supporting of home industries, but is it not the treatment that one so often is subjected to by British firms that drives us elsewhere? True it is that minor orders are respected and attended to in a business manner by many firms, and those firms alone are worthy of our support.

I have owned for the past few years a 3½ h.p. cycle made by a firm of repute not a thousand miles from Lincoln, and whether the part required be a rocker arm, wheel rim, or petrol tap I have received it per return. Such a firm is worthy of consideration, and when its prices are taken into account there is nothing to fear in the event of the 33⅓% duty being taken off. JAS. REECE.

Sir,—I have been noticing in your paper lately letters from various people about spare parts from the makers. I have a 3½ h.p. twin Humber. I went to the makers about various things, and found them most obliging. They retuned my machine while I waited, overhauled the carburetter, and put in several new parts at an extraordinarily low price. Whenever I have written to them for spares, I have always got them by return post.

I do not think there are many makers who can beat them for promptness, and I wish them every success, and I feel sure that such treatment deserves publicity.

E. W. FLINT.

Sir,—Noticing a few letters in *The Motor Cycle* re "Spare Parts," I should like to mention my own experience. I have a 2¾ h.p. Douglas, which, owing to being driven fairly hard, requires spares pretty frequently. I always apply for these to Robinson's Garage, Cambridge, whom I consider to be exceptionally quick and businesslike in all their dealings, and to deserve the patronage of all Douglas owners requiring spares.

I might add that I have no connection whatever with Robinson's Garage, and that it is only a coincidence that my name is M. J. ROBINSON.

I have read with great interest the various letters upon the supply of spare parts, and, with no connection beyond being a satisfied owner of a machine made by the undermentioned firm, give my experiences.

Some few weeks ago, from my home in Stirlingshire, I wrote to Messrs. Butterfields, Ltd., for two small nuts for my carrier. These I was agreeably surprised to receive within three days of my order. Later I again had occasion to write for two exhaust pipe nuts, being then in remote Argyllshire. I received these in five days.

As a point of interest, I might mention that my consumption works out at 135 m.p.g. on long runs and about 110 to 115 m.p.g. on short trips, on half petrol and half benzole. The machine is a 1915 single gear Baby Levis, fixed ignition, and Amac carburetter, but lately my m.p.g. has been spoiled by the atrocious roads of Argyllshire. Climbing Rest and Be Thankful eats up the fuel!

Ardgartan, Argyllshire. LM 2904.

Sir,—I should be very pleased if you would allow me a small space in your valuable paper to say that there are still a few firms who will do repairs quickly.

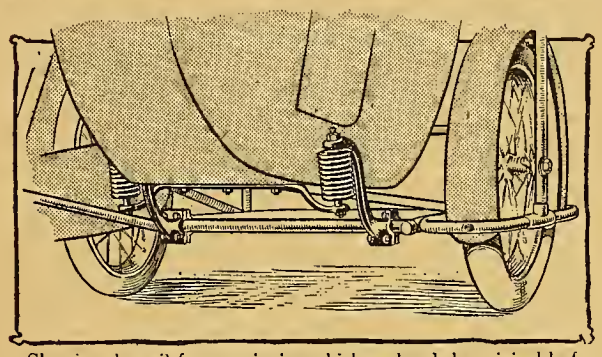
A few days ago I was unfortunate enough to stop a motor car with my little Radco, and, of course, I came off worst.

I took the machine to the makers, Messrs. Radnall, of Birmingham, on a Monday, and by the following Thursday the machine was ready for the road, and the price they charged was exceedingly moderate.

I may say I have no connection with the above firm, except that of a highly satisfied customer. L. VERNON.

SIDECAR SPRINGING.

Sir,—The accompanying photograph shows an improvement I have made to my Matchless sidecar, which not only allows more weight to be carried, but gives a beautiful soft springing movement which I have not experienced on any other sidecar. I had the arm which holds the coil springs made out of steel and exactly the same size as the two leaves in the original leaf spring. The coil springs used are the same as on the rear of the sidecar. The bar which is secured



Showing the coil front springing which replaced the original leaf springs on a Matchless sidecar.

to the bottom of the sidecar is replaced by one with a drop of about 3in. to raise the sidecar to the correct height in front. There is nothing in this arrangement which can bend, therefore the sidecar is always at its correct angle. The slight side lash which one gets is not sufficient to affect the steering adversely, and to my mind it improves it. A friend of mine who is a Matchless rider is so pleased at the result that he is having his machine similarly altered. The alteration cost me 28s. I am sure there are a good number of your readers who will endorse my statement on the weakness of the front springs, and who will find this a great improvement.

Stratford, E. C.M.

THE JUNIOR TRIUMPH AS A MOUNT FOR THE MAIMED.

Sir,—I see in *The Motor Cycle* some notes on the 1919 Triumph.

I am on the wrong side of the half hundred. In 1913 I got a three-speed B.S.A. that never gave me any trouble. I was rather handicapped as, through an accident at sea, I had lost the thumb and first finger of my right hand. In 1916 on Naval duty I got my left arm smashed in two, and they had to remove the humerus. A well-known London specialist I was under told me I should never be able to use my left arm again, and was never to attempt to ride a bicycle or motor cycle again. I cannot get my arm up or behind me. I sold my B.S.A. and was laid up for some months. I then went back to my naval coast watching duty on the rough coast of South Wales, and, at last, started to ride my bicycle. I heard of a Douglas two-speed for sale and bought it, then sold it and got a 1917 three-speed Douglas, which was a lovely mount but was too heavy for me with no arms to speak of. In July last, I got, through a friend's advice, a 1919 Junior Triumph, and sold my Douglas. It is a revelation to me; it is so light and handy and so easy in traffic and takes me up most hills on top. I was so pleased with it that I determined to get a second hand 1919 model the first chance I got, which I managed to do a couple of weeks ago.

I used to hunt a great deal, but can never ride to hounds again. I now get to a great many meets of otter and stag

hounds; and, as I know the country, I see a great deal of hunting on it, over rough roads and tracks. I can pedal it away in a few yards, and it is a godsend to me, as I feared I should never be able to see hounds again.

Anyone who is a bit on the ancient side, or nervous, or has not the proper use of his arms cannot do better than try a new 1919 Junior Triumph. I have no interest whatever in the company, but just give my experience for what it is worth.

D. J. W. EDWARDES.

A CANDID CRITICISM.

Sir,—While agreeing with Major Kennedy as regards the desirability of simplifying handle-bar controls, I certainly do not think many riders will fall in with the alternatives he suggests. He says in effect—

(1.) "The air lever I have never found any use for, as the carburetter is entirely automatic"; and later, "Why not fit a hand-controlled air slide on the carburetter itself?"

If the air lever is useless, why fit it anywhere?—though I venture to think that as winter comes on Major Kennedy will find some use for this control.

(2.) "The magneto control might be fitted on the tank, as it is seldom necessary to use it?"

Evidently Major Kennedy is not a sidecarist. If so, and he had this lever on the tank, he would very soon want it back on the bars. A machine has to be laid out for all conditions, and no competition rider would be very keen on a tank magneto lever, which is apt to be required in the twinkling of an eye.

Again, even if these levers are seldom used, it seems to me that they might as well be on the bars in a properly accessible position as anywhere else.

The Triumph merely conforms to everyday practice as regards its handle-bar controls, and one really fails to see how any practical simplification could be made. One does not require to use all the controls at the same time, and, this being so, why place some of them in obscure and inaccessible places, falsely gratified with a sense of having simplified matters? I once collided with the back of a London omnibus through searching for the twiddley little air lever of a new Indian I was riding for the first time, and now prefer everything visible and above board.

I do not think Major Kennedy's petrol consumption is quite up to the average. I used to do 105 m.p.g. regularly riding solo. The new P. and M. I am now riding does 96-100 m.p.g. with a sidecar in the Highlands, which I think tops anything I have ever previously experienced.

Such candid criticisms as the one I criticise are refreshing.

CHINOOK.

311 M.P.G

Sir,—Upon first reading the letter from your correspondent Mr. Hudson, I thought I would reply in detail. I think, however, that I can explain the matter simply to him and quite briefly.

When a carburetter is flooded and a few minutes allowed to elapse whilst the machine is wheeled, the results of flooding disappear. To obtain easy starting it is of no use to flood a carburetter long before it is required. The petrol is then in a state of equilibrium, and excess which overflows the jet has dripped out and evaporated. If the level in a tube feeding the float chamber is taken and found quite stationary *before* starting the test, and the level is allowed to become stationary *after* the test, it is obvious that the conditions are the same, as the float chamber must have filled itself from the tube to the same level. The engine suction cannot suck the float chamber empty without the testing feed tube level dropping, and this level becomes quite stationary after each test.

Mr. Hudson's suggestion that a large float chamber would enable no consumption of petrol to be obtained on a half-mile run is ludicrous because the float chamber is kept at the same level before and after by the petrol running in from the tube.

Surely Mr. F. A. Hudson, A.M.I.C.E., is aware that consumption varies continually to an enormous extent, and that to obtain very low consumption over short distances where very small power is being used is not unusual in a well-designed machine.

The 40-50 h.p. Rolls-Royce car which did twenty-four odd miles per gallon, with a weight of about two tons and over hilly roads for a long distance and *not* slowly, is far more remarkable than almost anything I have experienced. The

SIX UP ON A SIDECAR.

The 8 h.p. New Imperial sidecar depicted above belongs to a Leicester enthusiast, who regularly carries his wife and four children. We are informed that the two small passengers in th "dickey" are quite comfortable

results were officially observed by the Royal Automobile Club, and possibly Mr. Hudson might like to take the matter up with them!

Your correspondent was present all through the test, actually drove me to the spot and converted the figures into m.p.g. for me later in the afternoon without a word upon the subject. He possibly finds it more interesting, for some strange reason, to wait until he reaches home, and then write to John—I mean *The Motor Cycle*, about it.

A. M. LOW (Major, R.A.F.).

THE LIGHTING REGULATIONS.

Sir,—One wonders, when reading the letter signed by your correspondent "Liberum Arbitorium," if he ever used the road at night, and, if so, one can only presume that he rides a push bicycle, and has never driven a car or motor cycle himself at night. If he has he would be only too pleased to provide the police with "one of the finest sports they ever had," or, in other words, the duty to see that every vehicle on the road between half an hour after sunset and half an hour before sunrise carried front and rear lights.

I am certainly sorry for your correspondent; he must be exceptionally unfortunate in the rear lights he has. I might say that I have ridden both motor cycles and push cycles for many years, and have never experienced any difficulty in keeping rear lights alight. I should suggest that he buy a new one by any well-known maker.

I think the large number of motorists and motor cyclists would like to see an emergency Order on the subject issued at once under D.O.R.A., and permanent legislation as soon as possible.

Cannot the A.A. and the R.A.C. take the matter up before any more serious accidents occur? Several have happened since the Order was rescinded.

EDWARD C. PRATT.

BOOKS AND MAPS FOR MOTOR CYCLISTS.

(Issued in conjunction with *The Motor Cycle*.")

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QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Position of Sidecar Wheel.

How would the sidecar wheel forward of the driving wheel affect the steering of a sidecar outfit?—C.T.

If the sidecar wheel is very much in advance of the rear wheel of the motor cycle there is a great tendency for the sidecar to lift when taking left-hand corners. A slight advance, however, of the sidecar wheel, say about 4in., generally gives a better all-round steering than is experienced with an outfit in which both the sidecar and motor cycle rear wheels are level.

Care of Magneto.

I have recently purchased a Royal Enfield motor cycle fitted with Bosch magneto. Will you kindly inform me where I could obtain a copy of the makers' instructions as to oiling and as to the care of the magneto. I have applied to the Enfield Co., and they inform me that they regret they are out of stock of the booklet.—NOVICE.

A current copy of "Motor Cycles and How to Manage Them," price 2s. 10d. by post from our publishing offices, 20, Tudor Street, London, E.C.4, contains detailed descriptions of standard type mangetos. The instructions for adjustment, cleaning, etc., are very complete, and cover any type of magneto on the market.

4 h.p. Single for Passenger Work.

I have a 1917 4 h.p. Triumph, and am anxious to turn this into a sporting outfit by having discs fitted all round and buying a second-hand light torpedo sidecar. (1.) Can you tell me if it will be powerful enough to take any hill, myself 10½ st. and passenger 7 st.? (2.) If it could occasionally take three up, say another 9 st.? (3.) The make of a suitable sidecar and approximate second-hand price of same? (4.) Maximum speed obtainable? (5.) Average m.p.g.? W.S.W.

(1.) A countershaft Triumph is quite capable of taking a sidecar and passenger up most hills where the wheel can grip. (2.) It would also take three-up anywhere excepting the most hilly districts. (3.) Any first-class make of sidecar would be suitable, and if you do not require a new one, we would refer you to our advertisement columns. (4.) Under ordinary touring conditions you should obtain a speed of 45 m.p.h. with the outfit. (5.) About 60 to 65 m.p.g.

V Twin Lubrication.

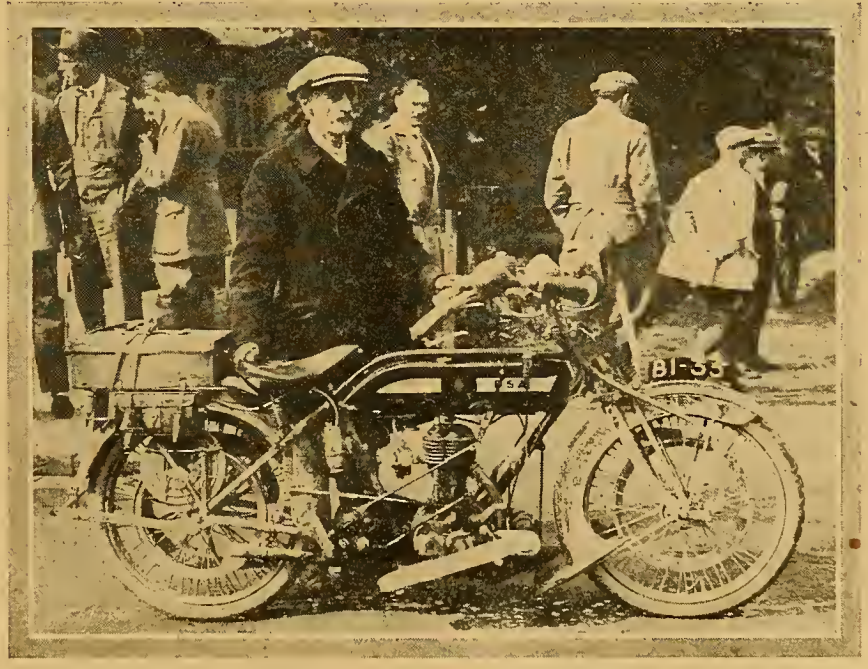
(1.) I have a 5-6 h.p. Clyno combination, about 1914, the rear cylinder of which continually oils up the plug about every ten miles or less. (2.) Also, the front cylinder fires very irregularly when running slowly. (3.) I only obtain about 35 m.p.g. with a 25 Amac jet. Is this too low? (4.) Do the gear box and chain get oiled from the engine or does one oil them separately?—C.H.T.

(1.) You are probably giving your engine too much oil, and it may be advisable to improvise some form of baffle plate at the base of the rear cylinder to prevent excess of oil being thrown therein. (2.) Irregular firing of the front cylinder may be due to the plug, as you suggest, or air leaks in induction pipe. Note particularly the inlet valve and guide, which, if much worn, will also cause poor running at low speeds. (3.) 35 m.p.g. is decidedly poor. Try slightly lowering the level, and also examine the petrol supply system generally for leaking joints. (4.) The gears and chains will require individual oiling about every 500 miles.

A Bad Bargain.

An advertisement appeared as follows: "2¾ Douglas for sale, renovated, as new; wants assembling." I went to see this machine in London, and the parts were all over the place, but I was assured that they were all there with the exception of tyres, tubes, and footrests. When it arrived I found the following parts missing. Complete head for front fork attachment, foot-brake rubber and pedal, four valve springs, no high-tension cable, one plug, no hub, or spokes for rear wheel. The tank was in a dirty condition, all rusted, and a box supposed to contain bolts and nuts was filled with tin-tacks, nails, and screws. I have written to the firm and they answer that nothing can be done. Are they liable for replacement?—F.J.H.

As the advertisement obviously misrepresented the machine you will be justified in demanding the return of your money if you can prove all your statements. We should advise you to place the matter in the hands of a local solicitor.



"No Age Limit" in the A.C.U. Six Days Trial. F. W. Applebee ("Pa"), the oldest competitor. His age is 59, and he made a fine performance on his 4¼ h.p. B.S.A., gaining a gold medal.

Dread of Punctures.

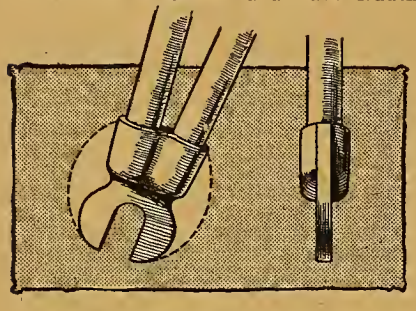
I am an old pedal cyclist, and have decided to go in for a motor cycle and sidecar, but there is one thing with the motor cycle I dread, and that is a puncture. Will you kindly say if there is a puncture-proof band? If so, where are they to be bought?—J.W.S.

Puncture-proof bands have not proved satisfactory when used in motor cycle tyres. We should recommend yon to fit heavy covers of the best quality.

READERS' REPLIES.

Damaged Fork End.

May I point out to your correspondent that I had a similar occurrence to my front fork, but I got it welded as per dotted line in sketch and have ridden



Showing position in which new metal was welded on fork-ends.

it at high speeds over rough roads, but it has never given the least signs of breaking. Perhaps this will be useful to your contribntor.—A.C.

Elusive Ignition Fault.

I had exactly the same trouble with a Bosch DA2 magneto, as your correspondent S.W.R. experienced. I cured it easily after eliminating every other source of failure, such as leaking condenser, poor earth, etc. The failnre was dne to an ovalty of about .02in. in the bearing, which is in one with the bronze end plate. This was reamered out about $\frac{1}{16}$in., the armature spindle lapped true, and then a liner pressed into the end plate. The hole was then scraped to an exact fit on spindle. The reason of the failnre is due to slight short circuiting of the armature with the pole pieces (perhaps metallic dust helps also) due to the pull of the driving chain.—WALTER HARE.

As I have recently had an exactly similar experience, I may be of some help to this reader. In my opinion, his trouble is not due to ignition at all, which is proved, as in my case, by being able to run well on each cylinder in turn. What happened was this, the exhaust valve spring when fully extended was too weak to keep the valve closed regnlarly on the induction stroke (back cylinder) when running at a comparatively slow speed, and on disconnecting the front cable connection, the engine speed would fall slightly and allow a proper mixture to be drawn into the rear cylinder without the exhaust valve lifting off its seat. New valve springs remedied the defect absolutely. It is advisable also to see that the inlet valve guides are not excessively worn, as this may cause the mixture to vary in richness.—J. B. HUDSON.

MONTHLY TOTAL OF QUERIES.

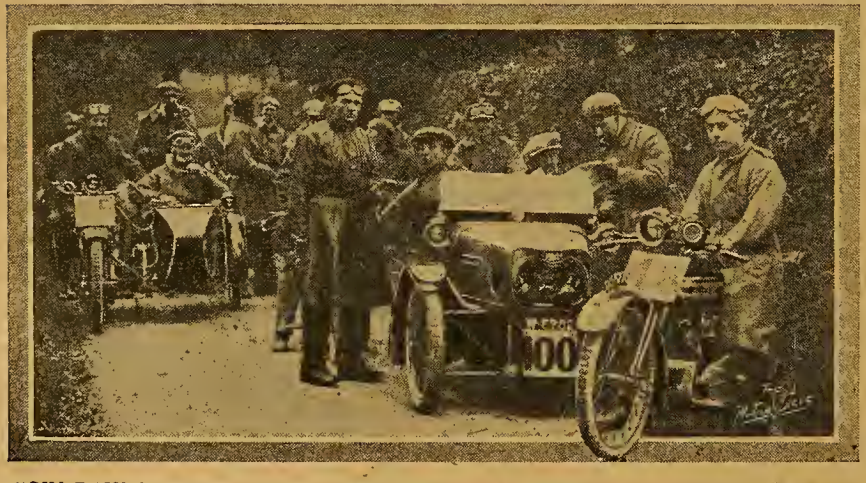
During last month "The Motor Cycle" queries department answered upwards of 700 correspondents by post.

RECOMMENDED ROUTES.

COVENTRY TO LEEDS.—B.O.
Coventry, Leicester, Melton Mowbray, Grantham, Newark, Retford, Bawtry, Doncaster, Pontefract, Leeds.

CINDERFORD TO WREXHAM.—L.T.G.
Cinderford, Lydbrook, Ross, Hereford, Leominster, Ludlow, Craven Arms, Welshpool, Oswestry, Overton, Wrexham.

AYSGARTH TO LINCOLN.—F.W.
Aysgarth, Wensley, Bedale, Leeming Bar, Boroughbridge, York, Market Weighton, Beverley, Hull (ferry to New Holland), Brigg, Lincoln.



"SIX DAYS." COMPETITORS IN ADVERSITY.—A STUDY IN FACIAL EXPRESSION.
LOST! Some riders who ran off the course through a misplaced arrow.

SPARKLETS

Barimar Welding in France.

A company has been formed in Paris with the title "La Société Française Barimar," in order to exploit the Barimar welding processes in France, Tunis, and Algeria. The factory is situated at 48, Rue d'Alsace, Clichy (Seine).

The Bleriot Whippet.

We are informed that the Bleriot Aircraft and Motor Car Works will in future be known as the Air Navigation and Engineering Company, Limited, Addlestone, Surrey. This firm manufactures the Bleriot-Whippet cycle car.

No Ariel Light Car.

Ariel Works, Ltd., Bournbrook, Birmingham, inform us that owing to unforeseen delays, etc., they will not be marketing a small car during the 1920 season. Their activities will be confined to the manufacture of the well-known Ariel cycles and motor cycles.

Royal Ruby Prices.

Commencing from September 1st, all Royal Ruby machines will be sold by the agents of the Ruby Cycle Co., Ltd., at the advertised price, plus cost of crate and carriage. This arrangement, which is a worthy step to check profiteering, will be in force throughout 1920.

Sidecars in Speed Events.

At the recent Luton Hoo speed trials Verus sidecars made their first appearance in competitions, being fitted to H. le Vack's Edmund-M.A.G. and Baragwanath's Zenith. Four firsts were secured by each of these riders.

A Motor Cycle from Sheffield.

We learn that G. W. Wilkin, the well-known Sheffield agent and motor cyclist, has relinquished his interest in the firm of Wilkin Motors, 154, Broomhall Street, Sheffield, and is now manufacturing a motor cycle under his own name fitted with Blackburne or Villiers engines.

"The Technical Review."

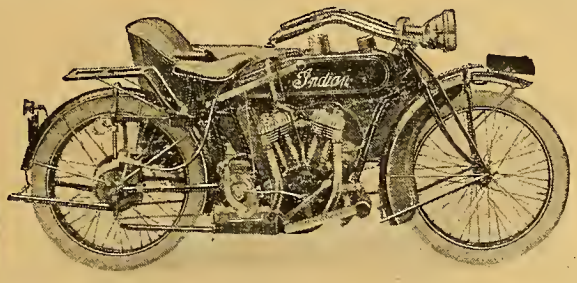
During the war a very interesting publication was issued by the War Office, known as "The Technical Supplement for the Review of the Foreign Press." Renamed "The Technical Review" (20, Tavistock Street, London, W.C.2), it will remain under its original editor, Major W. E. Simnett, M.B.E., R.E.

The Fellows Magneto.

We are in receipt of the latest catalogue of Fellows magnetos from the Fellows Magneto Co., Ltd., Cumberland Avenue, Park Royal, Willesden, London, N.W.10. This company sell three different types of motor cycle magnetos the ES1 single-cylinder type, the ES2 two-cylinder type for horizontally-opposed engines firing at 180°, and the ES11 two-cylinder pattern for V engines. All these magnetos have the same dimensions.

THE 1919

INDIAN



BIG POWERPLUS

MOTO-CYCLE

— THE EXPRESS DE LUXE OF THE ROAD. —

Can now be seen in GODFREY'S SHOWROOMS.

SOLO - - - £136

SIDECAR COMBINATION - £166

WITH FULL ELECTRICAL EQUIPMENT

Mr. E. A. Colliver rode a standard model with Sidecar throughout the 6 Days Trial, and came through with a perfectly clean sheet for

RUNNING TO SCHEDULE;
CLIMBING ALL HILLS;
CONSISTENT DRIVING.

PLYNLIMMON: "Amongst the very best passenger ascents were Colliver (Indian and Sidecar); who has ridden most consistently throughout."

BWLCH-Y-GROES: "Colliver, 7 h.p. Indian and Sidecar, made a fine climb."

—Extracts from "The Motor Cycle."

WE CAN ACCEPT A FEW MORE ORDERS FOR DELIVERY IN DECEMBER & JANUARY.

1920 MODELS will comprise

BIG 7 h.p. Spring Frame Powerplus Twin with Electrical Equipment.

LITTLE 4 h.p. Powerplus Twin.

Illustrations and Specifications will be available in a few weeks.

THERE IS SURE TO BE A VERY LARGE DEMAND FOR BOTH MODELS, SO PUT YOUR NAME ON OUR WAITING LIST WITHOUT DELAY. ALL ORDERS WILL BE EXECUTED IN STRICT ROTATION.

Phone: 7091 Mayfair (2 Lines)

GODFREY'S Ltd.,

SOLE LONDON AGENTS,

208, GT. PORTLAND ST., LONDON, W.1.

Motoring Reconstruction.

Big Results of the A.A.'s "Peace Push."

Immediately the Armistice was signed the Automobile Association settled down to the task of restoring touring conditions to their pre-war standard. As its five hundred civilian soldiers were demobilised they resumed their old positions and helped to train the new blood which replaced those who had fallen in the war.

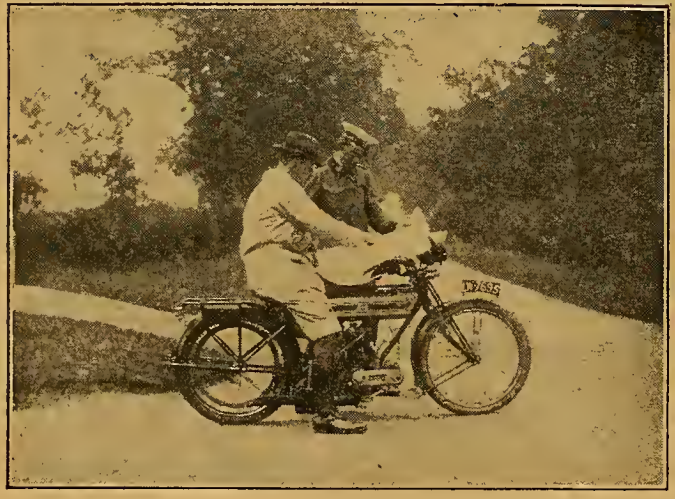
When one remembers touring conditions during 1915/18 and contrasts the position with that of to-day, the success of the A.A.'s endeavours is easily seen.

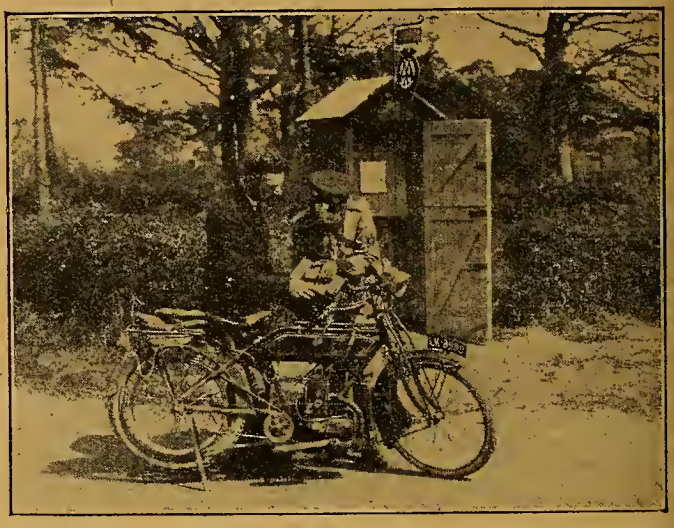
THE KHAKI-CLAD A.A. PATROLS are again on all the main roads, directing traffic, undertaking roadside adjustments, obtaining replacements, giving members road information and warning them of highway dangers. "Mechanical First-Aid" Cycles for light repairs to members' cars or motor cycles have been added to the patrol organisation.

ROADSIDE TELEPHONE BOXES have been re-opened, the number of instruments has been increased, and the service is being extended so as to be available to every member at any hour of the day or night.

AGENTS AND REPAIRERS have been appointed on twenty thousand miles of main road in the United Kingdom. In every case an official of the Association inspects the premises and facilities before an appointment is made.

A.A. HOTELS have been re-inspected by a specially trained staff. The hotels have been classified on a "star" basis and the list is constantly being added to and revised.





TOURING FACILITIES are again available and the Association provides all possible assistance to members touring with their cars, light cars or motor cycles in Great Britain and Ireland.

FOREIGN TOURING ASSISTANCE has been augmented so that members are now able to take their cars abroad without having to deposit cash in respect of customs dues.

FREE LEGAL DEFENCE is afforded to every member in any proceedings, arising out of the ownership or use of privately-owned motor vehicles, instituted under the Motor Car Act. This benefit has now been greatly extended and covers Free Legal Representation by the Association's solicitors in civil cases.

Other privileges of A.A. membership include Free Legal Advice, Special Insurance Facilities, Engineering Assistance, etc., etc.

Full particulars of all these benefits are contained in the booklet, "The Key to the Open Road," a copy of which can be obtained post free, from the Secretary, The Automobile Association, 21, Fanum House, Whitcomb Street, London, W.C.2. Send a postcard to-day. Motorists in London who wish to join the Association without delay are invited to call at Headquarters, where a staff of experts is always in attendance ready to give information on any question relating to motoring.

In answering this advertisement it is desirable to mention "The Motor Cycle."

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns First 12 words or less 2/-, and 2d. for every ıdditional word. Each paragraph is charged ıparately. Name and address must be counted. ıries discounts, conditions, and special terms ı regular trade advertisers will be quoted on ıplication.

Postal Orders and Cheques sent in payment for ivertisements should be made payable ILIFFE & SONS Ltd., and crossed & Co. reasury Notes, being untraceable if lost in ransit, should not be sent as remittances.

All advertisements in this section should be ccompanied with remittance, and be addressed the offices of "The Motor Cycle," Hertford reet, Coventry. To ensure insertion letters ıould be posted in time to reach the offices of The Motor Cycle," Coventry, or London (20, udor St., E.C.4), by the first post on Friday ıorning previous to the day of issue.

All letters relating to advertisements should uote the number which is printed at the end of ich advertisement, and the date of the issue which it appeared.

The proprietors are not responsible for clerical r printers' errors, although every care is taken avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be ddressed to numbers at "The Motor Cycle" Office. hen this is desired, the sum of 6d. to defray the cost of gistration and to cover postage on replies must be added the advertisement charge, which must include the ords Box 000, c/o "The Motor Cycle." Only the number ill appear in the advertisement. All replies should be ddressed No. 000, c/o "Motor Cycle," 20, Tudor Street, .C.4. *Replies to Box Number advertisements containing mittances should be sent by registered post, but in all such ses it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box umber, as it is unusual for these to be sold without first ing inspected by the intending purchaser, advertisers will cilitate business by embodying in their advertisements me mention of the district in which the car offered ay be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons ay deal in perfect safety by availing themselves of our eposit System. If the money be deposited with "The otor Cycle," both parties are advised of this receipt. The time allowed for a decision after receipt of the oods is three days, and if a sale is effected we remit the oount to the seller, but, if not, we return the amount the depositor, and each party to the transaction pays rriage one way. For all transactions up to £10, a eposit fee of 1/- is charged; on transactions over £10 d under £50, the fee is 2/6; over £50 and under £75, 5/-; er £75 and under £100, 7/6; and on all transactions er £100, ½ %. All deposit matters are dealt with at , Tudor Street, London, E.C.4, and cheques and money ders should be made payable to Iliffe & Sons Limited. The letter "D" at the end of an advertisement is an dication that the advertiser is willing to avail himself of e Deposit System. Other advertisers may be equally cirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no swer to their enquiries are requested to regard the dence as an indication that the goods advertised have ready been disposed of. Advertisers often receive so any enquiries that it is quite impossible to reply to ch one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Hornmo. Ltd., 9, Parr St., Liverpool. [0003

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London, E.C.4.

For square deals and Values....

Easy terms of payment taken in advance for new 1920 models. Motor cycles or sidecar combinations of any leading make supplied. Payments can be made now to suit own convenience. Should one half the total amount be remitted before the new machine on order is delivered, the outstanding amount unpaid could then be received in twelve equal monthly instalments. We propose charging a small commission not exceeding 5% on the outstanding amount unpaid. This arrangement ensures very easy terms and should greatly assist the new beginner who has decided to secure a new 1920 machine. No commission whatever would be charged if settled for before delivery. Prices to be those ruling at time of delivery.

BOOK NOW FOR 1920 MODELS.

Machines supplied strictly in rotation. There is no certainty that deliveries will not be crippled, and the demands for 1920 are certain to exceed those of 1919. There is no responsibility in booking, but you secure preference in delivery and an opportunity to pick up your machine when required. We take good second-hand machines in part payment for new models.

WAUCHOPE'S

invite enquiries for particulars of stock of second-hand light cars—cycle cars—motor cycles, and sidecar combinations.

The latest 1919

6 h.p. J.A.P. Twin Cylinder Engines

From Stock Trade Supplied. Terms on application; these include extras 50 Engines for immediate delivery, £37 10s. each

Second-hand Engines taken in part payment. GOOD PRICE ALLOWED.

Makers' Guarantee

Wauchope's, 9, Shoe Lane, London

Phone: Holborn 5777

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C. Distributors for Radnorshire. Book your orders now to ensure early delivery.—Owens, Baveno Garage, Llandrindod Wells. [7863

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

Abingdon.

ABINGDON 4h.p., T.T., 1914, just renovated; £45; would accept cycle in part.—232, Brixton Rd., S.W.9. [7474

ABINGDON K.D. 3½h.p., perfect condition throughout, fast; £25.—60, Walligford Av., North Kensington. [6851

1916 Abingdon King Dick, 4h.p., chain-cum-belt drive, 2-speed, hand clutch, excellent running order; nearest £50.—63, Arlingford Rd., Tulse Hill, S.W. [6844

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall Tel.: 444. [5601

A.J.S. Military Model 6h.p., never used.—Write, 41, Cavendish Rd., Broadesbury. [6814

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

A.J.S. 6h.p., 3-speed combination; any trial; £120; or solo, £90.—5, Blakemore Rd., S.W.16. [6918

1919 A.J.S. Combination, 6h.p., delivered May, spare wheel, lamps, etc.; £160.—Holland, Oakeswell End, Wednesbury. [X4202

A.J.S. Combination, 1915, 4h.p., all accessories; £90, or offer.—Seen by appointment at 94, Idmiston Rd., West Norwood. [7242

A.J.S. 6h.p., sidecar, purchased new September, Klaxon, etc.; £160.—Bryant, Briar Cottage, Downview Rd., Barnham, near Chichester. [X4234

1914 6h.p. A.J.S. Combination, detachable wheel, screen, etc.; £110; trial by appointment; Hull district.—Box 465, c/o *The Motor Cycle*. [X4201

A.J.S. 1917 Combination, accumulator lighting, low mileage, excellent running order; £145.—Capt. E. Oliver, M.C., Long Bennington, Grantham. [6746

A.J.S. 1915 6h.p. Combination, interchangeable wheels, hood, screen, speedometer, spare tubes; trial; £117.—110, High St., Merton, S.W. [6842

A.J.S. Combination, mechanically sound, good tyres, tools, lamps; lowest, £90.—Gemmell, Claremont, Southern Rd., Ashton-on-Mersey, Cheshire. [7130

A.J.S., 2¾h.p., 1914, 3-speed countershaft, semi-T.T. bars, long exhaust, speedy sporting machine, in splendid condition; £60, or offers.—McLeay, Tomintoul. [7423

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries. [0007

1918 A.J.S. 6h.p. Combination, complete with spare wheel, screen, apron, Lucas lamps and horn, splendid condition; £165.—Burlinson, 15, Elmsthorpe Av., Nottingham. [X3955

4h.p. A.J.S. Combination, engine No. 6008, year 1916, in first-class condition; £130.—37, Daleham Mews, Belsize Lane, Hampstead, London, N.W.3. 'Phone: Hampstead 4608. [6539

1916 A.J.S. 2¾h.p., 2 speeds, clutch, kick start, lamps, horn, speedometer, spares, exceptional condition throughout; offers over £65.—Wright, Parton, Whitehaven. [X4472

A.J.S. 1913 2¾h.p., 2-speed, kick start, hand clutch, lamps, horn, speedometer, tools, excellent condition; £55.—Apply, Sidney Hodges, jun., 58, Darlington St., Wolverhampton. [X4419

ALLEN-BENNETT Motor Co.—A.J.S. 6h.p. 1916 Combination, hood and screen, spare wheel; £135.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [7339

A.J.S. 6h.p. C.B. Combination, 1914, in perfect running order, ready ride away, lamps, spares, and new spare Dunlop heavy cover; 120 gns.—Taylor, 2, Victoria Parade, Muswell Hill, N.10. [7319

1919 A.J.S. Combination, spare wheel, wind screen, hood and cover, lamp, Lucas horn, spring seat-pillar, very little used, quite new; the greatest bargain of the season, £180, no offers.—21, High St., West Norwood, London. [4199

A.J.S. 1914 6h.p. Combination de Luxe, D.A. lighting, Binks, Triplex screen, speedometer, full accessories and spares, stored during war, very fast, reliable, and first-rate condition; £140, or near offer.—23, Adelaide Rd., South Hampstead. [X4269

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S. Combination, 6h.p., 3-speed countershaft gear, chain drive, £16 recently spent on complete overhaul, enamel and plating excellent, tyres as new, Cowey luggage carrier; £105.—3, Regent St., Rugby. [X4600

1919 A.J.S. Combination, not done 500 miles, lamps, horn, screen, spare wheel, etc., like new in every respect; what offers?—Apply, E. E. Rider, Rectory Farm, Low Catton, Stamford Bridge, York. [X4140

1914 A.J.S., 6h.p., and Speedwell sidecar, just overhauled and stove enamelled, splendid running condition, unused during restrictions; best over 100 gns.; Manchester district.—Box 471, c/o *The Motor Cycle*. [X4246

1919 Brand New A.J.S. Combination, fitted with screen, apron, luggage grid, and spare wheel complete, large Lucas head set, Lucas sidecar and rear lamps, magnificent combination; available for immediate delivery.—Parker's, Bradshawgate, Bolton; 245, Deansgate, Manchester. [X4523

4h.p. A.J.S., 1915, hand clutch, 3 speeds, K.S., made like new machine recently by makers, T.T. handlebars, interchangeable disc wheels, heavy 700×80 tyres, knee-grips, Lucas horn, best head and rear lamps, tool roll, spare valve, high gear engine sprocket, chain links, plug, etc., very fuset, in perfect order; £110, no offers; approval, deposit.—Holloway, Greenrigg, Torver, Coniston, Lancashire. [X4462

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

Alldays.

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [0017

NEW Allday's Allon, just in, delivery from stock. —Main, 36, The Parade, Leamington. [X3587

ALLON, 1919, 2-speed clutch model, indistinguishable from new.—Parker's, Bradshawgate, Bolton. [X4525

1915 Alldays Allon, 2-speed, in perfect order; what offers?—McGhie, King St., Stranraer. [7127

ALLDAYS Matchless 4h.p., 2-speed, B. and B., Bosch, ride away; £60.—Hayward, 53, East Dulwich Rd., S.E.22. [6714

1916 Alldays Allon, 2-speed, 2-stroke, hand-controlled clutch, splendid conditon throughout; £48.—Roy Glossop, Amhergate. [X4373a

JONES' Garage, special agents for Alldays Allon Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2931

1918 Allon, 2-speed, clutch, lamps, horn, leg shields, mileage 1,000, splendid condition; any test; £60. —210, Kew Rd., Richmond. [X4138

1916 Alldays Allon, 2-speed clutch model, tip-top condition throughout, fully equipped; £55.—Parker's, Bradshawgate Bolton. [X4526

ALLON 1917 2¾h.p., single speed, chain-cum-belt drive, climbs beautifully; private owner; £41.—Apply, Wooton's Garage, Oxford. [6757

1915 Alldays Allon, 2-stroke, new tyres, enamel and plate unscratched, perfect and complete; £38, bargain.—120, Sutherland Rd., West Croydon. [6550

ALLDAYS Allon 2¾h.p., 1917, 2-stroke, countershaft model, spare tube, chain, belt; £48; after 7 p.m. —Lawrence, 5, Inman Rd., Harlesden, N.W.10. [6717

ALLON 1919 2¾h.p., brand new, actually in stock. —F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead, N.W. (near Hampstead Tube). 'Phone: 3752. [6331

4h.p. Alldays, 3-speed, K.S., clutch, stored from Feb., 1915, to Jan., 1919, not done 3,000, enamel and plating as new, climb anything, new tyres, and lamp set; £65.—Preach, 78, Park Rd., Dulwich, S.E. [6908

ALLDAYS Matchless, engine recently overhauled, new gudgeon, silencers, magneto platform, etc., fitted, Sturmey 3-speed clutch, tremendously speedy, climb anything solo, lamps, horn; nearest to £40 secures; buying combination.— L. J. Williams, Ferndale, Prior Park Rd., Bath. [X4634

Ariel.

ARIEL 3½h.p., condition, appearance, and tyres perfect; £36.—175, Merton Rd., Wimbledon, S.W. [6292

ARIEL 3½h.p., Bosch, B. and B., semi T.T., 3-speed, clutch, head lamp, just overhauled; £55.—G.B., Ingleside, Hookwood, Horley. [X3981

ARIEL, 3½h.p. and 6-7h.p.; early deliveries.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

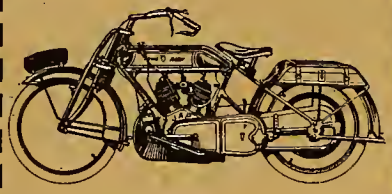
1919 (May) 3½h.p. Ariel and sidecar, lamps, horn, spare belt, valves, etc., complete; £120.—Stanbridge, Agnells, Hemel Hempstead. [X4351

3½h.p. Ariel, 1912, Bosch, new Amac, drip, thorough order; ride 50 miles to best over £48.—Wareham, Burley, Brockenhurst, Hants. [X4638

ARIEL 3½h.p. Sidecar, 3-speed, Bosch, new tyres and belt, any trial, three up; £55.—17, Nella Rd., Fulham Palace Rd. (opposite Greyhound). [X4549

1919 Ariel, 3½h.p., countershaft 3-speed, kick starter, delivered May, horn, speedometer, perfect; any trial; £100.—Barnes, Harting, Petersfield. [X4307

THE LAST FEW.



Royal Ruby

8 h.p. Twin J.A.P., 3-speed, all chain drive, handle-bar controlled clutch, 28 x 3 Dunlops.

£115 - 10 - 0

Makers' list price.

Delivery from Stock.

All these are Brand New W.D. Models.

SECOND-HAND

All machines overhauled and guaranteed

SIDECAR COMBINATIONS

SUNBEAM, 3½ h.p., 3-speed, countershaft	£170
JAMES, 3½ h.p., 3-speed, countershaft.....	£95
ROVER, 3½ h.p., 3-speed	£85
HARLEY-DAVIDSON, 1916, Model F. ...	£150
DOUGLAS, 3½ h.p., 3-speed 1915	£130
ARIEL, 1915, 3½ h.p., 3-speed, countershaft	£115
INDIAN, 1016, 7-9 h.p. Powerplus	£150

SOLO MACHINES

RADBURY, 1911, 3½ h.p..	£35
DOUGLAS, 1914, 2¾ h.p., 2-speed	
SUNBEAM, 2¾ h.p., W.D. Model	£84
DOUGLAS, W.D. 2¾ h.p., 2-speed	£75
RUDGE MULTI, 1914, 3½ h.p.	£75
RUDGE MULTI, 1914, 5-6 h.p.	£80
JAMES, 1915 2¾ h.p., 2-speed	£50
CONNAUGHT, 2¾ h.p., single-speed	£35
DOUGLAS, W.D., 2¾ h.p.	£83

Maudes' Motor Mart

100, Great Portland St, London W. 1.

100, Paris St, Exeter.

Telegrams: "Abdicate, Wesdo, London"
Telephone: Museum 557.

Telegrams: "Combustion, Exeter."
Telephone: Exeter 933.

MAUDES MOTOR MART

THE SEAL OF SATISFACTION

MOTOR CYCLES FOR SALE.

Ariel.

1919 3½h.p. Ariel, delivered end of June, fitted with Lucas lighting set, horn, and Stewart speedometer, mileage low; £110.—Hind, Duddington, Stamford. [670

3½h.p. Ariel, 3-speed, clutch, B. and B., new tub and cover back, lamp, 2-seater coachbuilt sidecar, good condition; £60.—Brown, Haven, Brough, E. York. [660

1919 Ariel 6-7h.p. Combination, electric light, speedometer, mirror, Tan-sad, Easting screen, all necessary spares, mileage 800; £170 cash; considered lightweight.—150, Park Rd., Crouch End. [727

ARIEL 3½h.p. Combination, 3 speeds, clutch, de compressor, semi T.T. handle-bars, horn, lamps tools, spares, comfortable sidecar, with luggage grid, ex cellent condition; £58/10.—61, Greyhound Rd., W.6. [653

6-7h.p. 3-speed Ariel, delivered August, and Empire coachbuilt sidecar, hood, wind screen, P. and H. head lamp, rear and sidecar lamps, Watford speedometer, spare tyre and tube, unused, other spares, fully insured, mileage 1,200; any trial; £160, or near offer owner going abroad; North Lancashire district.—Box L4,476, c/o *The Motor Cycle*. (D) [658

Auto-Wheels

WALL Auto-Wheel, little used; £10.—Cecil Dutton Malpas, Cheshire. [668

WALL Auto-Wheel, small mileage, perfect; £12.—C Upperton, Fittleworth, Sussex. [664

AUTO-WHEEL, in good condition; £12, or offer.—Box L4,553, c/o *The Motor Cycle*. [747

AUTO-WHEEL, perfect except cradle lugs of frame require brazing; £5/10.—19, Saxon St., Wrexham. [711

AUTO-WHEELS, latest Models de Luxe; £23/2, or 42/4 monthly.—Metropolitan Machinists' Co., Ltd. 248, Bishopsgate, London, E.C. [745

AUTO-WHEEL, engine No. 5436, splendid condition, but little used, but tyre somewhat perished £10.—Frank F. Ward, Boscastle. [X440

AUTO-WHEEL, attached gent's specially low-built cycle, new tyres, shock absorber, perfect running £18.—34a, Fieldhouse Rd., Balham. [700

AUTO-WHEEL de Luxe, B.S.A., 1914, mileage about 300, good condition, and in first-class running order; £1'/10.—Box 495, c/o *The Motor Cycle* [X440

WALL Auto-Wheel, lined red, green, attached gent's cycle, guaranteed good running order; 12 gns. would sell separate.—Dowse, Rose Cottage, King's Langley. [X420

AUTO-WHEEL for Sale, B.S.A. engine, No. 44153 nearest offer to £15 secures.—Can be seen, 131 London Wall, goods entrance.—John Smith (London Wall), Ltd. [667

Bat.

3½h.p. Bat, Bosch, Amac, good tyres, about 1912 £18.—Box L4,567, c/o *The Motor Cycle*. [749

B.A.T.-J.A.P. 6h.p., Bosch, Amac; best over £60 —Stainer, s.s. Biarritz, Marine Office, Dover. [695

BAT, 6h.p. J.A.P., 2-speed and clutch, kick starter in nice condition, with sidecar; £65.—85, Church Rd., Willesden. [739

8-10h.p. Bat Combination and 8-10h.p. solo; bargains to clear, £65 and £37.—W. Whitty, Walberton, near Arundel. [705

1912 Bat-Jap, 7-9h.p., spring frame, Roc 2-speed; reason selling, too powerful; £60.—Tucker, 116 High St., Scunthorpe, Lincs. [X437

BAT 4h.p., Bosch, Amac carburetter, heavy Dunlops new belt; ride away; first M.O. for £20 secures.—Frost, Greyhound, Ardingley, Sussex. [680

1914 Bat-Jap, 8h.p., and C.B. sidecar, 2-speed, new tyres, fully equipped, splendid condition; £75 or near.—Lloyd Marris, Hendre Wen, Llanrwst. [X425

BAT-J.A.P., 1914, 6h.p., 3-speed Armstrong gear kick starter and clutch, coachbuilt sidecar; £65.—Germain, 43, North Cross Rd., East Dulwich, S.E.22. [728

BAT-J.A.P. 1916 4-5h.p. Twin, 2-speed countershaft not done 500 miles, all accessories; owner bought Morgan; £80.—98, Forest Av., Bush Hill Park, Enfield [729

6-8h.p. Bat-Jap Combination, N.S.U. 2-speed, good condition, Binks 3-jet, spring frame, wicker sidecar, screen, apron, spares; £45.—Wood's, Ltd., Sligo. [702

4h.p. Bat, clutch, sprung frame, B. and B., Simms new belt, back tyre, fast, reliable, take sidecar; £35; exchange good 2-stroke; after 6.—79, Tubbs Rd. Harlesden. [664

£75.—Bat-Jap 8h.p. twin combination, 2-speed countershaft gear, kick starter, hood, screen good solid lot.—Dudley Davis Motor Exchange, 103a High St., Wandsworth. [725

8h.p. Bat-Jap, spring frame, coachbuilt combination, disc wheels, nearly new light car tyres, Mabon clutch, mechanically perfect; £55 lowest.—56, Scales Rd., Tottenham, N.17. [714

1915 Bat-Jap Combination, 3-speed, mechanically perfect, all new tyres, 3 lamps and generators, Stewart horn, tools, complete, any trial; £125 cash.—Fred B. Page, 169, Knox Rd., Wellingborough [X454

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AT-J.A.P. 8h.p., luxurious combination, French grey, 3-speed clutch, kick starter, special sprung dle and sidecar wheel, mechanically perfect, excellent appearance; any trial or examination; £135.—rker's, Bradshawgate, Bolton. [X4527

.A.T.-J.A.P. 8h.p. Combination, light grey, countershaft, 2-speed, clutch, kick start, all chain drive, ong frame and sidecar wheel, just overhauled, hanically perfect, excellent appearance; any trial examination; £95.—Perry, 30, Park Rd., North on, W.3. Tel.: Chiswick 727. [7002

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TANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [4016

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside ade, North Finchley. [2932

LACKBURNE 1917 Coachbuilt Combination, perfect condition, just overhauled, wind screen, 3 ps, Klaxon, 2 new tyres; £125; seen after 7 or urday afternoon.—83, Ulverston Rd., Walthamw, E. [7154

Bradbury.

RADBURY Agents, Bright and Hayles, 78, Church St., Camberwell, London. [7577

Stock, 1919 4¼h.p. T.T. Bradbury; £82.—Hill's Victoria Garage, Barnstaple. [X4238

RADBURY 4h.p., genuine, 1913, Bosch, lamps, excellent condition; £35.—195, Romford Rd., atford, E. [5811

RADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444 [5606

RADBURY, 4¼h.p., in topping condition, with 2-speed and kick starter, nice C.B. sidecar, lamps, ; bargain, £52.—85 Church Rd., Willesden. [7398

38.—Bradbury 4h.p., 2 speeds, free engine, just overhauled, repainted; bargain.—Dudley Davis for Exchange, 103a, High St., Wandsworth. [7255

RADBURY 1919 4h.p. T.T. model, brand new, at list price; £82; delivery from stock.—Elce Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0551

913 Bradbury, 4h.p., B.B. carburetter, Bosch mag., 2-speed N.S.U., heavy Dunlops, with lamp and horn plete, good condition; £38.—38, Norfolk House Rd., atham. [6650

RADBURY 6h.p. Combination, 1914, 3 speeds, gear box, clutch, hood, screen, speedometer, lamps; £105.—335, Dersingham Av., Manor k. [7228

h.p. Bradburys, new, 2-speed models from stock, kick start and latest improvements, fitted with oelet sidecar; £112/17/6.—Wauchope's, 9, Shoe e, London. [7332

RADBURY Combination, 2-speed countershaft, F.E. and kick start, new tyres, perfectly sound; trial; first reasonable offer; no agents.—290, York , Wandsworth. [7036

RADBURY 4¼h.p., 1913 Sturmey-Archer 3-speed, J.S. Type, tyres and belt new, guaranteed perfect dition; £60.—Start, Virginia Water, Surrey. Two nutes from station. [7097

RADBURY 4¼h.p. 1914 Coach Combination, 2-speed, free engine, Klaxon, Stewart speedoter, stored 3 years, any trial; £60, nearest.—295, rrow Rd., Paddington. [X4592

RADBURY 1914 4h.p. 2-speed Combination, coach-built, latest model, underslung, electric lighting, d screen, Senspray, Bosch, speedometer, smart outfit £75.—43, Wildeck Rd., West Green, N. [6763

919 Brand New Bradbury fitted with magnificent black and gold sidecar, 3-speed, hand and foot tch, kick starter model; £170.—Parker's, Bradwgate, Bolton; 245, Deansgate, Manchester. [X4524

RADBURY, 4h.p., T.T., red, plated rims, clutch, free engine, Bosch mag., B.B., just overded at the cost of £10, tyres good, long exhaust, rty, and in good running order; 50 gns., or best r.—G. Hollingshead, The Poplars, Pamber, Basingke, Hants. [6660

Brough.

ROUGH 5-6h.p. and Sidecar, only run 150 miles, with lamps; a beautiful turnout; £150.—J. sdale, The Terrace, Spalding. [6865

ROUGH, Model H, 1915, 3½h.p., recently overhauled by makers, tyres good, new belt; £72/10. Snell, Newenham, Axminster. [6730

OUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., cial Dealers, Liverpool and Manchester. [7039

ROUGH, 1915, 2-speed, speedometer, Klaxon, new lamps, very fast and reliable; 70 gns., or near offer. Whitehead, 4, Montagne Mews, Crawford St., Baker eet, W.1. [7010

Brown.

ROWN 3½h.p., Gradua gear; 30 gns.—77, Acre Lane, S.W.2. [7472

h.p. Brown, Bosch, clutch, in good condition; £29.—2 Sharp, 39, Langdon Rd., Highgate. (After 6.) [6529

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BARGAIN.—3½h.p. Brown, Bosch, B.B., 2-speed, free engine, excellent condition.—10, Upper Park Rd., New Southgate, N.11. [7244

3½h.p. Brown Motor Cycle, new condition, in perfect running order, new tyres and belt; £35.—Matthews, 17, Kenyon St., Fulham, S.W.6. [X4491

6h.p. Twin Brown, T.D.C. engine, Mabon clutch, engine in pieces, but in perfect condition; £25, or offer.—H., 47, South Lambeth Rd., Vauxhall, S.W.8 [6906

B.S.A.

B.S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel: 444 [5602

B.S.A., 3½h.p., T.T., in good running order, lamps, horn, and tools; £42.—29, Brudenell Rd., Leeds. [X4444

1915 4½h.p. B.S.A. countershaft model; £62.—J. Smith and Co., 16, Hampstead Rd., N.W.1. [7501

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2919

1916 B.S.A. Combination, done 3,000, absolutely perfect, all accessories; £105.—Cecil Rhodes, Balmoral, Kidderminster. [X4586

B.S.A. 1917 4½h.p. Chain Drive Combination, screen, accessories, spares, mileage 2,200, perfect; nearest £110.—28, Hambledon Rd., Southfields, S.W. [7422

4½h.p. B.S.A., chain drive, 2-speed, clutch, lamps, speedometer, mechanical horn; any examination; £69.—Green, Builder, Arundel Rd., Brighton. [6564

B.S.A., 3½h.p., 2-speed, F.E., Bosch, new Dunlop and Palmer, ride away; £40; after 6 p.m. Friday.—90, Brunswick St., Hackney Rd., London. [X4332

B.S.A., 1916, 4½h.p., all chain drive, coachbuilt sidecar, screen, lamps, etc.; £97/10.—223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [6514

HIGHEST Offer over £85.—B.S.A., Model H, and No 2 B.S.A. sidecar, excellent condition throughout.—8, Ashley Park, Chesterfield Rd., Bristol. [X4513

B.S.A. 3½h.p. Combination, 2-speed, F.E., practically new tyres, large generator and lamps; £60, or sell separate; after 5.—58, Hugon Rd., Fulham, S.W. [7429

B.S.A. 4¼h.p., chain-cum-belt, 1916, 3-speeds, kick start, and coachbuilt sidecar; £90. Seen after 6 p.m.—F. Lacey, 8, Market St., Paddington, W.2. [6819

B.S.A. 1914 3½h.p., Philipson pulley, F.E., good tyres and new front wheel, less mag.; £35.—Wright, Strawberry Cottage, Haworth, near Keighley. [X4544

B.S.A. 1919 Combination, ridden less 300 miles, Lucas lamps, other extras; no accident; Birmingham district; £130, lowest.—Box L4,478, c/o *The Motor Cycle.* [6588

1916 B.S.A. 4½h.p., chain-cum-belt, with lamps, horn, etc., and Millford sidecar with lamp; about £80.—Wilson, Cranage Villas, Lostock Gralam, Cheshire. [X4474

ALLEN-BENNETT Motor Co.—B.S.A. 1915 Combination, 2-speed, very sound; £70.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [7343

B.S.A., late 1916, Watsonian sidecar, countershaft model, lamps, horn, etc., fine mechanical condition; best offer over £105.—111 King St., Dudley, Worcestershire. [X3972

1916 B.S.A. Combination, 3-speed, countershaft, all-chain, Cameo wind screen, lamps, etc., good condition, running order; £90.—10, Thornby Rd., Clapton, N.E.5 [7058

B.S.A. The Birmingham City Agents and B.S.A. Specialists, County Cycle and Motor Co., 307 and 308, Broad St. All replacements in stock. Tel.: Comocyco, Birmingham. [6311

SMITH'S, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station), have for sale B.S.A. 4½h.p., 1917, 3-speed, countershaft chain-cum-belt, condition as new; 68 gns. [7258

1914 B.S.A. Combination, 4½h.p., countershaft gear, 3 speeds, kick starter, Lucas lamps, wind screen, luggage grid, in fine condition; £85.—107, Admiral St., Toxteth Park, Liverpool. [6935

B.S.A. (19/5/16) 4½h.p. Combination, 3-speed, kick start, lamps, Klaxon, tools, etc., good condition; offers over £80.—Box L4,539, c/o *The Motor Cycle.* (Near Aldershot.) [6873

B.S.A. 1914 Coachbuilt Combination, 3-speed, clutch, lamps, horn, new Dunlops, carefully stored during war, new condition; £90, or best offer; Suffolk.—Box 503, c/o *The Motor Cycle.* [X4426

1916 4½h.p. B.S.A., 3-speed countershaft, chain-cum-belt, Mills-Fulford S.C., horn, lamps, speedometer, Binks 3-jet carburetter, good leg shields, good running order; price £90.—Ernest Hobbs, Little Faringdon, Lechlade. [6649

MOTOR CYCLES FOR SALE.

B.S.A.

1915 B.S.A., 4h.p., 3-speed countershaft gear, clutch, kick start, new back tyre, belt, chain, head and tail lamps, with cane sidecar; £85.—Matson, Ward's Farm, Highwood, nr. Chelmsford. [7052

1914 B.S.A. 3½h.p., clutch model, condition as new, any trial, £50; also coachbuilt sidecar, attached B.S.A., smart lot, very comfortable, £15.—H. Grigg, 37, High St., Eltham, Kent. [6830

B.S.A. 1916 4½h.p. Combination, 3-speed, kick start, speedometer, Canoelet sidecar, wind screen, 3 lamps; 110 gns., or near offer.—Middleton, 15, Elvet Bridge, Durham. 'Phone: 240 Durham. [7108

B.S.A., 1914, 4h.p., 3 gears, clutch, kick start, new lamp, no chain cases, well cared for, excellent condition, all chain drive; buying car; £80, no offers.—Bons Farm, Stapleford Abbots, Romford. [6510

B.S.A. Combination, 1914, 4¼h.p., all-chain drive, 3-speed countershaft gear box, lamps, speedometer, spare cover and tube, spare chains, tools, etc.; highest offer above £75.—B.S.A., 73, Greencroft Gardens, Hampstead. [6812

B.S.A., 1915, 3 speeds, countershaft, kick starter, lamps, Klaxon, pillion seat, spares, perfect running order, appearance like new, tyres excellent, with sporting sidecar; £75.—Tiernay, 22, Adelaide Rd., Leamington Spa. [X4345

B.S.A., 4¼h.p., Dec., 1918, chain-cum-belt, 3-speed, clutch, kick start, tyres just new, whole machine as new; £78; seen Saturdays, after 3 p.m.; photograph available.—Thornton, Heath Cottage, Church-Broughton, nr. Derby. [7190

B.S.A., 1917 (late), 4¼h.p., all chain drive, countershaft, kick start, 3-speed, clutch, speedometer, electric lighting, and new Bristol C.B. sidecar, tyres new, in perfect order; best offer over £120.—Rogers, 15, Manvers St., Bath. [6562

B.S.A., 1913, 2-speed, F.E. engine, overhauled by makers this summer, Montgomery C.B. sidecar, new August, Stewart speedometer, lamps, good tyres, spares, tools, grand condition; £78.—Barber, 87, Selhurst Rd., S. Norwood. [7000

1916 4¼h.p. B.S.A., chain-belt, 3 speeds countershaft, and coachbuilt sidecar, perfect order, Palmer cords throughout, speedometer, accessories, spares, take passenger anywhere; £95.—Write, Lieut. Lewis, 39, Hartfield Rd., London, S.W.19. [7044

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THE New Calthorpe 2-stroke, fitted with Enfield 2-speed gear; £62 nett.—Carlton Motor Co., Torwood St., Torquay. [4938

DELIVERY From Stock.

THE New Jap-Calthorpe Lightweight, fitted with Enfield 2-speed gear; £62 nett.—Carlton Motor Co., Torwood St., Torquay. [4937

DELIVERY From Stock

THE New Precision 2-stroke Calthorpe, fitted with Enfield 2-speed gear; £67/10 nett.—Carlton Motor Co., Torwood St., Torquay. [4936

CALTHORPE Junior, 1914 2¼h.p., 2-speed; £30.—Holmes, 30, Whitelake Av., Flixton, Manchester. [X4206

2¾h.p. Calthorpe-Jap, Enfield gear, excellent condition; £40.—Brunswick Lodge, Thames Ditton. [6939

CALTHORPE. 1915, 2 speeds, new condition; £40, or exchange.—619, Garratt Lane, Earlsfield, S.W. [7235

CALTHORPE 1915, 2¾h.p. J.A.P., Enfield 2-speed. new condition; £40.—63, Solon Rd., Brixton. [7443

1914 Calthorpe, 2 speeds, good condition, ride away; bargain, £32.—43, Yalding Rd., Bermondsey, S.E.16. [6658

NEW Calthorpe-Jap 2¾h.p., with Enfield patent 2-speed, and free engine.—Main, 36, The Parade, Leamington. [X3586

CALTHORPE-J.A.P., 1915, 2-speed, guaranteed condition, any time; £40.—51, Maplethorpe Rd., Thornton Heath. [7017

1916 Calthorpe 2¾h.p., 3-speed gear box, sound condition; £42; ready to ride away.—Smith, Cycle Depot, Stansted, Essex. [6946

CALTHORPE-J.A.P., 2¾h.p., 1919 (new July), Enfield 2-speed gear, hardly used; £60.—Fletcher, Fletcher Gate, Nottingham. [4832

CALTHORPE Junior, 1915, fine condition, 2-speed, F.E., ride away; offers or exchange, must sell.—87, Truro Rd., Wood Green. [6837

CALTHORPE-J.A.P., 2¾h.p., Enfield 2-speed, lamps, horn, speedometer, excellent condition.—173, Ravenslea Rd., Balham, S.W.12. [7185

CALTHORPE-J.A.P. (late), 2¾h.p., 2-speed, clutch, disc wheels, excellent tyres, all accessories, as new; £38.—70, Minet Av., Harlesden. [7274

CALTHORPE-J.A.P. 1915 2¾h.p., Enfield 2-speed, lamps, horn, tyres excellent, just overhauled, ride away; 42 gns.—G.L., 21, Church St., Croydon. [7151

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CALTHORPE-PRECISION 2½h.p., 2-speed, Lu lamps, spare belt, excellent condition; seen time; £38.—31, Ridge Av., Letchworth, Herts. [X4

1919 (July) Calthorpe-Jap 2¾h.p., P. and H. la set, horn, tools, 1½in. flexible exhaust, 800 mi perfect; £75, no offers.—Simpson, Eigne St., Hereford [6

CALTHORPE-J.A.P. 2¾h.p., 1917, wedge tank mo 2-speed Enfield gears, excellent order; any tri owner getting combination; £45.—Capt. Jewell, Ba staple. [6

CALTHORPE Lightweight, 1914, 4-stroke, 2 spe excellent condition, pulls splendidly, £3 wo spares; first £37 secures.—Raymond Bomford, Stoult Worcester. [X4

CALTHORPE-J.A.P. 2¾h.p., 2-speed, clutch, lam spare tube, belt, and mirror, etc., stored dur the war, condition excellent; £47, or nearest.—Whitworth Rd., Southampton. [7

CALTHORPE 1916, 2¾h.p. J.A.P. engine, Enfield speed and clutch, tyres perfect, in exceptional c dition throughout, just overhauled; £46; exchange R. D. Varty, Thundersley, Essex. [7

ALLEN-BENNETT Motor Co.—Calthorpe, 19 2¾h.p. J.A.P., Enfield 2-speed, and clutch, new; £44.—9, 10, 11, Royal Parade, London R Croydon. 'Phone: Croydon 2450. [7

1919 2¾h.p. Calthorpe-Jap, 2-speed, free engi Amac carburetter, tools, lamps, horn, sp inner tube and belt, new April, very little used, buy combination; 66 gns.—Joy, Buxted, Sussex. [6

CALTHORPE Combination, coachbuilt sidecar, t J.A.P. engine, copper disc wheels, perfect con tion, exceptionally smart turnout; £125.—Write, E S.M.T., Davies and Co., Finch Lane, E.C.3. [6

1915 2¾h.p. Calthorpe 2-stroke, in exceptiona fine condition, splendid hill-climber, low pet consumption, fully guaranteed, ride away; a g £29/10; wire secures.—Butler, 16, St. James R Derby. [X4

CALTHORPE-J.A.P., 1916, 2¾h.p., stored 2 yea excellent condition, nearly new Palmer cord ba tyre, Dunlop belt, accessories, spare tyre and 2 be takea pillion rider well; seen after 7 any evening, by appointment; £45.—Grellier, 57, River Av., E mer's Green, N.13. [6

CALTHORPE-J.A.P. 1916 4-5h.p. Twin Combi tion, Enfield 2-speed, all chain cush dri handle start, completely equipped, and perfect c dition throughout; £100.—F.O.C.H. (Fair Offer C House), 5, Heath St., Hampstead, N.W. (near Han stead Tube). 'Phone: Hampstead 3752. [63

Campion.

1914 Campion-Jap, 6h.p., with C.B. sidecar, go reliable machine, in splendid order; £80.—S Seaborne Rd., Boscombe, Hants. [73

1915 Campion-Jap Combination, 4¼h.p., 3-spe clutch, etc., condition excellent throughou £80.—213, Lincoln Rd., Peterborough. [6

1919 6h.p. Campion Combination, J.A.P. engi and Bosch mag., beautiful order, done 1 miles.—Evans, 162, Portland St., Southport. [X46

1916 6-8h.p. Campion-Jap Combination, 3 spee Bosch mag., coachbuilt sidecar, 2-cyl., spe ometer, lamps, horn; £110, or nearest offer.—Bak 16, Lavington Rd., Ealing. [72

CAMPION-VILLIERS 2¾h.p. 2-stroke, C.A. Amac, John Bull belt, Dunlops, Druids, fo boards, knee pads; ride away; £34.—Verity, 17c, Sil St., Wellingborough. [74

1915 6h.p. Campion-Jap Combination, Jardine speed, chain drive, B. and B., Bosch, nea new tyres, speedometer, mechanical horn, lamps, go condition; £95.—Sugden, Meadow Cottage, Shepl nr. Huddersfield. [71

Centaur.

3½h.p. Centaur and Sidecar, Bosch mag.; first o £28 secures; owner bought light car.—Rudla Birdsall Row, Redcar, Yorks. [68

CENTAUR, 3½h.p., U.H. mag., recently overhaul tyres as new, ride away; £25; after 6 p.m.—M sell, 19, Convent Terrace, South Ealing. [68

CENTAUR, 4h.p., 2 speeds, free engine, Bosch ma B. and B. carburetter, Whittle belt, nearly n tyres, in good running order; first £40 secures, rubbish, or cash difference for 8-10h.p. combination L. Stratford, 203, Junction Rd., Upper Holloway, L don, N.19. [68

Chater-Lea

8h.p. Chater-Lea and Sidecar; £45, or exchange 3½h.p. 2-speed.—Flavell, Wath-on-Dearne. [X45

SOUTH Lancashire Only.—Chater-Lea enquiries.—Blake and Co., Official Dealers, Liverpool-Ma chester. [70

CHATER-LEA Combination, 6h.p., 3 speeds, ch drive, good condition; £68.—62, Albert Rd., D eton, London. [67

8h.p. Chater-Lea Combination, 3-speed, clutch, go order; must sell; first offer £90 secures.—Lie Taylor, Marine Barracks, Plymouth. [X39

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Chater-Lea.

CHATER-LEA 3½h.p., mag., B. and B., new Dunlop belt, good tyres, horn, etc., good running order; £28.—H.W.M., 63, Shooter's Hill Rd., S.E.3. [7084

CHATER-LEA, 8h.p., 3-speed countershaft gear, Gloria sidecar, tyres as new, spare chain, and all accessories; price only £80; seen after 7.30 p.m.—Address, Ingram, 41, Riffel Rd., Cricklewood, N.W. [6899

Chater-Lea-Bat.

CHATER-LEA-BAT, 3½h.p., mag., B. and B., good condition; £18/10.—10, Kimberley Gdns., N.4. [7287

Chater-Lea-De Dion.

CHATER-LEA DION 3½h.p., B. and B., Bosch, horn, tyres excellent, condition good; offers, cheap.—Willesden Green Garage, 151, High Rd., Willesden Green, N. [6917

Chater-Lea-Fafnir.

CHATER-LEA-FAFNIR, good mechanical order; £35.—Dixon, 58, Station Rd., Anerley, S.E.20. [X4492

Chater-Lea-Jap.

8h.p. Chater-Lea-Jap, 1914, 3-speed hub, new C.B. sidecar; best offer over £80.—Write for appointment, Capt. Ryder, 43, Newlands Park, Sydenham, S.E.26. [6891

Cleveland.

CLEVELAND-PRECISION, 1914, 4h.p., 2-speed model, lamps, horn, and mileage recorder; £38.—The Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7. [0039

Clyde.

h.p. Clyde, B. and B., U.H. mag., Saxon forks, good tyres, horn, lamp, low, overhauled, ride away, £2 cash, appointment only; also new complete pulley air, fit lightweight, £3 cash.—Allen, Curles Manor, Havering, Newport, Essex. [6506

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CLYNO Twin, 1916, latest W.D. coach combination; £105.—R., 5, Victoria Av., Surbiton. [X4467

CLYNO 5-6h.p., coach sidecar, countershaft 2-speed; £78 cash.—17, Garden Av., Mitcham, S.W. [7093

CROVER, Smith and Willis, Basingstoke, Clyno Agents.—Deliveries in strict rotation; order now [5778

CLYNO 6h.p., 2-speed, kick-start, enclosed mag.; £42.—Geary, 155, Uxbridge St., Burton-on-rent. [X4559

CROW Bros., High St., Guildford, West Surrey agents for the new Clyno.—Order now for early delivery. [4084

CROOK Bros.; Burnham-on-Sea, can give delivery from stock of the new Clyno lightweight; write for particulars. [6735

h.p. Twin Clyno Combination, 2-speed, kick starter, perfect running order; £90; offers.—50, Ballsond Rd., Islington, N. [7080

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CLYNO 6h.p. 1916, 4 wheels, 3-speed, K.S., electric lamps, 2-seater sidecar; £110. — 18, Wood , Walthamstow, E.17. [7464

CLYNO 6h.p. 3-speed Combination, late model, interchangeable and detachable wheels; 105 gns.—alifax Motor Exchange, Union St. South, Halifax. [6790

CLYNO Combination, 1918 W.D. model, 6h.p., hood, screen, spare wheel, Lucas lamps, tools, etc.; barain, £130.—231, Coventry Rd., South Yardley, Birmingham. [X4433

CLYNO 1914-1915 6h.p. Coachbuilt Combination, 3 speeds, K.S., electric lighting, £16 overhaul, smart, splendid condition; £95.—Capt. Caute, Camp Dental out, Lydd. [X4635

-6h.p. Clyno Combination, 3 speeds, interchangeable wheels, in good running order, smart appearance, lamps, horn, etc.; £80.—Roy, Mill House, Burnham very, Norfolk. [X4248

CLYNO 6h.p., 1918 military model, 3 speeds, gun chassis, 4 new tyred interchangeable wheels, splendid condition, suit tradesman; £90.—Kelly, 85, Penarth Rd., Cardiff. [6978

ATE 1915 Clyno Combination, 3-speed, clutch, hood, wind screen, spare wheel, tyres, etc., splendid condition; £120, or offer.—45, Sweet Briar alk, Edmonton, N.18. [6914

h.p. Clyno Combination, coachbuilt sidecar, K.S., 2 speeds, free, chain drive, new tyres, Cowey speedometer, excellent condition; trial any time; £75, bargain.—Hingley, Lane End, Rock, Bewdley. [X4207

ALLEN-BENNETT Motor Co.—Clynos, two now being overhauled, 1916 combinations, spare wheels, re-enamelled any colour; £125.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 50. [7351

915-16 6h.p. Clyno Combination, 3-speed, kick start, speedometer, large lamp set, new tyres, hardly used since 1917, small mileage, guaranteed perfect; any trial; £100.—Hood, 45, Bow Common Lane, Bow, London. [7391

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CLYNO Combination, 1916, 6h.p., 3-speeds, kick-starter, enclosed chain drive, 6ft. attachment sidecar, 4 detachable wheels, several spare parts, excellent condition; £110.—A.S., 41, Hamilton Ter., N.W. 'Phone: Pad 819. [7023

CLYNO 5-6h.p. Coachbuilt Combination, 3 speed, kick start, clutch, spare interchangeable wheel, speedometer, 3 lamps, horn, spares, tools, nearly new back and front tyres; seen any time; 90 gns.—21, Singer Rd., Hornsey, N.8. [6887

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CONNAUGHT, 2¾h.p., perfect condition and appearance; £37.—Kwiksale, 35, Long Acre, W.C. [6679

CONNAUGHT 2½h.p. 2-stroke, good running order; £33/10; any time.—78, Springbank Rd., Hither Green. [6555

HOVE Engineering Works, Davigdor Rd.—Sole district Connaught agents; deliveries in rotation; all accessories and repairs. [3183

1919 2¾h.p. Connaught 2-stroke, single speed, only ridden 300 miles, perfect condition; any trial; £48.—21, Langham Place, Northampton. [6857

CONNAUGHT, 2½h.p., 1915, stored 2 years, just overhauled, fine condition, footboards, Jones speedometer, Lucas lamp, horn, tools, complete; £36. —Williams, Stanford, Faringdon, Berks. [6574

Corah.

CORAH-J.A.P. Combination, 6h.p., 3-speed, handle starting, coach S.C., 3 electric lights, wind screen, 3in. tyres, back new; £75, offer; trial after 5 o'clock.—16, Beresford Rd., Chingford. [6509

Coulson.

1919 Coulson B., actually in stock; £75.—W. Saunders, Ltd., Garage, Colchester. [X4541

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

De Dion.

DE DION, 6h.p., 3 speeds, reverse; £55; trial.—11, Dafforne Rd., Upper Tooting. [6760

Diamond

1919 Diamond, 2-stroke, 2¾h.p. Villiers engine, done about 300 miles only; perfect; £48.—79, Eaton Rise, Ealing. [7271

1919 Diamond-Jap, 2-speed, tools, lamps, etc., perfect condition, little used.—2, Wallbrook St., Coseley, Bilston, Staffs. [X4624

Douglas.

DOUGLAS 4h.p. Combination, condition as new; £95.—Below.

DOUGLAS 4h.p. Solo; bargain, £58.—Below.

DOUGLAS (2) 4h.p., need assembling; each £34.—Below.

NO Reasonable offer refused.

GAMLIN, 6, William Mews, Devonshire St., Gt. Portland St., London, W. [X4500

1919 Douglas New 2¾h.p. and 4h.p. Combinations in stock—Below.

1916 Douglas 2¾h.p., very good order; 45 gns.—Edwards, 7, Exhibition Rd., South Kensington, S.W.7. [7387

4h.p. 1918 Douglas Combination; £115.—27, High St., Doncaster. [7227

DOUGLAS 1919 4h.p., Canoelet sidecar; £135.—'Phone 1090 Hornsey. [X4272

DOUGLAS 1915 2¾h.p., 2-speed, excellent condition; £50.—63, Solon Rd., Brixton. [7446

4h.p. 3-speed Douglas, like new; £75.—29, St. Leonards St., Bromley-by-Bow. [7285

DOUGLAS 1916 2¾h.p., 2-speed, T.T., running order; 50 gns.—21, Newton Av., Acton, W. [7449

DOUGLAS, 1915, in excellent order; 50 gns.—45, Burton Rd., Brixton, London. [X3997

DOUGLAS 1918 4h.p., 3-speed, as new; £80.—Natona, top Richmond Park Rd., Sheen. [6526

DOUGLAS, 2¾h.p., 1916, as new, all spares; £65. —E., 69, Raymouth Rd., Rotherhithe, S.E. [7038

DOUGLAS, 1919, new, unridden, £85; 1915, £55; after 7.—9, West Heath Av., Golder's Green. [6544a

1914 2¾h.p. Douglas, £45; also 1915 2¾h.p., all accessories, £55.—175, Camberwell Grove, S.E.5. [6996

DOUGLAS 1911 2¾h.p., 2-speed, splendid condition; £32.—14, Melbourne Av., West Ealing. [6822

DOUGLAS.—Now delivering new 1919 model 4h.p. combination; £123.—Moffat, Yeovil. 'Phone: 50. [1103

DOUGLAS 2¾h.p., 1915, 2 speeds, running order; £35, no offers.—Hole, 129, Park Lane, Carshalton. [7207

DOUGLAS 2¾h.p., 2-speed, late 1914, as new; £58, or near offer.—59, Blenheim Rd., Walthamstow. [7164

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLASES, 1916, overhauled; £59, £57, £56, 1915 £53.—Edwards, 7, Exhibition Rd., South Kensington. [6544

DOUGLAS, 1911, just overhauled, climb well; nearest 20 gns.—Marriott, Haine's Hill, Taunton. [X4496

DOUGLAS 1916 2¾h.p., 2-speed, fast, reliable; first £50 gets it.—Box L4,556, c/o *The Motor Cycle.* [7481

1919 2¾h.p. Douglas, September delivery; £80, or offers.—Downing, Beecheroft, Tettenhall, Wolverhampton. [6731

1919 (new Jan.) 2¾h.p. T.T. Douglas, 2-speed, makers' colours, as new; £58/10.—R., 5, Victoria Av., Surbiton. [X4466

DOUGLAS 1915 2¾h.p., unused 2 years, engine perfect; £58; lamps, etc.—47, Hamilton Rd., Reading. [7160

DOUGLAS 3½ 4h.p., 3-speeds, kick-start, fine order; offers.—Brown, Rangemore Village, Burton-on-Trent. [X4562

NEW Douglas W.D. 2¾h.p., 2-speed, just unpacked, tested, sound.—Bennett, 29, Station Rd., Letchworth. [7231

DOUGLASES, 1915, 1916, overhauled; £47 to £58.—7, Exhibition Rd., South Kensington, S.W.7. [7384

1915 2-speed Douglas, in excellent order throughout; any trial; £52/10.—Empson, Gamlingay, Sandy. [7405

4h.p. Douglas, 2-speed model, 1915 machine, nice condition; £57/10.— Wauchope's, 9, Shoe Lane, London. [7335

DOUGLAS (late) 2¾h.p., 2-speed, perfect, only wants seeing; cheap; after 2.—Bell, 63, Pimlico Rd., S.W. [7091

DOUGLAS 2¾h.p., 1915, overhauled and re-enamelled; £55.—40, Replingham Rd., Southfields, S.W. [7308

£50.—W.D. Douglas 2¾h.p., footboards, good tyres and running order.—Valpy, Queen Mary Club, Eaton Square, S.W.1. [6711

DOUGLAS 2¾h.p., 2-speed, 1914, not ridden during war, perfect condition; £58.—White, 11, The Grove, Blackheath, S.E. [6639

4h.p. Douglas 3-speed Combination, accessories; £97/10.—223, Hammersmith Rd., W. Phone: Hammersmith 80. [6512

£60.—Douglas 2¾h.p. 1915, 2 speeds, fast, reliable.—Dudley Davis Motor Exchange, 103a, High St., Wandsworth. [7253

DOUGLAS, 2¾h.p., 1913, Bosch mag., single gear, T.T. bars, spare tube, very fast; 47 gns.—T. H. Amson, Uttoxeter. [X4566

DOUGLAS, 1913, 2-speed, new tyre and belt; bargain, first £43; appointment only.—Capt. Collins, Fairholme, Sunbury. [7210

4h.p. Douglas Combination, 1918 model, appearance as new; 98 gns.; exchange.—136, Lavenham Rd., Southfields, S.W.18. [6896

DOUGLAS W.D. 2¾h.p., 2-speed, ready to ride away; price £75.—Rothwell and Milbourne, Cowleigh Garage, North Malvern. [6724

DOUGLAS, 2¾h.p., 1915-16, 2-speed, overhauled and renovated; 45 gns.—Franklin, 357a, North End Rd., Fulham, S.W.6. [7105

1915 2¾h.p. Douglas, 2 speeds, long exhaust pipe, splendid condition; cash wanted; bargain, £48.—35, Mile End Rd., E.1. [6567

DOUGLAS, 2¾h.p., 2-speed, W.D., practically new, perfect condition; 72 gns.—Currington, Byron Place, Leatherhead, Surrey. [6689

DOUGLAS 1917 4h.p., 3-speed, clutch, kick starter, Douglas sidecar, accessories; sacrifice, £95.—5, Victoria Av., Surbiton, S.W. [7323

DOUGLAS 1914 T.T. Model, 2-speed, 2¾h.p., splendid condition; £49; seen any time.—Apply, 346, Richmond Rd., Twickenham. [6632

DOUGLAS, late 1916, 4h.p., 3-speed, clutch, splendid running machine; bargain, £75.—Box L4,557, c/o *The Motor Cycle.* [7482

DOUGLAS, 1912, £25; engine wants assembling, all on ready for taking away.—Nurse, 34, St. John's Wood Terrace, N.W.8. [6892

DOUGLAS New 1919 Combination, new type clutch, delivery this week certain; £150. — Janks, 16, Hesper Mews, Earl's Court. [7428

DOUGLAS 1919 4h.p. Combination, used for a few miles; £145.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0552

DOUGLAS 4h.p., 1918, almost new, very low mileage; accept £80 cash for quick sale.—24, Grosvenor Av., East Sheen, S.W.14. [7089

DOUGLAS 1916 4h.p. Combination, completely overhauled and re-enamelled; £110.—The Service Co., Ltd., 95-96, High Holborn, W.C. [7373

DOUGLASES, 2¾h.p., 2-speed, 1915 and 1916; from £48; call and inspect.—Rey, 173, Gt. Portland St., W. 'Phone: Mayfair 879. [7325

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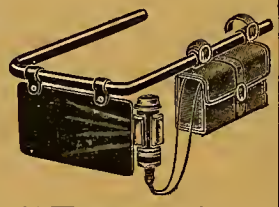

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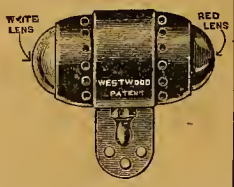

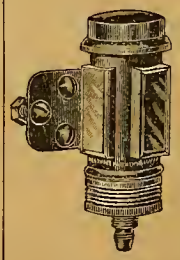

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Douglas.

DOUGLAS, 1915, W.D. model, 100 miles to gall. 50 gns.; good running condition.—W. Plowman, 46, Iverson Rd., Brondesbury, N.W.6. [712

DOUGLAS 4h.p. Combination, late 1916, 3-speed kick start, lamps, horn, like new; 95 gns.—Hutton, Red Lion Hill, East Finchley. [X464

1919 4h.p. Douglas Combination, just delivered from works, brand new, must sell; what offers?—13 Claremont Gardens, Surbiton, Surrey. [727

ALLEN-BENNETT Motor Co.—Douglas 1914 2¾h.p. £55.—9, 10, 11, Royal Parade, London Rd Croydon. 'Phone: Croydon 2450. [735

DOUGLAS, 2¾h.p., new May, 1919, W.D. mode electric head and tail lamps, Tan-Sad, tools, etc. £75.—27, Havelock Rd., Croydon. [656

4h.p. Douglas Combination, June, 1919, electri lamps, horn, tools, Bonniksen; £130.—1, Cnr nah's Grove, Old Trafford, Manchester. [X451

DOUGLAS 2¾h.p., 2-speed, 1915 W.D., new tyre enamel and plating perfect, Klaxon, tools, top ho turnout.—11, Waldegrave Rd., Ealing. [654

DOUGLAS, 2¾h.p., 1915, 2-speed, T.T., perfect orde throughout, Lucas lamp set, pump, horn, tool £55.—73, Victoria Rd., Stroud Green, N.4. [693

24h.p. Douglas, 1914, long exhaust, lamps, mechan cally sound, good appearance; nearest £55.- 6, Henstal Rd., West Hampstead, N.W.6. [695

DOUGLAS 1917 2¾h.p., 2-speed, very fast, tan aluminium and blue, tyres good, horn, pum etc.; £55.—Box L4,555, c/o *The Motor Cycle.* [748

DOUGLAS 2¾h.p., W.D., new June, 1919, electri lamp and horn, footboards, all tools, etc.; £7 —Carey, 17, Ellington St., Barnsbury, N.7. [697

1915 Douglas, 2¾h.p., in excellent condition, com plete set of accessories; expert's examinatio price £60.—Box L4,483, c/o *The Motor Cycle.* [662

DOUGLAS 1916 4h.p. Combination, good conditio and appearance, good tyres, mechanical hor tools, spare valve; 90 gns.—56, High St., Tooting. [717

DOUGLAS 4h.p. Combination, uncrated last May brand new condition, beautifully equipped; an trial; £120.—60, Wallingford Av., N. Kensington. [685

GIBB, Douglas specialist, Gloucester, solicits you enquiries for anything concerning Douglases; t him for the part you require. 'Phone: 852. [634

DOUGLAS 4h.p. Combination, July (1919), Cowey, lamps (Miller), Dunlop back; £130.—Evershed, Auckland Rd. West, Southsea, Hants. (After 5 p.m.) [660

DOUGLAS Lightweight, 2-speed, tip-top condition Amac, Dunlops, P. and H., long exhaust; £44.- 89, Durlston Rd., Upper Clapton. (After 5.15.) [688

DOUGLAS 2¾h.p., 2-speed, late all-black model, Luc lighting set, mechanical horn, tyres as new, fa and smart turnout; £55.—101, Grove Lane, Camberwel [681

DOUGLAS, 1914, 3½h.p., 2 speeds, clutch and kic starter, tyres as new, lamps and tools; recentl overhauled; no offers, £70.—Dennis, Woburn Sands. [X454

£100.—4h.p. Douglas combination, 3 speeds, kic start, comfortable, and in exceptionally sma condition.—Loweth, 6, Mount Pleasant Rd., Ealing W. [715

1919 Douglas 4h.p. Combination, delivered Augu 28th, mileage 500, faultless, lamps, horn, tool £135.—Jackson, 89, Oak Lane, Bradford. 'Phone 2190. [X456

ALLEN-BENNETT Motor Co.—Douglas, 191 £57/10; excellent condition.—9, 10, 11, Roy Parade, London Rd., Croydon. 'Phone: Croydo 2450. [735

1919 4h.p. Douglas Combination, new July, lamp horn, spares, splendid condition; £140.—Ea Harrington House, Gladstone Rd., Erdington, Birmin ham. [664

23h.p. W.D. Douglas, perfect condition throughou 24 Thomson-Bennett mag.; £55, no offers; appoin ment between 6 and 8.—68, Lytton Rd., Leytonston E.11. [652

DOUGLAS 2¾h.p., 1913, T.T., Bosch mag., ne pistons, front brake, and valves, horn, good co dition; £40; no cheques.—30, Norfolk Rd., Maide head. [70

1919 Douglas 4h.p. Combination, as new, not ridd 100 miles, large set P. and H. lamps, hor wind screen, storm apron, etc.; £165.—Cooke, 21, Grey Inn Rd., W.C. [66

1919 (June) Douglas 2¾h.p., W.D. Model, perfe condition, mileage under 200, Klaxon, all tool any weekday evening after 7; £78.—A.L., 25, T Drive, Ilford. [66

DOUGLAS 1919 2¾h.p., W.D., run 300 miles, to ing bars, unused lamps, horn, pillion seat, inst ance, numerous spares; £75.—Scott, 25b, North Au ley St., W.1. [67

4h.p. 1919 Douglas Combination, absolutely beautiful turn-out; £130, or nearest.—Be Grove House Garage, Cross St., Sale, Chesh 'Phone: Sale 11. [X46

MOTOR CYCLES FOR SALE.

Douglas.

SMITH'S, opposite Chalk Farm Tube Station, have for sale Douglas 1916 2¾h.p., in excellent condition, tyres new; 50 gns.; also 4h.p. 1916 combination; 85 gns. [7259

ALLEN-BENNETT Motor Co.—Douglas, 1919, 4h.p. model, run under 500 miles; £110.—9, 10, 11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [7365

DOUGLAS 2¾h.p., W.D., new last June, complete lamps, spares, horn, not much ridden, excellent condition; seen in London; £70.—Box L4,507, c/o *The Motor Cycle.* (D) [6668

3½h.p. Douglas, 1914, T.T., 2-speed, stored 3 years, perfect order, condition as new, lamps, horn, knee-grips, new tyre and belt; £75.—Box L4,566, c/o *The Motor Cycle.* [7493

4h.p. Douglas 1916 Combination, 3-speed, perfect condition, £100; ditto, 1915, good condition, £87; garaged West London.—To view write 47, Barrington Rd., Crouch End. [7415

DOUGLAS 4h.p., 3-speed, clutch, k.s., new belt, mag. and Amac, new condition; £67 lowest; evenings or appointment.—Gore, Gores Cottages, New Rd., Orpington, Kent. [7087

DOUGLAS, late 1915, 2¾h.p., 2 speeds, all accessories, tyres as new, in splendid running order; £60; can be seen after 6.30 any evening.—41, Hillcourt Rd., East Dulwich, S.E. [6691

1919 Douglas 4h.p. Combination, lamps, horn, wind screen, only run a few hundred miles, as new; price £145, or nearest offer.—E. V. Bassett, Handel House, Yeovil, Somerset. [6833

DOUGLAS 1913 T.T. 2¾h.p., 2-speed, lamps, horn, knee-grips, footboards, spares; trial on carrier; powerful hill-climber; £44; seen evenings.—13, Westfield Rd., Beckenham, Kent. [7201

A REAL Hot Stuff Douglas, climbs houses, 1914¾, 2¾h.p., Bosch, 2-speed, new tyres, first-class mechanical condition; bargain, £53; after 6 p.m.—8, Bishops Park Rd., Fulham. [6924

4h.p. Combination, 1918 Douglas, Silver Swan torpedo sidecar, smart turnout, good as new, perfect running order; bargain, 100 gns.—227, c/o Longman's, 35, New Oxford St., W.C. [6676

DOUGLAS 1919 4h.p. Combination, fully equipped, also 2 2¾h.p. 1915; £50 and £60; deferred terms arranged.—Lamb's, 151, High St., Walthamstow, and 6, High Rd., Wood Green, N. [6784

1919 2¾h.p. Douglas, delivered from works late August, perfect running order, lamps, accessories, etc., owner bought combination; £84.—Write or call, Tull, 30, Mall Rd., Hammersmith. [6734

DOUGLAS, 1919, 2¾h.p., bought in March, all accessories, spare chain, valves, etc., owner buying light car, splendid machine; £80, or near offer.—Snell, 19, Cornwall Av., Church End, Finchley. [6661

1919 Douglas 2¾h.p., delivered May, engine No. 39905, blue tank, lamps, horn, knee-grips, etc., spare belt, tube, valve, well tuned engine; £80.—Seen at 136, London Rd., Kingston, Surrey. [X4186

DOUGLAS, 1914, in good order, spare valves, springs, plugs, belt, tube, lamps, generators, horn, toolkit, and pump; £55. Wanted, 6h.p. J.A.P.—Write, Sheppard, 108, The Crescent, Chelvey, Slough. [7427

DOUGLAS 2¾h.p., 2-speed, 1915, Bosch mag., lamps and horn, tyres new, recently plated and enamelled and overhauled, mechanically perfect; first £55 secures; Newcastle.—Box L4,569, c/o *The Motor Cycle.* [7504

2 3h.p. W.D. Douglas, brand new; one or two early deliveries at £72, plus carriage; pamphlets with particulars.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [7328

DOUGLAS 2¾h.p., 2-speed, only ridden short distance, excellent appearance, fast, powerful, economical, lamps, generator; bargain, 60 gns.—33, Hoveden Rd., Cricklewood Broadway N.W.2. [6972

DOUGLAS 2¾h.p., 1914, 2-speed, K.S., clutch, speedometer, P. and H. lighting set, spare valve, accessories, in beautiful condition; £60; after 7 evenings.—56, Ormeley Rd., Balham, S.W.12. [7132

DOUGLAS 2¾h.p., 1913-14, T.T., 2-speed, stored 2 years, Bosch mag., new crankshaft, flywheel, long exhaust, beautiful tone, lamps, speedometer, spare tyre; £55.—P. Hamson, Queen's Rd., Hale, Cheshire. [X4133

DOUGLAS 1913 2¾h.p., 2-speed, excellent condition, very little used, lamps, horn, despatch and tube cases, spare belt, chain, valves, tools, etc., tyres good; £50.—Borwick, Colf House, Windermere. [X4401

BRAND New 1919 4h.p. Douglas Combination in stock for immediate delivery; cash or extended payments.—Harrods Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [6673

ALLEN-BENNETT Motor Co.—Douglas 4h.p. Combination, lamps, hood, and screen, disc wheels, smartest Douglas on the road; £155.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [7343

1919 Douglas Combination, July, perfect, carefully driven 800, Lucas lamps, horn, Cameo, spares, engine 8107; taking delivery prior order higher power; £150, or near.—Read, Westhourne Terrace, Lancaster. X3798

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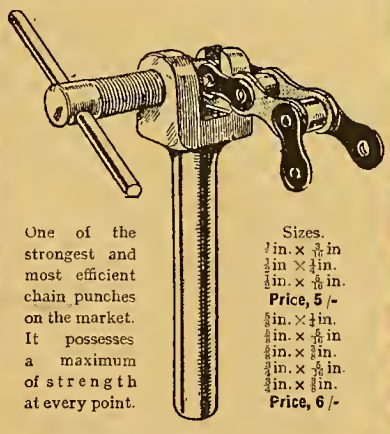

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PETROL FUNNELS, oblong in shape, with gauze strainer, 6in. × 3½in., **1/9**; 8in. × 4½in., **2/9**; 10in. × 6in., **3/9.** (Postage 4d.)

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Showrooms: 21a, STORE ST., W.C.1
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MOTOR CYCLES FOR SALE.

Douglas.

1919 Douglas 2¾h.p., post-war model, electric lighting, Klaxon, tools, small mileage.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead, N.W. (near Hampstead Tube). 'Phone: Hampstead 3752. [6327

1913-14 Douglas, 2¾h.p., 2-speed, free engine, Bosch mag., Binks carburetter, lamps, horn, etc., also all parts for clutch and kick start, in splendid condition; 45 gns., no offers.—Addison, 10, Park Av., Barrow-in-Furness. [X4411

DOUGLAS, 4h.p., 1915, Millford C.B. sidecar, 3 speeds, clutch, kick starter, excellent condition, low mileage, new Dunlop tyres, lamps, horn, speedometer, etc.; £100.—Williams, 36, Spilman St., Carmarthen. [7117

1919 2¾h.p. W.D. Douglas, perfect condition, complete with footboards, set of P.H. lamps, mechanical horn, long copper exhaust, and full tool kit; £75, or best offer.—Corbin, 33, Clarence St., Loughborough. [X4335

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0966

70 GNS.—Douglas, 2¾h.p., W.D., lamps, Klaxco, tools, disc wheels, long exhaust, tank blue and aluminium, enamel and plate in perfect condition; owner going abroad.—3, Madeira Park, Tunbridge Wells. 'Phone: 424. [7276

1914 Douglas 4h.p. Combination, 2-seater sidecar, electric lighting set, splendid running order and condition, privately owned; price complete for quick sale £98.—Seen and tried at Virgos, 156, High St., Hounslow, W. [X3993

DOUGLAS, 1919, 2-speed, T.T., new in August, only done 400 miles, Lucas lamps and horn, Veeder cyclometer, all spares, very fast, fully insured until next July; £82.—Marians, 47, Dover St., W.1. Tel.: 1043 Regent. [6989

1914 Douglas, 2¾h.p., 2-speed, little used, and just completely overhauled, first-class running condition, tyres good, Bosch mag., tools and usual accessories, footboards; price 50 gns.—On view Atkey's Garage, Becket St., Derby. [6636

DOUGLAS Combination, brand new, 4¼h.p., actually in stock, ready for delivery, latest type clutch, just received from works; £150.—Stretton and Smith, Light Car Specialists, 23, Woodstock St. (off New Bond St.), W.1. Mayfair 3129. [6672

1916 Douglas Combination, Canoelet sidecar, 2 speeds, Klaxon, speedometer, lamps, inflator, tools, spares, fully insured to next August, splendid condition; £92; seen by appointment.—Kirby, 51, Chestnut Av., Forest Gate, E. [7152

DOUGLAS 1919 4h.p. Combination, lamps, horn, tools, and spares, perfect condition, small mileage, actually in stock.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (nr. Hampstead Tube). 'Phone: Hampstead 3752. [7466

1919 4h.p. Douglas Combination, engine overhauled on September 20th, and in tip-top tune, dissolved acetylene lighting outfit, all lamps, mechanical horn, 3 spare tubes, belt, and tools, also watch; best over £135.—'Phone appointment, Kingston 222. (D) [X4187

DOUGLAS T.T., delivered Feb., 1919, little used, specially tuned engine, long exhaust, head and rear lamps, horn, knee-grips, Terry's spring forks, tool kit, etc., in splendid condition; £80, or nearest offer.—R. Mitchell, Springville, Keighley. [X4195

4h.p. 1919 Type Douglas Combinations, with improved type of clutch; one or two early deliveries at £123, plus cost of crate and carriage; pamphlets with specification.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [7329

DOUGLAS 2¾h.p., 2-speed, September, 1914, low mileage, very little used during war; Lucas lamps and horn, Bink's carburetter, XL'All saddle, best Smith's speedometer, good Palmer tyres; £50; no offers.—Dr. Wells, 48, Belsize Sq., N.W.; after 4.30. [X4553

DOUGLAS 1919 4h.p. Combination, one month in use, hardly scratched, perfect, horn, spare belt, tools, cording waterproof and leggings; owner going abroad; £155; seen by appointment, letter, or 'phone Kensington 3560.—Wolffsohn, Bailey's Hotel, Gloucester Rd., S.W. [6683

1919 Douglas 2¾h.p., delivered end of July, semi-T.T. bars (rubber grips fitted), Klaxon, lamps, pump, full set tools, insurance 10 months to run; machine guaranteed perfect and unscratched; offers over £85.—Rumbold, 30, Alumhurst Rd., Bournemouth West. [6874

DOUGLAS 1919 4h.p. Combination, conch-varnished sidecar, hood, wind screen, apron, 3 electric lamps, Klaxon, speedometer, and improvements, spare cover and tube, condition as new; £150; any trial by appointment.—Rev. F. E. England, Craighall, Grove Rd., Sutton, Surrey. [6569

SPECIALLY Picked 2¾h.p. W.D. Douglas, mileage 1,500, carefully run in, and in perfect order, tyres practically new, tubes unpunctured, belt and chain new, full toolkit, with spare chain, etc.; £55; any examination and trial run.—Bushey View, Sandy Lane, Hampton Wick. [6998

MOTOR CYCLES FOR SALE.

Douglas.

1914 Douglas, T.T., 2¾h.p., very fast, light grey and navy, Bosch mag., Amac carburetter, Stewart speedometer, powerful head lamp, tyres in splendid condition, stored during war, tools and other effects; £60.—Apply, E. J. Ashby, The Gables, Harmondsworth, Yiewsley, Middlesex. 'Phone: 2 Yiewsley. [7113

DOUGLAS 1915 T.T. 2¾h.p., 2-speed, topping running order, splendid condition, and exceedingly fast, good pre-war material inside and out; compelled to sell through doctor's orders; must go, or shall be tempted to ride again; £55; stored 2 years of war.—E. F. Griffiths, 757, High Rd., Tottenham. [6720

2¾h.p. Douglas and Lightweight Streamline Sidecar, fitted with dynamo lighting outfit with accumulator, head, side, and tail lamps, and switchboard, specially strong chain and sprocket wheels, the smartest lightweight outfit on the road, cost over £100, and has only been ridden about 500 miles; will accept 85 gns.—Want, The Cottage, Addlestone, Surrey. [6880

1919 Douglas, 2¾h.p., W.D., 2-speed variable pulley, new May, small mileage, everything perfect, original tyres, Stewart speedometer, A.K. knee grips, Pedley handle-bar grips, new Klaxon, front and rear acetylene lamps, watch, spare valves, £80; also Henderson featherweight sidecar for same, dark green, disc wheel, apron, new May, perfect, £20; or the combination £95.—Smith, 16, Sunny Hill Rd., Bournemouth. [6733

Edmund.

SPECIAL 3½h.p. Twin M.A.G. Edmund, spring frame, 2-speed, chain drive, one of the fastest 3½ h.p. machines on the road, winner of many races, fitted with sporting sidecar; 125 gns., or offers for cycle alone.—Le Vach, 21, Love Lane, Church St., Tottenham. [X4197

Elswick.

1914 Twin Elswick-Precision, 3-speed, free engine, clutch, coach sidecar, hood, excellent condition; £75.—Rest Harrow, Coopersale, Epping. [X4550

Enfield.

ENFIELD 3h.p. Twin, 1915, good condition; £45.—Ireland, St. Neots Hunts. [6981

ENFIELD 6h.p. Combination; £70; trial run invited.—W. W. Evers, Wath. [6623

6h.p. Enfield Combination, hood, screen, lamp, etc.; £105.—27, High St., Doncaster. [7226

3h.p. Enfield, 1915, 2-speed, kick starter, excellent condition; £50.—63, Solon Rd., Brixton. [7445

1915 3h.p. Enfield, in splendid condition; open for trial; £50.—Rosser, Somerset St., Abertillery. [X4407

ENFIELD 3h.p., 1917, good as new, run very little; £68.—Platt, Tranby, Friary Rd., Handsworth, Birmingham [X4477

1917 Enfield Combination, as new, fully equipped; £135, or near offer.—J., 77, Howarth Rd., Plumstead, S.E. [X4465

1919 Enfield 2-stroke, Ixion, Wolf-Jap, Diamond-Jap, Excelsior, in stock.—Clifford, Motories, Eastwood, Notts. [7120

ENFIELD Combination, 6-8h.p., 1918, good condition; £125; any time.—78, Springhank Rd., Hither Green. [7246

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2920

ENFIELD Combination, 1918, just overhauled, splendid condition; £135.—40, Replingham Rd., Southfields, S.W. [7310

1916 Enfield 3h.p. Twin, 2-speed, lamps, and horn, good condition throughout; £60.—14, Market St., Stourbridge. [X4436

ENFIELD Combination, 1919, unused; bought car while waiting; £160.—Woodville, Anchor Wood, Bickington, Fremington. [X4303

ENFIELD 1919 8h.p. Combination, delivered last month; £164.—Stephens, Eldroth, Wake Green Rd., Moseley, Birmingham. [X4408

ROYAL ENFIELD, about 3h.p., V, kick start, 2-speed, splendid machine.—Lascell, R.A.F. Hospital, Old Sarum, Salisbury. [7054

ENFIELD 6h.p. 1916 Combination, hood, screen, luggage grid, lamps, Klaxon; £130; after 6.—191, Kingshall Rd., Beckenham. [7455

3h.p. Enfield, new June, 1919, little ridden, with or without light and good sidecar; offers.—Samuel Pence, Whittimere St., Walsall. [X4630

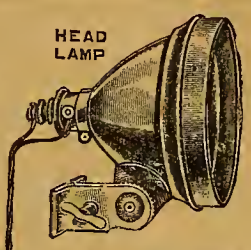
ENFIELD 1919 2¼h.p., 2-speed, lamps, etc., as new; purchasing sidecar machine; seen any time; £55.—Adams, H.M.S. P.64, Portland. [6705

6h.p. Enfield Combination, 1915, perfect condition, lamps, speedometer, nearly new tyres; £130.—75, Battle Rd., Belvedere, Kent. [6836

ENFIELD 6-8h.p. Combination, hood, screen, lamps, Dunlops, like a little car; first cheque secures; £98.—135, Plashet Rd., Upton Park. [6858

1918 Enfield 2-stroke, 2-speed, chain drive, Lucas horn, tools, little used, perfect condition; 48 gns.—881, Finchley Rd., Golders Green. [6883

ENFIELD 3h.p., 1916, excellent condition, little used; £60; horn, lamps, new Dunlop, spare chain.—Lee, 23, Oldfield Rd., Sale, Cheshire. [X4646



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Dry Battery LIGHTING OUTFITS.

BRITISH MADE.

Volex Lighting Sets are the ideal, no-trouble outfits for the Motor Cycle and Sidecar.
For over ten years they have been in use for this service, and of recent years, in consequence of their dependency, the demand is constantly increasing.
Dynamo Lighting Sets with Accumulators require careful attention and owing to complications have a tendency to go out of order. Accumulators, if not regularly charged, whether in use or not sulphate and become useless.

"VOLEX" DRY BATTERY LIGHTING SETS give no trouble whatever. The Battery, which is fitted in a metal container with switchboard mounted on top, lies conveniently in the bottom of the sidecar and with ordinary care will last, when in use, from six months to eighteen months without renewal. New Battery can be fitted in a few minutes at but little cost. The Battery Case contains three separate Volex 4-volt Aero Dry Cells, with separate connecting boxes for the cables to Head, Side, and Rear Lamps. If one of the batteries becomes exhausted it can be replaced independently of the others. Unless specified, we always provide 4 volt Metal Filament Bulbs to each lamp, but 8 volt Bulb for Head Lamp will be provided where desired. Complete outfit (as illustration), including Head Lamp, Ball Pattern Side and Tail Lamps, 3 Volex Aero Dry Batteries in metal container with switchboard, 2 Sets of Metal Filament Bulbs, and Waterproof Conducting Cords. - - **Price £6/10.**
Spare "Volex" Aero Batteries **15/- each**

CAUTION.—We would warn users that they may be offered substitutes for the "Volex" Dry Battery. No other battery will approach in reliability, durability, or capacity the British Made "Volex."

Sectional List, "VOLEX" DRY Batteries free on request.

UNITS of the above outfit.

HEAD LAMP, with switch and cord..... 32/-
SIDE LAMP, with lamp holder and cord..... 18/6
TAIL LAMP, with lamp holder and cord..... 13/6

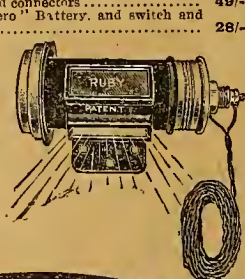
BATTERIES IN CASES, complete with waterproof conducting cord, to work in conjunction with own lamps.

Description	Price.
3 Volex "Aero" Batteries in metal container, with switchboard mounted on top, as illustrated	70/-
Ditto with 2 Volex "Aero" Batteries and switchboard, on pri-ing 2 switches and connectors	49/-
Ditto with 1 Volex "Aero" Battery, and switch and connector	28/-

THE "GEM" ELECTRIC REAR LIGHT

British Made.

Strong construction, neat appearance, ebony black body, nickel plated relief, fitted with ruby lens, white lens for illuminating number plate, and six feet of conducting cord.



Price 7/6.

Ward & Goldstone
SALFORD MANCHESTER

MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD 6h.p. Combination, latest model, lamps, excellent order, 700×80 tyres; £140.—Edwards, 7, Exhibition Rd., South Kensington, S.W.7. [7381

ENFIELD Combination, latest model, lamps, horn, etc., only ridden a few miles; 130 gns.—Edwards, 7, Exhibition Rd., South Kensington, S.W.7. [7386

ENFIELD Combination 8h.p., 1916, 700×80 tyres, excellent condition, lamps, screen, horn; £125—30, Crystal Palace Park Rd., Sydenham, S.E. [6961

ENFIELD 6h.p. Coachbuilt Combination, hood, screen, lamps, etc., splendid condition; £110.—223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [6511

ENFIELD 6h.p. Combination, 1916, fine condition, 2 new tyres and new coach body; £110.—Halifax Motor Exchange, Union St. South, Halifax. [6791

ROYAL Enfield, 3h.p., 2-speed, kick start, chain drive, in perfect order, with all accessories, new tyres; ride away; £45.—Spooner, Asylum Lodge, Warley, Essex. [6581

1917 Enfield 3h.p. twin, 2-speed, kick start, speedometer, Lucas lamps, smart appearance; £65.—Payne, Rosebay, Elm Grove Rd., Cobham, Surrey. [X4410

1919 8h.p. Enfield Combination, delivered July, any trial; evening after 6 or week-ends; private owner; £150.—Strathmore, Richmond Av., Westcliff-on-Sea. [7140

ROYAL ENFIELD 6h.p. C.B. Combination, accessories, excellent condition, new gears; £95, or near offer.—Bell, 24, Ashford St., Shelton, Stoke-on-Trent. [X3968

ENFIELD 1916 (October) 6h.p. Combination, Lucas lamps and horn, excellent condition throughout; £125, or nearest offer.—7, Court Rd., Kingswood, Bristol. [X4497

ALLEN-BENNETT Motor Co.—Enfield 1916 3h.p., 2-speed, T.T. model; £57/10.—9, 10, 11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [7362

ENFIELD Late 1913 6h.p. Combination, engine recently thoroughly overhauled; any trial or examination; roomy sidecar.—Parker's, Bradshawgate, Bolton. [X4528

ENFIELD, 2¼h.p., 1911, any trial, £26; Armstrong Mark VII. 3-speed hub, complete, £11; approval.—A. Tate, Radcliffe Terrace, via Acklington, Northumberland. [X4147

ENFIELD Combination, perfect, hood, screen, speedometer, Klaxon, tyres (2) new, electric lamps, accumulator; after 6 o'clock; £140.—193, Eastcombe Av., Charlton. [X4242

1916-17 Enfield 6h.p Combination, condition as new, hood, triple screen, watch, horn, speedometer, spares; £140.—Osborne, 177, New Park Rd., Brixton, S.W. [7144

ENFIELD Combination, 8h.p., July, 1919, with hood, screen, and Lucas lamps, mileage 300, indistinguishable from new; 150 gns.—128, High St., West Bromwich, [7318

1917 3h.p. Twin Enfield, 2-speed, chain drive, lamps, mechanical horn, B. and B., adjustable carburetter, tip-top condition; £59.—36, Holland Rd., East Ham. (After 6 p.m.) [6558

1919 August 6h.p. Enfield Combination, 2-seater sidecar, hood, screen, mat, horn, mileage 300, perfect; seen Manchester; bought car.—Box L4,562, c/o *The Motor Cycle.* [7489

ENFIELD ⅝h.p. Combination, lamps, horn, recently overhauled, excellent condition; trial; £95, or near offer; before 6, or appointment.—Garaged, Dewick, 200n, Blackstock Rd., N.5. [6758

ENFIELD 1917 3h.p. Twin, 2-speed, K.S., ridden about 400 miles, all in new condition, unscratched; £60, or nearest offer.—Cawsey, 2, Wick Lane, Wickford, Essex. [7083

ENFIELD 1917 3½h.p. Twin, overhead valves, 2-speed, clutch, K.S., tools, horn, etc., engine guaranteed perfect; £70; after 6.—104, Vineyard Hill, Wimbledon Park. [6894

2¼h.p. Enfield 2-stroke, in practically new condition, engine No. 15266; what offers?—37, Dalehom Mews, Belsize Lane, Hampstead, London, N.W.3. 'Phone: Hampstead 4608. [6540

ENFIELD 2¼h.p. 2-stroke, 2-speed, new May, 1919, about 1,000 miles, Palmers, horn and tools; £65; new condition.—Charles Lyall, 15, Parkfield Rd., Didsbury, Manchester. [X4570

ENFIELD 2¾h.p., twin M.A.G. engine, 2-speed, F.E., chain drive, Bosch, B. and B., recently overhauled and renovated, ride away; £37/10.—Cope, 15, Upper Hagley Rd., Birmingham. [X4532

ROYAL ENFIELD.—Disabled, reluctantly parting with 1914 3h.p. twin, 2-speed, kick start, lamps, speedometer, tyres as new, stored during war; £50.—Lambert, 8, Mendow Rd., Southall. [6607

ENFIELD 1916 8h.p. Combination, complete with lamps and accessories, just overhanled, and in first-class mechanical condition; £130.—The Service Co., Ltd., 95-96, High Holborn, W.C. [7368

ENFIELD 6h.p.—Who wants a snip? Combination, excellent condition, Tan-Sad, and accessories, will take 5 up anywhere; £100, or near offer.—Apps, 12, Stanley Gardens, Hampstead, N.W. [7265

October 9th, 1919.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Motor Cycles in Emergencies.

THERE is a dwindling section of the community that looks on motor cycles as the toys of the gilded youth and, therefore, considers them as noisy useless contrivances fit only for week-end use. The war has done something towards dispelling this fallacy, but there are still some who little realise the importance of motor cycle developments. At such times as the present, the tangible results are particularly obvious, and should do much towards popularising both solo and passenger mounts. From the inception of the strike, motor cycles have been in demand in almost every quarter. Despatch riders for Government work, sidecar machines for the distribution of food and perishable articles, and any machine capable of propelling itself and its rider for the purpose of getting to and from work, even the oldest types, have been unearthed and pressed into service. Under such circumstances, it would not be surprising if a large number of breakdowns were noticeable, but our experience has shown that of the roadside stoppages during the past ten days, a very small proportion have been motor cycles. On the other hand, the loads carried have been phenomenal and greatly in excess of those for which the machines were intended by their designers. The motor cycle, and, we may add, the motor cyclist, is always ready in emergencies, and this fact must ultimately be noted by the public at large and by the very large number of firms whose business would be increased by the use of side-carriers for commercial purposes.

The motor cycle is no longer the crude vehicle of the past, but a reliable and satisfactory method of road transport, and additional proofs of this fact come to hand daily. The motor cycle, too, as stated by *The Daily Mail*, has been the vehicle on which many of the men, who are now so usefully employed in driving lorries, etc., began their acquaintance with the internal combustion engine. And it is impossible to exaggerate the use which the internal combustion engine has been to the country during the last few days of September and the beginning of the present month.

Competitions.

THE A.C.U. policy of strictly limiting the number of trials has been the cause of much discussion in both trade and club circles. With this policy we cordially agree. A plethora of open trials tends to confuse the buying public, and causes an unnecessary outlay on the part of competing firms. An idea is germinating in many minds that there should be a certain number of trials set aside for trade entries only, as exceptionally good or bad amateur performances must lead to confusion in the minds of those who decide on their future mount largely by its performances in competition work. Many an instance could be quoted of good machines failing under bad handling, and in a few exceptional cases a second-rate machine, if tuned up and ridden by an enthusiastic and skilled amateur, may put up a performance considerably better than that of the average machine. It is, of course, impossible to eliminate the human element, but a trade trial goes a long way in this direction, as no manufacturer would be likely to enter a rider who would spoil his record by bad riding.

The scheme of distributing open trials over various districts is as excellent as it is obvious; and if, as we hope, some of the smaller clubs amalgamate and form strong and well-organised bodies, some very interesting events may be expected in 1920.

Club events, as opposed to open events, are to be encouraged in every way; but their object is rather to foster the sporting and social sides than to improve the breed of motor cycles, and the smaller clubs, at any rate, would do well to concentrate on the type of event most suited to the majority of their own members, and leave the more strenuous work to the governing body.

An index to the advertisements in this issue will be found on the page facing the back cover.

Another Brake Contretemps.

HELL hath no fury like a woman scorned, and I have obviously offended the blind Fury with the abhorred shears by risking my neck somewhat freely in a gay and reckless youth. Anyhow she has come down on me this summer. This very morning as ever was, I found myself mounted on a new machine capable of 65 m.p.h. and confronted with as near as no matter a three-mile straight on a deserted moor. Apparently I was alone in the hemisphere. As any good motor cyclist would under similar circumstances, I opened the throttle till the Bowden wire all but parted under the tension. Presently a small red Devon bullock arose from the ditch bordering the moorland track, and wandered idly into the fairway, sniffing the breezes. When he realised that I was approaching after the fashion of a projectile, he started to jazz. I trod on the foot brake, as swerving at such a pace meant a parabola over the handlebars. Nothing doing. A nut on the brake connections had departed to join the nettles in the aforesaid ditch. Presence of mind always ranked high among my numerous fortes. I sloshed in second gear, which certainly retarded the machine, though it caused my nose to deal a vicious blow upon the centre of the handle-bar. Then I shut the throttle and dodged.

Vislok and Others.

WHEN I recovered a normal pulse, I dismounted and overhauled the machine to "pinch" a nut off some other part of its anatomy, and restore the brake to active service again. Incidentally, I meditated. The brake member in question was an extremely expensive job, ruined for want of a split pin. An American designer would have punched a hole through the tip of a bit of quarter-inch steel rod, threaded on a washer, and inserted a solid sort of split pin. Cheap, ugly, and effective. The Britisher had used about eight times the requisite amount of metal, indulged in five grossly otiose machine tool operations, and turned out a detail which was expensive, neat, and perilous to a degree. A few weeks ago I commented on a similar incident, and received sheaves of literature from Vislok and other indignant firms who manufacture perfectly good locknuts. I do not doubt their word. There are four or five studs or bolts on the machine in question which literally drip nuts on to the open road. I should love to vislok them, one and all. But there is not room for a double nut. There is not even room for a split pin. By the time I could get delivery of all the special gadgets required to render this jigger vibration proof, I should have exhausted all the copy and interest it contains and be selling it. Life is too short for a busy journalist to reconstruct every foolishly built machine he buys. What we motor cyclists are waiting for is a manufacturer who will sell machines from which nothing can conceivably come adrift. When his policy becomes known, nobody will buy any other make; and then—not before—all manufacturers will vislok or otherwise secure all their nuts.

One for the Spring Frame.

AS a rabid propagandist I cannot miss this chance of putting in a word for the cause. My stable houses a 1914 spring frame machine. It has not done the mileage which its age suggests, thanks to the Kaiser and other obtrusions: nor can I say precisely what distance lies behind it, for I got fed up with the speedometer drive, and that gadget is now on the shelf. But the beastie had exceeded 12,000 when I removed the screechy gears from its front spindle in 1917; and it has not been exactly idle since that date. Anyhow, this is the point. During this long and honourable existence not a single item has ever worked loose or fallen off except two small screws, whose profession is to act as pivots for the valve lifter. The moral is obvious. If you have an engine with some pretensions to balance (*e.g.*, a flat twin), mounted in a frame which is insulated by fore and aft springs, you won't shed assorted ironmongery on the public roads. On the other hand, if you have an engine which dithers the tails off any long letters embossed on its crank case whenever you accelerate on a low gear; and which is further mounted in a frame designed to attain the limits of rigidity; and if you further avail yourself of the latent r.p.m. of that engine on modern British roads, you ought to trail a magnet behind to pick up the bits which you will drop.

Driving on the Exhaust.

FOR many years past I have secretly cherished a shameful heresy, in that I have habitually "driven on the exhaust," in the sense of using the exhaust instead of the throttle for most of my slowings down or coasting. Of course, I acquired this bad habit in my early days, when our only throttle control was a stumpy lever mounted on the tank top; and when Bowden throttles came in, my prejudiced muscles were slow at acquiring the new habit. I used to blush when experts dilated on the superiorities of "driving on the throttle," and occasionally I schooled my errant fingers to rely almost wholly on the throttle if I were afflicted with a machine disfigured by a thoroughly bad exhaust lifter, *i.e.*, one which only raised the valve a millimetre or so, allowed a lot of petrol to be wasted, and led to explosions in the silencer. Since so many machines possess valve lifters, which do not lift the valve very far, or are short of leverage, I am now—when I like—an expert driver on the throttle alone. But I have no technical enthusiasm for the accepted practice. What you win on the Aunt Sally you spend on the roundabouts; for if you

Occasional Comments.—

keep your engine a little cooler by driving on the throttle, you also carbonise it rather faster. Furthermore, a man who, like myself, is perpetually riding different makes, is very apt to pile his machine up if he relies on the throttle, for his muscles may forget in an emergency which way the throttle closes, whereas no such blunder is possible if he stops on the valve lifter. Given a sensibly designed valve lifter, which prohibits finger cramp and banging in the silencer, I do not believe either method of driving has much vantage over the other. When I am driving subconsciously, I find I govern speed graduations with the throttle, but use the valve lifter to stop the engine.

T.T. or Tourist?

JUST a word to novices who are hesitating whether to buy the T.T. or the tourist model of the machine of their heart. The T.T. *cachet* has a very distinct attraction for the beginner, who knows that the machine will be lighter, livelier, and faster than the more stolid roadster type. He should remember, on the other hand, that it takes a good deal more driving. A young friend of mine, resident in a district where undulating hills of much severity and incredible twistiness abound, has just given a T.T. the preference, and wishes he hadn't. Since I retarded his ignition and packed up his cylinder, so as to lower the compression, he has doubled his enjoyment. To sum up the debit side of the comparison, the high compression engine is vastly inclined to conk whenever it is asked to pick up from a crawl, or to accelerate suddenly on a hill. Since no sympathetic driver allows his engine to conk, the result is an increase in the number of gear changes and the need for far more delicate handling of the carburetter and ignition levers. In really bad country, the most expert driver of a genuine T.T. engine will be perpetually twiddling with his controls, and even at that will often be forced on to second gear where a comparative novice could easily keep a roadster engine on top gear. So it all depends what your motor cycling ideals are. If you are primarily interested in the technical aspects, by all means get a T.T. and learn to handle it, but if you desire sordid utilitarian transport, and you desire to carry something frilly in a sidecar, a roadster is indubitably your mark.

Improving the Starter.

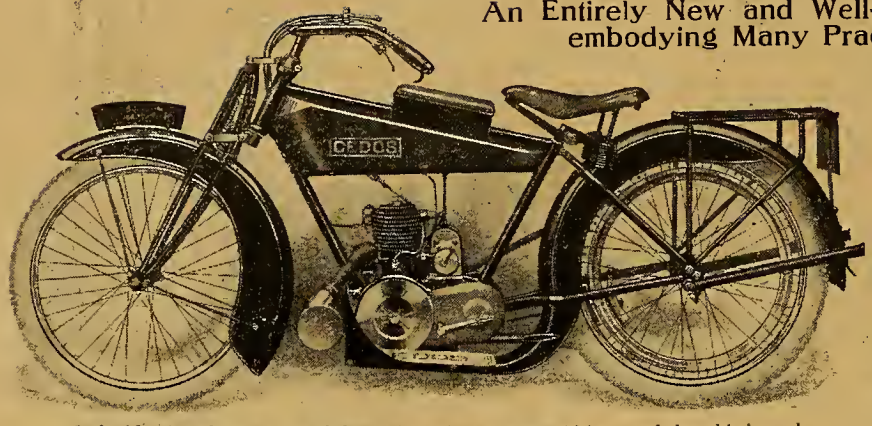
I CONGRATULATE the Phelon and Moore designer on having realised that the starting mechanism is one of the details of the average motor bicycle which shrieks loudest for improvement. Years of pedalling on the stand (what ridiculous figures we cut!) or pulling the back wheel round (and gashing our hands on the tail of the guard!) had bred such a hardy race that we hailed the first kick-starters with delirious and servile glee. Yet most of them are absurdly difficult to operate. During the war I noticed that the girl despatch riders were practically unanimous in despairing of their kick-starters, even when a sidecar was attached to the bicycle. A common sight on the Strand front displayed an immaculate subaltern pushing off a sidecar with a khaki-clad maiden at the helm; when the engine fired, she declutched and waited till his breathlessness overtook her and clambered in. It may be urged that such machines were usually in very poor tune, owing to hard usage, indifferent driving, slipshod repair work, and bad fuel. Yet these are exactly the conditions which prevail in seven private garages out of ten. Almost any sort of apology for a kick-starter will serve the needs of a flat twin or a small V: they are easily bounced over compression, the resistance is slight, and proper co-ordination of the valve lifter and starting pedal does not particularly matter. But a girl or a beginner will usually experience some difficulty in kick-starting a "tight" single-cylinder; and a big V may be even more troublesome. I am not at all sure that the push start on second gear is not still the easiest method of starting the majority of solo machines from cold; and this is an absurdity in the year 1919. Insufficient leverage and an awkward angle are the two commonest faults in kick-starters; both appear to have been exorcised from the new P. and M., and unfortunately for the designer, neither alteration is patentable.

THE STRIKE—MOTOR CYCLISTS TO THE RESCUE.

In response to the Government's appeal for volunteers to help in food transport service immediately the railway strike started, many motor cyclists at once offered their services. The photographs show them enrolling at Park Street, Portman Square, London.

THE 2¼ h.p. CEDOS.

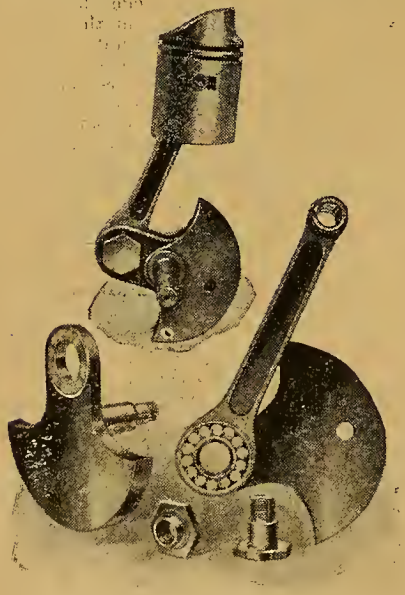
An Entirely New and Well-designed Lightweight embodying Many Practical Features.



Left side view showing one of the brake pedals. It should be noted that this is on the same fulcrum as the pedal on the opposite side, but extends rearwards instead of forwards as is the case with the right side brake. Thus the rider has a brake pedal convenient to his foot in whatever position on the foot-plates his feet may be placed.

THERE are two ways of constructing a reasonably priced motor cycle; one method is to skimp finish and fittings, and the other is to lay out a design in the first instance for mass production, every part being designed so that it is immediately interchangeable and drops into its place without any unnecessary fitting. The former method is, unfortunately, so common that it is a real pleasure to examine a machine falling into the latter class.

Messrs. Hanwell and Sons, Components, Ltd., Northampton, are about to market one of the most carefully thought out lightweights that we have yet been privileged to examine. In spite of the fact that at the present moment only one complete machine has been built, there are absolutely no loose clips or fittings of any description. Every detail is so designed that it is brazed or welded directly to the particular part of the frame to which it belongs, and, in consequence, there should be a minimum of rattles.



(Top) Piston, connecting-rod, and crankshaft assembly. Note the method of fixing the gudgeon pin.

(Bottom) The built-up crankshaft, showing method of fixing, and the roller big end.

Three-port Ball Bearing Engine.

The engine of this machine is a 2¼ h.p. two-stroke, having a bore and stroke of 62 × 70 mm. It is of the usual three-port type, and is designed and made entirely on the company's premises. There are no very unusual features about the power unit, with the exception of the fact that all parts are beautifully made, and that the crankshaft, which runs on ball bearings with plain bearing compression retainers, is built up of two parts, in a rather ingenious manner. The driving side of the crankshaft is constructed in one piece with the crank pin which registers in a hole in the crank web on the magneto drive side, the two parts being held together by a bolt passing through the middle of the pin. Both the inside of the pin and the outer diameter of the bolt are carefully ground to size so as to ensure an accurate and tight joint.

A roller bearing big end having Hoffmann rollers is employed, and the connecting rod, which is a particularly fine piece of work, is a very light steel stamping carefully case-hardened in the race and on the sides abutting the inside of the crank webs.

Piston Machined All Over.

A light piston carrying two rings at the upper end is fitted, and has a head formed in such a manner that it can be machined over the entire surface, inclusive of the transfer side of the baffle. The hollow gudgeon pin is ground very slightly taper, and is locked in position by a spring clip passing through holes in the pin and locking into corresponding slots in the piston.

All ports have been carefully designed, and are divided into two parts, so as to prevent the piston rings from catching.

Lubrication is effected by a sight feed drip, the oil being conducted to a point in the cylinder wall opposite the end of the gudgeon pin. Thence the lubricant is collected in a groove round the baffle plate in the top of the crank case, and is led by drilled ducts to the compression retaining bearing on either side of the crankshaft. Each of these bearings is provided with an internal and helical groove cut in such a manner that the oil is drawn inwards towards the centre of the crank case.

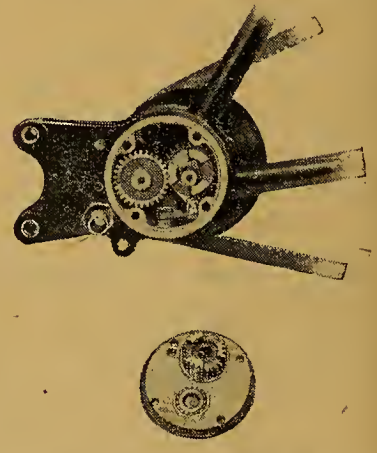
Features of interest are common, one of the simplest being that studs are not employed for holding down the cylinder, but bolts are passed right through lugs at the base of the cylinder and at the top of the crank case casting. This obviates any possibility of studs becoming loose in the aluminium.

A comparatively small diameter flywheel is fitted, and the transmission to the gear box is by ½in. × ¼in. chain.

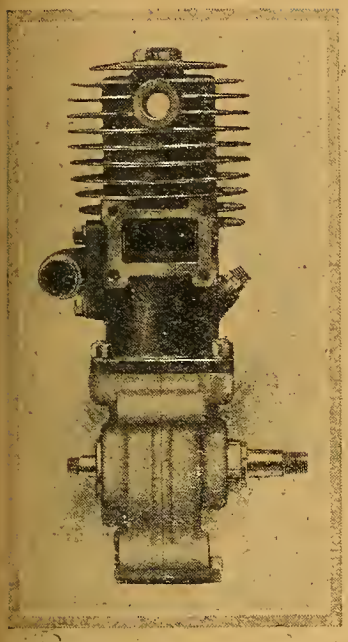
The carburetter employed is very ingenious, but we are unable to describe it fully at the present moment, owing to the patent being still incomplete. The strong point of this carburetter is that it embodies a variable choke, and enables the engine to run extremely slowly and two-stroke regularly.

A Sane Gear-box Mounting.

A very simple two-speed gear box of the constant mesh type is enclosed in a circular box, and this box in its turn is fitted into a circular lug, which forms the bottom bracket of the frame. Both box and lug are carefully machined to fit, and the box is positioned by a large split clip. To adjust the tension of the driving chain, it is, therefore, only necessary to slack off the single bolt holding this clip, and rotate the gear box through a few degrees by means of a tommy-bar. This method of fixing prevents any possibility of the chain wheels getting out of line, and as the dogs are operated by a



Contained in a circular case, the Cedos gear box is of the simple dog clutch type. The main driving pinion is supported on a ball bearing carried in the spigoted cover plate.



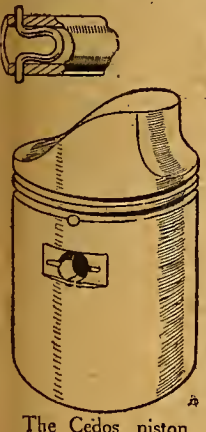
Front view of the engine, showing the exhaust outlet with machined ports.

Bowden control, a movement of the gear box does not entail any adjustment to the gear control. This control is operated by a thumb lever directly below the spark control, and in a similar manner to the throttle lever.

The final drive is by a ⅜in. belt running over a 6in. front and 18in. rear pulleys. In this connection it must be mentioned that the belt is so guarded that slip should be unknown.

The valances of the rear mudguard come well down to the belt rim, and a special underscreen is so arranged that it forms the lower part of the rear mudguard, spreading out on either side to the aluminium footboards, and terminating at the front end in a shield, which effectually protects the lower part of the rider's legs from mud thrown up by the front wheel.

We have seldom seen more complete arrangements made for the manufacture of frame and fittings. Every frame is constructed on special jigs, so that it is to all intents and purposes impossible for any variation to occur.

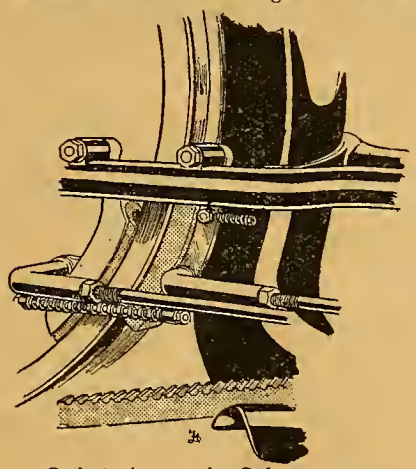


The Cedos piston, which is machined all over. The inset shows an enlarged view of the gudgeon-pin fixing.

Special forks are constructed by the manufacturers, which are very neat and light, although their strength has been well tested and proved. They are attached to the head by the usual parallel links, and their action is limited by a compression spring situated between the blades of the fork. The lower end of this spring is carried on a bridge piece integral with the fork, and the upper end by a swivelling housing connected to a lug at the bottom of the steering column. The top links are somewhat shorter than those at the bottom, so as to provide the double motion necessary for good front springing. Incidentally, it should be mentioned that the steering head is unusually long, and the ball races large.

In spite of the sloping top tube, which gives the machine a neat and practical appearance, the tank holds almost two gallons of petrol. The colouring of the motor cycle is in a shade of purple, the frame being of a slightly deeper tone than the tank.

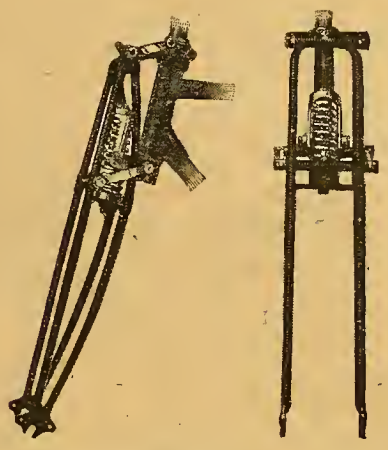
The manufacturers do not believe in front wheel brakes, and, consequently, we find two brakes acting on the belt rim—one on the inside of the V is operated by the right toe, and one on the outside of the V by the left heel. The brake rods are neatly arranged and lie parallel to each other, and a single coil spring serves to return both shoes to their "out of action" position.



Both brakes on the Cedos operate on the belt rim, and have a common take-off spring.

24in. × 2¼in. tyres are used, and every part of the machine, with the exception of rubber and leather goods and ignition appliances, is manufactured in the firm's own works.

A detail which shows the practical mind of the designer is instanced by a small portion of the magneto chain case, which is quickly detachable, so as to provide easy access to the rear cylinder nut, which would otherwise be somewhat inaccessible.



Of the parallel link type, the Cedos spring fork embodies a single coil spring centrally disposed.

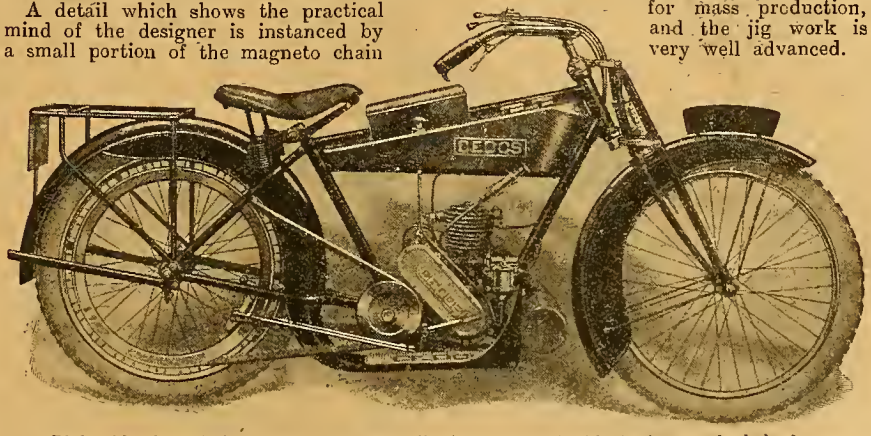
A Quiet Exhaust.

A very large silencer, placed in front of the underscreen, and having a long flat pipe, renders the exhaust reasonably quiet, and the enclosed release valve is practically noiseless when in operation.

The cooling of the engine appears to be extremely efficient, and, though our ride was too short to allow of a long run on full throttle, we were assured that it is practically impossible to dry up the engine, and we certainly saw no indication of this trouble. In this connection a rather interesting feature is noticeable, in that the top fin is formed by a detachable copper rib, held in position by a plug in the centre of the cylinder head. This serves a double purpose, in that it assists the cooling of the most vital point on the engine, and also saves the fracture of the top rib, which is a rather common occurrence when cast iron is used.

It is Messrs. Hanwell's intention to market the little machine at a reasonable price, though no definite figure can be given at the present moment. Deliveries will commence in January.

The works are being carefully laid out for mass production, and the jig work is very well advanced.



Right side view of the Cedos two-stroke, illustrating the double brakes on the belt rim, and one of the conveniently placed pedals.

Motor Cycle Design in Holland.

The 3½ h.p. Simplex, embodying an Unconventional Frame, English Components, and M.A.G. Engine.

A Dutch production. While being particularly "English" in style and finish, the Simplex is full of novelty although quite free from freakishness.

ALTHOUGH the Simplex machines have never been introduced commercially into this country, they have been known to many riders for their general excellence of workmanship through the friendly meetings resulting on the Anglo-Dutch trials, which were so popular before the war.

The present design now before us, which is to be placed on the market next year, is of very taking appearance, and embodies very sound principles of frame construction.

An extremely low saddle position, barely twenty-eight inches above the ground, is possible with the design, which is of duplex construction throughout, and has continuous members running direct from the steering head to the back fork ends.

The saddle is placed as nearly as possible midway between the front and back wheels, since it is here that the minimum of road vibration is felt by the rider, the machine, as it were, oscillating about the centre point, which consequently deviates less than any other part from a path parallel to the ground during its forward travel.

A Sporting Touring Model.

Druid Mark II. forks are fitted in conjunction with flat handle-bars of the semi-T.T. type, and the latter are fitted with Pedley pneumatic grips, which we know from experience are extremely pleasant to the hands, especially on long journeys.

A 3½ h.p. twin M.A.G. engine is fitted, with magneto placed in a well protected position behind the rear cylinder. Lodge weatherproof plugs are used, while gas is supplied by an Amac carburetter.

Transmission is by chain and belt through a three-speed gear box with handle-bar-controlled clutch, while a powerful kick starter is fitted on the right-hand side.

Transmission and Brakes.

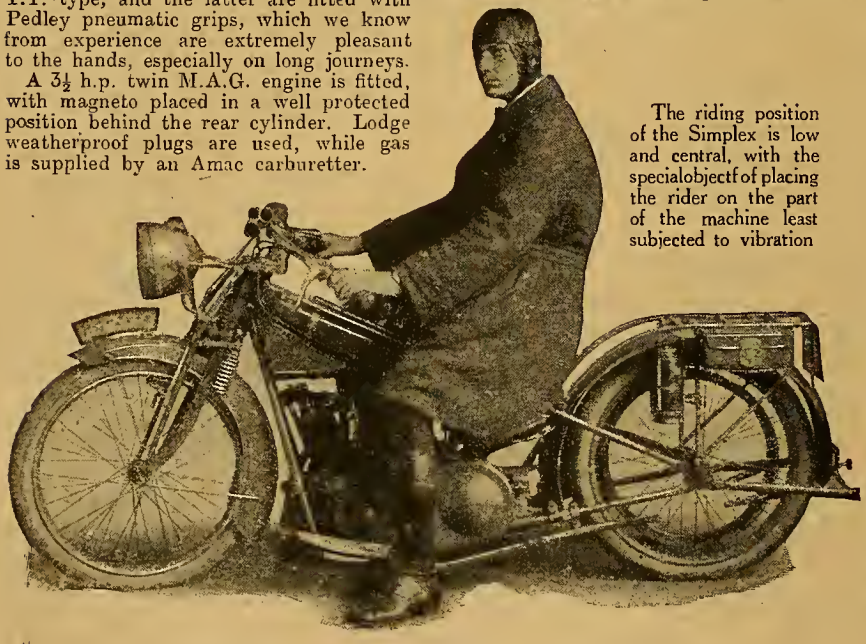
The final drive is also on the off side, somewhat similar to that of the 4 h.p. Douglas, but the large diameter pulley and belt lie within the duplex frame, which is extremely wide—this construction avoids the use of cranked tubes, necessary on most conventional designs where the transmission is outside the frame members.

A belt guard is provided, and as the belt centres are wider than on most countershaft machines, the bugbear of belt slip on low gear should be largely obviated.

The petrol and oil tanks are separate, the latter being at the top of the frame and fitted with a Benton and Stone oil pump and drip feed. Immediately below the steering head, and occupying the triangular space between the oil tank and the top of the engine, is a metal receptacle suitable for carrying tools or spares.

Brakes follow standard British practice, that on the front wheel being a Bowden, while the rear is of the compensating type working in the V of the belt drum—it will be noticed that enormous leverage is obtained both on the pedal situated beside the right-hand aluminium footboard, and also on the arm of the brake itself.

Altogether the design is clean and workmanlike, and reflects credit on the makers, the Simplex Cycle and Motor Co., Amsterdam, Holland.



The riding position of the Simplex is low and central, with the specialobjectf of placing the rider on the part of the machine least subjected to vibration

"MAGNETOS." *

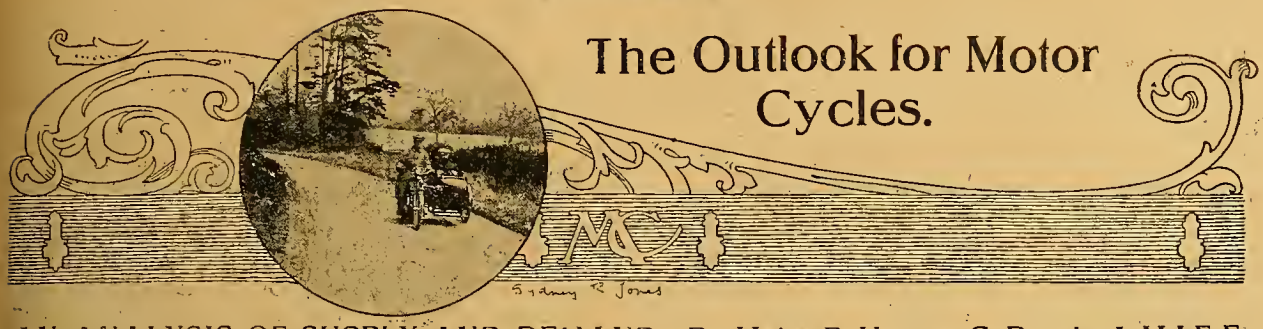
THERE is no keener class among motorists than motor cyclists. We feel sure, therefore, that the above book, written by A. P. Young, A.M.I.E.E., will appeal to a very large number of motor cyclists, whether they are interested in the internal combustion engine as a pastime, or engaged in the actual production of engines.

The above work, which is written by an expert engaged in the actual production of one of the best known magnetos, deals with all British-made magnetos, both theoretically and practically. Among the items which will appeal strongly to motor cyclists, and about which we are constantly receiving enquiries, are the magnetising of the magnets, the timing of the magneto, magneto testing, etc.

Other valuable features are detailed illustrated descriptions of practically every British-made magneto on the market, including aeroplane magnetos, illustrated by sectional drawings, showing how the rotating armature type of magneto differs from the polar inductor type. The language employed is as simple as possible, so that anyone with a rudimentary knowledge of electricity can readily follow the text.

Publishers: Iliffe and Sons, 20, Tudor Street, London, E.C.4.

* "Magnetos." 4s. 6d. nett. By post 4s. 10d.



The Outlook for Motor Cycles.

AN ANALYSIS OF SUPPLY AND DEMAND. By Major R. Vernon C. Brook, A.M.I.E.E.

THE year 1919 is now far advanced, and there are still thousands of would-be motor cyclists who have not been able to obtain delivery of machines ordered long ago.

Motor cycling is no longer a seasonal pastime, though, to appreciate its joys to the full, one must have fine weather; and the utility motor cycle, used for business purposes, or for carrying its owner from his home in the country, or suburbs, to his business in town, is in use all the year round.

Motor cycle manufacturers, like all others engaged in the engineering industry, have been, and still are, labouring under many difficulties as regards production, labour troubles, "going slow," shorter working hours, new designs, new hands, new tools, and, in some cases, new factories, which have all conspired to make the manufacturer's bed one of thorns rather than of roses.

On all sides one hears the remark that the big output aimed at cannot be attained by a very wide margin. Some makers are better placed than others, particularly the older ones, who receive preferential treatment in the matter of raw material or accessory supplies from the firms with whom they have always dealt; but the raw material suppliers are in a similar plight, owing to the difficulties of the transition period and of getting labour into its full swing again.

As the Prime Minister recently remarked, the whole nation is suffering from "shell shock" and from the reaction following on the greatest war the world has ever known. I think the remark is as true a one as any the Prime Minister ever made; and, in consequence, I base hope upon the fact that, just as surely as the majority of shell-shock cases can be cured, so will labour—and in labour I include all those who work, from the highest to the lowest—recover from its present convalescent state, and attain such vigorous health and strength that outputs never dreamed of before the war will be the certain sign of recovery, and big output brings its own reward to all who help attain it.

Why is Enormous Output Necessary?

One hears on all sides that there is to be a boom in motor cycles. Undoubtedly the next few years will see more motor cycles on the road than ever previously; the motor cycle is the pleasure vehicle of the multitude, from the artisan to the bank clerk, all will want motor cycles, and the more there are turned out, the cheaper they will become and more men will be able to buy.

How many motor cycles will there be in 1921, say? Well let us see. In 1913—the last full year prior to the war—over 180,000 motor cycles were registered in the United Kingdom, being in excess of the number registered in 1912 by nearly 39,000, and showing an increase of more than 20% for the year.

These 39,000 machines were not all made in this country, as 1,700 motor cycles were imported during the year, as compared with 1,380 in 1912, which, deducted from the above figure, leaves some 37,300, which may roughly be taken as the number of machines manufactured for the home market. In addition to these machines, 17,000 motor cycles were exported in 1913, so that the two figures added together give 54,300 as roughly the number of machines made in the United Kingdom in 1913—a figure very much larger than one would state if asked to give an estimate.

The Lost Years.

Now, up to the end of 1914, the motor cycle factories did not slacken output to the public more than 50% probably—that is the factories which were not supplying machines for war purposes—but several of the largest factories devoted their output exclusively to the War Office, so that it is probably safe to assume the total supply of motor cycles to the public during 1914 did not reach more than 50% of the supply in 1913. The years 1915, 16, 17, and 18, and the first half of this year, were almost dormant, so far as the motor cycle production for the public was concerned, so that before normal conditions are reached, the loss of output during these years has to be overtaken, together with the increased demand.

To err on the safe side, suppose the increase of 54,300 shown in 1913 over 1912 had been maintained during the last four years, leaving the war period of 1914 and the first half of 1919 out of account, then an additional 217,200 motor cycles would have been manufactured in this country.

I think with the increased popularity which the motor cycle was beginning to enjoy in 1914, and its increased use by tradespeople, there is little doubt that this increase would have been at least maintained, if not exceeded, during these four years, so that the figure may be taken as a moderate one.

Mass Production.

Now, during the war some of the few motor cycle factories making machines for the W.O. have been extended to obtain greater production, and all have learned more of the methods of mass production. In 1913 there were not more than a dozen motor cycle firms turning out over 2,000 machines each per annum: it is doubtful if there were as many as a dozen. Of the

The Outlook.—

remaining twenty-three makers, who go to make the total of thirty-five firms, turning out more than 500 machines a year, very few reached 1,000 machines per annum.

To-day some of these firms are planning for 5,000 or even 8,000 machines per annum, and in addition there are a number of new firms, say half a dozen, who are laying out for 5,000 machines per annum, to say nothing of the firms which are planning to produce motor cycle engines on a big scale, which engines will be absorbed by the numerous small motor cycle builders not included above, of whom there are at least two dozen, each turning out, or capable of turning out, five or six machines a week.

Making allowance for the disappointments which some of the big output planners will undoubtedly experience, it may be safely assumed that, given a return to normal conditions, the commencement of the 1920 season should see a return to the output of 1913, namely, 54,300, plus, say, 25% increase all round—quite a liberal figure, in my opinion, and I know something of the present position in many works—which gives a total of 67,900 machines per annum amongst the makers who existed in 1913. Assuming that six big new firms will produce by next spring 15,000 machines per annum, added to which there are, say, twenty small "assemblers" who on an average will turn out machines at the rate of five a week, and we get a further 5,200 machines per annum, making a grand total of 88,100 machines per annum to meet the estimated shortage of 217,200 motor cycles which exists to-day, and by the time the above estimated outputs are in full swing the shortage will be greater still.

To relieve the situation a number of machines will undoubtedly be imported from America, though whether they will come in large numbers with the 33⅓% duty, 15% extra to cover difference in rate of exchange, and a big leeway to make up in America, seems extremely doubtful, particularly as the output of the American factories is down too.

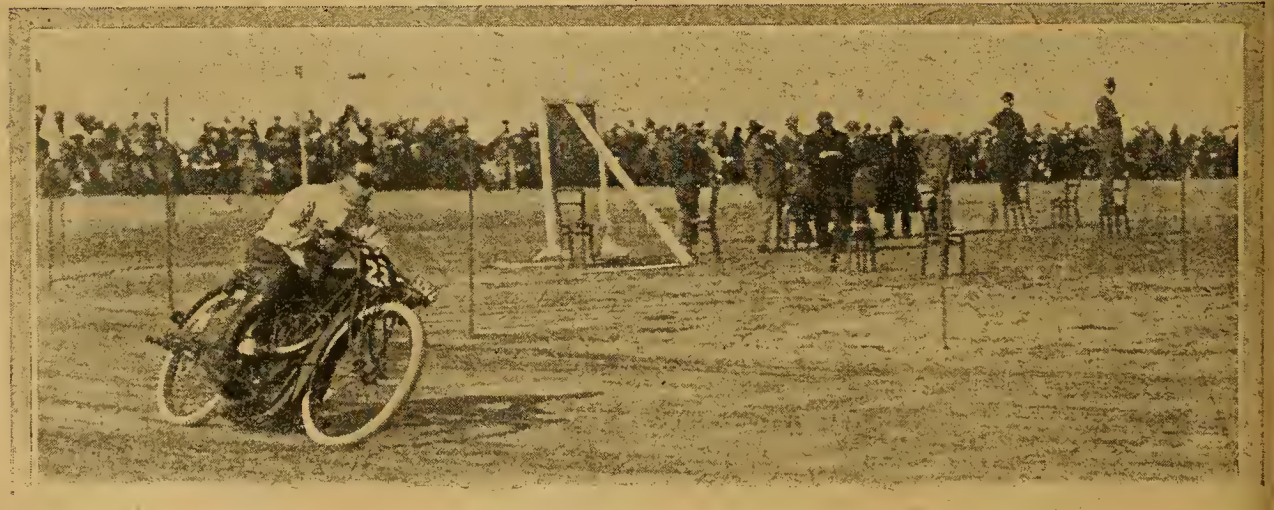
The imports from all countries in 1913 amounted to 1,700 odd machines; there were no restrictions, no duty to pay, American prices were lower, the rate of exchange was normal, and the Americans were anxious to get into the British market. With the existing conditions, is it likely that the imported machines will be more than trebled in number? For the sake of argument, say the figure becomes 5,100. This increases the 88,100 machines to meet the shortage to 93,200, or not quite half of what is required.

This is assuming the British manufacturer decides to keep all his productions for the home market—which unfortunately appears to be the case in many instances—rather than export to the Colonies and abroad in order to prevent the market falling into American hands, and also in order to help to reduce the cost of imported necessities. The demand for machines for export, which numbered 17,000 odd in 1913, is also short by very large numbers—perhaps not so short proportionally as we are at home here, as the demand has fallen off for many reasons, and America has been very busy in our pre-war markets.

No Immediate Fall of Prices.

To sum up, then, it seems very likely that it will take at least two years to meet the present shortage: probably four or five years will be the time required to overtake the demand, during which time the demand is steadily increasing, so that there is little hope of a fall in prices, unless every other commodity falls as well. Manufacturers can go ahead with every confidence, and the workers in the factories need have no fears of producing too many machines: they cannot produce too many whatever happens, for the more they produce the more will be sold, both at home and abroad. Prices will only come down when big production is made and the supply is equal to the demand; then when prices come down the demand will increase again beyond the limits of supply.

The prospective buyer who waits for a drop in prices is likely to be disappointed, unless he is prepared to wait for two to two and a half years, for, with the present more equal distribution of wealth, there are thousands waiting to buy and prepared to pay fancy figures if only they could lay hands on the machines of their choice.

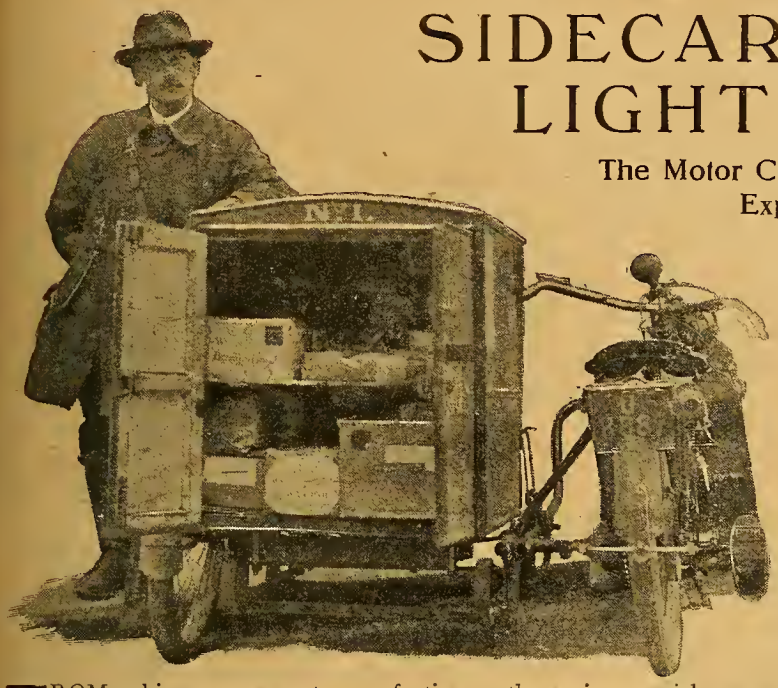


SCOTTISH SPEED CHAMPIONSHIP AT ST. ANDREWS.

Mr. A. H. Alexander (7-9 Indian) cornering at speed in the heavyweight championship race. At this point he was leading by nearly a lap.

SIDECARRIERS FOR LIGHT DELIVERY.

The Motor Cycle as an Aid to Cheap and Expeditious Transport.



In almost every sphere of life motor cycles now play a part, and their scope widens as progress is made in design, permitting persons without mechanical knowledge to drive them without trouble. The simplicity of the average motor cycle, its comparatively low cost and undoubted economy, are all points in favour of its becoming more generally adopted by tradesmen for delivery purposes. In the following article are set forth many of the advantages of sidecarriers for light delivery.

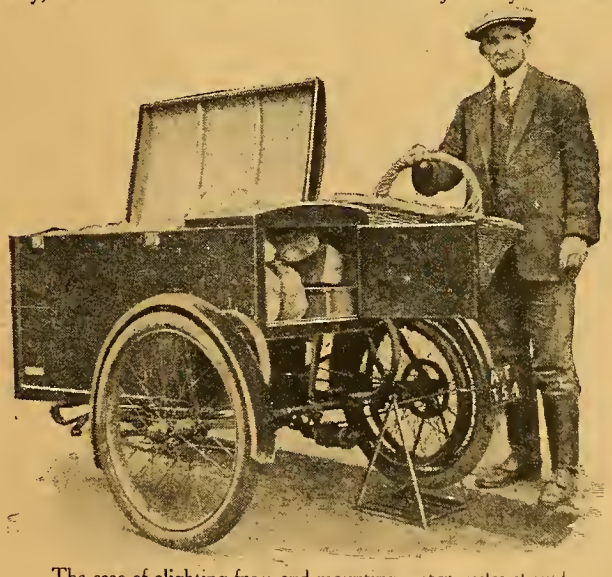
FROM chimney-sweep to confectioner there is scarcely a tradesman who cannot use a sidecarrier with advantage. Time has always represented money, but it represents a greater value than ever to-day, and one may anticipate that the motor cycle will play an important part in preventing waste of time, which is such a serious item in every business.

The solo motor cycle is already a welcome and fully recognised means of quick transportation for men who hitherto have walked, but we are concerned at the moment with the delivery of light goods such as, before the war, employed a vast army of horses, carts, and youths, which, costly as it was to the tradesmen, failed to give entire satisfaction.

One has only to recall the spirited horses and the reckless youths in butchers' carts to realise that in this direction alone lies an enormous field wherein the sidecarrier can become the general means of delivery, and that such service would be of great advantage both to the butchers and their customers. The butcher's cart has always been a fast vehicle, but its speed has sometimes been a risk to the public. The sidecarrier could increase this speed, and at the same time reduce the risk, as a motor cycle moving at 20 m.p.h. is well within control of the driver, whereas a horse approaching this speed is at a mad gallop, and impossible to bring quickly to a standstill.

A sidecarrier designed for delivery of stationery and office equipment.

What applies to the butcher can easily apply to the baker; but, instead of dragging round half a ton of bread to cover the round, the sidecarrier would carry, say, a third the load and make return journeys to the bakery when required. It requires but a few minutes for a motor cycle to run a couple of miles, but for a horse and cart to do this would be a serious loss of time; furthermore, odd items may be cheaply delivered, but the large van is not economical unless worked to its full capacity.



The ease of alighting from and mounting motor cycles should appeal to bakers who have many frequent halts.

Very few drapers employ a delivery vehicle. In a Midland city of 120,000 population, which has several

S.decarriers for Light Delivery.—

large drapery establishments, only one has the means to deliver his customers' orders, and that draper employs a side-carrier. This vehicle gives this enterprising tradesman several great advantages over his competitors. Not only is he able to send his customers' purchases, but, being on the telephone, an ever-growing circle of customers are getting into the way of placing their orders over the 'phone, because they know purchases will be delivered quickly.

The Value of Prompt Delivery.

Every smart tradesman knows the value of being able to give prompt delivery. To deliver all customers' purchases is an asset in itself, but to do this promptly

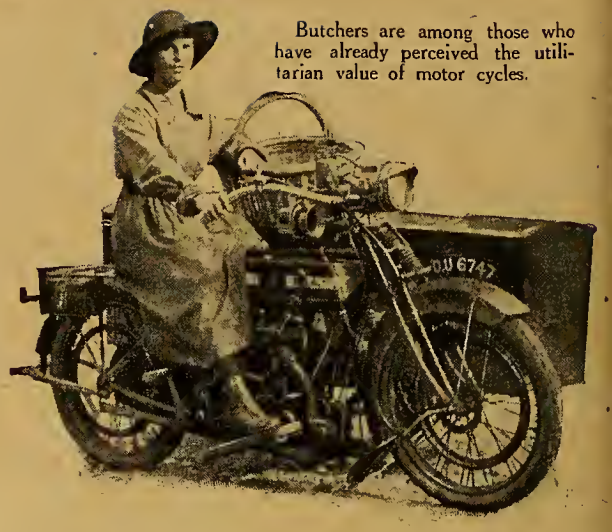
A roomy side-carrier used by a grocer.

considerably enhances the value of that asset. One draper of the writer's acquaintance has built up a large business by making a rule of delivering all goods purchased over his counter. To deliver a packet of pins as a matter of course, just as he would a ten-guinea coat, is his greatest advertising medium, and for this purpose he keeps two smart sidecar outfits run by youths in uniform.

Before the war there was ample evidence to show that a motor cycle for light delivery was a much better proposition than horse delivery, there being a saving of upwards of 50% with the former. There is every reason to believe that the saving is even greater at the present time if only because of the increased cost of labour, which makes time such an important factor.

Even before the war the cost of fodder and stable materials for two horses to give the same service as one motor cycle was higher than the cost of oil and petrol sufficient for sixty miles per day, and one tradesman had carefully calculated his costs, and found that he could deliver daily 180 parcels of 10 lb. each at a total cost of ¾d. per parcel.

A poultry farmer who finds the motor cycle of great use in transporting eggs.



Butchers are among those who have already perceived the utilitarian value of motor cycles.

Several bakers found that delivery by motor cycle cost only half the expenses in connection with a horse and van.

In hilly districts especially is the side-carrier found a great money-saver. One has only to call to mind the slow progress of a baker's or butcher's cart up long steep hills and the hill-climbing capabilities of the side-carrier to appreciate this.

Reverting to the question of time-saving, which in these days means considerable money-saving, it has frequently been demonstrated that with a horse and van certain "rounds" have taken 5½ hours, which have only occupied 3½ hours with a side-carrier.

Another great advantage of the motor cycle for light delivery is that the small tradesman, by having two bodies for the sidecar chassis can use the machine for pleasure during the week-end.

A point greatly in favour of the side-carrier is that it can be made a valuable mobile advertising medium, and many kinds of unique carrier bodies have been devised to attract attention.

Roughly speaking, the field of the side-carrier can be divided into two sections: the small tradesman using one or two machines, and the big stores which use them as auxiliaries or tenders to large capacity vans, while London and provincial newspapers use sidecars with success to distribute their several editions. The side-carrier is also used by wholesale newsagents.

As to the most suitable type of machine for delivery work, this is obviously largely dependent upon the weight of the goods to be carried. The "big twin" may be considered first, but for many tradesmen a single of 550 c.c. should be quite suitable: in fact, the single-cylinder machine has been used in greater numbers than the twin, the reason probably being the greater simplicity of the former. However, it may be said that the majority of modern

"Lycetts."

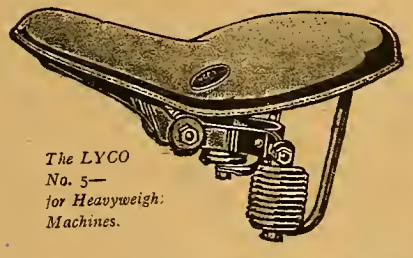
Two Seats
which yield the Maximum of Comfort

The LYCO No. 5, which is specially designed to meet the needs of riders of Heavy-weight machines, and the LYCO No. 6 for the Light-weight. The LYCO Anatomically-shaped Pan Seat Saddles are scientifically designed, faultlessly finished, and embody our well-known Patent LYCO Spring Action.

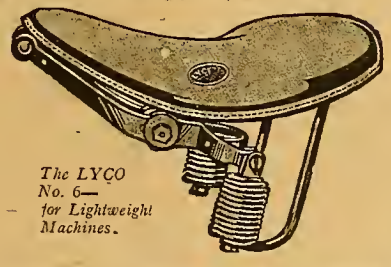
This is the LYCO Spring-principle—

The saddle is hinged at its peak, and its special springs are anchored dead-centrally at top and bottom on two swivel fastenings, which ensure a perfectly straight pull, eliminate twisting strains, and obviate breakages. The hinged peak, swivel action on the spring, and dead central pull, allow the saddle to describe a circular movement at the back when the seat is depressed under the rider's weight, thus giving easy motion and fullest comfort.

If you want to tour in comfort, with a freedom from strain and fatigue, or enjoy every-day riding to the full, you will find no system to equal the LYCO Spring-principle.



The LYCO No. 5— for Heavyweight Machines.



The LYCO No. 6— for Lightweight Machines.

LYCETT'S, "The Saddlery," BIRMINGHAM.

B.H.B.

MAXIMS FOR MOTORISTS

The Rule of the Road is keep to the left, and insure your Car or Cycle with the Motor Union Insurance Company, Limited.

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Telephone: Regent 2200.

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Sidecarriers for Light Delivery.—

machines of 550 c.c. upwards are quite suitable for light delivery work.

It is obvious that, to obtain the full benefit of sidecars for light delivery, a suitable carrier must be provided. In several provincial towns small tradesmen are using passenger sidecars for this purpose: a practice which is not to be recommended for several reasons. First, the capacity of the body is very restricted for the accommodation of boxes and parcels; secondly, the upholstery is very quickly damaged, and soon the body is rendered useless for either passenger or delivery work; thirdly, the advertising value of delivery by motor cycle is lost.

Most sidecar manufacturers make delivery sidecarriers suitable for almost every business, and tradesmen should not find any great difficulty in procuring an outfit to suit their requirements.

The services of a smart youth or young woman should be easy to procure: more easy, in fact, than if a driver were required for a horse-drawn vehicle. A large number of drivers of the W.R.A.F. and other forces in which women have been employed have been demobilised and are available. It may be found that some of these young women will be willing to accept positions as drivers of side-carriers, and, if so, that they will be more satisfactory than the average youth, although the latter would be keen to be so employed.

To summarise, there is no doubt that the side-carrier will solve the delivery problem for hundreds of tradesmen, and that an increased number of such vehicles will be seen as time goes on.

A New Field for Manufacturers.

Although the conventional machine sold for passenger work will be found quite satisfactory, there is undoubtedly a great field for the maker who will produce a model specially designed for light delivery. Such a machine should have a moderately low compression, be simply and sturdily built, and need not embody the refinements of the touring mount.

Parts likely to suffer through exposure to the elements should, of course, be enamelled, and such equipment as lamps and horns would be better if embodied as part of the machine instead of as a detachable accessory.

VEDETTE.

American Motor Cycle Club Life.

Extracts from our United States News Letter.

THE second annual motor cycle field day of the New Jersey M.C., held on September 14th, brought out 828 motor cyclists and their friends on 329 machines to the rallying place, Seidler's Beach.

Three special awards were made for neatest solo and sidecar outfits, and longest distance travelled by anyone attending. Prizes were won by riders who had machines that had gone more than 10,000 miles each. 172 miles was the farthest anyone rode to attend.

Eight novelty events were run off—five for solo, three for sidecar. Big thrills were in the cross country solo and sidecar and the sidecar pursuit race. One machine somersaulted in the water, but without damage to riders or machine, although it was a close call.

The 1920 Harley-Davidson seen at the beach has longer forks than the current model. These project above the handle-bar line, affording longer springs and easier riding. The head light is placed above the old position, covering any awkward lines the new forks would give the machine, while the Klaxon horn is occupying a position originally used for the lamps. A new tail pipe with plugged end and saw-cut notches for relief of exhaust gases is a feature, as is the new cut-out on the muffler shell. This is a particularly lusty cut-out, and it is hard to reconcile the Harley-Davidson attitude of "Cut out the cut-out" with this new silencer shatterer.

A new four-cylinder outfit is on the way to production in America. It is to be built in Philadelphia, the motor cycle to be designed by Wm. Henderson, designer of the original Henderson Four, and financed by J. W. Grady (New England B.S.A.) and Max Sladkin (Haverford Cycle Co.), owner of a chain of ten motor cycle and bicycle stores in the principal cities in the United States. It is rumoured that a machine is to be road tested this month for the first time since organisation, and the company hopes to be in production by February.

A UNIQUE SNAPSHOT. In a beach race organised by the New Jersey M.C., one competitor steered so abruptly round the turning point that his outfit overturned. No serious damage was done.

Our club programmes are apt to be a little more snappy than those issued at home. These extracts from that of the Seidler's Beach affair are just a shade less staid and formal than you will be accustomed to:

"Carl W. Bush Co. Gallop (for solo riders).—Ride halfway to a turning point, dismount and push motor cycle, with engine *not* running, around post, start motor, and ride to finish. Get off and push, laddie buck. Three good prizes donated by the Carl W. Bush Co.

"Joseph B. Werner Scramble (for sidecars only).—Sidecars line up in ring and ride until they have eliminated others or have been eliminated themselves. Passengers must work to help their man win. All set? Les' go! Three merchandise awards donated by Jos. B. Werner.

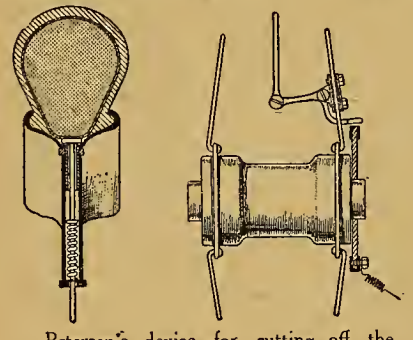
"The Sidecar Run and Ride (sidecars and passengers only).—Machines at one end of field, crews at other; at the word the crew start running for their machine, start the engine, and ride to the finish. It calls for team work. One set of prizes for the winning crew only is all we could dig up, fellers."

E. B. HOLTON.

RECENT PATENTS.

REVIEWED BY B. H. DAVIES.

MR. PETERSEN, of Copenhagen, proposes that a punctured tyre may automatically switch off the engine. To effect this, he fits a T-headed striker in much the same position as a security bolt, equipping it with a guide and a small coiled spring, which keep its head pressed against the inner tube. The tip of the striker is suitably linked to a switch on the hub, connected by a wire with the ignition circuit. When your tube deflates—little or much, according to your ideas on the adjustment of the device—the striker follows the tube into the cover, the switch is operated, and the engine stops instanter. A number of minor criticisms might be offered: for example, if you go through a water-splash, your engine will infallibly be stopped in the middle. But the main weakness of the gadget, of course, is that only an indiarubber-skinned man in a very superbly sprung motor can remain in

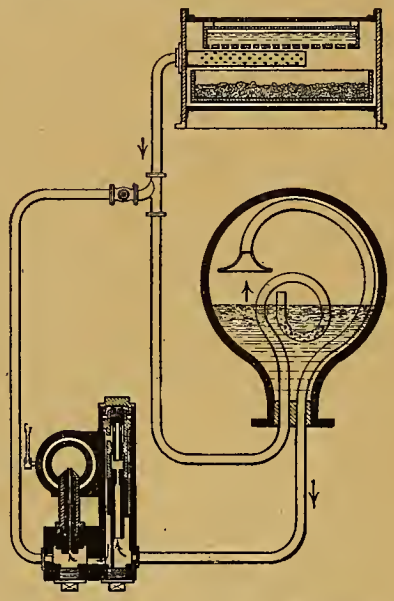


Petersen's device for cutting off the engine when a puncture occurs. No 122,821. 30/1/18.

ignorance that a tyre is deflating gradually, whereas when a tyre deflates suddenly, *i.e.*, bursts, the driver will cut his engine off as quickly and infallibly as any mechanism could do it.

Running on Acetylene Gas.

The price of petrol is evidently felt in Switzerland, as two residents in that country have thought fit to propound a method of running internal combustion engines on acetylene gas, after treatment with ammonia, camphor, and ether; the resultant gas would hardly be cheap in this country. The accompanying sketch depicts their apparatus. The acetylene gas proceeds from the generator at the top down the vertical pipe into the closed chamber on the right. The branch pipe on the left is a more direct path for pure acetylene to be used in starting the engine, and is controlled by the cock shown. The closed chamber contains a bath of an aqueous solution of ammonia, to which small proportions of ether and camphor may advantageously be added. On quitting this chamber the gas is led through the preheating apparatus on the left, which is suitably heated from the engine, either by conduction or exhaust gas and vaporises any liquid present in

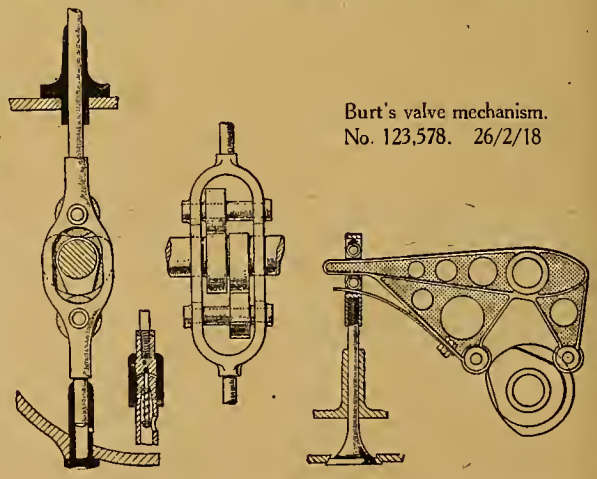


Sieber's method of running an internal combustion engine on acetylene gas No. 125,308. 31/9/18.

the gas. For this purpose the gas is led through a series of fine passages on the right of the apparatus before it is delivered through a feed nozzle into the induction pipe on the left. The arrangement of the preheating chamber forms a safeguard against flashing back.

To Eliminate Valve Springs.

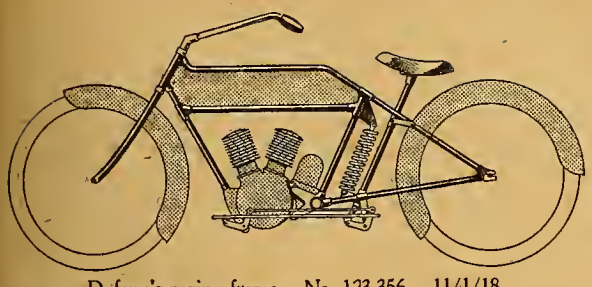
When the war broke out, a pantomime song about "the old Bull and Bush" (which I understand to have been an imaginary hostelry) had not quite passed out of mind. Sundry patriotic motor cyclists immediately nose-dived into the R.F.C., and therein made the acquaintance of the Beardmore aero engine. It was usually their first experience of a power unit with pull-and-push tappets, which both opened and closed the valves positively. So it was promptly re-christened the "bull-and-bush" type. Capt. Burt has now patented a valve mechanism of this character. As shown in the drawings, the system embodies two cams per valve, one to open and one to close. On side valve engines the tappet is slotted, and the cams operate inside the slot; on o.h.v. engines the cams rotate between two rollers mounted on peaks projecting from the underside of a rocker. In each case the last umpteenth of a millimetre in the closing movement is performed by a spring, which may be a flat tongue or a wee coil, as desired. This is necessary, for something would go if the tappet violently hoiked a valve hard against its seat with about an inch of movement still to go: and with so many duffers about you could never be sure that the "bull" action was set to a hair, not to speak of expansion under heat. Such systems aim at eliminating noise, bouncing, and the waste of power involved in compressing very stiff springs 2,000 times per minute. The side valve type shown herewith is too costly and too fiddly for motor cycle engines: I should like to try the o.h.v. pattern some day. But if these patents are valid against other "bull-and-bush" brews which one knows, I should fancy that designers will be able to sidestep quite a lot of previous applications. Patent law is a curious thing.



Burt's valve mechanism. No. 123,578. 26/2/18

A Springing Arrangement.

The Dufaux people of Geneva, who make the M.A.G. engines, are evidently sounder on engines than on frame design. They have patented an idea for retaining the rigid frame and insulating the driver. The drawing is self-explanatory. The saddle and footrests are hung from hinged links and bell cranks, the whole system being suspended from a large coiled spring, as shown. Ten years ago we should have welcomed such a notion, which approximates roughly to the famous Bat spring frame (so-called)—the pioneer of comfortable motor cycling. To-day

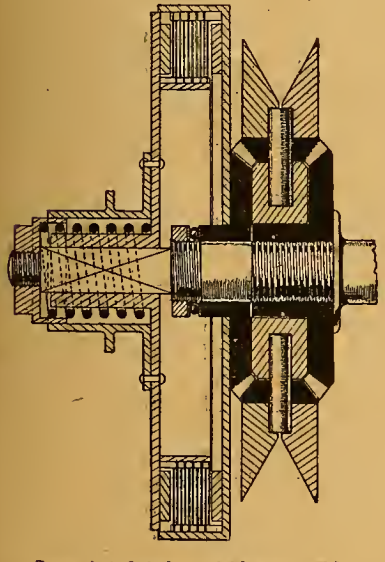


Dufaux's spring frame. No. 123,356. 11/1/18.

we have advanced beyond compromises. Unless we can save a great deal of money or a great deal of weight by skimping matters, we prefer to spring the machine as well as the rider, thereby, for example, ensuring that we shall not arrive at the flapper rendezvous to find that the box of chocolates has slipped its strap on the carrier. Of course, for lightweights and cheap machines there *may* be a future for "hammocking" the rider on a rigid frame; Messrs. Dufaux think so.

Variable Gearing.

Mr. C. H. Strong protects an infinitely variable gear, depicted in the accompanying drawing. It consists primarily of an ordinary differential two-speed gear, affording a solid top gear and a 50% reduction for second gear. The first point of interest is that a belt pulley may be mounted on the differential if so desired. The second is that a multiple disc clutch is mounted between the main-shaft and the inner bevel wheel; consequently, if this clutch be slipped by means of a suitable control, all the ratios intermediate between zero and maximum may be employed. In other words, the gear is equivalent to the old Nala hub, which some of us remember as a reliable but weighty contraption, plus the special advantage that on special occasions, *e.g.*, in a hill-climb, one can call as many ratios as a Zenith clutch model affords.



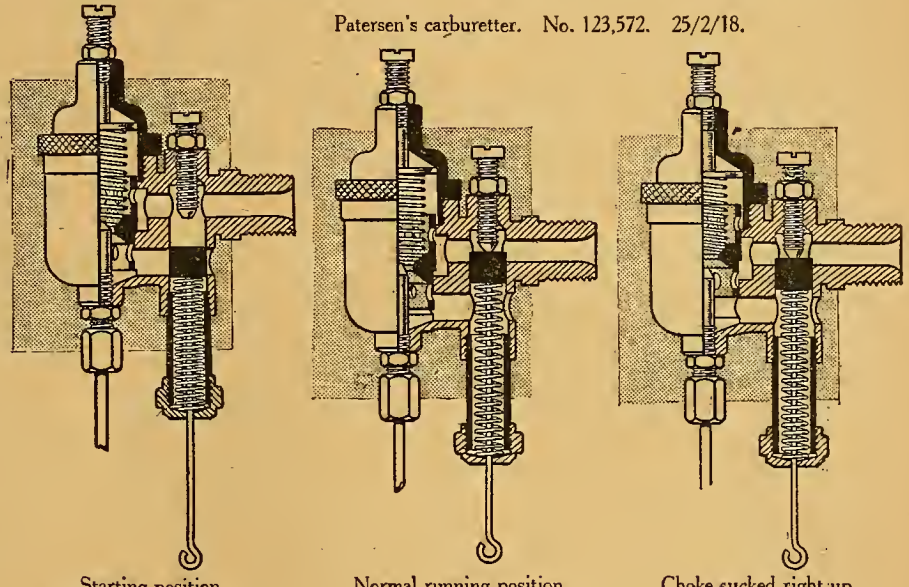
Strong's infinitely variable gear. No. 123,753. 13/12/18.

I will only say that clutch slipping is a dubious method of obtaining extra gears; and that I have yet to meet a clutch which likes being slipped indefinitely. This merit used to be claimed for the famous Hele-Shaw clutch. I have owned a number of them, but the plates had to be in splendid order and bathed in precisely the right amount of the lubricant before clutch slipping made a three-speed gear box infinitely variable uphill.

An Automatic Carburetter.

Mr. Patersen has joined the vast army of carburetter designers, and his suggestions are interesting. The drawings show a very simple carburetter, which has been designed for starting purposes. It should be cheap to make, easily set to a given engine, and automatic in action.

Patersen's carburetter. No. 123,572. 25/2/18.

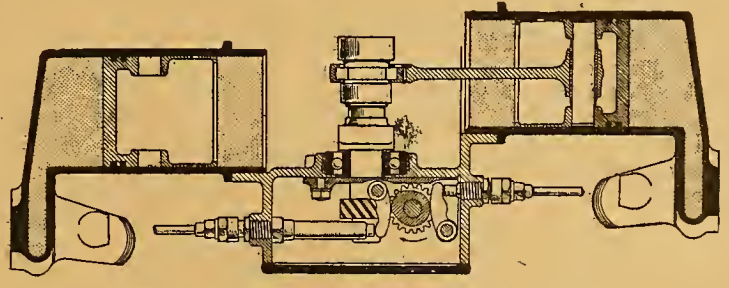


Starting position. Normal running position. Choke sucked right up.

The principles, of course, might be applied to an instrument arranged as the sole gas-supplying apparatus of a motor cycle engine if a float chamber was added and larger passages incorporated. Petrol enters the base of the spraying chamber. Engine suction drags the juice *into* the jet, as well as out of it. The heart of the notion is the floating choke tube, which is normally held down by a spring, and rises in response to engine suction. As the engine speed rises, the choke tube is sucked up, and, owing to the shape of its throat, the suction on the jet is reduced. Indeed, as the sketch shows, if the choke is fully lifted, the engine may be starved; and a great variety of settings are possible. A simple device is incorporated, by which the air ports can be closed by hand, concentrating all the suction on the jet for a moment.

Flat-twin Valve Mechanism.

The sketch at the foot of this page is self-explanatory; it illustrates the particularly neat valve gear adopted for the latest Douglas engine. The vertical camshaft and rockers are mounted on a plate which can be detached from the crank case. Both inlets and both exhausts are respectively operated by a single cam, and study of the sketch will indicate that, althongh the two inlet or the two exhaust tappets are not in the same plane, the arrangement gives identical timing in both cylinders. The valve-lifting mechanism consists of a double-humped cam, floating on the camshaft.



Douglas Motors Ltd., valve gear. No. 127,146. 18/7/18.

EQ

A SINGLE GEAR TEST.

A Plea for the Simple Solo Mount and Sporting Competitions to develop it.

DURING the week of the A.C.U. trials there was naturally much discussion in Llandrindod Wells on the subject of motor cycles and all that appertains thereto. One of the most acutely argued points concerned the flexibility of the modern engine.

Many well-known motor cyclists, especially those whose experience dates from the earlier days of the industry, contend that since the general introduction of gear boxes and variable gear ratios, manufacturers have taken less trouble to provide flexible engines, and consequently the modern engine is not as good as it should be.

Now this is a subject which is capable of almost infinite argument, and there are so many possible points of view that one is apt to lose sight of certain very important points connected with design.

To begin with, it may be argued that the modern high efficiency engine maintains its efficiency largely by reason of high r.p.m., and that a well designed high-speed engine with a wide range of gear ratios is preferable to a comparatively slow speed engine, which will pull a reasonably high gear at low road speed.

This is true to a certain extent, but a very large number of riders (probably the majority) do not care for constant gear changing, and prefer an engine which will do all normal work on top gear, and this is particularly the case with solo riders, who crave for a light machine with the minimum of complication.

The Great Days.

We do not mean to suggest that change speed gears are undesirable; on the contrary, under existing conditions, it would be well for sidecarists to use the gear boxes (for which, by the way, they pay a considerable sum) to a very much greater extent than is usual, but we do suggest that a well-designed engine, fitted to a solo mount with a single gear ratio, should be capable of taking its rider anywhere that he is likely to go in the normal course of events. It is well to remember in this connection that in 1911 W. F. Newsome, on a 3½ h.p. single-geared Triumph, made a clean ascent of Bwlch-y-Groes under unfavourable weather conditions. Here, it is true, is the case of a crack rider on a thoroughly well-tuned machine, but on the other hand not one in a thousand tourists take a hill of this description in a year's riding. It may be added that during the Six Days Trials we saw a first-class ascent of one of the rough and steep observed hills by a somewhat similar machine.

Present-day trials are designed to develop and test the modern motor cycle as a whole, and the conditions imposed tend to encourage high-speed engines with which at least three-speed ratios are desirable. Nothing is done to enhance the pulling power of engines, especially at low speeds. It is probably true that had three and four-speed gear boxes been in vogue in the early days of motoring, engines would not have advanced to their present stage of perfection. It was the single-geared solo mount that brought engines to a very satisfactory state before the passenger machine became possible, and we contend that if the single-geared machine were again brought prominently into open competition, nothing but good would accrue. Therefore, we suggest that a single-gear trial be held some time next year, preferably in a locality allowing motor cyclists from all parts of the kingdom to compete.

We are well aware that there is nothing particularly original in the suggestion. Before the war there was a single gear club, and undoubtedly there is now even greater scope for such a body of sporting riders. There is, however, a feeling among expert riders that in the majority of present-day trials, everything depends upon gear ratios, and that, compared with the trials of a decade ago, very little skill is required. This class of rider—and there are many representing the type—desire to ride in a sporting event in which tune and skill will be the all-important factors.

W. F. Newsome, who in 1911 made the first clean climb of Bwlch-y-Groes. He used a single-speed 3½ Triumph, geared 6½ to 1.

A club promoting such a trial would, we feel sure, be certain of very substantial support, and we should like to see an important club or combination of clubs come forward to organise it. An event of this nature may easily become the most popular event of the year among a very large coterie of solo riders, who have skill enough to pilot a suitable single-gear machine almost anywhere the multi-speed sidecar can go.

A Trial Suggested.

Such a trial would be essentially sporting, but lessons for engine manufacturers would bound to be revealed, and it would also encourage makers of solo machines to develop their products as simple solo mounts.

We are prepared to compile a list of single gear enthusiasts who would enter a sporting trial of the nature outlined above, and invite these motor cyclists to send us their names in order that some approximate idea may be conveyed to energetic clubs who may give the matter consideration. If no clubs care to take up the idea, we would ourselves willingly organise such a trial for private owners.

It should be remembered that the more simple a machine is, the cheaper it will be; consequently, there seems to be no apparent reason why, even at present-day prices of labour and material, a simple solo machine with an engine around the 500 c.c. mark should not be produced for £60 or so.

CURRENT CHAT

Times to Light Lamps.

GREENWICH TIME.

Oct.	9th	5.49 p.m.
,,	11th	5.45 ,,
,,	13th	5.41 ,,
,,	15th	5.37 ,,

The Scooter Trial.

The Auto-Cycle Union is so fixing the conditions for the proposed Open Scooter Trial that all types of these little machines will be included.

Single Gears—a Reminiscence.

On page 394 will be found an article which suggests a single gear test as a means further to develop the flexible engine. This proposal brings to mind several good performances on single gear machines. Among these, undoubtedly the most notable was the achievement of Geo. Brough, who, in 1912 and 1913, secured gold medals in the Scottish Six Days Trials on a 6 h.p. single gear Brough, and, what was more, covered 1,000 miles under observation with sealed tool bags. Incidentally, the 1913 Scottish trial included Applecross and Kenmore, upon which hills his gear was only 4½ to 1.

A Mean Trick.

A reader in Manchester, who advertised his machine for sale in the columns of *The Motor Cycle*, has had his mount stolen by a confidence trick. The morning the paper was published a plausible stranger called upon the owner's wife, who was persuaded to allow him to try the machine. Result, a lost 1913 3½ h.p. Triumph, fitted with N.S.U. two-speed gear, Bosch magneto, and Senspray carburetter. We hope other readers may be the means of its recovery. The owner is Mr. J. Todd, 33, Link Avenue, Stretford, Manchester.

Profiteering in Petrol.

A Government Order issued last week brought the price of petrol within the provision of the Profiteering Act. In view of the frequent complaints of overcharging that have reached us, this regulation will be most acceptable. The following are the maximum prices of the various grades of spirit retailed in cans:

	Retail per gallon. s. d.
Aviation	3 4½
No. 1	3 0½
No. 3	2 10½

For delivery to commercial consumers (not for re-sale) in steel barrels, 1d. per gallon less than can price, and for delivery in bulk to commercial consumers (not for re-sale), 1½d. per gallon less than can price.

One penny per gallon to be added to all above prices when sold for delivery in Scotland or Ireland.

Quantities less than a gallon shall be sold at a price proportionate to that charged per gallon.

Where motor spirit is delivered by a retailer to a purchaser at any place other than the retailer's place of business an extra charge at the rate of one penny for a gallon, or for any part of a gallon, may be added to the price.

Motor Journalist Forsakes Pen for Showroom.

Mr. Arthur Gough, the Midland motor cycle journalist, is forsaking the pen and is opening a business at 173, Broad Street, Birmingham, where he will sell motor cycles and most things appertaining thereto. Gough served four years in the Army, and has but recently been demobilised.

Paris-Nice in 1920.

The Paris-Nice trial next year will be held from February 13th to 16th, and will be so arranged that the competitors will arrive at Nice in time for the carnival on Shrove Tuesday. M. Gaston Sweerts, the prime mover in the organisation of the trial, is anxious to see a large party of British competitors, who will be assured of a hearty welcome in France. A hill-climb (quite separate from the Paris-Nice trial) will be held at La Turbie probably on February 19th.

Motor Cycle Experts.

Three more registered competitors are now "qualified" for the expert class under the Auto-Cycle Union's Regulations, these being S. L. Bailey, G. Dance, and W. A. Jacobs.

Special Features.

A SINGLE GEAR TEST. THE OUTLOOK FOR THE INDUSTRY.

Still Growing.

The membership of the Auto-Cycle Union, which is now much greater than at any previous time in its history, and continues rapidly to grow, is convincingly indicative of the increasing popularity of the motor cycle.

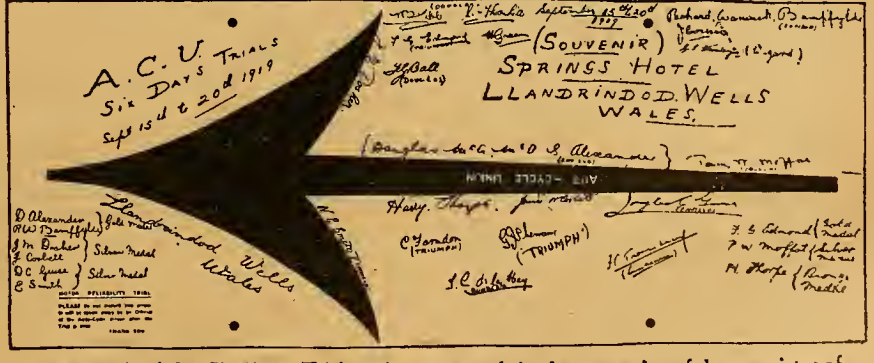
Weights of Machines in A.C.U. Trials.

Great interest has been displayed in the weights of the competing machines in the recent Six Days Trials, published exclusively by *The Motor Cycle* in the issues for September 25th and October 2nd. There was a typographical error in the latter list which quoted D. H. Noble's 5 h.p. twin Rover as a 3½ h.p. machine, but since this rider's mount was correctly referred to throughout the report, few readers could have been led astray.

A Veteran Designer.

Mr. Paul Kelecom, whose name is well known to motor cyclists, and especially to the old brigade, was an interested spectator of the A.C.U. Six Days Trial. His views on the future of motor cycles are interesting, especially as he now holds a prominent position in the F.N. concern.

We learn that a new four-cylinder, modelled on the 7 h.p. F.N., is to be produced by the company concerned. Mr. Kelecom was particularly impressed by the running of British flat twins and by the performance of a certain little two-stroke. He expressed the opinion that the future sidecar motor cycle will be engined with a four-cylinder, and that the flat twin will provide the motive power for solo mounts.



A souvenir of the Six Days Trials. An arrow card, in the possession of the proprietor of the Springs Hotel, Llandrindod Wells, which bears the signatures of many successful competitors who made the hotel their headquarters.

Scott Trial and Petrol Scarcity.

In view of the petrol shortage, incidental to the railway strike, much praise is due to Mr. Dovener, of the Scott Co., in arranging for a supply of 100 gallons of spirit at the conclusion of the Scott Sporting Trial.

Midland Palmer Cup Trial.

The South Birmingham M.C.C. announce particulars of their open trial on November 1st, which will be held over a course approximately 150 miles in the Midlands. The prizes will be decided on the results of a series of tests, for which marks will be awarded, deductions being made for failures on a brake test, easy starting, and stopping and restarting. The object is to find a winner on the machines' merit, as different from sorting out by secret time checks and speed-judging. Mr. S. Kempson Jones, 93, John Bright Street, Birmingham, is the organising secretary. Entries close on the 24th.

Standardisation of Chains.

Good progress has been made in the direction of standardisation by the members of the Association of British Driving Chain Manufacturers. Narrow and wide chains, $\frac{3}{8}$in., $\frac{1}{2}$in., $\frac{5}{8}$in., and $\frac{3}{4}$in. pitch, have been standardised, which will be available early in December, meanwhile, any difficulty in changing over to the new standards will be obviated by the temporary adoption of certain tooth widths which will accommodate existing sizes of chains as well as the new association standards. Particulars are obtainable from the Secretary of the Association of British Chain Manufacturers, Bassishaw House, Basinghall Street, London, E.C.2.

Of Interest to Aspiring Engineers.

The London County Council offers numerous scholarships to boys who intend to enter the skilled trades. There are scholarships for carriage and motor body building at the Regent Street Polytechnic, and for engineering and the allied trades at the L.C.C. Hackney Institute, the L.C.C. Paddington Technical Institute, the L.C.C. School of Engineering and Navigation, Poplar, and the Woolwich Polytechnic, Woolwich. Application should be made to Mr. R. Blair, Education Officer, L.C.C. Education Offices, Victoria Embankment, London, W.C.2.

Motor Cycle Permits for Ireland.

The R.A.C. draw attention to the fact that a Military Order is in force in Ireland applying to the whole of Ireland forbidding having, keeping, or using a motor cycle by any person other than a member of His Majesty's Forces, or police constable, without a permit from the Competent Naval and Military Authorities, or from the Chief Officer of Police in the district in which the person resides. Motor cyclists taking machines to Ireland must approach the police authorities in the district in which they reside in England in advance, stating that they intend to take a motor cycle to Ireland *via* a certain Irish port and request the police authorities to write to the Chief of Police of the port of disembarkation in Ireland, in order that the traveller on reporting to the Chief of Police at the port of arrival in Ireland may obtain the necessary permit.

IMPORTANT DATES.

Paris Salon	Oct. 9th to 19th.
Athens Motor Show	Oct. 13th to Nov. 14th.
Olympia Car Show	Nov. 7th to 15th.
Olympia Motor Cycle Show,	Nov. 24th to 29th.
Brussels Show	Dec. 8th to 13th.
Paris Aero Exhibition	Dec. 19th to Jan. 4th.
New York Show	Jan. 3rd to Jan. 10th.
Birmingham British Industries Fair	Feb. 23rd to March 6th.

La Cote de Gaillon

The Motor Cycle Club of France are holding a hill-climb at Gaillon, on the road from Paris to Rouen, at the end of October. The Côte de Gaillon has been practically an annual event with French organisers, and usually attracted a large number of entries.

A Famous Single Gear Exponent.

The other day we were delighted to meet W. F. Newsome near the Triumph works in Coventry. Latterly, "Billy" Newsome has been in the army, and has had many outlets for his activity and motor knowledge, having been at various times during his military career a motor cycle mechanic and tester, and a car tester, although he was mostly in charge of motor cycle engine overhauling at one of the large M.T. depôts. Talking of mutual army experiences led us to gossip of the old days when speed gears were not, and apropos of Bwlch-y-Groes in the recent Six Days, Newsome told us that he still cherished a silver-framed photograph of the hill presented to him by local riders. This was in commemoration of the first "official" climb of the hill he accomplished on a fixed gear Triumph in 1911. We hope that now he is demobilised, the name of W. F. Newsome will again appear amongst those of the regular supporters of motor cycle competitions.

Lighting Regulations.

Owing to the railway strike some of the lighting regulations which were in force under D.O.R.A. have been re-imposed. This means that lighting-up time is half-an-hour after sunset, that motor cars, horse-driven vehicles, sidecars, and cycle cars, must carry two lights in front, that hand carts must again be lighted, and that all vehicles, including bicycles, must display a red light in the rear. In the case of hand carts, a single lamp showing a white light to the front and a red light to the rear will be deemed sufficient.

208 Exhibitors at Olympia.

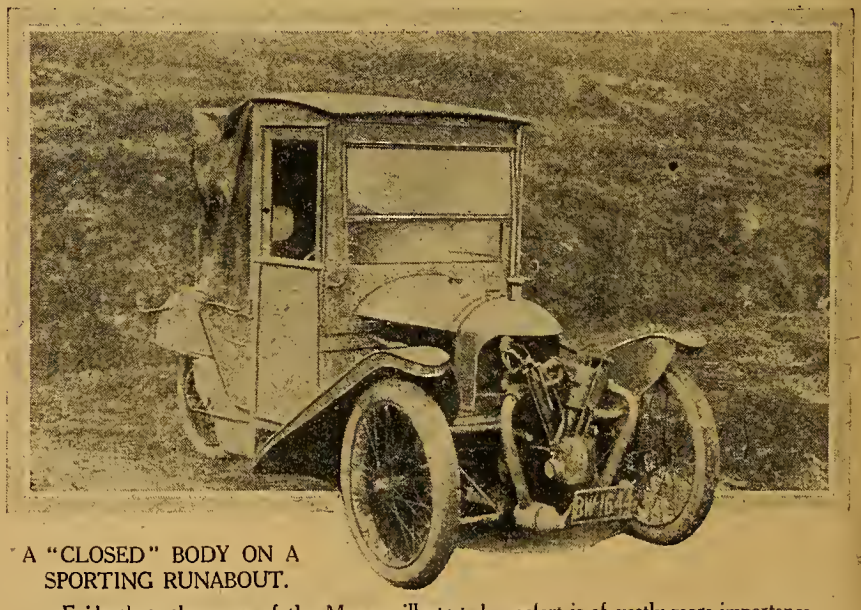
Up to the time of going to press, the list of exhibitors at the Olympia Motor Cycle Show (November 24th to 29th) number 208.

The Rear Light Question.

Recently a woman was killed through a collision with a motor car while cycling at night. At the inquest at Grimsby, the coroner said he did not think the accident would have occurred if her cycle had had a rear light, and the jury asked him to write to the Home Office with a view to the rear red light regulation being reinstated. It is exceedingly pleasant to see that some coroners take a very sensible view of the rear red light question. A red rear light again became compulsory on October 1st.

Honour to whom Honour!

A competitor in the recent Scott trial writes us: "Will you thank the Scott people for their generosity and for the highly sporting spirit that characterised the whole event? I learn with much regret that no vote of thanks was proposed at the presenting of the cups, though I am sure the appreciation of all of us was most genuine. Few of us ever remember a more enjoyable and sporting trial."



A "CLOSED" BODY ON A SPORTING RUNABOUT.

Evidently to the owner of the Morgan illustrated, comfort is of vastly more importance than appearance. The association of a coupé body with a vehicle admittedly one of the most "sporting" on the road is decidedly incongruous. This little hybrid was seen at the Six Days Trials at a lonely spot on the Welsh moors.

IMPRESSIONS OF THE SCOTT TRIAL.

Random Jottings by our Representative who observed the Event and journeyed by Road to Coventry the same Night. Being thus independent of Railways and Telegraphs we were enabled Last Week to publish an Exclusive Illustrated Report.

THE object of the Scott Sporting Trial was largely to gather together a crowd of sporting riders on a course of such difficulty that only the brave and the lucky should survive it. The habitual competition riders of the "split-second" type were not catered for; they were welcome, but the spirit of the day called upon them to forget all except the fact they had to get round. Their frames might be broken in the attempt—well! No complaints or "strikes owing to the severity of the course" could be entertained, for the trial was indeed on the lines of the survival of the fittest.

Everyone was imbued with the sporting spirit, so that when one man broke his frame, he cheerfully patched it up with bootlaces and string and struggled to the end in the brightest humour. A second man promptly retired in order to assist a third competitor who was involved in a collision, and so on throughout the day; the usual business of "pot-hunting" was forgotten in a joyous trek across the mountain tops.

The course was so utterly bad that no one was expected to exceed the schedule speed of 17 m.p.h., and, in consequence, no marks were deducted for being ahead of time. "Go as you please" was the order of the day, and the man who accomplished the best time handsomely beat the schedule average by adhering to the injunction. This rider was Geoffrey Hill, mounted on a 4 h.p. Triumph, and his performance was an eye-opener, especially to some of the Scott boys, who ran him very closely.

One man is reported to have dashed straight through a closed gate at the foot of a precipitous descent. The rotten and weather-beaten timber flew in all directions, and, as the rider's balance was not upset, he carried on without loss of time, and the gap he left behind was much appreciated by those who followed!

Several Six Day competitors and a host of North-country sportsmen took part, and the Scott Co. hope that a larger entry than ever will be forthcoming next year; they, on their part, promise to find a still more difficult course.

Every praise is due to Capt. Vinter and Mr. Dovener of the Scott Co. for the splendid organisation, arrowing of the course, and the liberal "replenishments" available for men and machines at the lunch and tea stops.

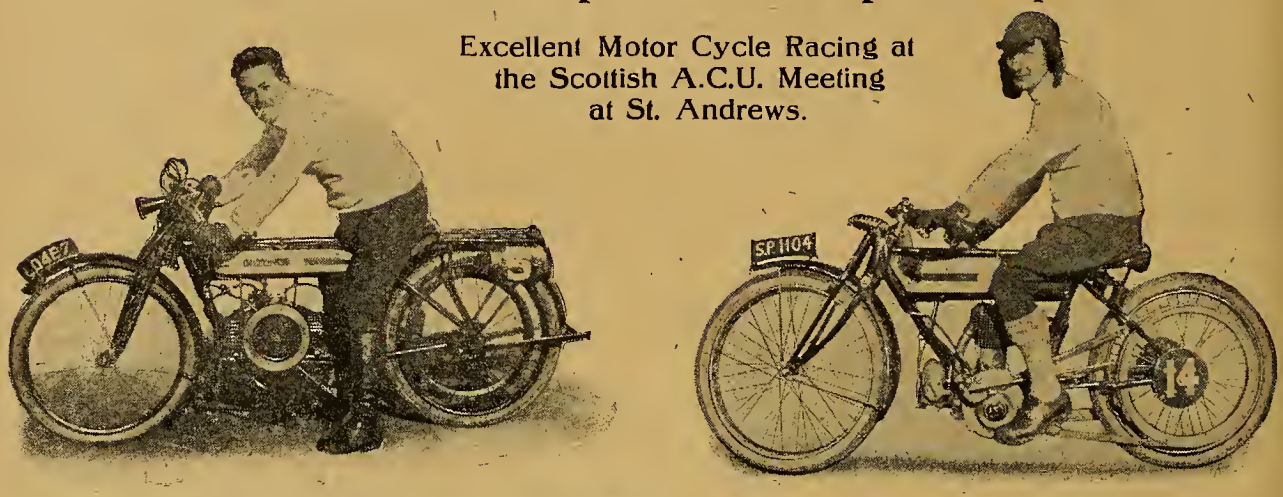
At the conclusion of the trial, several of the competitors attempted to cross the River Wharfe at Burnsall, and fitted rubber extensions to the air-intake and silencer outlet, carrying them to the level of the handle-bars and carrier respectively. Thus equipped Capt. C. P. Wood, after several fruitless attempts ending with his own Scott becoming water-logged in four feet of water, succeeded in finding a passage not deeper than the top of the wheels. Borrowing Wills's 5-6 h.p. James, he successfully crossed the river and returned.

Tim Wood, who ran fourth for the Trade Cup, and is thoroughly at home amongst the Yorkshire byways, made one complaint: "Too much main road." There were about sixteen miles out of the eighty-two!

INCIDENTS OF THE SCOTT TRIAL. J. E. Walker (3½ h.p. Scott), followed by H. W. Sellers on a similar machine, near Blubberhouses. (Right) G. Wray (4 h.p. Triumph) on Pock Stones Moor, where the road was merely a treacherous pathway of damp moss.

The Scottish Speed Championships.

Excellent Motor Cycle Racing at the Scottish A.C.U. Meeting at St. Andrews.



Two Scottish Championship holders: D. S. Alexander (2¾ Douglas), the Scottish lightweight champion, whose time was 30 minutes for the twenty miles, and G. W. Glen (4 Triumph), the mediumweight speed championship winner.

DESPITE the dislocation of postal and railway service caused by the strike, we were able last week to give an exclusive report of the results. Further particulars of this most important speed contest of the Scottish motor cycle year are now available.

Ideal weather favoured the event, and, except at one of the turns, the sands were in excellent condition, and favoured fast times. The course was straight, with a turn at each end, the complete lap being approximately two miles.

The event included fourteen classes, but, owing to lack of entries, two of these, Class 12 and Class 14, had to be abandoned.

The Championship Classes.

Chief interest centred in the three championship events as follows: Class 1 (open), Scottish lightweight speed championship; Class 2 (open), Scottish mediumweight speed championship; and Class 3, Scottish heavyweight speed championship. The distance in each case was ten laps, approximately twenty miles.

In the first class there were five starters, and one or two of the riders had trouble very early. A. L. Downie on a 2¾ h.p. A.J.S. had a stretched inlet valve, and immediately after broke a crank pin.

The brothers D. S. and A. H. Alexander took the lead early on, and, barring accidents, the event rested with one of these riders. D. S. Alexander (2¾ Douglas) was leading at the end of the first lap, but his brother, "A.H.," also on a Douglas, took the lead, going very strongly, J. R. Alexander (2¾ Douglas) and A. E. Wills (2¾ Douglas) following in the order given. Just when the event appeared his, A. H. Alexander gave up after a good race, and D. S. Alexander won easily, J. R. Alexander being second, and A. E. Wills third. Winner's time, 30m.

Some of the best riding of the day was seen in Class 2. The event produced eleven entrants and nine starters, the non-starters being J. Emerson (3 A.B.C.) and R. J. Braid (3½ Beaumont). Hugh Mason, the winner of the lightweight championship in 1914, was very much fancied on his 3½ h.p. N.U.T., but his luck was out and a broken crank pin put an early stop to his chances.

A. H. Alexander (3½ Douglas) was again well to the fore, and seemed to have an excellent chance of winning when a valve cap blowing off put him out of the race. The finest performance of this event, if not of the afternoon, was that of G. W. Glen (3½ Triumph). This local rider had a very speedy mount and knew how to handle it. His riding was greatly admired, and his cornering was one of the features of the afternoon. After the retirement of A. H. Alexander, Glen had things his own way, and keeping a fine average speed won easily, his time being 26m. 15s. Towards the finish his engine seized slightly, and he got off, but mounting again finished in the time given. J. R. Alexander (3½ Matchless), was unfortunate; his first trouble was in connection with the drip feed, the needle valve indicator falling out; with the aid of an ordinary pencil he kept going until gear trouble caused him to retire. The final placing was—(1) G. W. Glen (3½ Triumph), (2) Capt. A. Lindsay (3½ Norton), and (3) O. G. Braid (3½ Norton). Glen's time was two minutes faster than that of the second man.

Bad Luck Amongst the Heavies.

In the Heavy Class, seven riders started, but T. Stewart (8 Chater-Jap) could not get his machine started and retired. A. H. Alexander (7 Indian) was again unfortunate. He was leading at the end of four laps, when coming round past the judges for the fifth time, he threw a plug amongst the crowd, and made a brave show on one cylinder. He naturally failed to finish among the leaders.

D. M. Brash (7 Harley-Davidson) stopped and changed a plug, while A. T. Brash had a nasty fall through his exhaust pipe working loose and locking his back wheel. F. W. Dixon (7 Indian), who had been riding well all through, proved to be the winner, his time being 22m.

Several exciting finishes were witnessed in the shorter races. Glen (3½ Triumph) repeated his success in Class 5, confined to private owners; C. Duncan (3½ Norton) was second.

The Edinburgh Club easily won the team race, their team consisting of Geo. Grinton (7 Harley-Davidson), A. J. C. Lindsay (3½ Rover), and A. H. Alexander (7 Indian). The last-named made the fastest time of the day during this event.

An Aluminium Sidecar Body with Screwed & Welded Joints.

MANY new designs, both in the chassis and body construction of sidecars, have appeared amongst the post-war models, notable amongst them being the recent use of metal in preference to three-ply wood, which is usually employed. Many sidecars, the bodywork of which consists of sheet steel or aluminium, have been marketed from time to time; now we hear that a smart looking car, having a sheet aluminium body chemically treated in order to form a matt surface, will, at no distant date, be placed on the market by Messrs. The Gracemill Sidecar Manufacturing Co., High Street, Epsom.

The skeleton framework is made throughout of bent ash, the semi-circular side members being dovetailed into the wide footboard and the wooden top rail respectively, the whole forming a rigid frame to carry the aluminium plates which are screwed thereto, the joints in which are substantially welded so as to form a seamless and symmetrical surface.

Accommodation for tools and spares is provided under the fully-upholstered seat and in the nose of the body, access to the latter being effected by opening the hinged footrest, which is retained in position by engaging a wooden tongue, fixed thereto, with a slot in the framework.

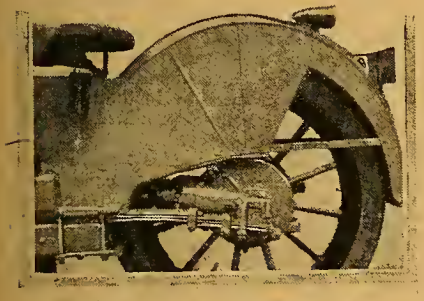
A safety step, situated between the rear wheel of the motor cycle and the sidecar body, is provided, in order that the passenger, when entering the car, shall not be exposed to the passing traffic.

A Motor Cycle on Car Lines.

The American Militor, a Machine embodying a Four-cylinder Engine, Three Speeds and Reverse, Shaft Drive and Spring Frame.

ACCORDING to car designers, the motor cycle eventually will follow car lines, inasmuch as four-cylinder engines, shaft drive and spring frames are concerned. How far these prophets are correct only time can prove, but, so far, where drastic departures have been made on motor cycles, such machines have been regarded as freaks and have failed to appeal to public fancy.

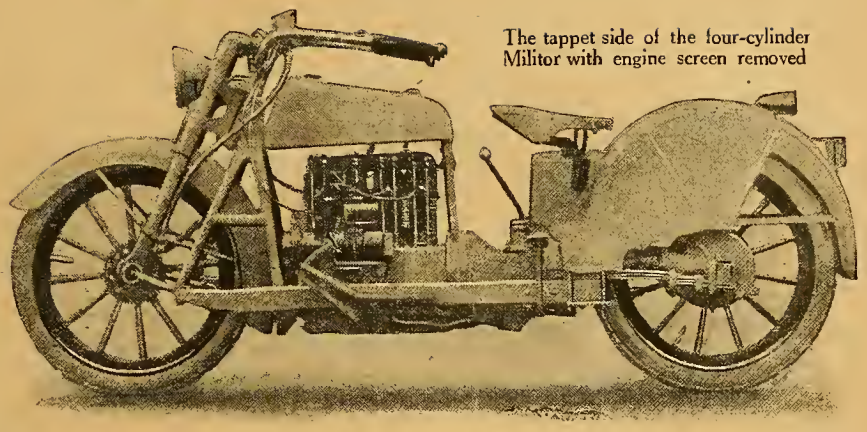
Among these novel machines the American Militaire probably takes first place. Although little has been heard



The system of rear springing, it will be observed, is on car principles.

of this unique motor cycle of late, it seems that experiments have been proceeding, and it now reappears on the American market under the name of Militor.

It will be seen from the illustrations that the new model is distinctly in the "heavy" class. The four-cylinder engine has a bore and stroke of 63 and 89 mm. respectively, giving a total capacity of 1,568 c.c.—far and away the largest engine fitted as the standard power unit of a motor cycle. This engine is air-cooled with overhead valves and mechanical lubrication by a gear pump. The gear box is integral with the crank case and is centrally controlled as on most American cars.

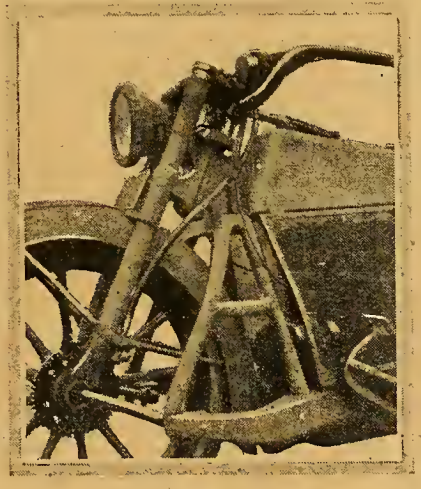


The tappet side of the four-cylinder Militor with engine screen removed

From the engine power is transmitted through a plate clutch and gearing to the shaft and bevels. The electrical installation includes a combined lighting and ignition set, which is carried on the side of the crank case. Artillery type wood wheels are employed both on the machine and on the special sidecar which is supplied when required.

Pressed Steel Frame.

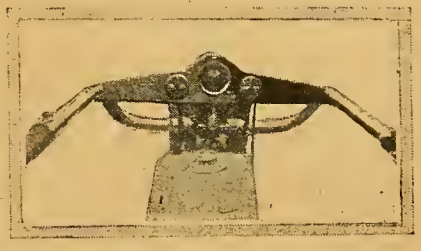
Undoubtedly the most interesting feature of the Militor is the pressed steel frame, which consists of two side members connected at the front by a triangulated "pyramid" supporting the steering head. The front fork tubes are carried up above the steering head and embody two heavy coil springs. In addition, the hub is connected to the front ends of the frame by a patented system which, it is claimed, will absorb head-on shocks of enormous pressure.



Showing spring fork and steering head.

At the rear the frame is sprung on three leaf laminated springs, with an additional supporting leaf on the rear under side.

The tank is supported at the front on a lug on the head stamping, and at the rear, on a loop member carried on the clutch casing of the engine-gear unit.



A unique feature is the handle-bar instrument board.

The capacity of this tank is 3½ gallons, while 1½ gallons of oil are carried in a second tank which is integral with the rear mudguard.

28×3in. tyres are used, which, with the footboards arranged on the frame level, give a somewhat high riding position. An instrument board is carried on the handle-bars.

In July of this year, Lieut. A. Chapple covered two miles in 1m. 18⅖s. at the Sheepshead Bay Speedway, U.S.A., which is a speed of nearly 92 m.p.h.

The price of this unique machine in America, with sidecar, is £120, or as a solo machine with idler wheels, the price is approximately £96.

OFFICIAL MARKS IN THE SCOTT TRIAL.

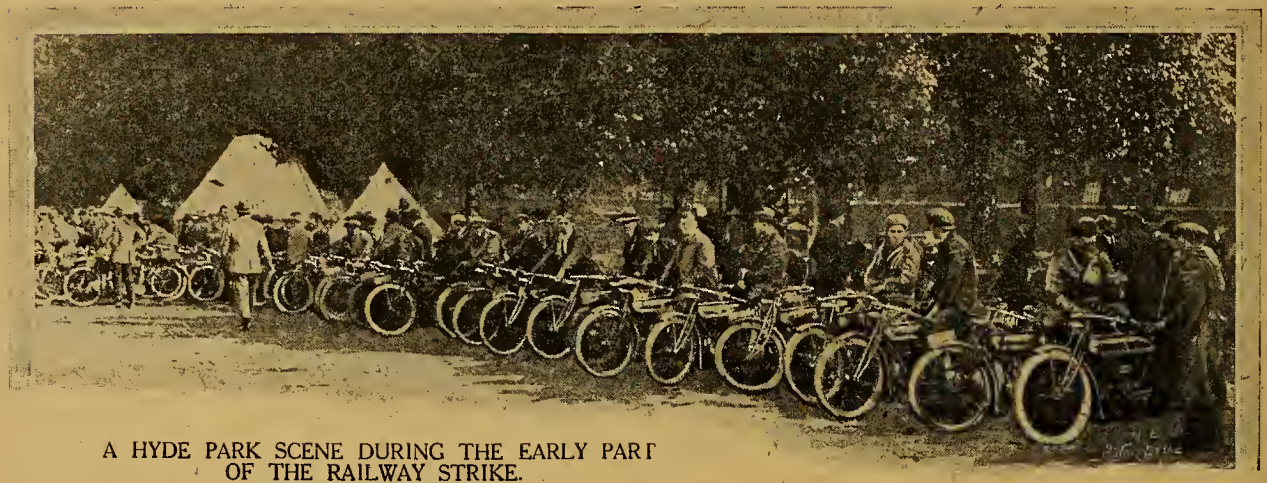
THE awards in the Scott Sporting Trial were given in the last issue of *The Motor Cycle*. The total marks of those competitors who finished the course are of interest, and are here given:

Geoffrey Hill (4 Triumph)	137
W. Leslie Guy (3¾ Scott)	126
W. E. Grange (6 A.J.S.)	121
H. O. Wood (3¾ Scott)	116
H. Langman (3¾ Scott)	99
W. Townsend (3½ P. and M.)	99
J. E. Walker (3¾ Scott)	97
W. Westwood (4 Triumph)	96
H. Mortimer Batten (3½ P. and M.)	95
W. Drake (3½ P. and M.)	95
H. W. Sellers (3¾ Scott)	94
T. Hargreaves (3¾ Scott)	90
W. Moore (3¾ Scott)	89
Capt. Hardy (4 Triumph)	88
Jesse Baker (3¾ Scott)	88
J. W. Wills (5-6 James)	86
B. Dewhirst (4 Triumph)	81
G. C. Ecroyd (4 Triumph)	80
J. Dosher (8 Enfield)	72
J. Duxbury (4 Trinmph)	72
H. Hill (3¾ Scott)	64
Walter Smith (3¾ Scott)	63
E. Wilkes (3¾ Scott)	52
W. Clough (3¾ Scott)	50
W. Atkinson (4 Triumph)	44
C. Froggatt (3¾ Scott)	37
Geo. Wray (4 Triumph)	32
Bentley Rigg (3¾ Scott)	27
—. Atkinson (Bat)	27
Donald Moore (3¾ Scott)	23
E. Washing (2¾ Coulson B)	17
E. C. Bean (2¾ Douglas)	16
Chas. Hart (3½ P. and M.)	15
G. R. Hardaker (3¾ Scott)	— 58
G. A. Reed (2¾ Coulson B)	— 60

G. Walker (4 Triumph) retired in order to assist Stanley Ashby (3¾ Scott), who collided with a car. Eighteen others started but failed to complete the course

PETROL AND THE STRIKE.

The Internal Combustion Engine proves its Value in a Peace Crisis as in War.



A HYDE PARK SCENE DURING THE EARLY PART OF THE RAILWAY STRIKE.

Hundreds of motor cyclists volunteered their services immediately the Government made their appeal. The photograph depicts despatch riders ready to depart at a moment's notice.

JUST as the internal combustion engine was an important factor in the winning of the war, so has it proved the salvation of the country when threatened with starvation through the strike of the railway workers. As during the period of the war, motorists came forward in their thousands to assist the Government in maintaining the nation's food supply, with the result that every type of motor vehicle—from the motor cycle to the 5 ton lorry—was pressed into service. The number of volunteers for service as drivers probably exceeded the call when the nation went to war, for the sole reason that the great part played by the motor during the war has brought into being increased numbers of those who are accustomed to the steering wheel.

On every main road in the kingdom there was evidence of the railway stoppage in the large amount of motor traffic passing in both directions. Had the strike taken place before the war, the whole country would have been paralysed. As it was, the reverse seemed to be the case. It was as if Great Britain had awakened. Instead of an atmosphere of uncertainty, and a general slowing down of the nation as a whole, which certainly would have been apparent had all transport come to a standstill, the activity on the roads gave one the impression that there was a general speeding up, that instead of the "jog-trot," with which English people are sometimes supposed to travel through life, the country had "opened the throttle," as it were—and, what was more, seemed to enjoy it.

Then and Now.

The traffic in London, particularly, was almost appalling, especially in the main thoroughfares. About thirty years ago the then Vicar of London Colney (that small village on the Holyhead Road about three miles south of St. Albans) said he remembered the time when as many as eighty coaches a day passed through on their way to Birmingham and the North-west. Had the old cleric lived to the present time, he would have seen the activities of the road restored to their pristine condition. The four-horse coaches of his time were, however, replaced by towering 5 ton lorries, some bearing marks identifying them with the late war, and every other form of motor vehicle engaged upon the great work of feeding a nation threatened with calamity. Despatch riders once more became common objects of the countryside, and the economy of the motor cycle was forced upon everyone's notice every time an overloaded sidecar passed bearing a contingent of City workers to their duties at a cost in fuel of approximately 9d. per person for fifty miles.

As was to be expected, perhaps, the petrol profiteer made an early appearance, demanding as much as £1 per tin of fuel, but the Government quickly put a stop to this practice by including motor spirit in the schedule provided by the recent Profiteering Act.

Along the main roads long-distance chars-à-bancs were to be frequently seen, bearing such inscriptions as "London-Blackpool Express," while lorries laden with human loads became a common sight. All military movements had to be accomplished by motor transport. People who usually used the train between their homes and their work occupied the seats on motor 'buses, and any other type of vehicle capable of accommodating them. It became a recognised rule amongst motorists that an empty seat was something of which to be ashamed.

Apart from the question of food supplies, a great deal of raw material has been carried, thus reducing the chances of unemployment in the main industries. Upon the question of quick delivery depends the employment of labour in many fields. As an example, the large staff at the printing works of our publishers depend upon the many journals which they print being distributed. Without a means of doing this, the publication of any papers would be futile.

As in all previous national crises, motor cyclists came forward in large numbers to assist the Government. The photograph shows lines of private machines placed at the disposal of the Ministry of Food.

Everything was done to ensure motor cyclists and motorists obtaining their copies of *The Motor Cycle* and *The Autocar*, and in case passing drivers from outlying districts had been unable to obtain the papers, emergency bookstalls were installed on the roadside at various points on the chief main roads. Such instances are, of course, only incidental, but serve to demonstrate the value of road transport under all conditions.

The first emergency bookstall was established at Shirley's Garage, Meriden, on the London-Holyhead road, in the popularly recognised centre of England.

In the newspaper world no time can be lost in lengthy deliberation. Immediately the strike was declared several additional lorry chassis were acquired for the transport department. In the meantime came many offers of assistance from car manufacturers in Coventry, who placed at our disposal a fleet of cars for service between the capital and Coventry. In addition, readers we had never seen before offered assistance with their sidecars, and the staff found time, between their other duties, to run in twenty-mile trips with loads of 2 cwt.

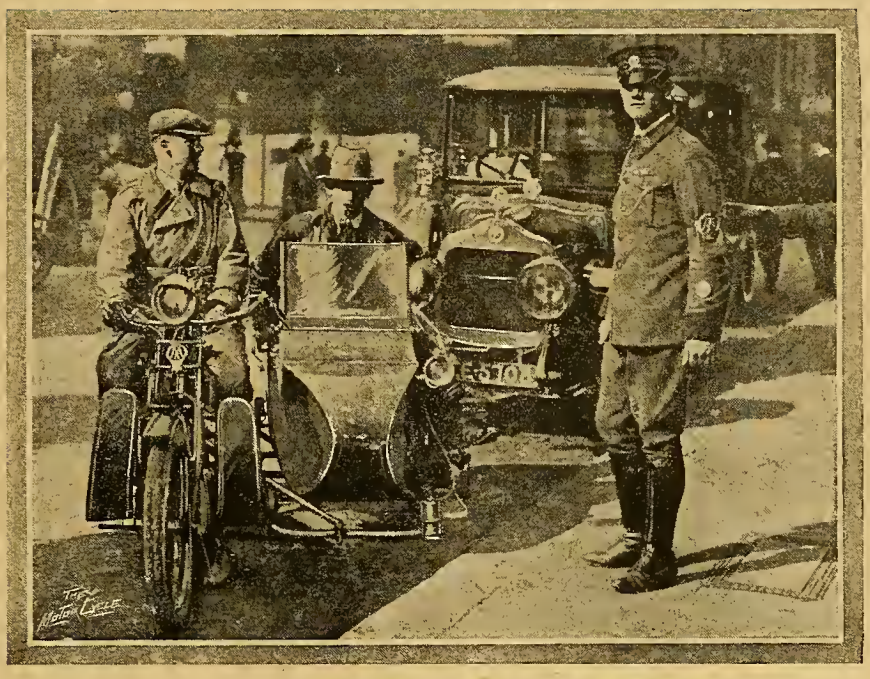
The two Triumph sidecars undergoing the A.A. benzole test were put to practical use. Instead of the tour arranged for the second half of the test these two machines, still under A.A. observation, formed a valuable daily mail service between London and Coventry, carrying important letters and small parcels, starting each day at noon from *The Motor Cycle* offices at Coventry and the A.A. benzole depôt on the outskirts of London, one machine passing the other each day midway between the two points with the utmost regularity.

London Traffic.

The traffic in London was appalling, especially in the main thoroughfares, and one morning we had an exciting time with a single-cylinder sidecar outfit, the clutch of which was out of action.

On the Country Roads.

Naturally every form of motor vehicle was encountered. During two journeys, amounting to about 170 miles in all, we do not recollect a single instance of joy-riding. Everyone appeared to be bent on serious business. A few people were obviously motoring home from places where they had been stranded by the strike, and most of the vehicles were conveying food or household goods. The worst thing to overtake was a lorry laden with empty milk cans. We followed one for miles, and then beckoned a six-cylinder Sunbeam to take our place and use his Klaxon. He did not hesitate to do the former, but omitted to use the horn for quite a long time Few people possess warning signals which can be heard above the din these milk lorries make.



A volunteer despatch rider arriving at the A.A. headquarters.

There were, alas, plenty of instances of bad driving, and it behoved every road user to exercise the utmost care and consideration. The food lorry held sway, and rightly so, but its driver should have hugged the near side, and let the swifter cars and motor bicycles have a chance of passing. The most common infringement of road law is failure to recognise that the man on the near side has the right of way, and if a motor cyclist overtaking a lorry sees another about to pass in the opposite direction, he should slow down and leave him a free passage. In a run of seventy miles we saw at least four results of accidents —all lorries. Of these, one was clearly due to defective lamps, as the vehicle had left the road and had charged the off side hedge.

"The Motor Cycle" delivered by Road.

Travelling south from the Midlands on a *Motor Cycle* lorry, we were given many cheers from passing motor cyclists.

The Empty Sidecar.

We felt particularly uncomfortable whenever we were compelled to travel up to the City with an empty sidecar.

Troubles by the Wayside

There were plenty of minor breakdowns to be seen on the roads, but few motor cyclists were seen stranded.

Our Mounts.

On the first day of the strike, copy for *The Motor Cycle* was taken down to the printing works by a member of the staff on his 2¾ h.p. Douglas. One of the photographic staff used his 8 h.p. Matchless, and an editorial representative travelled up to Town on one of the latest P. and M. sidecar outfits. Later, a 1919 4 h.p. Triumph with sidecar was pressed into service. On local duties were A.J.S., Ariel, Norton, and Enfield sidecars.

The two Triumph sidecars undergoing the A.A. 5,000 miles benzole test were put to good service when the engines had been decarbonised after covering 2,400 miles. The animated scene is at the Coventry offices of *The Motor Cycle*, where the London mail was handed to the riders, who maintained a regular service.

FROM THE PRINTERS TO THE PUBLIC.

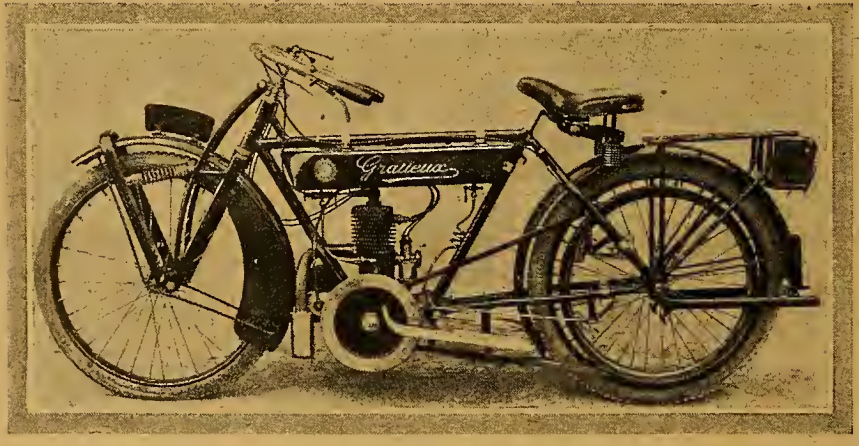
One of *The Motor Cycle* lorries distributing last week's issue during the railway strike The lower picture shows one of the emergency bookstalls placed on the main roads by our publishers.

A New French Two-stroke Lightweight.

THE fact that France is making rapid strides in motor cycle construction is emphasised by the advent of several new machines, amongst which the Gratieux two-stroke compares favourably with English productions. This machine is of entirely French construction, being built in the factories of F. Gratieux at Billancourt, a firm which gained a reputation during the war for its aeronautical productions. The motor is a three-port two-stroke, and is said to be economical in running and very well balanced. The lubrication is automatic, and can be regulated by a milled head. Two brakes are provided, both acting on the belt rim, and it will be noted that the aluminium footboards are placed unusually far back.

Maximum speed is about 38 m.p.h.; weight just over 120 lb.; and tank capacity four and a half litres (one gallon) petrol and one and a half litres oil.

The price fixed is 2,100 frs., equalling roughly £84 purchasing power, and delivery is promised within fifteen days. A striking feature lies in the unusual type of spring forks, the design of which is clearly illustrated. They should be equal to the road conditions in France, which in places are reported by demobilised despatch riders to be very bad. The Gratieux is only one of many interesting machines which have been produced in France since the Armistice.



The Gratieux two-stroke, a French lightweight weighing 120 lb. and selling at £84.

A French "Reliability Trial."

COMPARED with the average British trial, the recent "Grande Ceinture" was not at all a strenuous affair, except for road surfaces, which, on the whole, were very bad. Starting from one of the suburbs of Paris, the sixty competitors were required to make a 125-miles circuit of the city at an average speed of 18⅜ m.p.h.

All the riders enumerated in the table below obtained full marks for running to schedule, their final positions being determined by comparison of their total times in the two speed hill-climbs included.

250 C.C. CLASS.—1, Louis (Alcyon); 2, Dubost (Moto-Solo); 3, Reservat (Gratieux).

350 C.C. CLASS.—1, Vulliamy (Alcyon); 2, Colombel (Douglas); 3, Rigal (Motosacoche); 4, Gordon Wren (Coventry Eagle); 5, Isoldy (Douglas); 6, W. Davis (Douglas).

500 C.C. CLASS.—1, Joly (Alcyon); 2, Barthelmy (Rover); 3, Geoffrey (Rudge Multi).

750 C.C. CLASS.—1, Gompertz (Triumph); 2, Favart (Douglas); 3, Pinney (Triumph); 4, Duverne (Douglas); 5, H Nass (Sunbeam); 6, Suriray (——).

SIDECARS, 500 C.C. CLASS.—1, Gallié (Triumph); 2, Psalty (Rover); 3, Riant (Rover).

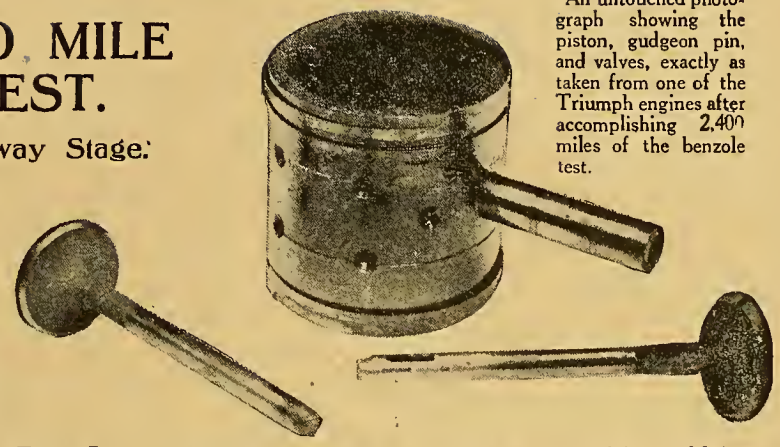
SIDECARS, 750 C.C. CLASS.—1, Lacour (G.L.); 2, Delabre (Rover); 3, Moret (G.L.); 4, Herbert (Sunbeam).

CYCLE CARS, 1,100 C.C. CLASS.—1, Noel (Noel); 2, Enders Jack (Enders Jack); 3, Mahieux (Bedelia); 4, Binet (Bedelia).

The cups awarded to the best equipped machines were won by the G.L. team, and by Mahieux on the Bedelia cycle car.

THE A.A. 5,000 MILE BENZOLE TEST.

Engine Examination at Half-way Stage.



An untouched photograph showing the piston, gudgeon pin, and valves, exactly as taken from one of the Triumph engines after accomplishing 2,400 miles of the benzole test.

AT the conclusion of something over 2,400 miles, the Triumph sidecar outfit, on which the A.A. benzole test is being carried out, arrived in Coventry once again.

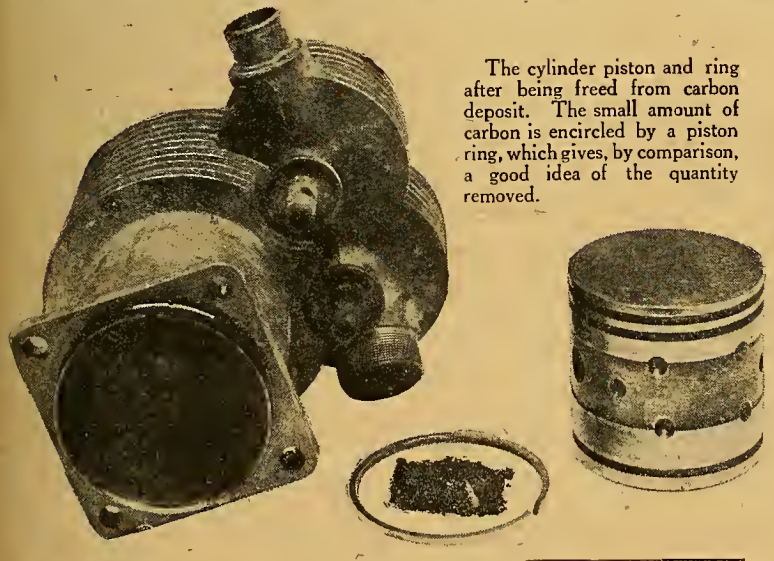
As mentioned in our last issue, the engine was stripped for examination at the Triumph works under expert observation, which included representatives of the Triumph Co., Mr. Smith, of the A.A., Mr. Robert S. Fox, M.A., A.M.I.A.E., M.J.I.E., A.F.Aer.I. (the observer appointed by the I.A.E.), and ourselves.

No engine trouble had been experienced up to the time of inspection, with the exception of a stretched exhaust valve due to the high average speeds maintained throughout the trip.

On the removal of the cylinder, it was immediately obvious that there was a much smaller quantity of carbon deposit than the circumstances warranted. In fact, the estimates of the observers varied from half to a quarter of the amount of carbon usually present after the same distance on petrol.

All carbon was carefully scraped off the piston, cylinder head, rings, and valves and collected together in a small heap. The process was particularly easy, as the deposit was so soft that most of it could have been removed by wiping with a rag. It was intended that the carbon should be weighed, but the total quantity was so small that it was decided that photographic evidence would be sufficient.

It should be mentioned that the piston showed slight signs of seizure, and the top ring was slightly stuck in its groove. This, of course, would tend to increase carbon deposit, but, as far as could be ascertained, the trouble was in no way due to the use of benzole as a fuel, but rather to the gruelling test to which the machine had been placed. The same cause was probably responsible for the fact that the exhaust valve was rather burned and scaled, though otherwise the engine was in perfect condition. Mr. Fox at any rate stated that in his opinion the state of the valve was due to overdriving, and not to the effect of the fuel.



The cylinder piston and ring after being freed from carbon deposit. The small amount of carbon is encircled by a piston ring, which gives, by comparison, a good idea of the quantity removed.

Two samples of the oil in the base chamber have already been taken, and two more will be taken, and it is expected that these samples will provide a valuable clue to the effects of benzole on air-cooled engines. Practically no trouble has been experienced throughout the trip, and the "tender," a similar machine carrying four cans of fuel in addition to a twelve stone passenger, was still running so well that it was not considered necessary to strip the engine. At the conclusion of the 5,000 miles the engine will again be examined, and in the meantime the machines are continuing the test, and, in addition, serving the useful function of acting as *liaison* between the London and Coventry offices of *The Motor Cycle*.

THE MONT VENTOUX HILL-CLIMB.

HEAVY rain interfered somewhat with the Mont Ventoux hill-climb on September 27th, organised by the Lyons M.C.C. The wet surface at the corners prevented high speeds, so it is not surprising that the fastest time of the day, 3m. 42 1/5s., by Vulliamy (Alcyon), was not a record. This stands at 3m. 23 4/5s.

The winners of the various classes were: 250 c.c.—Joly (Alcyon), 4m. 22 4/5s. 350 c.c.—Vulliamy (Alcyon), 3m. 42 1/5s. 500 c.c.—Péan (Peugeot), 3m. 56 3/5s. 750 c.c.—Greame Fenton (A.B.C.), 4m. 0 4/5s. 1,000 c.c.—Vache (Sunbeam), 3m. 50 1/5s. Sidecars.—Yenné (G.L., 750 c.c.), 4m. 27 2/5s.

Among the British machines that competed, in addition to the A.B.C. and Sunbeam, may be mentioned Nodet and Gauthier (Triumphs), second and fourth in the 750 c.c. class, the Sevez (B.S.A.), second in the sidecar class.

Club News

Exeter M.C. and J.C.C.

Only ten members competed in this club's recent reliability trial from Exeter to Falmouth and back, and all but one, who experienced tyre trouble, finished to time. Two half days were taken, the outward journey being made on the Saturday afternoon, and the return during the following day.

Wolverhampton M.C.C.

The following are the results of the Wolverhampton M.C.C. open hill-climb:

SUNBEAM MEDAL (fastest time of the day).—G. Dance (3½ Sunbeam), Class 6a, 46s.

ALFRED BIRD CUP (best performance on formula by a Wolverhampton Motor Cycle Club member).—G. Dance, Class 4a, figure of merit 2,680.

WOLVERHAMPTON MOTOR SERVICES CHALLENGE SHIELD (best amateur performance on formula by a Wolverhampton Motor Cycle Club member).—R. Brown (3½ Sunbeam sc.), Class 10a, figure of merit 4,500.

A. J. STEVENS GOLD MEDAL (best amateur performance on formula by a solo rider).—G. E. Boston (2¾ A.J.S.), Class 4b, figure of merit 3,480.

THE CLYNO CHALLENGE CUP (best performance by a sidecar rider on formula).—G. Dance (3½ Sunbeam sc.), figure of merit 3,121.

THE DIAMOND GOLD MEDAL (best amateur performance on machines up to 350 c.c. on formula).—G. E. Boston (2¾ A.J.S.), Class 4b, figure of merit 3,480.

CLASS 1.—O. G. Beman (2¼ Autoglider), silver medal.

CLASS 2a*.—A. Butterfield (2¼ Levis), gold medal.

CLASS 2b*.—W. Savage (2½ Sun-Villiers), gold medal.

CLASS 3a*.—R. E. Pagb (2½ Levis), gold medal.

CLASS 3a†.—W. H. Butterfield (2¼ Levis), gold medal.

CLASS 3b*.—1, A. Butterfield (2¼ Levis), gold medal; 2, W. Savage (2½ Sun-Villiers), silver medal; 3, H. Taylor (2½ Diamond), bronze medal.

CLASS 3b†.—A. Butterfield (2¼ Levis), gold medal.

CLASS 4a*.—1, G. Dance (2¾ Sunbeam), gold medal; 2, G. Kuhn (2¾ Levis), silver medal; 3, G. E. Boston (2¾ A.J.S.), bronze medal.

CLASS 4a†.—G. Dance (2¾ Sunbeam), gold medal.

CLASS 4b*.—1, G. E. Boston (2¾ A.J.S.), gold medal; 2, H. C. Heath (2¾ A.J.S.), silver medal; 3, B. Cadwell (2¾ A.J.S.), bronze medal.

CLASS 4b†.—G. E. Boston (2¾ A.J.S.), gold medal.

CLASS 5a*.—1, G. Dance (3½ Sunbeam), gold medal; 2, T. De la Hay (3½ Sunbeam), silver medal; 3, H. S. Noakes (3½ Norton), bronze medal.

CLASS 5a†.—G. Dance (3½ Sunbeam), gold medal.

CLASS 5b*.—1, H. S. Noakes (3½ Norton), gold medal; 2, C. Sgonina (3½ Norton), silver medal; 3, G. E. Boston (2¾ A.J.S.), bronze medal.

CLASS 5b†.—G. E. Boston (2¾ A.J.S.), gold medal.

CLASS 6a*.—1, G. Dance (3½ Sunbeam), gold medal; 2, T. De la Hay (3½ Sunbeam), silver medal; 3, A. T. Noakes (3½ Norton), bronze medal.

CLASS 6a†.—G. Dance (3½ Sunbeam), gold medal.

CLASS 6b*.—H. S. Noakes (3½ Norton), gold medal.

CLASS 6b†.—H. C. Heath (2¾ A.J.S.), gold medal.

CLASS 7a*.—1, T. De la Hay (3½ Sunbeam), gold medal; 2, G. Dance (2¾ Sunbeam), silver medal; 3, C. Wade (2¾ A.J.S.), bronze medal.

CLASS 7a†.—C. Wade (2¾ A.J.S.), gold medal.

CLASS 7b*.—1, H. S. Noakes (3½ Norton), gold medal; 2, C. Sgonina (3½ Norton), silver medal; 3, B. Cadwell (2¾ A.J.S.), bronze medal.

CLASS 7b†.—H. C. Heath (2¾ A.J.S.), gold medal.

CLASS 8a*.—G. Dance (3½ Sunbeam sc.), gold medal.

CLASS 9a*.—G. Dance (3½ Sunbeam sc.), gold medal.

CLASS 10a*.—G. Dance (3½ Sunbeam sc.), gold medal.

CLASS 10a†.—G. Dance (3½ Sunbeam sc.), gold medal.

* On time. † On formula.

Future Events.

Oct. 11.—Cardiff City and District M.C.C. and L.C.C. Consistent Driving and Reliability Trial.
Oct. 11.—Wolverhampton M.C.C. Members' Reliability Trial.
Oct. 11.—Birmingham M.C.C. Social Run.
Oct. 19.—Ilkeston and District M.C.C. Run to Crick.
OCT. 25.—LIVERPOOL M.C. OPEN RELIANCE CUP TRIAL.
Oct. 25.—South Birmingham M.C.C. Trial for Sangster Cup.
Oct. 26.—Ilkeston and District M.C.C. Run to Chatsworth.
NOV. 1.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR PALMER CUP.
Nov. 8.—Birmingham M.C.C. Closing Run.

Essex M.C.

The hill-climb arranged for Saturday, the 4th, had to be abandoned owing to the railway strike. It is hoped to hold the event next spring.

Camberwell M.T. Old Boys' Association.

The above Association was formed after the Armistice was signed, and is composed of all ex-soldiers who were stationed at the London M.T. Repair Depot (Motor Cycle Section) R.A.S.C., Camberwell, during the war.

The first annual gathering was held on the 28th of last month, and notwithstanding the scarcity of petrol in consequence of the railway strike, and also the large number of members still in the Service, twenty-five of the "Old Boys" assembled at Alms Hill, Henley-on-Thames, and some capital sport ensued.

H. Jepson (8 Zenith sc.) climbing Alms Hill with two passengers on the occasion of the first annual gathering of the Camberwell M.T. Old Boys' Association.

A cheer greeted the pioneer of the old depot, namely Ted Warren (afterwards Lt. Warren), when he drove up with his 8 h.p. Zenith.

H. Jepson (5 Zenith) was the first to succeed in reaching the summit, and he was closely followed by S. C. Lambert mounted on a 1919 Triumph. A 1914 3½ h.p. Rover ridden by F. Willitts then proved its worth by completing the course. R. Chitty made a praiseworthy attempt with a 4¼ h.p. single James and sidecar, but was compelled to retire when only thirty yards from the top.

The event of the afternoon was Jepson's double ascent with sidecar and two passengers—truly a fine performance which quite appealed to everyone present. To negotiate Alms Hill with "three up" is most unique and well worth recording.

A luncheon at the Catherine Wheel Hotel, Henley, concluded a most enjoyable and successful day.

Liverpool M.C.

Most of the members of the Liverpool M.C. placed themselves at the disposal of the Food Control Office, the Post Office, and the police of their city. This club has abandoned its car trial arranged for Saturday next, owing to the strike.

Blackburn and District M.C.C. Hill-climb.

The above club held a hill-climb recently at Waddington Fells. The course was one mile in length on an average gradient of 1 in 10. A record crowd of spectators (nearly 2,000) assembled, and, despite a strong wind down the hill, the meeting was very successful. Results:

CLASS 2.—LIGHT CARS NOT EXCEEDING 1,500 C.C.
1. A. Morton (Little Midland) .. .. 2m. 55⅘s.

CLASS 3.—LIGHTWEIGHTS (270 C.C.).
1. W. Stanworth (2¾ Connaught) .. 2m. 50s.

CLASS 4.—LIGHTWEIGHTS (350 C.C.).
1. S. A. Marks (2¾ Douglas) .. .. 1m. 36⅕s.
2. B. Houlding (2¾ Douglas) .. .. 1m. 41s.

CLASS 5.—STANDARD TOURING MACHINES.
1. H. Hebden (3½ Norton) .. .. 1m. 17s.
2. S. A. Marks (2¾ Douglas) .. .. 1m. 22⅘s.
3. H. Walsh (3½ B.S.A.) .. .. .. 1m. 27⅘s.

CLASS 6.—SPORTING MACHINES UP TO 560 C.C.
1. H. Hebden (3½ Norton) .. .. 1m. 18s.
2. S. A. Marks (2¾ Douglas) .. .. 1m. 23s.
3. H. Smethurst (3½ Norton) .. .. 1m. 24⅘s.

CLASS 7.—NOT EXCEEDING 750 C.C.
1. H. Smethurst (3½ Norton) .. .. 1m. 10⅘s.
2. H. Hebden (3½ Norton) .. .. 1m. 17⅘s.
3. S. A. Marks (2¾ Douglas) .. .. 1m. 21s.

CLASS 8.—ANY CAPACITY.
1. *W. Lyons (7-9 Harley-Davidson) .. 1m. 10⅕s.
2. S. A. Marks (7-9 Harley-Davidson) 1m. 13⅘s.
3. H. Smethurst (3½ Norton) .. .. 1m. 16⅘s.

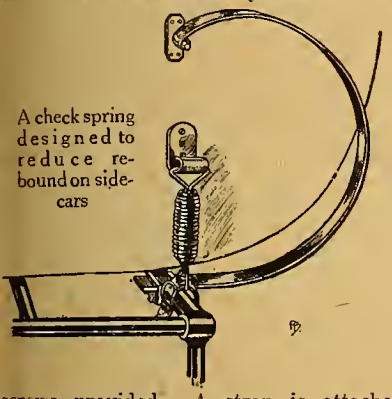
* Gold medal for fastest time of day.

PASSENGER MACHINES (560 C.C.).
1. H. Hebden (3½ Norton) .. .. 2m. 15s.

PASSENGER MACHINES (ANY CAPACITY).
1. B. Houlding (7-9 Harley-Davidson) 1m. 26s.

A SIDECAR CHECK SPRING.

A USEFUL check spring designed to reduce the excessive rebound of sidecars when travelling empty over bumpy roads has recently been placed on the market by Messrs. Herbert Terry and Sons, Ltd., Redditch. This fitting consists of a bracket which is fixed to the sidecar body immediately above the sidecar axle by means of the



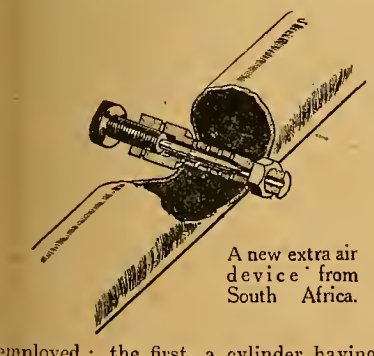
A check spring designed to reduce rebound on sidecars

screws provided. A strap is attached to the lower end of a coil spring, held at its upper end by the bracket, and secured to the axle tube or any other fitting which will hold the spring in vertical tension. The body is then pulled down by the strap, subjecting the sidecar springs to a load equivalent to the passenger's weight, thus limiting the movement of the springs and obviating the necessity for holding the sidecar down.

THE BAILLIE AIR VALVE.

TO enable the rider to admit a larger proportion of air to the mixture than is passed through the carburetter, thus reducing petrol consumption, a simple device, which can be adapted to almost any machine without the aid of extra fittings, has recently been produced by Mr. J. Baillie, 3, Commercial Road, Pietermaritzburg, Natal, South Africa.

The valve is inserted in a hole drilled in the induction pipe and held in position by a nut located on the smaller end of the device. Two components only are



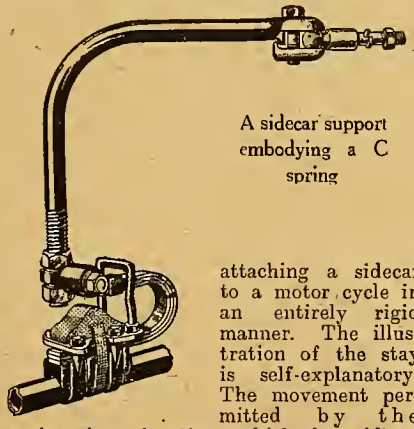
A new extra air device from South Africa.

employed: the first, a cylinder having a greater diameter at one end, providing a shoulder to prevent the valve passing through the induction pipe and to accommodate the second component, a screw, which acts as a needle valve in conjunction with a seating contained in the cylindrical portion. A series of small holes are drilled in the section of the cylinder inside the induction pipe, and by turning the milled head on the end of the screw, air can enter by way of the hole at the smaller extremity. By further withdrawing the needle, the holes drilled in the larger end of the cylinder are uncovered by the needle screw, thereby admitting a still greater quantity of air.

This device, which the inventor and manufacturer, Mr. Baillie, has patented in South Africa, England, and America, has had considerable success, and he is anxious to place it on the British market.

A SPRING SIDECAR CONNECTION.

WE think it is admitted by motor cyclists of experience that a too rigid sidecar is by no means desirable, and the designers of the American National sidecar evidently share this opinion, for their 1920 model embodies a sidecar arm which is connected to the chassis through a laminated "C" spring, the object of which is to absorb the vibration that results from



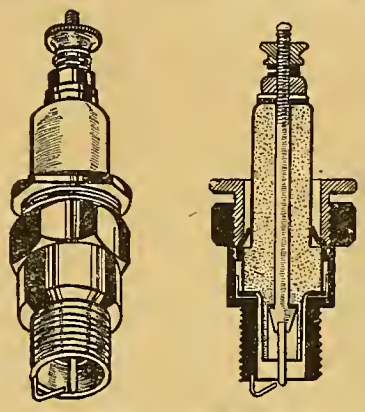
A sidecar support embodying a C spring

attaching a sidecar to a motor cycle in an entirely rigid manner. The illustration of the stay is self-explanatory. The movement permitted by the spring is only $\frac{3}{4}$in., which is said to be sufficient to take all the jar out of sidecar driving. It is not possible for the motor cycle to lean more than a few inches to the right or left.

AN ACCESSIBLE BRASS PLUG.

THE Apollo L.B.C. metal plug, suitable for engines of medium compression, is, in addition to being immune from the effects of rust, simply designed in order to facilitate its dismantling for cleaning purposes. The body of the plug, consisting of a brass die casting, having on its outer surface an hexagonal-shaped nut, is threaded internally to receive another brass cylinder, also provided with an hexagonal nut, the duty of which is to retain in position the porcelain insulator of the central electrode. The enlargement of the porcelain at its centre provides a flange at the upper and lower extremities. The former is provided with a copper washer lined with asbestos, and against this the centre brass cylinder is screwed, in order to press the lower flange against an asbestos washer placed on the top of a platform inside the brass body. The lower end of the central electrode is held against a washer in a recess at the lower end of the porcelain cylinder, by means of a nut located at its upper extremity.

This plug is sold by the Apollo Manufacturing Co., Apollo Works, Moseley

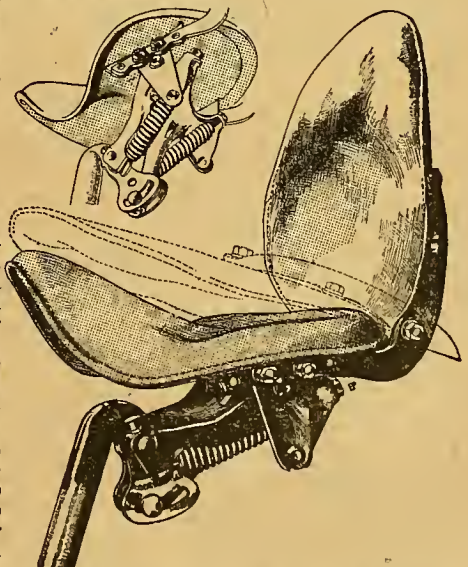


The Apollo L.B.C. sparking plug.

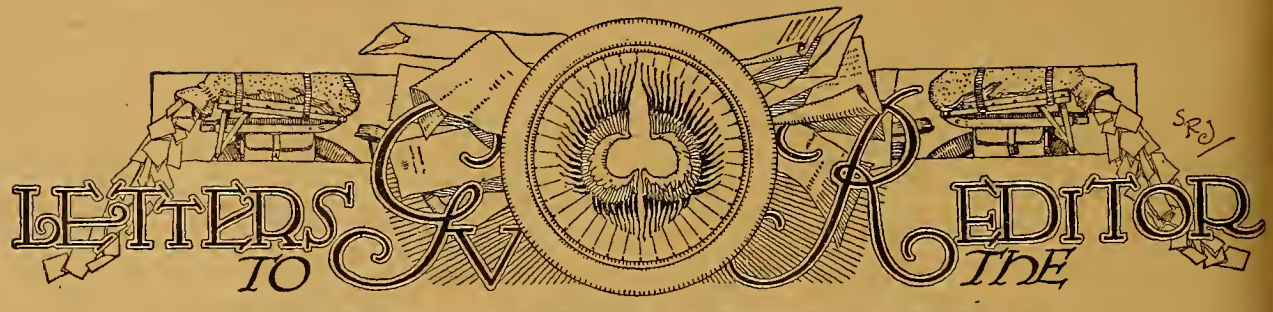
Street, Birmingham, and, being of a foolproof type, can be taken to pieces and cleaned with the greatest ease.

A LUXURIOUS MOTOR CYCLE SEAT.

XL-ALL, LTD., of Hall Green, Birmingham, have specialised for many years on the production of scientifically sprung and anatomically shaped seats for motor cyclists. Our drawing shows the latest effort in this respect, combining an improved saddle on the usual XI-All parallel motion principle and a carefully shaped back-rest. The latter may be folded over the seat to protect it from rain when the machine is not in use. This device should give the greatest possible satisfaction, especially on a sidecar outfit.



A recent addition to the list of XL-All saddles. This model has been designed in conjunction with the back rest. Such a saddle will no doubt appeal to many motor cyclists who desire the maximum of comfort.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

ANOTHER DANGEROUS CORNER.

Sir,—I should like to direct your attention to the dangerous corner of the Stalham road to Hickling, as a considerable number of motors and motor cycles pass round it. I have myself experienced a smash at this corner, and have discovered that there have been many before. Being a keen motor cyclist I feel that by making this known, it will caution the public. O. T. HAMLYN.

DANGEROUS ROAD REPAIRS.

Sir,—I beg to call to your notice the most appalling state of the main road at Burton Latimer, Northants. The road is under the pretence of being repaired, which leaves the road a sea of wet tar with a few large stones on top, making a most dangerous surface for any unfortunate motor cyclist who finds it necessary to use it.

I hope the publicity of your journal will liven up some of the officials responsible for this. C.V.F.

Market Harborough.

THE MODERN NOVEL.

Sir,—Perhaps the following may interest you as an example of the education of our modern novel writers on motoring subjects: "Over and in went the third-speed clutch, and the car ate up the road."

The lines occur on page 42, chapter iv., of the popular 7d. edition of "Ye Gods," by Eric Hudson and H. Grahame Richards, published by Hutchinson.

I am afraid even the gentle pets of my own corps cannot equal this regular road hog.

ALEC. S. GLEAVES, Lt. 8th Tank Batt.

ROLLER BEARINGS.

Sir,—I have noticed recently that the practice of dispensing with separate races in connecting rod and other roller bearings is being hailed as a novelty.

This method, while certainly very efficient, can hardly be described as new. The early Singers, as far back as 1904, had both the crankshaft and crank pin hardened, also the eye in the big end of the connecting rod, a separate outer race being used for the main bearings.

The bearings in question had caged rollers, and were of more generous proportions than the majority of modern designs. As regards wear, I know of an engine of this date which ran from 1904 to 1913 with the original bearings untouched, and these at the latter date were still in good condition. SIDNEY C. HERSEY.

PETROL CONSUMPTION.

Sir,—On a recent tour from Todmorden to Ayr (N.B.) and back on a 1915 7-9 h.p. Harley-Davidson combination, which I purchased and overhauled myself, I carefully booked down all petrol used, with a view to ascertaining my petrol consumption. At the termination of the run, after measuring the petrol in the tank, I found that my consumption was half a pint under nine gallons, and the distance (on a tested and found correct speedometer) was 641.5 miles, giving 71.28 m.p.g.

No special effort was made for a petrol test, and petrol was used from the tank on several occasions for hand cleaning purposes after small repairs and cleaning, and also for "doping" on all cold starts. The petrol used throughout was Shell No. 1, and the carburetter is the standard Schebler, with no patent "economy gadgets" fitted.

Throughout the trip I had 120 lb. weight in the sidecar, whilst my own weight is 168 lb.

I had a witness with me all the trip, which is perhaps as well, as several garage people where we called refused to credit my statement as to petrol consumption.

Messrs. Harley-Davidson Motor Co., Ltd., inform me that they have not heard of such a high average having been maintained before over so long a distance.

NORMAN BROWN.

STANDARDISATION OF CONTROLS.

Sir,—*Re* your remarks on the standardisation of controls, would it not settle the difficulty if the throttle was always arranged to shut off towards the handle-bar and be directly over it when shut off? This would make no difference to the levers opening either way. C.A.E.

Ashford.

BROKEN BOTTLES ON ROADS.

Sir,—It may interest readers of *The Motor Cycle* to know that the road from Farnborough, Hants., to Blandford, Dorset, *via* Alton, Winchester, Romsey, Ringwood, and Wimborne, is in good condition, with the exception of the road between Romsey and Ringwood, where the surface is rather loose.

I would warn motorists to watch the road between Alton and Winchester very carefully, as I found several places where broken bottles were thrown on the road, which appeared to be there more by design than accident, and although I rode as carefully as possible, I punctured my back tyre, also cutting the cover rather badly.

W. H. O. CUNNINGTON.

[It is a punishable offence to throw broken glass on a public road.—ED.]

SPEED WOBBLE.

Sir,—With reference to this somewhat long and drawn-out subject of "Speed wobble," at last two really good reasons have been sent in, viz., holding the handle-bars too tightly and closing the throttle too quickly.

Personally, I imagine that "G.E.S." got "wind up," and accordingly hung on hard to his handle-bars, and hence the wobble.

I am convinced that those of us who suffer from skidding do hold their handle-bars far too tightly. I have ridden purposely behind riders to observe this, and have almost invariably found it to be the case.

Mind you, I do not go so far as to say that holding them loosely is a *sure* prevention, because accidents *will* happen (I came off myself through a somewhat sudden skid on moss after a frost), but it is most certainly safer.

Gosport. B. S. NORTSUNBEAM

Sir,—I have noticed several letters on the above subject. I have, on several occasions, experienced this phenomenon; on the first occasion sustaining a fall at well over 50 m.p.h. on a spring frame Indian. I believe the wobbling to be caused, as stated by one of your correspondents, by the braking effect of closing the throttle, the wheels being out of track. The remedy, which has never failed me when applied, is to jam the throttle wide open once more, and endeavour to steer across and across the road in as much of a zigzag as is possible at the speed. Then the throttle may be gradually closed once more. Speed wobble only occurs when a machine is travelling in a straight line and when its wheels are out of track—at least, such is my experience.

R. THELWELL NORTH.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—I think the following will be of interest to motor cyclists generally.

While touring in Devon recently I had the misfortune to strip the gear pinion of my motor cycle. I had not been stopped five minutes before an A.A. scout appeared. Of course, he could do nothing, as a new pinion was needed. Knowing the difficulty of obtaining spares, I anticipated being hung up in an out-of-the-way corner of the country for a week or so, but the A.A. scout informed me that the Association would get me a new pinion if I asked them. I managed to get to a place where I could put up, and wrote at once to the A.A. in Birmingham, asking them to obtain for me a new pinion. This I received within two days, although the Association explained that they had had a little difficulty in obtaining the part. As the A.A. had trouble in getting the spare, I doubt whether I should have obtained one myself.

I do not think that this branch of the A.A. service is generally known amongst motor cyclists, but a word in your valuable paper would remedy this.

Although I have only been a member less than a month, I have received in "service" several times the value of my subscription. A. E. PHILLIPS.

CONTINENTAL COMPETITIONS.

Sir,—Concerning hill-climbs, reliability trials, races, etc., held on the Continent, I have frequently been struck by the fact that if there are any British entries they are not generally of the "first water"; nevertheless, "Blighty" manages to figure to some extent.

What an advertisement and fillip generally to our trade if the manufacturers would knock their heads together and pool top notch riders, also expenses, in making it their business to let a Sunbeam dance up the hills whilst an A(k) B(eer) C made the milestones into walls, every event of any importance being collared by the Old Country, to the complete extinction of practically everything not British. It can be done, but the wily maker says "No; nothing doing. I prefer to work by myself, and even if I won every event on the Continent I could not sell them one machine."

This may, or may not, be correct, depending largely on the quality of Mr. Stick-in-the-mud's grey matter. The actual point is that by consistently proving the superiority of British machines in open competition against the world's cracks Mr. Manufacturer would have far less to fear from American invasions or Continental dumping, so far as our Dominions, Colonial, or home markets are concerned.

And as our forefathers seemed to possess that "taking way" which has resulted in our (perhaps, I had better say) "having an interest" in so many large slices of earthy matter, any method of consolidating Briton's pre-eminence in those slices is surely worth consideration.

The fact that machines of various British makes compete one with the other, certain crack riders winning fairly consistently, does not convey that impression to a would-be purchaser living thousands of miles away that many awards won in our commercial rivals' camps would convey, and especially is this the case when he has our rivals' goods continually dangled under his nose. H. USHER.

STARTING WITH A BROKEN VALVE LIFTER.

Sir,—*Re* "Ixion's" article on September 11th, describing his efforts to start his machine with a broken valve lifter, I think I can give him a tip which will help him should he ever find himself in similar trouble.

In 1911 I had a 3½ h.p. single, with a rod and lever arrangement to lift the valve. After 10,000 miles running this developed wear at the points where movement took place, and became uncertain in action. When it first went on strike, I used pennies under the toe of valve, and also used the compression tap for starting, and other devices, all of which were troublesome and unsatisfactory.

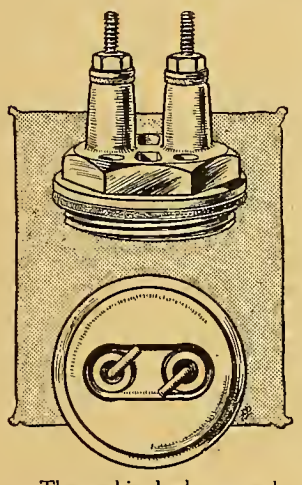
While thinking out a new arrangement for the lifting gear, to replace the old one, the following tip occurred to me, and I used it regularly until the new arrangement was fitted. Prepare the machine for an ordinary running start, but *leave the throttle closed*. Then push the machine over the first compression and continue pushing. After the resistance of the first compression stroke has been overcome, the closed throttle maintains a vacuum in the cylinder, and the machine can be pushed with little more exertion than is required when the valve is lifted in the ordinary way. When sufficient speed is attained, yank the throttle lever open with the thumb, and the engine will fire just as though the valve had been dropped. No preparation, such as opening cocks or "propping levers up with bits of wood," is required, and the machine can be started uphill if necessary, or under any conditions where a running mount can be used.

Since then I have given the tip to several riders in similar difficulty, and they have found it equally useful.

In conclusion, I must say that I have come across many useful tips in "Ixion's" interesting weekly articles during the last twelve years, and am now glad to be able to give him one in return. S. FRANK.

PERMANENT PLUG DESIGN.

Sir,—"Chinook's" article on "Permanent Sparking Plug" calls to our mind experiments we tried in this direction many years ago, and we are forwarding for your inspection the first of many attempts in this direction. Without remembering the exact date, we fancy it must be at least twelve years old. The idea provided two plugs in the one cap, and the central electrodes were extended in order that the plug might be used as a two-pole for multi-ignition. We modified this arrangement later, but, unfortunately, this is the only complete cap remaining.



The combined valve cap and sparking plug mentioned by Norton Motors Ltd.

We are greatly in favour of the idea, and believe many sparking plug troubles could be overcome if the principle suggested by "Chinook" (whose articles, by the way, we always read with interest) was adopted by sparking plug makers, although it would be an obstacle in the way of mass production.

NORTON MOTORS LTD.

SPARKING PLUG INSULATION.

Sir,—I recently experienced a rather curious trouble with the 6 h.p. J.A.P. engine of an Enfield sidecar combination.

After driving fairly hard for a few miles the outfit commenced to slow down, and at the same time a series of staccato grunts from the engine indicated a compression leakage from the rear cylinder. After allowing the engine to cool it started and ran quite correctly until warmed up, when the same trouble recurred.

Eventually the defect was located in the sparking plug of the rear cylinder which was fractured just below the plug body. When cold the break could not be seen, and the plug was compression tight. As soon as the engine warmed up, however, the electrode expanded longitudinally and allowed the faces of the fracture to separate.

The only virtues which porcelain appears to possess as a plug insulator are cheapness of manufacture, and also the ease with which a constant quality can be produced.

Porcelain is very brittle, and, with increase of temperature, rapidly loses its insulating qualities. As an illustration of this fact the filament of the Nernst lamp was made of a mixture of porcelain and magnesite, both good insulators when cold, but on being heated from an external source the element becomes quite a good conductor. This phenomenon may possibly account for the failure of some porcelain plugs in very hot engines.

Mica, on the other hand, being a natural product, is subject to metallic veins, and therefore all mica used in plug construction has to be very carefully selected; and for this reason, combined with the additional work necessary in building up the insulator, mica plugs are considerably more expensive than the porcelain variety. If a mica plug satisfactorily passes its over-pressure test it is practically indestructible mechanically, and possesses the additional advantage that if it should go down large lumps of porcelain do not fall into the engine cylinder. SPARKS.

Ecclesfield.

WAR WRECKAGE.

Sir,—Will you kindly insert the following in your valuable paper? I wish to air a grievance, which is no doubt shared by many other readers at this time. Just recently I have travelled twenty-four miles and fourteen miles to see two motor cycles that were advertised. In each case the machine was grossly misrepresented, and ought to have been described as *portions of war wreckage;* then we should not have our valuable time wasted in going to see such rubbish. The last I saw was advertised as a "Triumph 4 h.p., 1915, countershaft model, three-speed, less magneto and carburetter; £38."

This is what I saw: The remains of a Triumph with the engine radiating gills chipped, gear box with no external fittings of any kind or pulley, a bullet hole through the tank, which had no pump or fittings of any kind, no front tyre and wheel buckled, a worthless tyre on the back wheel, no saddle, no magneto, no carburetter or mudguards, and condition of the interior of the engine and gear box unknown. It stood out in the rain amongst many other old veterans, all in a worse plight than this one, which was an awful sight. OLD READER.

Fulham.

ENGINE DESIGN.

Sir,—With reference to the letter from "Two-stroke" in your issue for August 14th, in reply to "Entente's" comments on outside flywheels, I think "Two-stroke" is inclined to bring forward imaginary drawbacks which do not exist, and ignore the greatest points in favour of this type of engine.

Taking the four-stroke outside flywheel single, I have never found that my present machine (*i.e.*, a Blackburne) does any mud and oil-throwing, nor have I found any trouble from a "rapidly rotating disc in the vicinity of one's trousers." Regarding ground clearance, he has only to look at the 1919 Blackburne to satisfy himself that there is ample clearance for any roads (about 5½in.)

The great points which both your correspondents do not seem to consider are these: By the use of the outside flywheel it is possible to adopt a car-type one-piece crankshaft and split big end bearings. Also the freedom from "gumming up" owing to thick oil round the flywheels and the undeniably slow running and steady pulling at low speeds of this type of engine are points which are well worth consideration. J. A. WATSON-BOURNE.

SPARE PARTS.

Sir,—How is this for alertness in supplying spare parts? On September 9th I broke down in Blackpool whilst on holiday. 1914 engine, broken piston, gudgeon pin, and bent connecting rod. On the evening of that day I wrote to the engine makers, Messrs. F. E. Baker, Ltd. (Precision engine), for a *pro forma* invoice for the new parts; received invoice September 11th, despatched cheque in payment same day, and received the new piston, gudgeon pin, and connecting rod on the morning of September 15th.

Usual disclaimer. W. R. DAVIES.

Sir,—May I give my own experience of the courtesy and kindness of the Wulfruna Engineering Co.? In 1915 I bought one of their excellent T.D.C. two-stroke single-geared motor cycles, and after I had had it a few months I decided to fit a gear box, and received the parts from the company and fitted it myself. On the first run with the converted machine the gears seized up, and on examination I found that the main ball race had gone to pieces. I placed the machine on to the train and took it to the Wolf works myself, quite prepared to pay up for a new box and to be told that I had fitted it out of alignment. Instead of this I was treated more than kindly, a new gear box was put on in less than twenty minutes, I was taken over the works, given several very useful spare parts, and went on my way rejoicing. A fortnight later I was in Wolverhampton again, and the second box went the same way as the first. Without a murmur the company fitted a third gear box so promptly that I was able to continue my tour with the loss of only two hours!

In all my dealings with the firm I have met with more than courtesy, and their treatment of me with regard to my new "Wolf" makes me feel that I can never repay them for their consideration. I have no interest in the firm beyond that of a grateful client.

(The Rev.) M. P. SARGENT.

MOTOR CYCLES FOR DEFERRED PAYMENTS.

Sir,—At the present time, when there is an abundance of orders and a dearth of machines, agents are naturally reluctant to sell on "easy terms," and most of the firms who, during the existence of the petrol restrictions and the consequent lull in motor cycling, were only too glad to sell on these terms have now abandoned the gradual payment system. This hits the "demobbed" motor cyclist rather badly, as, of course, his military service has given him no opportunity to accumulate the necessary capital to purchase a new mount.

It is distinctly refreshing to find at least one firm of reputable agents who are still willing to consider the needs of the "capital-less" one, and their fairness in all things is worthy of publicity. This is the Eastern Garage Co., of 418, Romford Road, Forest Gate, London, through whom I have purchased a machine on these terms.

The surprisingly short time I had to wait for delivery plainly showed me that my position on their waiting list was in no way altered, because I was not purchasing on cash terms. Throughout the deal they treated me with the utmost courtesy, and I am now enjoying the fruits of my purchase—a 3 h.p. Enfield, which is a little gem of a machine.

The usual disclaimer. MANCUNIAN.

FROM THE EAST.

Sir,—In the officers' mess here away in the wilds I came across a copy of *The Motor Cycle* with the report of the Scottish Trials. It was a real treat to see it. How I would have liked to go over the old hills. I borrowed the copy and devoured it from end to end. Reading through that issue I was pleased to see so many of the old names, and I hope to have the pleasure of being with them next year, if not this. No doubt the boys will remember my camera. You can tell them that it is very busy away in these wild spots. I manage occasionally to borrow a W.D. Triumph, and get a bumpy ride. Tin Lizzies are very popular for these districts of tracks, *not* roads. That was a fine issue; glad to see you are going so strong.

Erankeui, Asia Minor. J. BRUNELL, Lt.

[Lt. Brunell is now back in England.—Ed.]

JET SIZES.

Sir,—I should be extemely grateful if one of your readers who rides a Sunbeam 3½ h.p. combination, with Amac carburetter, would be good enough to tell me *(a)* what size jet he uses *(b)* whether he finds it gives ample power for ordinary hills, etc., *(c)* what m.p.g. he obtains with it.

I am using a No. 31 and barely get 50 m.p.g., and even much less in hilly country or with a strong head wind. By "hilly country" I mean parts of Kent and Sussex, not Scotland or anything abnormal. I have tried the jet adapter recently advertised in *The Motor Cycle*, and find it quite hopeless as far as I am concerned. Possibly it is my lack of knowledge, but in my opinion the adjustment possible is nowhere near small enough. I find it is either too little petrol or too much. Will any reader who has used this adapter give me his experiences? It seems to me a much more gradually tapered screw adjuster is required.

North Chapel. C.T.

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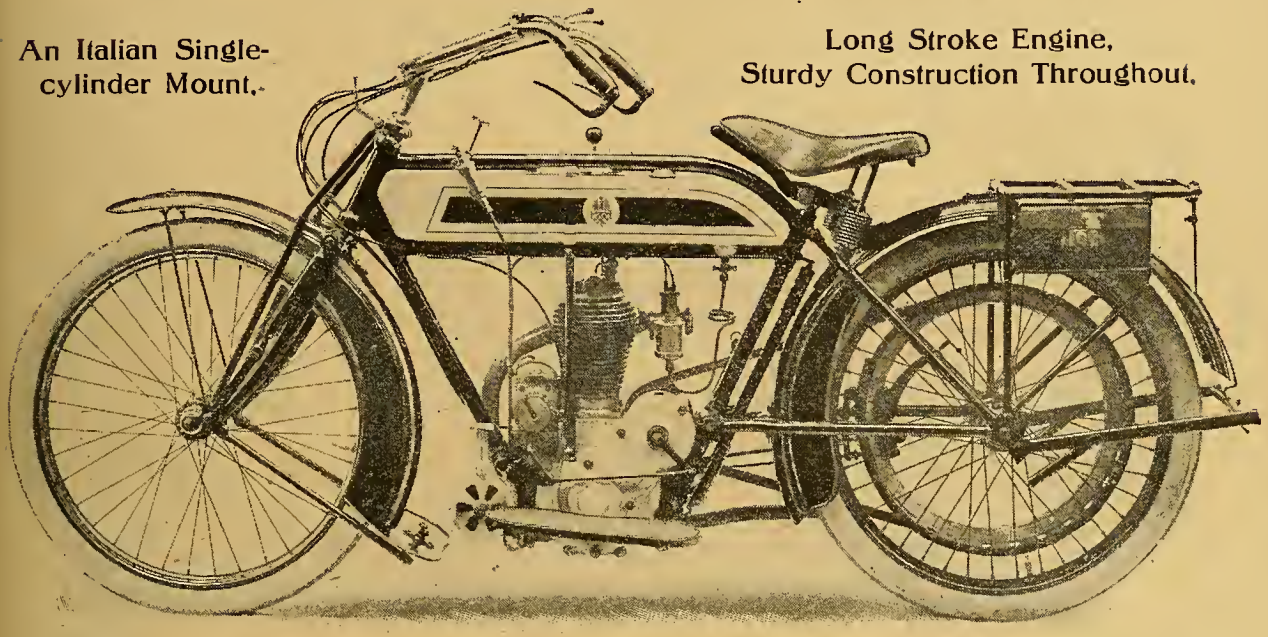
THE 4 h.p. BIANCHI MOTOR BICYCLE.

An Italian Single-cylinder Mount.

Long Stroke Engine, Sturdy Construction Throughout.

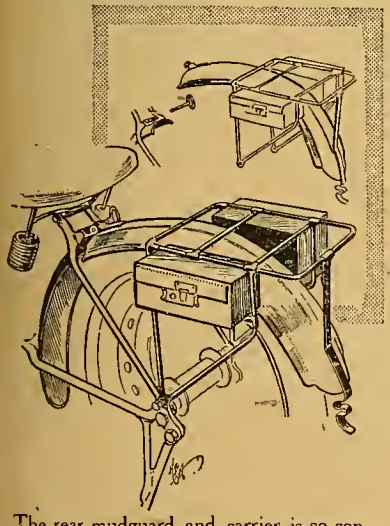


The latest Bianchi model, an Italian production fitted with a 4 h.p. engine of 498 c.c. and three-speed gear built integral with the crank case.

OUR sister journal, *The Autocar*, has many times referred to the excellent qualities of the Italian motor cars, and numerous excellent examples of these have been seen in this country. Until quite recently, however, no Italian motor bicycles have come to England, but since the armistice one Italian machine, at least, has arrived in London—the Bianchi—which is handled by the famous firm which makes the well-known Bianchi car, Bianchi Motors, Ltd., 26, St. James's Street, London, S.W.1.

A Long Stroke Single.

Built almost entirely on British lines, the Bianchi motor cycle, though it does not present any startling novelties, may be said to be a thoroughly practical mount, the performances of which we shall watch with interest in future trials. The most notable feature about the Bianchi is the power unit, which consists of an engine 75 mm. × 112 mm., 498 c.c.; it will be seen that the designers have pinned their faith to the long stroke, of which there are not many examples in British motor cycle engines at the present time. One is at first struck by the shape of the cylinder which is rather reminiscent of the Rudge, as the radiating fins are cast so that the cylinder has a pear-shaped appearance.



The rear mudguard and carrier is so constructed as to give quick detachability.

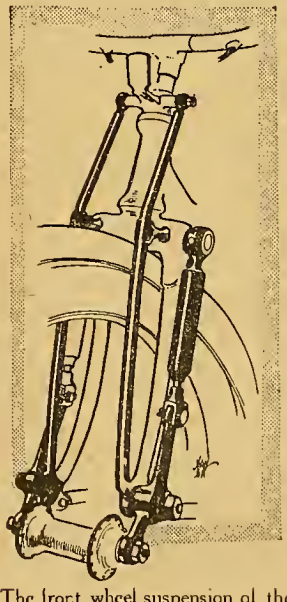
Unit Construction.

The gear is incorporated in the crank case, which also contains a multiple disc clutch, constructed in a similar manner to the clutch employed on the Bianchi car. It is operated by a quick-thread outside the crank case. The final drive is by belt, and on this score we feel constrained to express the opinion that the small countershaft pulley, despite its high and protected position, would prove far from efficient in the transmission, if a sidecar was used, under the weather conditions usually associated with British touring.

Accessible Brake Adjustments.

Following the arrangement now on standard cars, the near side pedal actuates the clutch and the off side pedal the brake, which works against the inside of the belt rim. There is another brake working on the outside of the belt rim, and operated by the lever on the right of the handle-bars. The adjustment of the inside brake is effected by turning a milled screw on one of the coupling rods, and is exactly similar to that employed on the best motor cars.

The Bianchi engine-gear unit embodies a kick-starter which follows the usual quadrant and ratchet-wheel pattern, although the parts are external and, therefore, less immune from the ravages of mud and dust than most of the current English designs. Comfortable footboards are fitted. The spring forks are of extremely neat design, and points of convenience have been well studied, as the back mudguard is so designed that its rearmost half, which is combined with the carrier, is detachable, and, consequently, allows easy access to the back tyre.



The front wheel suspension of the 4 h.p. Bianchi.

THE STRISIDE SKIRT.

A divided skirt enabling ladies to ride the conventional type of machine in comfort

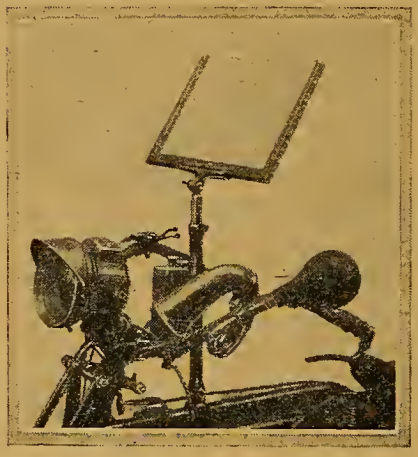
IN consequence of the growing popularity of motor cycling amongst ladies there has been a demand for a suitable skirt to enable a lady to use the normal "diamond" frame machine. A divided skirt, at the front and back of which are wide, inverted pleats, which expand during the exercise of the lower limbs, has recently been marketed by E. H. Harrison, 57, Gresham Street, London, E.C.2. Two cross pockets are provided, and on dismounting from the machine the cut of the skirt, which is made upon an entirely different principle from most garments of this kind, is not only elegant in appearance but does not betray the concealed division.

A serviceable motor cycling hat is also marketed by this firm, provided with adjustable side flaps, which may, if desired, be lowered to cover the back of the neck and ears, a strap fastened beneath the chin holding it in position. The peak, when raised, holds the goggles in position, but when riding it may be lowered to shade the eyes.

A MOTOR CYCLE WINDSCREEN.

A WINDSCREEN, as such, is no great novelty, but, up to the present time, solo motor cycle windscreens have not come into common use. Any device which will keep flies, dust, and rain off the rider's face and obviate the necessity of wearing goggles, will be welcomed by many. Naturally, the speed man, and the rider who objects to too many accessories on a motor bicycle, will not care for these fitments, but those who are out for comfort will invest in one and cannot fail to reap the benefits it offers.

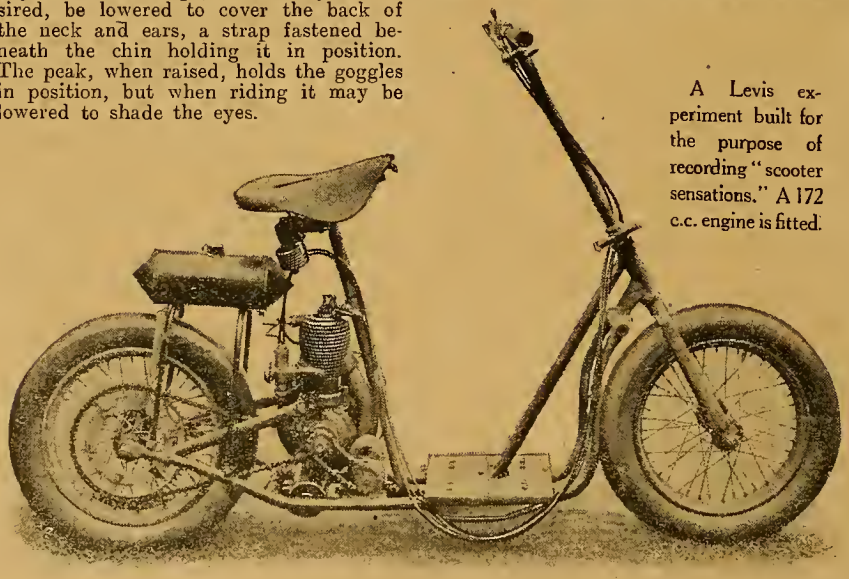
The latest of these windscreens has been placed on the market by the



A motor cycle windscreen marketed by the National Motor Co.

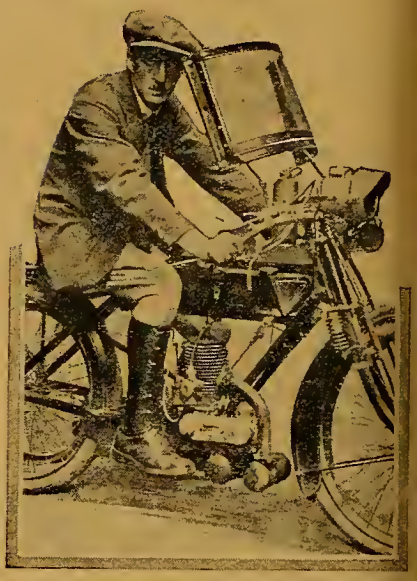
National Motor Company, 48, Bath Road, Edgbaston, Birmingham. The screen is held in a telescopic tube clipped to the top tube of the motor bicycle frame, and is of quite neat appearance. The rider's view is obstructed as little as possible, since there is no framework at the top.

Ordinary glass is fitted, but Triplex glass, which will not splinter, can be used: side wings can also be attached.



A Levis experiment built for the purpose of recording "scooter sensations." A 172 c.c. engine is fitted.

A WINDSCREEN FOR SOLO MOUNTS.



A windscreen designed for the use of the driver. Messrs. Easting Windscreens, Ltd., intend marketing this new form very shortly.

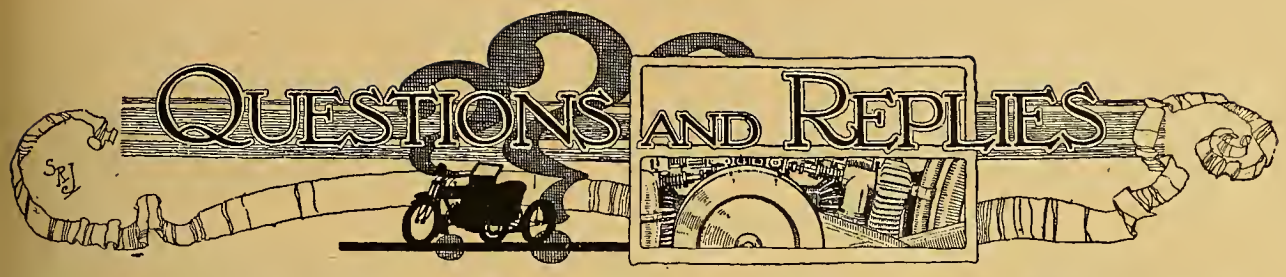
AN EXPERIMENTAL LEVIS SCOOTER.

AMONG the several motor cycle firms who have experimented with scooters, Messrs. Butterfields, Ltd., of Levis fame, are by no means least important. Their machine, which we illustrate, was constructed primarily to give the firm first-hand experience of the "sensations" of motor scooting in order that they might be compared with those of light motor cycles.

The public interest in scooters raised the curiosity of the makers of the Levis, and with an open mind as to the possibilities of this type of miniature machine, they decided to make a Levis scooter.

Fortunately, Messrs. Butterfields already had the nucleus of a suitable engine in the little flat twin two-stroke which they produced largely for war purposes. One of the cylinders, which has a capacity of 172 c.c., was adapted, and a neat little power unit was produced, which was fitted in the rear of a special open frame. The engine is supported at the rear by two stays which are part of the frame construction, by engine plates at the lower part of the crank case, and at the cylinder head by a lug at the seat tube. The wheels are fitted with 20 × 3 aeroplane tyres to absorb the road vibration.

Sufficient detail is shown in the illustration to render a more complete description unnecessary. We were able to inspect the little machine—which is, to all intents and purposes, a miniature open frame motor cycle—through the kindness of Mr. Albert Milner, the ex-Levis exponent, who now owns the "George in the Tree" Hotel, at Berkswell, incidentally a very popular Midland motor cyclists' rendezvous. We understand that Messrs. Butterfields have no intention of pursuing the experiments further, for the present at any rate.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply**. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Descending Hills on a Two-stroke.

The carburetter fitted to my Triumph Junior two-stroke does not appear to allow the entrance of any air to the cylinder when the throttle slide is closed. In view of this fact, what should I do in descending steep hills? If I raise the exhaust lever a fitful spluttering ensues, and blue smoke is emitted from the carburetter, as is common on two-strokes.—C.P.

When you descend a hill close the throttle but do not raise the compression valve if you wish your progress to be noiseless. The speed will also be greater than it would be if you release the compression.

Not Cricket.

I wrote to an advertiser, and offered some motor parts to him under a newspaper deposit system, but I sold these parts before I got a notice from the newspaper's office to say the advertiser's deposit had arrived. Can the advertiser take any action against me for not sending the parts, as I stated I would do in my letter?—C.D.C.

We do not think that the advertiser can take any action against you, although, at the same time, we rather think that you have been guilty of a breach of faith in selling the goods to someone else after expressing your willingness to receive his deposit. It is always safer to add "subject to being unsold" when writing potential purchasers.

Worn Big End.

I have a Triumph motor cycle with three-speed hub. I have just had a new piston from the makers. It is a good fit, and compression is good, but when travelling at speed, *i.e.*, when the road wheels seem to over-run the engine, there is a kind of knocking which seems to me as if the bottom of the piston knocks on the top of the crank case; there is a little play in the big end. How can this play be reduced? I think it is a ball bearing.—J.M.

If the new piston does not strike the crank case when the engine is being turned over by hand, it certainly will not do so when the machine is running at a high speed. In all probability the knocking or vibration which occurs when the machine over-runs the engine is due to play in the big end bearing. The big end has a bronze bush, not a ball bearing, and this will require to be renewed and properly fitted to the crank pin.

Touring in Devonshire.

I am contemplating a tour in the West of England, commencing in about a week's time, and should be glad if you would inform me whether you consider any parts of the road from Penzance to Bridgwater, more especially between Barnstaple and Minehead *via* Lynton, impracticable for a 1919 3½ h.p. Rudge Multi, ridden solo. In particular, do you think I should find trouble with the ascents or descents at Lynton and Porlock?—F.G.P.

The roads you mention include several bad hills, but there is nothing beyond the powers of a well-driven 3½ h.p. machine. The hills at Lynton and Porlock should present no difficulty if the weather is fine, but if wet, we doubt the possibility of surmounting them.

Motor Cycle for Cripple.

(1.) Do you know whether a person with one straight leg (stiff knee right leg) could ride a motor cycle? This person is able to ride a lady's fixed wheel bicycle with one left pedal. (2.) Are the qualifications for obtaining a licence to drive other than a capacity to drive? I mean, any physical test? (3.) Can you recommend a publication to help beginners?—S.L.

(1.) We think it would be *possible* to ride a solo motor cycle with the infirmity you describe, but would recommend an open frame machine, preferably with a sidecar attached. (2.) There are no special qualifications for obtaining a driving licence other than the payment of fee 5s. (3.) "Motor Cycles and How to Manage Them" can be obtained from our London office, 20, Tudor Street, E.C.4, price 2s. 10d. by post.

Twin Magneto for Single-cylinder.

I have a 4 h.p. single-cylinder Bradbury and a twin magneto. Can you inform me if it is possible to use it, and how to wire up so as to get a spark from the one side only? By turning the armature-shaft of the magneto I can get a lovely spark from the plug when the latter is held close to the magnets, but when moved to the cylinder it is absolutely dead.—J.T.

In order to use a twin magneto on a single-cylinder engine it will be necessary to remove one cam from the contact breaker cover and the carbon brush in the corresponding high-tension terminal. Unless you have the magneto actually mounted on the engine so as to obtain a good metallic return for the current between the sparking plug body and the magneto, you cannot expect a good spark.

A SCENE ON THE SCOTT SPORTING TRIAL.
At Dob Park the competitors were faced with the sudden dip down a gulley, at the bottom of which a mountain rivulet had to be forded.

Norton "Big Four."

[?] I have been thinking of purchasing a new Norton Big Four combination. As "Ixion" suggests this week, I want a machine which I can keep some years, but I have been told that the Big Four is like the T.T. models—built lightly internally for speed purposes, and is therefore not reliable or durable. (1.) Can you please advise me if I shall be all right in the Norton, as far as the above two points. (2.) Is there much difficulty in getting spares, owing to non-standardisation, etc.—W.H.B.

(1.) We do not think you need fear the troubles you mention, the bearings in the Norton engine are quite up to continued touring work, even in the sporting models. (2.) You will have no difficulty in obtaining spares for this machine.

Old Model A.I.V. Engine.

[?] I should be glad if you would kindly advise on the following points: My 7 h.p. (1908) twin Rex has developed the fault of conking out on the slightest incline. I packed the a.o.i.v. springs so that they only gave $\frac{1}{8}$in. lift, but in spite of this I am still troubled with above fault. I am also troubled with sluggish running. (1.) If inlet valves are packed to only give $\frac{1}{16}$in. lift, will this induce suction and eliminate sluggish running? (2.) Exhaust valves are timed to open $\frac{3}{8}$in. from bottom and close $\frac{1}{16}$in. over T.D.C. I am of the opinion this increases suction as exhaust gases are rushing out of combustion head. This will work somewhat on the method of induced draught. (3.) At slow speeds back cylinder constantly misfires. This trouble, I understand, is general with twins. I shall be glad if you will suggest a remedy. (4.) Crankshaft bush on driving pulley side of crank case occasionally works loose and unscrews, but when screwed tight allows from $\frac{1}{8}$in. to $\frac{1}{4}$in. side lash of crankshaft. Will this reduce power to extent of stopping engine? (5.) On engaging clutch, unless machine is run to speed of about 5-6 m.p.h., engine conks out. At times clutch will slip and not engage even after getting way on the machine. (6.) Carburetter was originally fitted with a No. 33 jet, but owing to heavy petrol consumption I reduced to 31, afterwards to 29, but had eventually to return to 31. Do you consider a 31 jet would be too small for this type of engine, as engine runs well on level when clutch has been successful?—Rex.

(1.) The automatic inlet valves of your engine should be free to open at least 5-32 of an inch. An opening of $\frac{3}{16}$in. even would not be too much. (2.) The exhaust valves should close just before the piston reaches the top dead centre. (3.) The misfiring in the rear cylinder may be due to air leaks in the carburetter connections; you might also experiment with varions adjustments of the sparking plug gap. You must make certain that both inlet valve springs are of the same tension. (4.) The end play of the crankshaft will not cause any particular loss of power, but its condition will be responsible for a good deal of engine noise. (5.) If yours is a single gear machine it will be certainly necessary to race the engine somewhat before engaging the clutch. The slipping is either due to incorrect adjustment or to the expanding band being badly worn. (6.) The 31 jet should be about right.

READER'S REPLY.

Fitting a Variable Jet.

In your issue for Sept. 18th, I notice a query *re* the W.S.R. jet adapter. Perhaps my own experience may be of use to your readers. My machine is a W.D. model Douglas, and I fitted one of these adapters. It was very useful, but awkward to reach, so I devised a handlebar control, and was surprised at the difference. First, regarding petrol consumption. I can get 130-140 miles per gallon without any of the discomforts of small jets. Secondly, regarding power. Hill climbing is, of course, made easier by opening out a little on hills. Thirdly, starting is much easier. For town riding the jet is opened a little to give slow running, keeping the air fully open. For country riding the jet can be closed down considerably, and the carburetter can be made very sensitive to the position of the air lever. For running on benzole and petrol the size can be varied with ease. Thus, if you run on benzole, and cannot obtain it on tour, a movement of the lever adjusts jet size for petrol.—X. F. Curtis.

EXPERIENCES WANTED.

"J.F.K." (Sherborne).—Metro-Tyler with or without two-speed; disc wheels in a wind.

"J.F.H." (Newcastle-on-Tyne).—Binks carburetter on 2¼ h.p. Levis, jet sizes, etc.

RECOMMENDED ROUTES.

Tamworth to Ellesmere Port.—W.B.

Tamworth, Lichfield, Rugeley, Stone, Market Drayton, Whitchurch, Chester, Ellesmere Port.

Brighton to Hanslope.—C.C.

Brighton, Horsham, Guildford, Chertsey, Staines, Windsor, Slough, Beaconsfield, Amersham, Chesham, Tring, Leighton Buzzard, Fenny Stratford, Stony Stratford, Wolverton, Castlethorpe, Hanslope.

Derby to Aberayron.—A.A.

Derby, Burton, Lichfield, *via* Watling Street to Shrewsbury, Montgomery, Newtown, Llanidloes, Dyffryn Castell, Aberystwyth, Llanrhystyd Road, Aberayron.

Rugby to Ipswich.—J.S.S.

Rugby, West Haddon, Harlestone, Northampton, Wellingborough, High Ferrers, Kimbolton, St. Neots, Cambridge, Newmarket, Bury St. Edmunds, Stowmarket, Needham Market, Ipswich. Approximately 135 miles.

Bedford to Billingham.—E.C.

Bedford, Eaton Socon, Buckden, Norman Cross, Wansford, Stamford, Colsterworth, Grantham, Newark, Tuxford, Retford, Bawtry, Doncaster, Ferrybridge, Aberford, Wetherby, Boroughbridge, Thirsk, Tontine Inn, Yarm, Stockton, Billingham. Approximately 200 miles.

Awards on Perfection Spirit.

At the A.C.U. Trials, Llandrindod, ten gold medals and the Principality Cup were secured by riders using Pratt's spirit.

Satisfactory Sparking Plugs.

Rex Mnndy, who drove a sidecar outfit in the Six Days Trials, and who was awarded a gold medal and a fuel prize, used K.L.G. plugs throughout.

Change of Address.

Messrs. The Palmer Tyre, Ltd., inform us that their Leeds depot is being transferred from 54, New Briggate to York Road, North Street Corner, Leeds.

Beldam Tyre Prices Increased.

The price of all tyres manufactured by the Beldam Tyre Co., Ltd., will be increased by 10% as from the first of the present month.

Tyres in the Johannesburg-Durban Race.

In the famous Johannesburg-Durban motor cycle race, which was revived this year, we are told that out of the fifteen machines that finished, the first, second, fourth, and eight others were fitted with Bates tyres.

A Waterproof Plug.

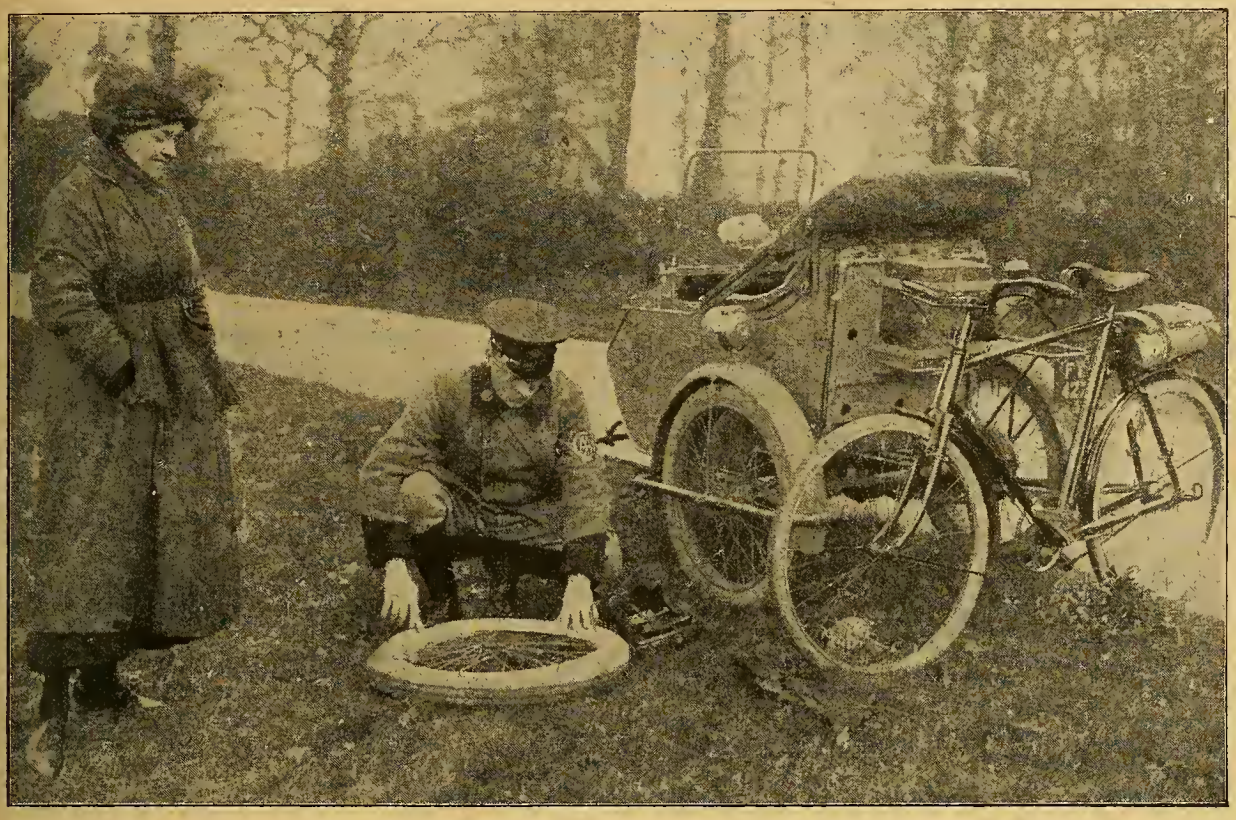
Many riders will be interested to hear that for wintry work a specially protected plug is marketed by the Forward Sparking Plug Co., of Summer Row, Birmingham. The feature of the plug is its waterproof cap, which effectively keeps out rain, mud, and damp, and leaves no terminals exposed to cause short circuits. The cap can be instantly detached for testing the spark.

500 c.c. Machines in Scottish Six Days.

Messrs. Phelon and Moore, Ltd., recently announced that the P. and M. was the only machine with an engine under 500 c.c. to complete the Scottish Six Days Trials without loss of marks. They wish us to state, however, that the performance of J. A. Newman, who rode a 3½ h.p. (500 c.c.) Sunbeam, was inadvertently overlooked. Newman also completed the course without the loss of a single mark.

Tyres in the A.C.U. Six Days.

It is always interesting to note statistics in connection with motor cycling competitions. Of the Six Days starters, 55% pinned their faith to Dunlop rubber-studded tyres, the remainder being divided between a number of other makes. The team prize (B.S.A. team) was secured on Dunlops, second place (Scott team) on Palmers, and third (Rover) on Dunlops again. A machine of the latter make also won the Welsh cup on the same tyres. Twenty-two gold medals were awarded: fourteen machines fitted with Dunlops (63.63%), six Palmers, and one each Avons and Goodyears.



THE DANGER OF DELAY.

What "waiting until next year" means to potential A.A. members.

The following extract is taken from a letter received recently by the Automobile Association :—

"I thank you for the booklet which I have read with interest. The service which is offered by your Association is excellent, but, as I shall not be doing much motoring after the end of this month, until next Spring, I think I will wait till then before joining"

When it is remembered that the work of the Association is carried on throughout the year ; that subscriptions run for twelve months from date of joining, and that a single motor trip without the A.A. badge is an avoidable motoring risk, the unwisdom of such a decision will be realised by others, as it was by the writer of the above letter, when his attention was drawn to it.

Membership of the A.A. alleviates such motoring risks as :—

Unecessary delay due to a breakdown, lack of motor fuel, spares, etc. The khak.-clad A.A. patrol will render invaluable help in any of these emergencies.

Charges under the Motor Car Act. Under the Free Legal Defence Scheme, A.A. solicitors will represent you in any police court in the United Kingdom, saving you pounds in travelling expenses and, probably, a day's business loss.

Foreign Customs Dues. If a member of the A.A., you can take your cycle into a 70 per cent. tariff country on a banker's indemnity alone, and without depositing hundreds of pounds in customs dues.

"Taking the Wrong Road." Detailed itineraries of routes throughout the United Kingdom, together with accurate guide cards of all the larger towns, are supplied free to members on request.

Buying a "Dud" Cycle. Qualified engineers advise on the choice of cars and motor cycles, and report upon motor vehicles, new and second-hand, offered to members.

Unsatisfactory Hotel Accommodation. The A.A. Handbook, issued free to members, contains a list of all the A.A. officially appointed Hotels throughout England, Scotland, Ireland and Wales.

In addition, membership of the Automobile Association secures free use of the Roadside Telephone Boxes, Mechanical First-Aid Cycles, Special Insurance Facilities, etc., etc., and it is to the personal advantage of every motorist who is not already a member to become one without delay.

Write to the Secretary, The Automobile Association, 21, Fanum House, Whitcomb Street, London, W.C.2, for a free copy of the booklet, "The Key to the Open Road," which contains full particulars of all A.A. benefits and the objects of the Association.

Motor Cyclists in London are invited to call at Headquarters where a staff of experts is always in attendance to give information on any question relating to motoring.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable & Co. to ILIFFE & SONS Ltd., and crossed Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box ooo, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. ooo, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½%. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Parr St., Liverpool. [0003

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London.EC4.

For square deals and Values....

Easy terms of payment taken in advance for new 1920 models. Motor cycles or sidecar combinations of any leading make supplied. Payments can be made now to suit own convenience. Should one half the total amount be remitted before the new machine on order is delivered, the outstanding amount unpaid could then be received in twelve equal monthly instalments. We propose charging a small commission not exceeding 7½% on the outstanding amount unpaid. This arrangement ensures very easy terms and should greatly assist the new beginner who has decided to secure a new 1920 machine. No commission whatever would be charged if settled for before delivery. Prices to be those ruling at time of delivery.

BOOK NOW FOR 1920 MODELS.

Machines supplied strictly in rotation. There is no certainty that deliveries will not be crippled, and the demands for 1920 are certain to exceed those of 1919. There is no responsibility in booking, but you secure preference in delivery and an opportunity to pick up your machine when required. We take good second-hand machines in part payment for new models.

WAUCHOPE'S

invite enquiries for particulars of stock of second-hand light cars—cycle cars—motor cycles, and sidecar combinations.

The latest 1919

6 h.p. J.A.P. Twin Cylinder Engines

From Stock Trade Supplied. Terms on application; these include extras. 50 Engines for immediate delivery, £37 10s. each

Second-hand Engines taken in part payment. GOOD PRICE ALLOWED.

Makers' Guarantee

Wauchope's, 9, Shoe Lane, London

Phone: Holborn 5777

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C. Distributors for Radnorshire. Book your orders now to ensure early delivery.—Owens, Bayeno Garage, Llandrindod Wells. [7863

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

Abingdon.

ABINGDON, 3½h.p., Grade, coachbuilt sidecar, good tyres; £45.—25, Elderfield Rd., Clapton. [7849

ABINGDON 1912 3½h.p., overhauled, enamelled, plated, as new; £45, offers.—152, Meeting House Lane, Peckham, S.E.15. [7616

A.J.S.

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

A.J.S. Combination, brand new, latest model, delivered Oct. 2nd; what offers?—Whitehouse, The Poplars, Brigtown, Cannock. [X5092

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries. [0007

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

A.J.S. Combination, 1919 (bought June), looks like new; sold for good offer; spare wheel, Lucas horn, screen.—85, Constable Rd., Ipswich. [7750

A.J.S. Military Model (new August 30th, 1919), with Mills-Fulford sidecar, fully equipped, as new; £158.—Greyshott, Cresthill Av., Grays, Essex. [7829

1919 Model New 6h.p. A.J.S., with Sunbeam sidecar, electric light, all complete; 180 gns.—62, Hampstead Rd., N.W.1. 'Phone: North 1519. [7944

A.J.S. 1919 6h.p. Combination, complete with lamps, horn and hood, delivered July; best offer over £175.—Primrose, Cummertrees, Annan, Scotland. [X4964

:: DEPOSITS ::

SPECIAL NOTICE.

The attention of Advertisers is called to the fact that Deposits are now dealt with at

20, Tudor St., London, E.C.4,

to which address all communications relating to deposits should be directed

1918 A.J.S. 6h.p. Combination, complete with spare wheel, screen, apron, Lucas lamps and horn, splendid condition; £165.—Burlinson, 15, Elmsthorpe Av., Nottingham. [X3955

1917 (October) A.J.S. Combination, 6h.p., M.M., hood, screen, side curtains, tools, storm apron, spare wheel complete, lamps, horn, pump, etc.; £145.—Sherwin, 206, Sneyd St., Burslem, Stoke-on-Trent. [X5076

6h.p. A.J.S. and Sidecar, 3 lamps, Klaxon, speedometer, Tan-Sad back seat, 700×80 Dunlops all wheels, combination brand new 3 weeks ago, owner going abroad; £185.—Lieut. Morrise, 8, Victoria Rd., Finsbury Park, N.4. [X5087

1919 Brand New A.J.S. Combination, fitted with screen, apron, luggage grid, and spare wheel complete, large Lucas head set, Lucas sidecar and rear lamps, magnificent combination; available for immediate delivery.—Parker's, Bradshawgate, Bolton 245, Deansgate, Manchester. [X4523

Alldays.

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [0017

ALLON, 1919, 2-speed clutch model, indistinguishable from new.—Parker's, Bradshawgate, Bolton. [X4525

ALLDAYS Matchless, 1915, 2½h.p., lamps, horn, perfect condition; £35.—121, North Side, Clapham Common, S.W.4. [7647

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS 4h.p., 2-speed, 1915, recently overhauled and good order, nearly new extra heavy tyres; £75.—H. Haycock, Great Glen, Leicester. [5700

DOUGLAS, 2¾h.p., 1915, latest buffer head, only uncrated this year, equal new; 50 gns.—Marks, 121, Acton Lane, Chiswick, London. [7566

1919 Douglas Combination, received from works August 2nd, 1919, bought for holiday; £125.—Pearson, Hinton St. George, Crewkerne. [7717

DOUGLAS 1915 and 1916, perfect machines, 2 speeds, etc.; £62/10; guaranteed; any time.—51, Maplethorpe Rd., Thornton Heath, S.E. [7746

DOUGLAS Combination, 4h.p., 3 speeds, etc., very smart condition, enamel, plating perfect; £100.—Loweth, 6, Mount Pleasant Rd., Ealing. [7836

1919 Douglas Combination, 4h.p., July delivery, very little used; £140; seen by appointment.—B., 73, Ellerdale St., Lewisham, S.E.13. [7756

DOUGLAS, 1914, all on, new tyres, tube, belt, perfect condition, ride 50 miles to purchaser; £45.—63, Stratton Rd., Shirley, Southampton. [7559

GIBB, Douglas specialist, Gloucester, solicits your enquiries for anything concerning Douglases; try him for the part you require. 'Phone: 852. [6340

DOUGLAS 1917 2¾h.p., 2-speed, very fast machine, nice condition, pump, horn, tools, spares; first cheque £55.—Box L4,660, c/o *The Motor Cycle*. [7933

DOUGLAS 2¾h.p., 2 speeds, lamps, horn, speedometer, mud shields, first rate tyres, ready for any journey; £55.—Bunting, Masons Av., Wealdstone. [7675

4h.p. Douglas, 1916, 3-speed, kick starter, tyres as new, lamps and mirror, ready to go anywhere; £85, or near offer.—226, Brownhill Rd., Catford, S.E.6. [7539

4h.p. Douglas Combination, 3-speed, clutch, kick start, recently overhauled, excellent condition; £85.—35, Annesley Av., The Hyde, Hendon, N.W. [7760

DOUGLAS 1914 2¾h.p., 2-speed gear, in splendid condition, tyres and belt new; £55, or nearest offer.—T. Charlton, 14, Cleveland Rd., Sunderland. [X5080

DOUGLAS 1914 2¾h.p., 2-speed, variable pulley, Lucas head lamp, generator, rear lamp, tyres good, spare chain, tools; £60.—Meaby, 32, Newlands Park, Sydenham, S.E. [X5077

DOUGLAS 1919 4h.p. Combination, new, latest clutch, ridden few miles only, faultless machine; owner leaving country; £130.—Write D., 4, St. Clement's Rd., Bournemouth. [7722

2¾h.p. Douglas, 2-speed, complete with lamps, new tyres, and tool kit; apply after 6, or after 1 on Saturday.—1, Haarlem Rd., Brook Green, W.14. 'Phone: Hammersmith 1035. [7823

SPORTING Douglas 4h.p. Combination, discs, T.T. bars, copper exhaust, Klaxon, spares, P. and H. lighting set, not done 1,000 miles; 98 gns.—84, Ilex Rd., Willesden, N.W.10. [7761

DOUGLAS 1919 2¾h.p., 2-speed, brand new, actually in stock.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (nr. Hampstead Tube). 'Phone: Hampstead 3752. [7922

4h.p. Douglas 1919 Combination, complete with storm apron; extended payments if desired.—Harrods' Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [7523

DOUGLAS 1916 Combination, coachbuilt sidecar, recently overhauled, perfect condition; £115, or near offer.—C. Williams, 83-86, Upper St., Islington, N. 'Phone: North 372. [7898

4h.p. 1919 Douglas, Easting wind screen, lamps, Klaxon, specially made luggage carrier, spare belt, hardly used, and absolutely as new; £140.—Stancliff, 4, Copthall Court, E.C. [7874

1919 4h.p. Douglas Combination, fitted with latest dry plate clutch, just arrived from makers; 140 gns., no offers; can be seen by appointment.—Address, Douglas, c/o Pool's, 180, Fleet St., E.C. [7664

2¾h.p. W.D. Douglas, brand new; one or two early deliveries at £72, plus carriage; pamphlets with particulars.—Robinson's Garage, 32-35, Greeo St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [7328

DOUGLAS 1918 4h.p. Combination, 3 lamp sets, new tyres, belt, chain, and sprocket, recently overhauled, sidecar repainted and upholstered, spares; £125.—Middleton, 330, Ivydale Rd., Nunhead, S.E.15. [7594

2¾h.p. Douglas, 2-speed, free engine, T.T. bars, new heavy passenger studded tyres, horn, lamps, generator, tools, bags, spares, thorough going order; £37; seen evenings.—11, Pleydell Av., Stamford Brook, W. [7754

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0966

4h.p. 1919 Type Douglas Combinations, with improved type of clutch; one or two early deliveries at £123, plus cost of crate and carriage; pamphlets with specification.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [7329

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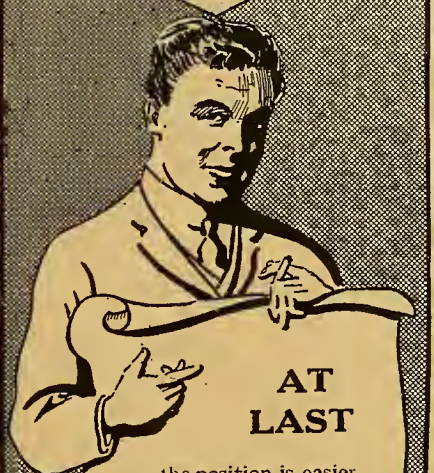

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£15.—Enfield 2¾h.p., Bosch, B. and B.; ride away.—48, Burchell Rd., Peckham, S.E.15. [7636

6h.p. Royal Enfield Combination, 1914; £87.—Wauchope's, 9, Shoe Lane, London. [7908

1915 3h.p. Enfield, in splendid condition; open for trial; £50.—Rosser, Somerset St., Abertillery. [X4407

1914 Enfield Combination, M.A.G. engine; £80, near offer.—L. Webb, 1, Kennett Villas, Peel Rd., Woodford. [7659

1919 Royal Enfield, 3h.p., Model 140, brand new, in crate as delivered; £80.—Rhosha Co., Mawneys Rd., Romford. [7949

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2920

1916 Enfield Combination, 8h.p., nearly new car size tyres, Lucas lamps; £110.—Oglesby, 12, Leaside Av., Muswell Hill, N.10. [7812

1919 6h.p. Enfield Combination, with Lucas large horn, not over 500 miles, new August 2nd; £150.—Burrow, Morwenna, Bideford. [7592

2¾h.p. Twin Enfield, 2-speed, just overhauled, new bushes, piston rings, etc., trial given; £38.—10, Leythe Rd., Acton. (After 5.) [7752

1919 6h.p. Enfield Combination, to be delivered this week; what offers?—F. Mundy, 239, Winchester Rd., Higham's Park, E.4. [7753

1919 6h.p. Enfield Combination, just delivered, complete with speedometer, lamps, horn, etc.; what offers?—Nevill, 98, Mongrieff St., Peckham. [7780

ENFIELD 6h.p. Combination, 1916, fine condition, 2 new tyres and new coach body; £110.—Halifax Motor Exchange, Union St. South, Halifax. [6791

ENFIELD 1916 3h.p. Twin, 2-speed, kick start, lamp, tools, and spares, tyres and tubes as new; £57.—Mitchell, 32, Bromley Common, Bromley, Kent. [7737

1914 Enfield 6h.p., coachbuilt, Tan-Sad, little used, splendid order and condition; lowest, £92.—4, Stockwell Park Crescent, Brixton, S.W.9. [7792

ENFIELD 6h.p. 1914-15 coachbuilt Combination, screen, speedometer, lamps, spares, tools, splendid condition; £110.—79, Upton Lane, Forest Gate. [7796

ENFIELD 6h.p. 1915-16 Combination, new coachbuilt body, 2-speed, complete with lamps, 2 new tyres, overhauled; £120.—Arnold, 133, Sloane St., S.W.1. [X5079

6h.p. Enfield Coachbuilt Combination, fully equipped and in excellent condition; accept £85, or good solo part.—436, Whitehorse Rd., Thornton Heath, S.E. [7847

ENFIELD Combination, 6h.p., late 1913, engine rebushed, new pistons, connecting rods, chains, receipts shown; lowest £85.—Box L4,664, c/o *The Motor Cycle*. [7937

ENFIELD Late 1913 6h.p. Combination, engine recently thoroughly overhauled; any trial or examination; roomy sidecar.—Parker's, Bradshawgate, Bolton. [X4528

BARGAIN.—Enfield combination, new condition, mileage 2,291, Klaxon, 3 lamps, speedometer, all accessories; £135, no offers.—Waters, Grocer, Southwick, Sussex. [7831

ENFIELD 1916 6h.p. Combination, stored 2 years, condition quite new, Lucas lamps, horn; any examination; must sell; £125.—6, Gold's Hill Rd., Handsworth, Birmingham. [X5094

1918 Enfield-Jap 6h.p. Combination, luggage grid, hood, screen, apron, speedometer, Lucas 445 lighting set, as new, star engine, mileage 4,900; £145.—Captain Forshaw, Brambles, Chelmsford. [7556

ENFIELD 8h.p. Combination, new June, Lucas electric lighting, Watford speedometer, foot and hand horns, hood, etc., beautifully fitted out; price £145.—Apply, Manager, Empire, Bonnyrigg, Midlothian. [7552

ENFIELD Combination, 1917, 6h.p., a fine reliable outfit, Cameo wind screen, apron, hood, luggage grid, Klaxon horn, speedometer; price £140; seen evenings 7, Saturday after 2.—32, Grove Lane, Stamford Hill, N. [7518

6h.p. Enfield Coach Combination, 1914, gears and engine just thoroughly overhauled, all worn parts replaced with new, sidecar just been repainted, spring luggage grid, lamps, horn, spares complete; 100 gns., or would exchange late model Triumph, countershaft.—Pickett, Jun., 8, Court Rd., Tunbridge Wells. [7707

MOTOR CYCLES FOR SALE.

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ELSWICK Precision 4h.p., 2-speed, F.E., Bosch watertight; £38.—Speechley, 1, Gunnersbury Lane, Acton Hill, W.3. [7818

Excelsior.

AMERICAN Excelsiors.—Place your orders now to save disappointment. 'Phone 943.—Horswill, 42, Bridge St., Chester. [2143

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

1915 5h.p. Excelsior Combination, splendid condition, 3-speed, clutch, Bosch mag., coachbuilt sidecar; £65.—Manford, Frodesley, Dorrington, Salop. [X5075

EXCELSIOR (British) 5-6h.p. Combination, Dine 3-speed gear box, Senspray, Dunlop tyres, pillion seat, Milliford sidecar, screen, lamps, speedometer, take 3 anywhere; £110, or near offer.—'Phone: Wanstead 150.—Penman, The View, Chigwell Rd., S. Woodford. [7782

F.N.

F.N., 5-6h.p., 4 cyls., 2-speed, good going order, coachbuilt sidecar with hood, new back and sidecar tyre; £45.—22, Somers Rd., Walthamstow. [7804

2½h.p. 1914 2-speed F.N., clutch and kick start model shaft drive, used carefully, and in excellent condition, lamps, accessories; £42.—30, Kingsdown Rd., Leytonstone. [7824

F.N. 5h.p. Combination, 4-cyl., Bosch, clutch, single speed, fast, nice cane sidecar, lamps, tools; 50 gns., or near offer; after 7 o'clock; photo.—14a, Prince of Wales Rd., S.W. [7640

5-6h.p. F.N. Combination, late model, stored 2 years, good condition, slight adjustment to 3-speed gear, run on low gear; bargain, £65; before 7 p.m.—39, Barnsole Rd., Gillingham, Kent. [7719

F.N. 2¾h.p. Lightweight, new Amac carburetter, new tyres, in perfect condition, seen any time, bargain, £35; also good second-hand carburetter, 30/-.—Jones, Foregate House, Chester. [7691

Grandex.

GRANDEX-J.A.P. 2¾h.p., 1914, with wicker canoe sidecar, splendid condition; £60.—149, Clapton Common, near Stamford Hill, E.5. [7688

GRANDEX-PRECISION 4½h.p. Coach Combination, about 1915, Enfield gears, tyres, condition, enamel as new; trial; £85.—30, Lysias Rd., Clapham Common. [7878

Harley-Davidson.

1916 Harley-Davidson Combination; £125.—Harris. 24, Grand Parade, Brighton. [7709

HARLEY Combination, 1915, electric lighting, lovely turnout; £120.—51, Maplethorpe Rd., Thornton Heath, S.E. [7745

1916 Harley-Davidson Combination, electric model, low mileage, new tyres, perfect condition; any trial; £160.—81, Clarence Place, Newport. [7809

HARLEY-DAVIDSON, 1917, electric, bulbous back sidecar, hood and screen, like new, fast and powerful; £170.—H., 280, Queen's Rd., Battersea. [7773

1915 Harley-Davidson, Mills-Fulford sidecar, magneto model, electric light, just completely overhauled, splendid running order; what offers?—Casson, Seacombe, Chard. [7658

HARLEY-DAVIDSON Combination, late 1916, sidecar nearly new, all complete with hood, screen, etc., splendid condition; £130.—Apply, Forsander, 43, Oxford St., W. [7842

HARLEY-DAVIDSON, very handsome 1915 combination, condition absolutely guaranteed; 128 gns.—Longman Bros., 17, Bond St., Ealing. 'Phone 1578 Chiswick. [7731

1918 10-12h.p. Harley-Davidson Combination, electric lighting set, in new condition; nearest offer to £150.—J. Dooley, 33, Killyon Rd., Wandsworth Rd., Station, London, S.W. [7814

1918 Harley-Davidson American Army Combination, perfect running order; on view Saturday and Sunday; highest offer rides away; London.—142, Castellain Mansions, Maida Vale. [7712

1919 Harley-Davidson Combination, electric model, complete with hood, screen and spare tyre, just delivered from makers; 220 gns., no offers; can be seen by appointment.—Address, Harley, c/o Pool's, 180, Fleet St., E.C. [7665

1915 Harley-Davidson Model 11J., 7-9h.p., 3 speeds, dynamo lighting, just completely overhauled by the makers, bulbous back sidecar, brand new body, new tyres, everything in perfect condition; £135.—Can be seen at 74, Newman St., W.1. [6767

HARLEY (Late 1917) Combination, Remy electric lighting, Dunlop tyres, all tools, spare valves, chains, etc., fitted beautiful Cooper sidecar with screen, 60 m.p.g., 5 to 55 on top; this machine is in perfect condition; call or write.—40, Murray Mews, Murray St., Campden Town. [7774

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HARLEY-DAVIDSON, late 1918 magneto model, disc wheels, large copper exhaust pipes, and all accessories, only run a few miles, enamel and plating as new, mechanically perfect, extremely fast engine, with brand new Milliford sidecar; £200; taking delivery of car.—R. Latham, 30, Ardgowan St., Greenock. [7510

1919 Harley-Davidson 7-9h.p. Electric Model, as new, only done 900 miles, special pattern drop handlebars, disc wheels, with speedometer and mascot, engine and whole machine in perfect condition, always been looked after by experts; £190, or near offer.—To be seen at any time at W. N. Froy and Sons, Ltd., Brunswick Works, King St., Hammersmith, W. [7610

HARLEY-DAVIDSON 1915 4½h.p., Model 11C., delivered September, 1918, Burberry coach sidecar, apron, Cameo wind screen, spacious rear locker (delivered March, 1918), machine mileage about 2,000, 2 lamps, tools, genuinely perfect condition throughout, extraordinarily fast, spare new chain and pair valves; 110 gns; seen London.—Captain Forshaw, Brambles, Chelmsford. [7555

HARLEY-DAVIDSON 1915 Combination, 3 speeds, clutch, kick start, good tyres, 3 acetylene lamps, 2 generators, screen, hood and side curtains, saddle backrest, mechanical horn, Stewart speedometer, and good kit of tools, enamel and hood in poor condition, engine recently overhauled, excellent; a very fast and reliable outfit; seen by appointment; 107 gns.—Corner House, Cowley St., S.W. [7682

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2¾h.p. Hazlewood-Jap, lamps, horn, Bosch, engine recently overhauled by makers, good tyres, ride away; £35.—Apply, after 6.30, G., 59, Gaisford St., Kentish Town, N.W.5. [7889

HAZLEWOOD, 1915 model, 5-6h.p. J.A.P. engine, 3-speed countershaft gear and kick starter, splendid condition, with coachbuilt sidecar; £70.—Box L4,632, c/o *The Motor Cycle.* [7580

HAZLEWOOD-J.A.P. 5-6h.p. Coachbuilt Combination, Bosch mag., 3 speeds and kick start, lamps, mechanically perfect, only ridden 600 miles, delivered end of 1914, condition as new; bargain, £95, or offer. —118, Hither Green Lane, Lewisham. [7845

HAZLEWOOD Combination, believed 1916, 5-6h.p., kick start, coachbuilt sidecar, 3-speed, been thoroughly overhauled, good running order; purchaser can have trial trip any time, preferably week-end; £100.—S. W. Pearson, 6, Queen's Gate Villas, Victoria Park Rd., London, E.9. [7862

Henderson.

1918 Henderson and sidecar, latest model, sporting machine; £154.—J. C. Ivens, Stanmore, Kidderminster. [X5010

PLACE Your orders now for Hendersons.—Horswill, Castra Motor Cycle Garage, 42, Bridge St., Chester. 'Phone: 945. [2142

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

Hobart.

HOBART-VILLIERS 2-stroke, new, delivery from stock; £50.—Saunders Cycle Co., Chatham. [X4486

HOBART-VILLIERS, 2½h.p., 2-speed, perfect condition, lamps, horn, good tyres; £50.—D. Stopher, Church Rd., Merton, Surrey. [7057

HOBART, 1919, 2-stroke, 2-speed, brand new, in stock; 60 gns.—Longman Bros., 17, Bond St., Ealing. Tel. 1578 Chiswick. [7732

Humber.

HUMBER, 1919, 3½h.p., as from makers, used 3 weeks; best offer.—Hancock, Veterinary Infirmary, Cowley Rd., Uxbridge. [7529

HUMBER 2¾h.p. Twin, 3-speed, clutch, Bosch, B.B., lamps, tyres good; £45, or offer.—19, Linden Grove, Peckham, S.E. [7887

HUMBER Coachbuilt Combination, 3½h.p., 2-speed, free engine, tyres as new, ride away; £58.—Mr. Irwin, Leavesden Rd., Watford. [7839

HUMBER, 1914, 3½h.p., 2-speed, powerful, reliable, with coach sidecar, lamps, etc.; first £45.—46, Chapel St., Marylebone. [7755

£26.—3½h.p. Humber, rebushed, C.A.V., Amac, good tyres, Druids, lamps, horn, ready for road; after 6.—151, Stepney Green, E.1. [7871

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HUMBER Coachbuilt Combination, 2-speed, 1913, excellent throughout, trial, well equipped, spares; £60; wanted 8h.p.—Fernhurst, Weston Rd., Guildford. [7565

HUMBER, 1914, 3-speed, clutch, K.S., good condition and appearance, new piston, lamps, light wicker sidecar; £56.—32, Balfern Grove, Chiswick Lane. [7866

HUMBER 3½h.p., 2-speed, free engine, handle start, Bosch, B. and B., smart machine, suit solo or sidecar; genuine bargain, £45, or near offer.—191, Grange Rd., Ilford, Essex. [7623

Indian.

1915 7-9h.p. Indian, excellent running order; £85. —116, Holden Rd., Finchley. [7738

1914 7-9h.p. Indian Combination, only done 3,000 miles, new condition; £105.—H. Wright, Arlesey, Beds. [7674

5-6h.p. Indian Combination, late 1915, 3-speed; best offer over £100.—The Bungalow, North Town, Aldershot. [X4963

INDIAN Combination, 1915, 5-6h.p., excellent order throughout, repainted.—Bridgend Foundry Co., Cardigan. [X4302

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport, Mon. [0032

INDIAN 7-9h.p. Road Racer, perfect condition; 60 gns., or exchange good make 3½h.p., late model. —80, York Rd., Battersea, S.W.11. [7692

1915 3-speed 7-9h.p. Indian Combination, just overhauled, accessories; £100; lightweight part exchange.—73, High St., Weston-super-Mare. [7879

INDIAN, 3½h.p., clutch, Amac, just been thoroughly overhauled, ride away; £55, or offers, or exchange good 2-stroke.—The Limes, Oakham, Rutland. [X4959

1915 Indian Combination, 3-speed, and clutch, just been re-enamelled and overhauled; a bargain, £110.—Jones, 4, Woodside Parade, N. Finchley, N.12. [7682

PLACE your orders for Indians now; don't be left; will northern county customers note the new address.—Horswill, 42, Bridge St., Chester. Castra Motor Cycle Garage. 'Phone: 943 [2141

7-9h.p. Indian, 1915, with new 1918 3-speed gear box and clutch, new Dunlops, new P.H. lamp; splendid bargain, £65; owner optimist getting A.B.C.—Write 39, Hatton Park Rd., Wellingborough. [7723

INDIAN, 1916, 5-6h.p., 3-speed, clutch, kick start, lamps, Rennoc coachbuilt sidecar, all accessories, perfect condition, ridden 800 miles; £120.—Rose, Wenden, Beach Av., Leigh-on-Sea, Essex. [X4780

1915 5-6h.p. Red Indian Combination, stored 3 years, 3 speeds, kick start, lamps, spare chain, new Kempshall heavy tyre, spare, and tools; £110.—Hamilton, 120, Queen Victoria St., E.C. [7783

INDIAN 1915 Clutch Model 7-9h.p., just been thoroughly overhauled and rebushed, new valves, clutch, spare tyre, chain; any trial; owner bought car; £75, lowest.—Tidmarsh, Aerodrome, Witney, Oxon. [7589

1916 Indian, Model G. Powerplus, Phœnix sporting sidecar, only used 6 months, all accessories, perfect condition guaranteed; any trial by appointment; £150, or near offer.—Kay, 31, Parker St., Watford. [7620

INDIAN Combination, 7-9h.p., 1915, 3-speed, K.S., spring frame 1919 Indian sidecar, with apron, really good outfit; take 2¾h.p. 3-speed A.J.S. part, or sell 92 gns.—Hatchford Hill Cottages, Cobham, Surrey. [7699

INDIAN 5-6h.p., late 1915, Model B., 3 speeds, kick start, lamps, speedometer, touring and T.T. bars, spare cover, excellent condition, just been thoroughly overhauled; £80.—Tintern House, 20, Wood Green, Wednesbury. [X5013

INDIAN 1915 7-9h.p., 3 speeds, clutch, kick start, spring frame, electric lamps and horn, speedometer, sidecar hood, screen, luggage carrier, splendid condition; £120, or near offer; London, Surrey).—Box L4,655, c/o *The Motor Cycle*. [7727

INDIAN, 5-6h.p., delivered May, 1916, to present owner, scarcely used, in new condition, 3-speed clutch and kick starter, fitted with acetylene lamps, speedometer, mechanical horn, clock, and an extra tool bag; price £90, or near offer.—Apply, Sopwith, Kingswood, Hendon Av., Church End, Finchley, N.3. 'Phone: 218 Finchley. [7543

Ivy.

1914 Ivy-Precision, overhauled, replated, and re-enamelled, now as good as new, all accessories. —89, Wigmore St., W. [7857

H. G. HENLY and Co. are sole London Agents for the popular Ivy 2-stroke.—91, Gt. Portland St., W.1. 'Phone: Mayfair 4084 [0023

IVY 2-stroke, late 1915, single speed, Amac, drip feed lubrication, Dunlops, running order; £36.—4, Mill Cottages, Esher, Surrey. [7876

1919 Ivy 2-stroke De Luxe, all purpose model, Albion 2-speed gear, new June; £55, no offers. —C. O. Beanc, Derby Rd., Long Eaton, Notts. [X4782

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Ivy.

2¾h.p. Ivy-Precision, Brampton-Gradua gear, just fitted new connecting rod, rings, and rebushed, good tyres and belt; £28.—Lawrence, Orchards Farm, Hanley Castle, Worcs. [X5001

MADISON Bargains.—3½h.p. Ivy 4-stroke, lightweight, B.B., handle-bar, Bosch mag., good tyres, foot-rests, smart comfortable saddle, slightly faulty, easily repaired; it's cheap, £28 till sold.—Madison, Littleover, Derby. [X4957

James.

1919 James 5-6h.p. Combination, full equipment, as new, wind screen; £135.—27, St. John's Rd., Putney. [7902

JAMES Combination for sale; £70; trial run given, or specification posted.—Donnison, Westcroft, Endlebury Rd., Chingford. [X4711

JAMES, 5-6h.p., 1919, tandem sidecar, Lucas lamps, Klaxon, perfect condition, mileage 1,000; £150. —23, Mandeville Rd., Enfield Wash. [X5093

JAMES, 5-6h.p., late 1918, only run 1,000 miles, equipment, tools, and spares; £100.—The Telephone Motor Works, Allsop Place, N.W.1. [7541

1916 3½h.p. Twin James, 3-speed, kick start, clutch, horn, lamps, speedometer, just overhauled by maker, excellent condition; £70.—Tennant, 12, Gresham St., E.C. Tel.: Cent. 12199. [7779

JAMES 4½h.p. Combination, 1917, lamps, horn, speedometer, coachbuilt sidecar, hood just fitted, lovely condition, climb anywhere; £120, with 3 cans of No. 1; or exchange lightweight.—Bunting, Masons Av., Wealdstone. [7677

J.E.S.

LANCASHIRE and Cheshire Only.—J.E.S. motor cyclette and attachment sets; enquiries invited.—J. Blake and Co., Liverpool-Manchester. [7042

J.H.

7-9h.p. J.H., 1915 model, M.A.G. engine, Sturmey-Archer countershaft gear, fitted with handsome coachbuilt sidecar; £115.—Wauchope's, 9, Shoe Lane, Fleet St., London. [7907

Kerry.

2¾h.p. Kerry, coil ignition, B. and B. carburetter, good appearance and good condition; first £12 secures.—Stanley, 6, Holly Park Rd., Hanwell, London, W.7. [7720

£135.—Kerry combination, 3½h.p., Bosch mag., B. and B. carburetter, splendid condition.—Smith, 67, Coleman St., E.C. [7619

Kynoch.

3¾h.p. Kynoch-Precision, in good condition, fast, reliable, sporty, lamps, horn; what offers?—Hazeldene, Storehouse Lane, Hitchin. [X4724

Lea-Francis.

LEA-FRANCIS Brand New 4h.p. Combination; best offer accepted; Midlands.—Box 534, c/o *The Motor Cycle*. [X4999

LEA-FRANCIS.—Orders are now being booked for future delivery of these splendid machines.—Hucklebridge, 133, Sloane St., London, S.W.1. [X3511

LEA-FRANCIS, 1919. Place your name on our waiting list for delivery of these aristocratic mounts.—A. J. Sproston, 198, Gt. Portland St., W.1. [6612

Lincoln-Elk.

LINCOLN-ELK 2¼h.p., Bosch watertight mag., B. and B., excellent running order; £25.—213, Nevells Rd., Letchworth, Herts. [7598

LINCOLN ELK 4h.p. Combination, 2-speed, free, kick start, good condition; £36.—74, Dollis Park, Church End, Finchley, N.3. [7884

£44.—Lincoln Elk 4¼h.p., 2-speed, countershaft, kick start, new coachbuilt underslung sidecar; or exchange for lightweight.—M.S., 49, Well St., Hackney, E. [7860

Levis.

LEVIS, 1916, just overhauled, excellent condition, lamp, Klaxon; after 5; £37.—4, Little Heath, Charlton. [7696

HOVE Engineering Works, Davigdor Rd., are executing Levis orders in strict rotation; all accessories and repairs. [3184

LEVIS, 2¾h.p., 1914, 2-speed, in good condition; £37.—Butterworth's Garage, 64, Mill Lane, Brixton Hill. [7892

LEVIS 2¼h.p., Bosch mag. with cut-off, Senspray carburetter, engine perfect running order, tyres Hutchinson rubber studded, Melksham ribbed 24×2, Dunlop belt, brakes, bearings all in excellent state, machine is lively, easy to control, runs perfectly, new early in war, ridden by present owner in holidays only; 42 gns.; to be seen 28, Park Crescent Mews West, near Regent's Park Tube Station. Tel.: 4940 Padd. Ready to ride away, with horn, pump, tools, and registered number plates. [7726

L.M.C.

£22; L.M.C. motor cycle, 3½h.p., Bosch, splendid order throughout.—Speechley, 1, Gunnersbury Lane, Acton Hill, W.3. [7817

MOTOR CYCLES FOR SALE.

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L.M.C. 4¼h.p., new style S.-A. gear box, 3 speeds, clutch, K.S., 650×66 Dunlops, latest 1919 model, finish black and gold, Grindlay C.B. sidecar fitted, grey finish, apron, Dunlop heavy, very smart outfit, new, delivery from stock; £120.—Saunders Cycle Co., Chatham. [X4488

L.M.C. Motor Cycles.—The motor cycle with the comforts of a car All models available shortly; demonstration model now in stock.—The sole distributing agents for London and the Home Counties Mehes and Mehes, the Original Light Car Specialists, 144, 154-6, Gt. Portland St. W.1. [3695

Matchless.

CROW Bros., High St., Guildford, West Surrey agents for the new Matchless.—Order now for early delivery. [4085

JONES' Garage, special agents for Matchless, Broad way, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2921

MATCHLESS Combination, 6h.p., 2-speed, fine turnout; £85, bargain.—35, Freegrove Rd., Caledonian Rd., Holloway, N. [7663

MATCHLESS-J.A.P. 8h.p. Combination, fine condition, just overhauled; £110, or near offer.—301, Underhill Rd., East Dulwich, S.E. [7662

MATCHLESS 8h.p. 2-speed Combination, coachbuilt sidecar, Klaxon, and all accessories, perfect condition; £95.—14, Half Moon Crescent, N.1. [7950

MATCHLESS Combination, 8h.p., hood, screen, discs, long plated exhaust, all accessories, perfect; trial willingly; 95 gns.—20, Derby Rd., W. Croydon. [7667

MATCHLESS-J.A.P., 8h.p., 2-speed, Binks 3-jet, Bosch, new cylinders, pistons, etc., spares, coachbuilt sidecar; £95, offers.—Goode, Woodville, Argoed, Mon. [X4786

MATCHLESS New Model H, spring frame. We are now booking orders for this latest model, for rotation delivery.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0491

MATCHLESS Combination, 8h.p. J.A.P., Bosch mag., clutch, 3-speed, K.S., 1914, chain drive, just overhauled, re-enamelled, perfect order; £90; taken for debt.—18a, Highgate Rd., Kentish Town. [7702

MATCHLESS, M.A.G., late 1917, very little used, detachable wheels and spare, Lucas dynamo lighting set, all as new, in perfect condition; best offer over £170.—Tassell, 1a, Broomfield Rd., Plumstead. [7835

MATCHLESS-J.A.P. 6h.p. Combination, Meetgomery cane sidecar, Bosch, B. and B., 2-speed, Dunlop tyres, Tan-Sad pillion seat, lamps, horn, spares, take 3 anywhere; £65.—36, Radnor Gardens, Twickenham. [7642

MATCHLESS, 7-9h.p. M.A.G. engine, 8B., 3-speed, coachbuilt combination, nearly new oversize cord tyres, electric lights, hood, screen, mechanical horn, speedometer, ready for long tour; £125; after 6 p.m.—156, Browning Rd., East Ham. [7718

8h.p. Matchless-Jap, Jardine 4-speed coachbuilt sidecar, luggage grid, lamps complete, tools, pump, spares include tyre, tubes, chain, belt, speedy mount, fine condition; £120.—Waters. View and trial at Guthrie Garage, Shenfield, Essex. [7797

MATCHLESS.—The new Model H spring frame will shortly be ready; write and book for earliest delivery; Lucas dynamo lighting at option; decide now, and order the best combination; no premium, and 5% on deposit to date of delivery.—J. Tassell, 1a, Bloomfield Rd., Plumstead [6798

MATCHLESS 8h.p., coach Combination, late 1918 Victory model, clutch, kick-starter, spare wheel, lamps, horn, tools, speedometer, back rest, Tan-sad; a magnificent outfit, perfect.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (nr. Hampstead Tube). 'Phone: Hampstead 3752. [7925

Metro.

1919 Metro-Tyler, new, just delivered; £54.—Jones, 4, Woodside Parade, N. Finchley. [7680

METRO-TYLER, single gear, discs, Seospray, tools, horn, just delivered; £54.—H. E. Long, Durley, Botley, Hants. [7901

METRO-TYLERS.—We are now in a position to give immediate delivery of this sporty lightweight.—Edward and Gill, 118, Hampstead Rd., N.W.1. [7724

Minerva.

MINERVA, 3½h.p., Bosch, B. and B., horn, pump, running order, easy starter; £25.—61, Eccleston Rd., West Ealing. [7550

MINERVA, 2¾h.p., mag., good tyres, with accessories; £15.—Butterworth's Garage, 64, Mill Lane, Brixton Hill. [7891

Monarch.

MONARCH-VILLIERS 2-stroke, 2-speed gear box, new, delivery from stock; 60 gns.—Saunders Cycle Co., Chatham. [X4467

Motosacoche.

MOTOSACOCHE, 2¼h.p., fine condition, nearly new; £19, bargain.—17, Heaton Rd., Mitcham. [7888

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1915 SUNBEAM, 3½ h.p., Sunbeam Sidecar	£120	0
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1915 SCOTT, W.C., 2-stroke, Sporting Sidecar	£90	0
1915 HARLEY, electric model, Harley Sidecar	£125	0
1917 ZENITH, 6 h.p., countershaft, kick starter, clutch, Zenith Sidecar, electric light	£125	0
1916 B.S.A., 3-speed countershaft, Sidecar	£110	0
1915 MATCHLESS, 6 h.p., 2-seater Sidecar	£125	0
1916 ENFIELD 8 h.p. Combination	£125	0
RUDGE-MULTI, 5-6 h.p., re-enamelled, new appearance	£80	0

SOLO MACHINES.

1919 ZENITH (July) 8 h.p. standard, complete equipment	£115	0
1919 BRITISH EXCELSIOR, 2¾ h.p., 2-speed, 2-stroke, kick starter	£65	0
1919 METRO-TYLER, 2-stroke, single speed	£52	18
1919 ENFIELD, 2¾ h.p., 2-speed, 2 stroke, complete equipment	£53	0
1919 NEW IMPERIAL, 8 h.p., 3-speed countershaft, kick starter	£115	0
1919 BRADBURY, 6 h.p. 2-speed, kick starter	£122	10
1919 O.K., 2-speed, 2-stroke	£60	0
1919 NEW COMET, 2-speed, 2-stroke	£55	0
1916 CALTHORPE, 2-stroke, 2-speed	£55	0
1915 TRIUMPH JUNIOR, 2-stroke	£50	0
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MOTOR CYCLES FOR SALE.

Motosacoche.

MOTOSACOCHE 1¾h.p., mag., Druids, B., and B., good condition.—Jackson, 118, Herbert Rd., Woolwich. [7826

MOTOSACOCHE, 3½h.p., 1914, Enfield 2-speed, Bosch, speedometer, lamps, wicker sidecar, new tyre, many spares, leggings, stored 3 years; £60.—80, Grangehill Rd., Eltham, S.E.9. [X4785

3½h.p. Motosacoche, 1914, De Lissa valves, 2-speed, kick-starter, tyres good, lamps, horn, recently overhauled, mileage under 5,000; bargain, £30.—Olivos Motors, 120, Bollo Bridge Rd., Acton. [7840

MOTOSACOCHE, 2½h.p., with new light sidecar and hood, Miller-head lamp, new belt, variable pulley, all in splendid condition; £48; will sell separately; seen between 6 and 7.—3, Palmerston Rd., Wimbledon. [7768

New Hudson.

NEW HUDSON Combination, 1919, with full equipment, equal to new; £135.—241, Upper Richmond Rd., Putney. [7647

NEW HUDSON 2-stroke, 2 speeds, in splendid condition; £38, or nearest; ride away.—A. Harrison, Rockbourne, Salisbury. [7790

1914 New Hudson 3½h.p. Combination, 3-speed, clutch, Bosch mag., lamps, etc.; bargain, £60.—2a, Sistova Rd., Bedford Hill, Balham. 'Phone Streatham 352. [7607

1917 4h.p. New Hudson Combination, 3-speed, clutch, kick start, accessories, and apron, new condition, and perfect; £110.—Austen, 1, Westfield Terrace, Park Rd., South Farnborough, Hants. [7526

New Imperial.

NEW Imperial.—Caffyns, Ltd., Eastbourne, are booking orders for delivery shortly. [0018

1916 New Imperial-Jap 2¾h.p., 2-speed, unused 2 years, as new, lamps, horn; bargain, £48.—7, Milner Rd., Merton, S.W.19. [7765

NEW IMPERIALS. Call and inspect the latest models.—Sole London agents, Rey's, 173, Great Portland St. 'Phone: Mayfair 879. [9677

NEW IMPERIAL-J.A.P., 2¾h.p., countershaft 2-speed, free, lamps, horn, tools, new tyres, engine guaranteed perfect; £45.—Hurford, 120, Sutherland Rd., W. Croydon. [7681

NEW IMPERIAL-J.A.P., 1914, 2-speed, T.T., excellent condition, engine just overhauled, new back tyre; any trial; £40.—Write only, Holmes, Petridge Wood, Redhill, Surrey. [X2830

£55.—1919 New Imperial-Jap, 2¾h.p., bought new March last, not done 800, 2 speeds, Dunlops, splendid order; owner officer ordered India; can be seen by appointment.—E., Marlborough Lodge, Harrow. [7701

NEW IMPERIAL 2¼h.p., 1919, semi T.T., clutch, kick, all new accessories, tools, spares, insurance, delivered last week, cost £82 complete, sell same amount spot cash; no offers.—93, Ameshury Av., Streatham, S.W After 7. [7793

Norton.

NORTONS.—We are now booking orders for the latest model Norton solo and sidecar outfits; £5 deposit; deliveries in strictest rotation.—Mandes', 100, Gt. Portland St., London. W.1. [4156

N.S.U.

N.S.U. 6h.p. Twin, 2-speed, F.E., C.B. sidecar, Bosch, B. and B., a real good outfit; any reasonable trial given; £66.—68, Hyde Vale, Greenwich, S.E.10. [7516

N.S.U. Combination, C.B., 5-6h.p., 2-speed, kick start, Bosch mag., electric lamps, in good condition; £55, or near offer.—Glentilt, Princes Rd., Teddington. [7649

N.U.T.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for N.U.T.-J.A.P. motor cycles; early delivery. [4019

O.K.

O.K. Junior, single speed, nearly new; sacrifice 36 gns.—Adams, 44a, Myddleton St., Clerkenwell, E.C. [7741

JONES' Garage, special agents for O.K. machines, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2922

£30.—O.K. Junior, 1916, good condition and running order; seen any evening.—Write R. Howe, Faraday House, Southampton Row. [7941

Omega.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Omega-Jap motor cycles; early delivery. [4018

OMEGA-J.A.P., 2¾h.p., 2-speed; several 1919 demonstration machines for sale from £49.—District agents: O. M. D. Garage, 5, Tavistock St., Leamington. [X4939

P. and M.

1919 3½h.p. P. and M., R.A.F. model, ridden 80 miles, perfect; £95.—White and Co., London Rd., Camberley. [7819

P.M., new, 1919, sidecar, accessories, many spares, Palmer and tube, spare; best offer over £100.—Morrie, 11, Portland Rd., Holland Park. [7770

MOTOR CYCLES FOR SALE.

Paragon.

PARAGON 2-stroke, 1914, 2½h.p., 2-speed, enamelled all-black, rebushed, lamps and horn, etc., done 3,000 only; £25.—27, Sackville Rd., Hove, Sussex. [7508

Precision.

1914 4h.p. Precision, perfect, Bosch waterproof, B.B.; ride away; £25.—Bedford, Sunnyhill Rd., Streatham, S.W.16. [7525

Premier.

1916 Premier, 4h.p., 3-speed countershaft, clutch, kick start; £65.—93, Wellwood Rd., Goodmayes, Essex. [7694

3½h.p. Premier, 2-speed, F.E., just overhauled; £38; Saturday after 12.—11, Torridon Rd., Hither Green, S.E. [7614

1915 Premier, countershaft, 3-speed, kick start, clutch, smart lot; £65.—Ough, 12, Huntsmoor Rd., Wandsworth, London, S.W. [7520

PREMIER 2¾h.p., Bosch, B. and B., tyres as new, guaranteed sound; price 30 gns.—Apply, Confectioner, 44, London Rd., Croydon. [7859

3½h.p. Premier Motor Cycle, 1913, B. and B., all complete, perfect running order; accept £35.—Turner, 35, Water Lane, Newport, Salop. [7534

3½h.p. 1915 Premier, 3-speed countershaft, lamps, horn, underslung C.B. sidecar, wind screen; £85.—21, Upper Charles St., Goswell Rd., E.C.1. [7611

1917 4¼h.p. Premier, 3-speed countershaft, torpedo cane sidecar, dynamo lighting, new condition; £85, no offers.—Grover, 44, Holden Rd., Woodside Park, N.12. [X5089

PREMIER 4h.p. 1916 Combination, countershaft, handle start, new tyres, P. and H. lighting set, Klaxon, guaranteed in first-class running order; £85.—165, New North Rd., N.1. [7630

PREMIER 3½h.p. Combination, 3-speed and clutch, B. and B., Bosch, Druids, Dunlop tyres, in excellent running order, coachbuilt sidecar; offers above £60.—J.L.J., 191, St. James's Rd., Croydon. [7762

Quadrant.

QUADRANT, 1916, 4¼h.p., 3-speed, B.S.A., all-chain drive, in new condition, all on; £60.—Val, 50, Thornhill Rd., Islington, London. [7877

QUADRANT, 3½h.p., B. and B., Bosch, Whittle belt, good tyres and tubes, horn, and lamps; £23, after 6; ride away.—55, Stracey Rd., Forest Gate, E.7 [7868

4¼h.p. Quadrant, 3 speeds, foot clutch, Whittle belt, enclosed mag., new tyres and tubes, coachbuilt sidecar; £55, or part exchange lightweight.—Cantor, Belle View, Glue Hill, Sturminster Newton, Dorset. [7661

Radco.

LATE 1915 2¾h.p. 2-stroke Radco, lamps, accessories; £27.—7, Wastdale Rd., Forest Hill. [7751

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Radco motor cycles; delivery commenced [401

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2923

Rex.

REX 6h.p. C.B. Combination, 1913; cheap for quick sale; good running order; offers.—Allen, Barnwell, Peterborough. [7687

REX 6h.p. Twin, overhead valves, T.T. bars, sporty appearance, Bosch mag., in splendid condition; £27/10.—Butterworth's Garage, 64, Mill Lane, Brixton Hill. [7893

REX Motor Cycle, in perfect running order, B. and B. carburetter, Bosch mag., just been thoroughly overhauled; a bargain, £23.—Forrest, c/o Marsh's Garage, Rye Lane, Peckham. [7604

Rover.

1919 3½h.p. T.T. Rover, h.b.c., Philipson, specially tuned, perfect; £80.—Owen-Evans, c/o Rosedene, Camberley. [7820

JONES' Garage, special agents for Rovers. Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2924

ROVER 1919 5-6h.p., run a few miles only, Lucas lamp, speedometer, etc.; 124 gns.—Longman Bros., 17, Bond St., Ealing. Tel. 1578 Chiswick. [7735

ROVER 1919 5-6h.p., absolutely as new, Lucas lamps, speedometer, etc.; 124 gns.—Longman Bros., 17, Bond St., Ealing. 'Phone 1578 Chiswick. [7729

1914 Rover, 3-speed and clutch, good tyres and belt, engine just overhauled, complete with Lucas lamps and tools, fast and reliable; £57, or nearest.—H. W. Holmes, Townsgate, Market Deeping [X4718

ROVER, 3½h.p., late 1918, 3-speed, countershaft, new coachbuilt sidecar, Lucas lighting set, Klaxon, speedometer, full spares, tool kit, recent complete overhaul; £115.—Hall, Wymondley, Stevenage, Herts. [X4778

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MOTOR CYCLES FOR SALE.

Royal Ruby.

ROYAL RUBY-J.A.P., 2¾h.p., 1916 T.T., 2-speed, excellent condition; £45.—Broad, Rawlingswell Lane, Marlborough. [7547

JONES' Garage, special agents for Royal Rubys, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2925

1919 Royal Ruby, 2½h.p., 2-stroke, equal new, small mileage, perfect running order, £48; also what offers 1919 Sunbeam combination, never been used; selling both for car.—Youngman, Brazen Hall, Tattersett, King's Lynn. [X4942

Rudge.

RUDGE Multi, 1917, excellent condition; £58.—Cpl. Capon, 70, Baring Rd., Lee. [7564

RUDGE Multi, June, 1919, 200 miles; £95.—Goodey, Brightview, Hadley Rd., New Barnet. [7670

1919 (new) 3½h.p. Rudge Multi; list price.—The Mornington Garage Co., Mornington Rd., Belton. [7612

RUDGE 3½h.p., clutch model, single speed, all accessories; £30.—19, Old Dover Rd., Blackheath, S.E. [7613

RUDGE 1919 3½h.p., I.O.M. model, brand new; £90.—Longman Bros., 17, Bond St., Ealing. Tel. 1578 Chiswick. [7733

JONES' Garage, special agents for Rudge, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2926

1919 (Sept.) 3½h.p. Rudge Multi, Henderson coachbuilt sidecar; £115.—29, Montford Place, Kennington, S.E.11. [7766

1919 I.O.M. Rudge Multi, 3½h.p., brand new, very fast, beautiful 'bus, just delivered; £95, or near.—Agnew, Wellington, Salop. [X5086

3½h.p. I.O.M. Rudge Multi, new, 1919 model, with clutch; £90/13; from stock; first cheque secures.—Wauchope's, 9, Shoe Lane, London. [7904

1919 Rudge Multi Combination, delivered August 28th, complete tools, Klaxon, and pump, in beautiful condition, any trial; price £116.—Walker, Fairlight, Rochdale. [X4784

5-6h.p. Rudge Multi and Canoelet Sidecar, coachbuilt, in good condition, and accessories; £85, or exchange for 2-seater car, condition immaterial; call after 6.—51, Myrtle Rd., Acton, W.3. [7622

RUDGE Multi, 3½h.p., 1915 (Nov.), with all Lucas accessories, Stewart speedometer, Dunlop and Michelin heavy tyres, tools, etc.; £60; trial.—9, Hamilton Gardens, St. John's Wood, N.W.8. [7778

1913 T.T. Rudge, single-speed, clutch, stored during war, just overhauled, rebushed throughout, all accessories, tyres and condition excellent; after 6 p.m.; £42.—Laird, 37, Glebe Rd., Hornsey, N. [7531

1917 Rudge Multi, coachbuilt sidecar, 3 lamps, horn, spare tyre, tube, valve, new belt, original front tyre, back new, all in fine condition, not used during war, 1918, enamel and plating as new; £90, no offers.—Bell, 3a, Nunnery Lane, York. [7621

RUDGE Multi, 3½h.p., 1916, with sidecar, disc wheels, T.T. handle-bars, big F.R.S. lamps, generator, Klaxon horn, knee grips, accessories, complete, for sale; £85; owner having left for India; all in perfect condition.—Irving-Bell, Denton Grange, Eastbourne. [X4958

1919 I.O.M. Rudge Multi, delivered July, guaranteed A1 condition, handle-bar celluloid scratch sole blemish, expertly driven, never been all out, fitted with Miller head light and generator, Bonniksen speedometer, illuminated by electric bulb at night, twin tumbler switches mounted on tank control speedometer and rear lights, heavy Dunlops, as new, Klaxon and spare belt; best offer over £99 during the week, by wire or letter only.—Millett, Upton House, Chester. [X4721

Scott.

SCOTT, 3¾h.p., T.T. bars, electric lamps, front and rear, horn; £68.—91, Oakhill Rd., Putney, S.W.15. [7714

SCOTT Combination, 2-speed gear, all new tyres, excellent condition; £75, or offer.—H. H., 104, Leigham Court Rd., Streatham, S.W.16. [7897

SCOTT 1915 W.D. Model, 2-speed, K.S., lamps, horn, etc., splendid running order, very fast; 55 gns.—20, Cowley Mansions, Cowley Rd., Brixton, W. [7744

SCOTT Combination, 1916, electrically equipped, just overhauled by makers, lovely condition; £90.—Hill, 39, Penrhyn Rd., Kingston-on-Thames. [7850

SCOTT W.D. Combination, just covered 300 mile run under 14 hours; £80; purchaser driven home up to 100 miles; enquiries Saturday after 2.—Wright, 49, Cresswell Rd., Twickenham. [7535

Sparkbrook.

BARGAIN.—1917 Sparkbrook, 2¾h.p., 2-speed, splendid condition; £45.—29, Madeley Rd., Ealing. [7532

Sun.

SUN-VITESSE, 1919, new, in stock, latest model, at list price; £57/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0492

MOTOR CYCLES FOR SALE.

Sun.

SUN-V.T.S., 2½h.p., 1916, stored 2 years, under 1,000 miles, condition as new, all accessories; £40, no offers.—Basemeot, 5, Newman's Court, Cornhill, E.C. [7553

SUN-VITESSE 1919 2-stroke, 2-speed, Dunlop tyres. Miller lamps, spare belt, tools, perfect condition, as new; £60, or near.—Box L4,658, c/o *The Motor Cycle.* [7931

SUN Combination, J.A.P. engine, 6h.p., twin-cyl., new late 1916, just thoroughly overhauled, in splendid condition, sidecar in coachwork; bargain, £90.—Apply, F. Butler, South Warnborough, Winchfield, Hants. [X4716

Sunbeam.

1914 6h.p. 3-speed Sunbeam and Millford Empress Sidecar; £120.—Newton, Cromford, Matlock. [X4715

1914 Sunbeam Combination, 4h.p., lamps, speedometer, etc., well kept outfit.—Harris, 24, Grand Parade, Brighton. [7710

3½h.p. Sunbeam Combination, just delivered new, not been used, black and gold; £155.—Smith, 19, Stafford St., Walsall. [X4710

1919 3½h.p. Sunbeam and Sidecar, apron, wind screen, tools, delivered June, mileage about 750, condition better than new; £150.—Bolingbroke, Brambles, Chelmsford. [7557

SUNBEAM 1914 3½h.p., 3-speed, kick start, lamps, horn, speedometer, tools, very little used owing to having been on service, in splendid condition; best offer above £85.—Rayner, Fairholme, Hessle, Hull, E.Y. [7600

1919 Sunbeam 3½h.p. Solo, all black and gold, unscratched, done 100 miles, condition better than new, Miller head, overalls, insurance, spares, tools, plugs, Klaxon; £130.—Appointment only, Telephone Bhumm Finchley 1023. [6644

SUNBEAM 1914 6h.p., 3-speed, dynamo lighting, speedometer, Gloria sidecar, hood, screen, grid, new tyres, used week-ends, stored 3 years, extremely smart, sound outfit; £145; seen after 6.—'Phone: Mayfair 4693.—Wheeler, 10, Clonmel Rd., Teddington. [7853

Triumph.

1919 Triumph (June), countershaft gear, as new; £98.

1919 Triumph, Type D., brand new, just delivered from works; £75.—Below.

1919 Triumph (July), countershaft gear, electric head and rear, horn, as new; £102.

1919 Triumph, countershaft gear and Gloria sidecar, mag., electric head, as new; £132.—Triumph Specialists, Rhosha Motor Co., Mawneys Rd., Romford. [7618

1915 Triumph, as new; £45.—Marks, 121, Acton Lane, Chiswick, W. [7567

1919 Triumph Junior, little used, and better than new.—89, Wigmore St., W. [7864

TRIUMPH, 1918, incomplete, and Bosch mag.; £28.—12, Beechwood Av., Finchley. [7873

1919 Triumph, splendid condition, electric light; £90.—Byrd, 5, High St., Evesham. [X4947

TRIUMPH, clutch model, lamp, horn; £40.—A. Jape, 22, St. John's Rd., Putney Hill, S.W.15. [X5082

1919 Triumph, Model H., mileage 200, coachbuilt combination; £135.—Gosling, Revesby, Bostco. [7657

1919 4h.p. 3-speed countershaft W.D. Triumph; £90.—Bates, 17, Hamilton Ter., N.W. After 6. [7795

1919 Triumph, delivery this week, 3-speed countershaft, K.S.; £105.—Box 517, c/o *The Motor Cycle.* [X4725

1914 4h.p. Triumph, T.T. bars, splendid condition; £48.—J. Smith and Co., 16, Hampstead Rd., N.W.1. [7500

1914 Triumph, 3 speeds, and clutch, in thorough running order; £65.—Jones, 4, Woodside Parade, N. Finchley. [7679

TRIUMPH 1919 4h.p., and Canoelet sidecar, in excellent order; £120; new 3 months.—Iliffe, Burnt Post, Coventry. [X5073

JONES' Garage special agents for Triumphs, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2927

TRIUMPH, 1911, just been thoroughly overhauled, very fast machine; £40, or nearest offer.—Christon, Grove Rd., Sutton. [X5084

TRIUMPH, fixed engine, Bosch, runs 200 miles weekly, just overhauled; £25.—Whitmore, White House, Clifton, Beds. [7538

TRIUMPH 4h.p., 3 speeds, T.T., lamps, very fast, sound condition; £55; any time.—51, Maplethorpe Rd., Thornton Heath, S.E. [7747

1919 Triumph and Gloria sidecar, new condition, speedometer, lamps, horn; £140.—Jeffryes, 32, Felstead Rd., Wanstead. [7637

TRIUMPH, 1917, 3-speed countershaft, in splendid condition, all accessories; a bargain, £75.—300, Marylebone Rd., N.W.1. [7883

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4h.p. Triumph, countershaft, just out of works, only done few miles, perfect in every way.—Offers to Owner, 41, The Parade, Leamington. [X4998

BABY Triumph, new Easter, 1919, mileage under 500, Triumph patent leg guards; trial; what offers? —Flower, The Hill, Stratford-on-Avon. [X5009

1919 4h.p. Tourist Trophy Triumph, delivered Aug., condition as new; £90, or nearest.—Lt. Wilson, Newtown, Portsmouth Rd., Camberley. [7704

TRIUMPH 4h.p. Combination, coachbuilt, 3-speed countershaft, clutch, decompressor, new condition; £115.—Bailey's Garage, Manor Rd., Wallington. [7769

TRIUMPH 1914-1915 4h.p., S.A. 3-speed and C. hub, wide tank, re-enamelled, and completely overhauled; £60.—Morgan, 5, Elms Av., Muswell Hill, N.10. [7629

TRIUMPH, 3-speed, free engine, new saddle, new belt, enamel, plating perfect, appearance as new; £65.—145, Blackhorse Lane, Walthamstow. [X2304

TRIUMPH, 1919 (June), T.T. bars, Canoelet sporting sidecar, £10 accessories, owner going to India; price £135.—Stockdale, Cambridge Rd., Ely, Cambs. [7550

TRIUMPH 1919 Model H., just unpacked, fully equipped; best offer.—Burdchardt, 21, Grove Terrace., Highgate Rd., N.W.5. 'Phone Hornsey 474. [7725

1911 Triumph, L.O.M. T.T. engine, pedalling gear, Dunlops, lamps, horn, belt case; £33; privately owned.—J. W. Frankton, Ribble Rd., Coventry. [X5114

TRIUMPH 1916 Combination, 3-speed, kick start, appearance as new, enamel and plate perfect, well worth seeing; £88.—145, Blackhorse Lane, Walthamstow. [X5007

TRIUMPH, 3½h.p., good condition, footboards, new covers front and rear, new inner tube front; £28, or near offer.—16, Manson Mews, Queen's Gate, South Kensington [X4941

TRIUMPH, 3½h.p., free engine, just overhauled, Bosch mag., good tyres, lamps, and accessories, fast machine; £34, or nearest, quick sale.—243, Main Rd., Sidcup. [7528

COMBINATION; 56 gns. or close; Triumph 3-speed, 1913, excellent mechanical condition, fully equipped, privately owned; eveniogs.—154, Verdant Lane, Catford, S.E. [7545

TRIUMPH 4h.p., 3-speed, free engine, enamel and plating perfect, fitted with new saddle, belt, appearance as new; £45.—145, Blackhorse Lane, Walthamstow, E. [X3709

TRIUMPH Combination, 1914, 3-speed and clutch, lamps, speedometer, wind screen, and spare tyre, perfect condition; £82.—159, Lincoln Rd., Acock's Green, Birmingham. [7650

1914 4h.p. Triumph, 3-speed coachbuilt combination, splendid condition; £75, or near offer; exchange higher power.—18a, Foley Place, Wandsworth Rd., S.W.8. [7759

1911 Triumph, 3½h.p., B. and B., U.H. mag., new Dunlop belt, good tyres and tubes, pulls well, reliable; 35 gns.; after 6 p.m.—North, Newton Longville, Bletchley, Bucks. [7513

1919 4h.p. Triumph, countershaft, brand new, unridden, Lucas lamps, horn, speedometer, spare valve; £106.—'Phone: 4227 Gerrard, 24, York House, Highbury Crescent, N.5 [7951

1919 Triumph, 4h.p., countershaft, Empress sidecar with military chassis, Tan-Sad, Cameo, lamps, tools, insurance; £115.—Sanders, 72, Stanmore Rd., Edgbaston, Birmingham. [X5085

TRIUMPH 1919 T.T. 4h.p., brand new, actually in stock.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead, N.W. (near Hampstead Tube). 'Phone: Hampstead 3752. [6329

3½h.p. Triumph Coachbuilt Combination, 3-speed, clutch, lamps, speedometer, accessories and spares, excellent condition; £68, or near offer.—Bamford, Gablecote, Ashford, Middlesex. [X4717

TRIUMPH, 3½h.p., No. 255526, Sturmey 3-speed hub and clutch, pedals, new tyre back, front in good condition, machine in good order and ready immediate use; £55.—Dowse, Tidworth. [X4945

TRIUMPH, 1919, countershaft, Lucas large lamps, speedometer, mud shields, knee grips, nearly new Dunlop belt and tyre, complete spares; Midlands; £100.—Box 541, c/o *The Motor Cycle.* [X5116

TRIUMPH, in good condition and perfect running order, N.S.U. gears just fitted, tyres as new, lamps, tools, etc., with sidecar; £65.—Seen by appointment at 15, Market Place, Henley-on-Thames. [7785

TRIUMPH, 3½h.p., fixed, Philipson pulley, new cyl., new belt and tyres, just been overhauled, excellent condition, less lamps and tools; £30, or offer; seen any time.—169, Fulham Rd., South Kensington. [X4946

1911 Triumph, 3½h.p., clutch model, nearly new Dunlops, lighting set complete, horn, 2 new ball bearings and crank pin and bush, fitted fortnight ago; price £38.—R. Stephens, Bricklehampton, Pershore. [X4966

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Triumph.

TRIUMPH Combination, 4h.p., 3-speed, clutch, fully equipped with lamps, tools, etc., steel torpedo sidecar, perfect throughout, little used, very sporty; £70.—Victory Garages, Coldharbour Place, Camberwell, S.E. [7772

1918 Triumph, 3-speed model, completely renovated, indistinguishable from new machine, only ridden 50 miles since renovation; approval deposit; genuine bargain, £79.—Harold, 50, Marlborough Rd., Coventry. [X5115

1919 Triumph Junior, new Aug. 23rd, Cowey speedometer, P. and H. lamp and generator, unused, Klaxon horn, Lucas mirror, watch case, insurance transferable, unscratched; £77.—Dentist, 194, Tufnell Park Rd., Holloway, London, N.7. [7836

3½h.p. Triumph, N.S.U. 2-speed gear, Bosch mag., Dunlop tyres and belt, T.W.K. head light and rear, Brooks saddle, just overhauled and re-enamelled, ride away; £43.—Harries, Red House, Gaynesford Rd., Forest Hill, S.E. (Appointment.) [7757

1911 Triumph, B.B. carburetter, Bosch waterproof mag., Philipson pulley, new tyres, belt good, in sound running order, any trial, £32; Rudge, Senspray carburetter, Whittle belt, variable gear, sound running condition, £30.—352, High Rd., Willesden Green. [7806

Tyler.

TYLER, 1915-16, 2-speed, 2-stroke Metro engine, just overhauled by makers, mechanically perfect, appearance fair; £33; call or write.—40, Murray Mews, Murray St., Camden Town. [7775

2½h.p. Tyler 2-stroke, single speed, and long nickel-plated exhaust; extended payments if desired.—Harrods' Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [7522

2½h.p. Tyler 2-stroke, single-speed, disc wheels, and long nickel-plated exhaust; extended payments if desired.—Harrods' Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [7521

Williamson.

8h.p. Water-cooled Williamson Combination; £110.—Wauchope's, 9, Shoe Lane, London. [7906

WILLIAMSON Combination, 8h.p., perfect condition; £100.—Skaife, 162, Windleshaw Rd., St. Helens. [7546

WILLIAMSON 8h.p. Combination, water-cooled, 2-speed, kick start, new tyres; £85; solo wanted.—40, Fauconberg Rd., Chiswick. [6547

WILLIAMSON, 1914, W.C., roomy 1919 sidecar, hood, screen, spares, nearly new oversize tyres; £100; stored 4 years.—6a, Canadian Av., Catford. [7844

Wolf.

1914 Wolf-Jap, 4h.p., coach sidecar, 2-speed, chain drive, all accessories, good condition; £70.—Mallett, 46, Braxted Park, Streatham. [X5002

Wooler.

JONES' Garage, special agents for Woolers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2928

Zenith.

1919 6h.p. Zenith, in perfect condition, only used a few weeks.—89, Wigmore St., W. [7855

3½h.p. Zenith-Gradua Combination; £50.—64, Howson Rd., Brockley, London. (After 7.) [7872

1919 8h.p. Zenith, countershaft, horn, speedometer, never been used.—89, Wigmore St., W. [7858

ZENITH 8h.p. and Sidecar, fine condition; £125, or nearest.—On view, Hill, Ardath, Esher. [7917

ZENITH 1915 Combination, 8h.p., countershaft; nearest £105; splendid condition.—129, Grove Green Rd., Leytonstone. [7571

8h.p. Zenith-Gradua, 1917 J.A.P. engine, just been thoroughly overhauled by makers, first-class condition; £95.—Openshaw, Christ Church, Oxford. [0039

4-5h.p. (Nov., 1914) Countershaft Twin Zenith, Gradua gear, clutch, kick, splendid condition (been stored), lamp, etc.; nearest £80.—Box L4,645, c/o *The Autocar*. [7666

1914 Zenith-Gradua, 4h.p. J.A.P., good condition, Phœnix C.B. roomy sidecar, 4-point; trial; £75.—After 5 p.m., 26, Latimer Rd., Wimbledon. [7875

1915 6h.p. Zenith, genuine racing model, splendid condition, almost new, including lamps, Klaxon horn; £65.—J. Smith and Co., 16, Hampstead Rd., N.W.1. [7499

4h.p. Zenith C.B. Combination, good condition, Gradua, insured 12 months, everything on; £60, no offers; appointment.—Penny, 55, Enuerdale Rd., Richmond. [7574

6h.p. Zenith-Gradua Combination, lamps, speedometer, horn, tools, spares, Bosch, Binks, ready to ride away; £35.—Clayton Garage, Hermitage Lane, Child's Hill, N.W.2. [7668

FOR Sale, 1917 8h.p. Zenith combination, countershaft K.S., speedometer, watch, mirror, hood, screen, luggage and petrol carrier, spares; best over £120.—33, Keemor St., Woolwich. [7527

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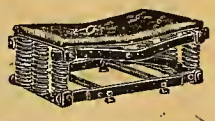

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ZENITH-GRADUA Combination, 8h.p. J.A.P., clutch, countershaft, Millford sidecar, luggage carrier, Lucas lamp, mechanical horn, new belt and tyres, excellent condition.—Malkin, 96, Rodenhurst Rd., Clapham, S.W.4. [7553

1915 Zenith, 5h.p. twin J.A.P., countershaft, clutch, and kick start, Gradua gear, Binks carburetter, new tyres, semi-T.T. bars, engine just been completely overhauled, fast and sporting bike; £85.—C. O. Beane, Derby Rd., Long Eaton, Notts. [X4782a

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Miscellaneous.

ONE 1914 T.T. Douglas 2¾h.p., one late 1915 J.A.P. 2½h.p.; what offers?—Boorman, Woking. [7654

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NEW Lea-Francis, 1919, twin.

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NEW Calthorpe, 1919, 2½h.p., 2-stroke.

NEW Omega, 1919, 2 speeds.

NEW Triumph, 1919, 2½h.p.

NEW Sparkbrook, 1919, single speed.

NEW Coventry Eagle, 1919, single speed.

NEW Clyno, 1919, 2 speeds.

NEW Alldays Allon, 1919, single speed.

NEW Levis, 1919, 2 speeds.

NEW Douglas, 1919, 2 speeds.

NEW Sun, 1919, 2 speeds.

TRIUMPH 1919 Combination, new.

LEA-FRANCIS 1919 Combination, new.

RUDGE Multi 1919 Combination, new.

B.S.A. 1919 Combination, new.

P. and M. 1919 Combination, new.

A.J.S. 1919 Combination, new.

DOUGLAS 4h.p. 1919 Combination, new.

A.V. Monocar, 1919, new, 2 speeds.

A.V. Monocar, 1919, new, single speed.

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1916 P. and M. Combination, in good condition; £100.

THE H.C. Motor Co. have the following machines for disposal:

1916 Renovated Triumph, 3-speed, straight from works and as new; £90.

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THE H.O. Motor Co., 347, Finchley Rd., N.W.3. 'Phone: Hampstead 4631. Open afternoons and Sundays. [3747

A.C. Tradesman's Carrier, overhauled and repainted, splendid condition, £80, or near offer, exchange Ford van; 3½h.p. Minerva, Bosch mag., £30; 2½h.p. Quadrant, E.I.C. mag., new tyres, £29; both running order.—18a, Foley Place, Wandsworth Rd., S.W.8. [7758

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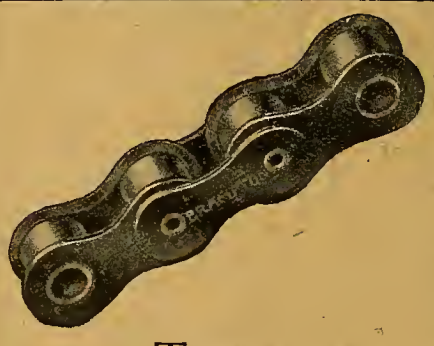

THE superior quality of material used in their manufacture, and the precision with which they are made ensure a maximum of efficiency and service to the user.

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MOTOR CYCLES FOR SALE.

Miscellaneous.

BARGAIN.—I give addresses of people who wish to sell their motor cycles privately. Guaranteed no dealers.—Call or write, Kwiksale Registry, 35, Long Acre, W.C. (4 doors from Covent Garden Tube Station). [7946

1915 Morgan de Luxe, grand condition, £165; late 1914 6h.p. A.J.S. combination, £100; late 1915 4h.p. twin A.J.S. combination, £125; 8h.p. twin Douglas engine combination, £100; all above are in perfect condition and demonstration can be given to serious applicants.—Barratts, Garage, Worcester St., Wolverhampton. [X5117

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THE Raymside Motor Cycle Co. have a large stock of accessories and the following machines for sale at their new showrooms at 8, Station Parade, Balham: 1917-18 Sunbeam, new tyres, all accessories, like new, 105 gns.; 1919 Radco, brand new, with accessories, £42/10; 1915 sporting Indian combination, 5-6h.p. 3-speed, clutch, all accessories, 100 gns.; 1915 7-9h.p. Indian, 3-speed, clutch, spring frame, all accessories, 86 gns. [7512

F.O.O.H. (Fair Offer Car House).—To those desirous of getting something good quickly it will be to their advantage to come and see us. A stock of new and second-hand motor cycles and combinations always on hand. Your old machine taken in part payment. We pay fair cash prices for any good, reliable make. Our name implies our business methods.—5, Heath St., Hampstead, N.W.3 (near Hampstead Tube Station). 'Phone: Hampstead 3752. [2902

TRIUMPH, 1913, fixed gear, splendid running order, £35; Buck, 1914, 4½h.p. Bloomfield engine, free engine, kick starter, in splendid condition and running order, £57; Premier, 1914, 7-9h.p., 2-speed, Canoelet sidecar, wind screen, and all accessories, in running order, £85; Bradbury, 1914, 3-speed, countershaft, and sidecar, running order, £65; sidecar bodies, two Douglas, £5 each; sidecar bodies, two Clyno, £7 each (the only sidecars left); Douglas Amac carburetter, new, 46/- each; B. and B. carburetters, variable jet, top feed, new, £3 each; Amac control levers and slides, new, 30/-; several other kinds of accessories.—The Dartmouth Motor and General Engineering Co., Dartmouth Row, Blackheath, London, S.E 10. [7861

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MOTOR Scooter, Auto-Wheel unit, equal wheels, as new; £28.—Sparks, 45, Park Lane, Stoke Newington. [7743

AUTO-GLIDERS.—Place your orders now to secure delivery.—Distributers for Kent, Saunders Cycle Co., Chatham. [X4486

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RENNOC Sidecar Co. are actual manufacturers of hoods, wind screens, etc.; hoods fitted whilst you wait from £2/16/3; screens from £1/9/6; immediate deliveries to fit any make sidecar guaranteed. We also supply hood sticks, motor twill, and all hood and screen sundries.—Rennoc Sidecar Works, 88, Victoria Rd., Strnud Green, N., and Progress Works 156, Marlborough Rd., Hornsey Rd., N. Our list with 200 illustrations upon application. [2280

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VENUS.—The sidecar body experts. Bodies, any design, in the rough if desired.

VENUS.—Bodies direct from factory to user; save money; lists ready, write.

VENUS Sidecar Co., 6-8, Gourley St., S. Tottenham. [6754

COACH Bodies, special for lightweights, 20 lb., fit any chassis, any colour, strong, sporty; cheap.—Venus Sidecar Co., 6-10, Gourley St., S. Tottenham. [1356

October 16th, 1919.

THE MOTOR CYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
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Motor Cycle Noises and the Public.

WE have referred to the subject of motor cycle noises before, and doubtless shall do so again, for the only method of driving home the importance of a subject is by repeated reference to it. To the rider noisy valves or any unnecessary noises in the engine—for instance, the tap caused by a loose piston or bearing—are far more irritating than the sound of the exhaust, but it is the latter which is most abhorred by the public at large. The general hum made by a car, combined with the noise of steel-studded tyres on the road, does not force itself upon the attention like the staccato bark of a well-tuned but inadequately silenced single-cylinder motor cycle.

The tester rarely speaks of the noise of his machine: general tune is his greatest concern. The designer's aim in life, too, is advancement in efficiency, and it is rare to hear him discourse on the question of noise. Familiarity in both cases has bred contempt.

It is left to the public to breathe their caustic comments on noisy motor cycles. It is noise that irritates the public; noise, and not speed alone, that has caused magistrates to inflict vindictive fines and give vent to satirical censure when a victim is brought before them; noise that has hindered, and will hinder, the hypercritical man from buying sidecar outfits.

Is Silence a Danger?

This may sound unduly condemnatory, but it must be admitted as the truth. Frequently it has been stated that silent motor cycles would be dangerous on the road, but such assertions are almost ridiculous, even though there may be grounds for the contention. To concede that there may be different qualities of noise and that some motor cycles are noisy but not objectionable may be easy and reasonable. A discourse, however, on the quality of noises would need more space than is available here; every motor cyclist knows what is meant when we speak of noisy machines.

A badly silenced single-cylinder is undoubtedly the worst offender, but a twin engine, even if fitted with a silent exhaust, can make its presence very much heard by bad valve clatter, swish of chains, and the drumming of gear case and mudguards. It must be admitted, however, that the type of machine which needs most attention is the one that has been the means of the motor cycle industry attaining the prosperity it has attained—the single-cylinder. It's reliability is unquestioned, just as unquestioned as is its noisiness, and, in qualifying the latter statement by admitting that there are one or two quiet singles on the market, so is the general condemnation justified. Single-cylinders *can* be made efficient and at the same time reasonably silent. Then, why are they not? If one firm can turn out a single-cylinder chain-driven machine with an effective silencer, noiseless valve gear, and transmission chains that do not sing, then others can do so.

Public Toleration.

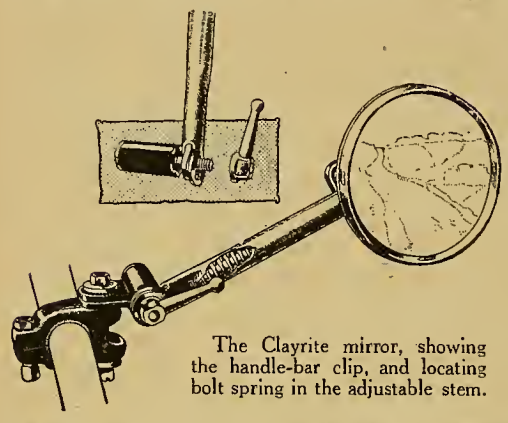
Although the country as a whole realises that it owed a great deal to the motor cycle during the war and tolerates now with fairly good humour the frequent imitations of machine gun clatter in the street and on the roads, the public may not always be so tolerant. Next year there will be many thousands more motor cyclists abroad, and every maker should consider *now* the question of silencing his particular machine to the utmost degree possible. It can be safely asserted that legislation is more likely to be directed to noisy motor cycles than to noisy lorries, although comparisons of the discomforts caused by both are ridiculous

But, quite apart from the nuisance to the public caused by the racket of exhausts, the fact that a quiet machine is infinitely more pleasurable to ride should alone induce manufacturers to give the question more attention than they have been doing up to the present time.

An Index to the advertisements in this issue will be found on the page facing the back cover.

THE CLAYRITE HANDLE-BAR MIRROR.

A NEW firm in the accessory branch of the industry is Messrs. Clayton Wright, Ltd., who have registered offices at 5, Corporation Street, Birmingham, and if the quality of their first speciality is any criterion, they evidently intend to produce only the best class of fitting.

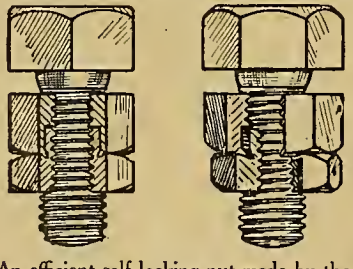


The Clayrite mirror, showing the handle-bar clip, and locating bolt spring in the adjustable stem.

We have before us an exceptionally neat and soundly constructed handle-bar mirror, which is to be known as the Clayrite. The finish is nickel plate and dull black, and it has a clip suitable for handle-bars of either ⅞in. or 1in. diameter. The back bracket of the mirror permits its adjustment in any desired position on the stem, while the latter may be placed in any one of five different positions (relative to the attaching clip), in each of which it is held rigidly by a positive locking device. This adjustment is effected without the use of tools, being obtained by means of a form of spring bolt operating in slots milled in the lug which supports the stem. The Clayrite mirror is to be sold at the moderate price of 11s. 6d.

THE ROSS LOCKNUT.

IN consequence of a remark made by "Ixion" in our issue of August 21st last, the Ross Locknut Co., Billiter Square Buildings, London, E.C.3, sent round a representative to explain the Ross locknut. There seems to be little doubt that this fulfils the purpose for which it is intended. It consists of a nut within a nut, one shallow and one of standard size, an extension on the flat nut being spun inside the other. The holes through both are slightly eccentric, and when the bottom nut has been screwed home it is only necessary to give the top one a quarter turn, when it is firmly locked. Its gripping powers were illustrated by two unthreaded nuts slipped over a piece of steel bolt. If the shallow nut is turned clockwise, it locks on the smooth bolt so securely that it cannot be turned or moved.



An efficient self-locking nut made by the Ross Locknut Co.

Both portions of the locknut have guide marks stamped on them, and when the nut has to be removed these two are brought opposite each other. The only tool required to fit this nut is an ordinary spanner. The chief advantage is that it does not damage either its own thread or that of the part on which it is screwed. Ross locknuts are made in all sizes and in all standards.

A SIDECAR CAB.

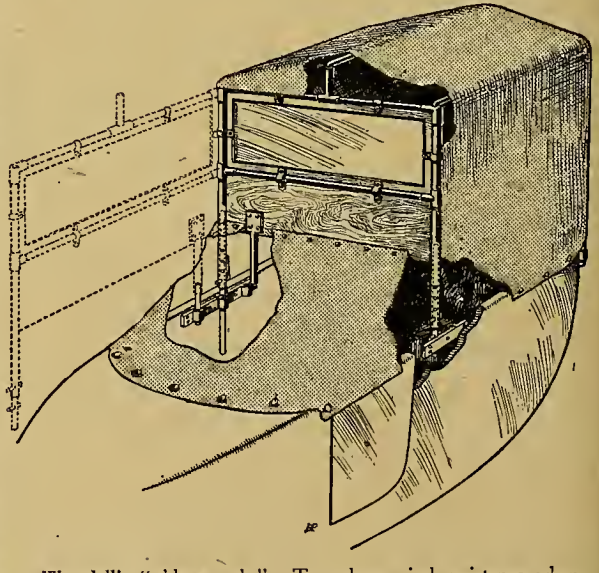
THE increase of pleasure-motor cycling during the past season has brought along quite a number of appliances for enhancing the comfort of the sidecar passenger, chief among which are the several windscreens now on the market. Probably quite 50% of sidecars now on the road are fitted with some form of screen, and quite a number have hoods also. Such equipment greatly adds to the comfort of sidecarring, and passengers who once have had these comforts will always demand them when the mount is changed.

Many makers, however, do not fit hoods and screens as standard equipment, and for some time to come there is every promise of success for those who market such equipment as accessories.

With this in mind, Mr. H. Worsdall, 102, Lady Pit Lane, Leeds, has designed what he terms a sidecar cab, which consists of an adjustable screen and an easily fitted hood.

The screen utilises only a small sheet of celluloid, in order that the cost of renewal is kept low. This screen is fixed in a wooden frame mounted in a tubular member, which is carried in a vertical position and is adjustable as to height. Below the window there is a panel of three-ply wood or metal, and the space between it and the forward end of the well is provided with an apron. The uprights are supported in sockets fixed to the side of the body, and by lifting the outer tube the driver may, without dismounting, swing the screen round to allow the passenger to enter.

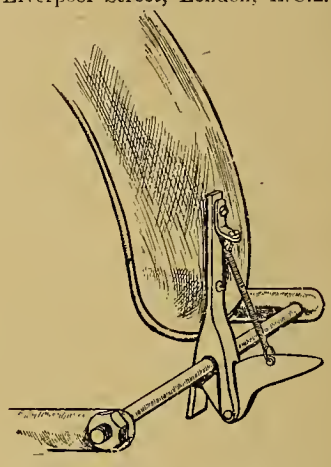
At the back of the body three sockets are fitted to carry upright tubes which connect with the screen frame by other tubes over which the hood is "stretched." When not in use, these tubes and the hood roll up together in a very compact form convenient for carriage.



Worsdall's "sidecar cab." To reduce wind resistance when riding with an empty sidecar the screen may be fixed, as shown in dotted lines.

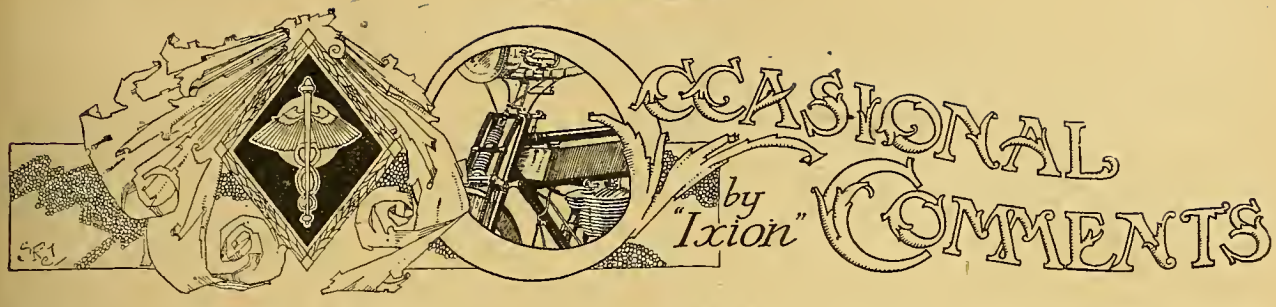
A USEFUL MOTOR CYCLE STAND CLIP.

A SIMPLE, well-made, and ingenious stand clip has been brought out by the London Engineering Company, 25, Liverpool Street, London, E.C.2. It locks the stand securely, is quickly engaged, and is as easily released. It is claimed that it will fit any motor cycle and does not damage the mudguard; it is said to be impossible for this stand to fall down through road vibration.



A readily-operated stand clip.

The device is worthy of commendation as a departure from the orthodox clip, composed of fierce and vice-like strips of strong spring steel. This arrangement is so designed that only the lightest possible spring is necessary for its correct action.



Speedman's Wobble.

NONE of our correspondents have really *explained* speedman's wobble in response to the invitation by "G.E.S.," though several readers have answered his letter. They are perfectly right in saying it is folly to whack an unfamiliar machine up to 65 m.p.h., especially upon our war-shattered roads. But they have none of them accounted for the phenomenon which attends such folly. The problem offered them may be restated as follows: When a motor cycle is ridden at very high speeds, it is apt to depart from the rectilinear track, and to inscribe a wheelmark on the road roughly resembling a gigantic corkscrew pulled out just short of straight. This wobble is often invincible. The radius of the elongated spiral steadily increases until at last the rider is flung. In certain cases control cannot be regained by applying the brakes or shutting the throttle. In other words, the situation is rather reminiscent of a spinning aeroplane. So far as a remedy is concerned, I know of none, other than to avoid such speeds on surfaces which are not true, *i.e.*, to reserve track speed for the track. The development of the wobble may usually be prevented by bracing wrists, back, and legs so stiffly that the front wheel is rigidly held true. Should the wobble develop, the only hope seems to rest in *gradual* reduction of speed, whilst muscular strength restricts the machine to such an approximately straight track that it remains steerable. Certain makes of machine are peculiarly liable to this dangerous habit; and tyre pressures appear to affect its development.

Bad Steering and Tyre Pressures.

I HAVE recently made several references to the unsatisfactory steering design of certain machines which have passed through my hands. I have since had reason to suspect that we bring trouble on ourselves by carelessness about tyre pressures. Quite accidentally I converted the worst steerer of the bevy into a good steerer by riding it with a softer back tyre. Apparently, whenever the back tyre was board-hard, the tail of the machine bounced heavily and cast an illegitimate leverage on the front wheel, thus deluding both the owner and myself into fancying that the frame was out of truth, or the forks bent, or the steering badly designed. Of course we motor cyclists are tolerably careless about tyre pressures. We do not use gauges as the careful type of car owner will do. We kick the cover, or press a careless thumb into the tread, let a little air out if the machine is bounceable, pump a little more in if we feel the road too acutely. But whether our tubes are blown up to 40 lb. or 70 lb. per square inch, motor cyclists as a class neither know nor care. Spring frames have made me exceptionally careless in such respects of late. The necessity for trying many new machines, which are quite unpardonably fitted with rigid frames, has now led me to pay a novel attention to tyre pressures; and I am learning—or relearning—a lot. Chief amongst my discoveries is the fact that a very slight variation in tyre pressures has a marked effect upon light and easy steering. I intend to make special experiments towards ascertaining whether tyre pressures affect speedman's wobble. So if next week's *Motor Cycle* comes out with a black edge and my photograph, you will recognise that I died in a good cause.

The Chain Shortage.

I HEAR that so many machines are under construction that most of the chain manufacturers have four or five times the number of orders which they were accustomed to in 1914. Spares are practically unprocurable, even in such small items as odd links. Most of the factory replacement departments are devoid of stocks, and a leading chain manufacturer has offered as a special favour to supply my own modest requirements in three months' time. Wherefore, I counsel users whose chains are growing ricketty to give the old ones every attention, and to place their orders in good time.

Failures on Hills.

MUSING over the hill failures in the A.C.U. Trial, I reflected what hill stops I had personally sustained this year. Let it be prefaced that I have repeatedly climbed practically every famous or infamous hill in England, Wales, and Scotland on all sorts and dates of machine. I can recall three hill stops this year. One of them at a Y bend, when I intended to take the left-hand road, and found I had to tackle the other: I was on top gear, and by the time I had lugged the bicycle round and changed down, the machine was stationary and I stopped the engine. Another on a plain straightaway hill, when my sleeve caught the ignition lever and retarded it fully; for a reason which is not to the present point, the magneto in question did not spark on full retard, and, before I knew what had happened, the machine had stopped. The third failure occurred on the kind of hairpin which Mr. Loughborough adores. To be quite honest, I was showing off; as there were spectators present, and I was not a competitor, I ought to have come down to bottom gear and crawled; but, having climbed millions of hairpins of this villainous type, I remained on second gear and charged. My front wheel hit a big stone, and in a tenth of a second I was broadside on across the road, and had to shut off to avoid ramming the bank. These incidents are typical of the causes which lose men medals in modern reliability trials, though none of them actually befell me while riding in a competition.

DISC WHEELS ON SOLO MACHINES.

Readers' Opinions For and Against.

IN our issue of September 11th we invited readers to submit their opinions on the effect upon steering solo machines fitted with disc wheels in a wind. These opinions are by no means unanimous either in favour or otherwise, but most of our correspondents agree that steering is in some degree affected. Several writers contend that it is possible to become accustomed to the effects upon the steering. On the other hand, it is suggested that the nervous solo rider will experience some difficulty. Generally, it may be said that only high winds cause inconvenience. It is unfortunate that high winds are most common at a time when the advantages of disc wheels should be most apparent, *i.e.*, when wet weather and muddy roads are encountered.

One correspondent advances the somewhat startling theory that a side wind tends to bring a machine into the wind, and so assists in righting the balance. On the face of it this appears to be doubtful, as the greater part of the wheel is in front of the line drawn through the centre of the steering head to the ground, and therefore a side wind should tend to turn the wheel away from the line of travel. The interest lies in the fact that this reader has noticed the tendency, and this suggests that it is a case where some other agency is at work. On this point it would be interesting to have other views.

Below we give a selection of the letters received:

A New Theory.

Sir,—Three months ago I had discs fitted to my 4 h.p. Sunbeam machine by the Ace Disc Engineering Co., of Coventry, and have since done about 1,200 miles, using the machine daily, on a terrible road, for business. They add much to the good looks of the machine, and reduce the time required for cleaning by one half, for greasy hubs and spokes are next to uncleanable, and are really an eyesore.

Against the many advantages there is only one disadvantage, in my opinion, and that is the added weight of steel discs, which might tell on a very light machine; but I think it is not worth consideration on a Douglas or any machine of 3 h.p. and over.

As a trial run after having discs fitted I went from Newcastle to Keswick, *via* Alston, Penrith, and Hartside, with a very strong and gusty wind blowing from the South (consequently on my left) the whole way, doing the journey comfortably in four hours. At the start of the run at one or two corners I felt a tendency for the front wheel to turn *into* the wind, which at worst could only assist in righting the balance.

A steady side wind did not trouble me in the least, as I rode in many places for several miles with one hand off the bars for a rest. After I had covered about twenty miles I forgot all about discs and wind effects through use, and came to the conclusion that with discs fitted windy weather does not incur the least danger: it merely affects the machine in a slightly different manner from a machine without discs, and this is quickly got used to, especially when riding a heavy machine. I had never ridden a machine with discs fitted before, and must admit that, even under the adverse weather conditions, I was perfectly at ease the whole way. The return was made *via* Kirkstone Pass, etc., in the same wind.

May I remark, finally, on the excellent attention I received from the Ace Co. and the thoroughness of its work? I sent the firm three wheels to fit, and asked for them by fourteen days. I was on my way to Keswick on the 15th, and have had absolutely no trouble since fitting.

With a light sidecar fitted the wind effect is practically nil.
Sunderland. W.H.D.

Not for the Nervous Rider.

Sir,—Apropos of your request for experiences with wheel discs on motor cycles, may I mention mine?

I own a 1919 4 h.p. countershaft Triumph with an extra large engine sprocket. I have aluminium discs fitted, and have used them for four months, almost daily, on very fast, long distance runs, with spells of town work—all solo.

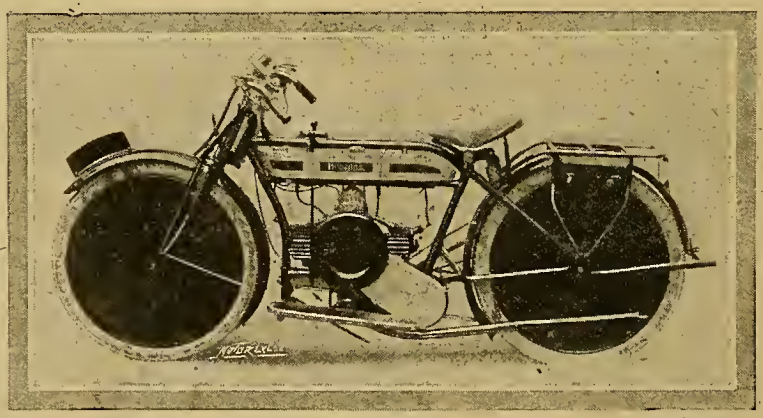
The chief points, in my opinion, are as follows:

FOR.—(1.) Ease of cleaning. (2.) Smartness and "finish." (3.) Nothing can pass between the spokes, thereby eliminating a source of accidents.

AGAINST.—(1.) With touring bars. *Dangerous* in gusty weather and high winds, especially on light machines. (2.) Difficult oiling of wheel bearings. (3.) After several months' usage, when spokes become loose, etc., the spokes, being hidden, escape the usual inspection and eventually lead to trouble.

Wide bars are a *necessity* in anything but calm weather, and one is very easily capsized by a wind coming from a side street, broadside on, unless well on the *qui vive*. A nervous rider is well advised to leave wheel discs alone.

I, myself, shall have them fitted to all my machines in future, especially passenger machines. W. MYLAM.



Disc wheels on a Douglas lightweight give the machine a very smart appearance. The discs fitted are known as the Chelsea, and are fixed by means of five studs in recesses, a speciality of Messrs. Vivian, Hardie and Lane, Ltd., of Woodstock Street, W.1, who also supplied the aluminium chain case shown.

Getting Accustomed to the Steering.

Sir,—Seeing an enquiry in *The Motor Cycle* of the 11th ult. *re* experiences of the effect of wind on wheel discs, perhaps mine would be of interest. I have covered 2,500

Disc Wheels on Solo Machines.—

miles on my 1919 4 h.p. Douglas, solo, and with discs fitted. At first the steering was rendered decidedly awkward on windy days, especially when side gusts round corners were encountered. A side wind of sufficient strength produces a marked tendency to turn the front wheel, and a head wind holds the wheel still, rendering swerving difficult. However, I have now got quite accustomed to it, and seldom notice the effect of the discs at all.

Still, judging by what others have told me who have tried my machine, I should be in no hurry to lend it on a windy day to anyone who is not used to riding solo with discs.

I may say I consider the steering of my machine excellent, and under ordinary conditions exceptionally easy.

Haywards Heath. E.K.

On a Solo Harley-Davidson.

Sir,—Respecting disc wheels on solo machines or combinations, they are certainly a vast improvement in the matter of appearance, and wheel cleaning is much simpler. I always dreaded cleaning spokes and hubs.

As regards wind affecting the steering on a machine fitted with wheel discs, it certainly does, and a machine is very awkward to steer in a strong wind. In 1915 I fitted wheel discs to my solo Harley-Davidson, and, riding one day in a storm, I found the steering so bad, especially on one or two corners, where I nearly came a cropper, that I dismounted and took the front wheel disc off, and proceeded without any further trouble. Since then I have ridden with discs only on the back wheel. That is my experience of discs on a solo machine. C. F. WALKER.

Disappointed in Results.

Sir,—Seeing an article in *The Motor Cycle* of September 11th, I should like to express my experience on the above subject. I have a 2¾ h.p. Douglas, which I use daily for riding to and from my business, which is several miles from here (Newport, Mon.), and as the winter riding gets the machine in a very dirty state, I thought I would fit a set of wheel discs to save the labour of wheel cleaning.

I consequently obtained a set of polished aluminium discs of a well-known make, and had them fitted, the result being that they affected the steering. What they would be like in the very bad and rough weather I should not like to hazard an opinion.

I was very disappointed with the result, and have since had the discs removed for safety sake. F. T. PHILLIPS.

The Experience of a D.R. in France.

Sir,—Perhaps the following facts may be of interest to you with regard to the discussion as to the advisability of fitting disc wheels.

While serving in France as a despatch rider with the R.A.F., I fitted discs to my P. and M., but found that when riding solo, if there happened to be a strong side wind blowing, it was very hard to keep a straight course. In whichever direction the wind was blowing, so it carried the machine. When it happened to be a head or following wind, I noticed no difficulty whatever in steering

When using a combination the same difficulty in steering was noticeable with a side wind, and speed was also very much affected. More so in the case of a combination than solo, as there was more wind resistance in three wheels compared with two.

The great advantage, of course, with discs is that your hubs and races are kept clean and dry, whereas, without, constant packing with grease is necessary, otherwise water and grit are bound to find their way in.

In view of the fact that the steering put such a strain on my wrists, I discarded the discs.

I have not used discs in this country, but should not think the same amount of trouble with steering would be so apparent, because our roads are sheltered by so many hedges, trees, etc., whereas French roads are completely exposed.

FRED U. MUNDY.

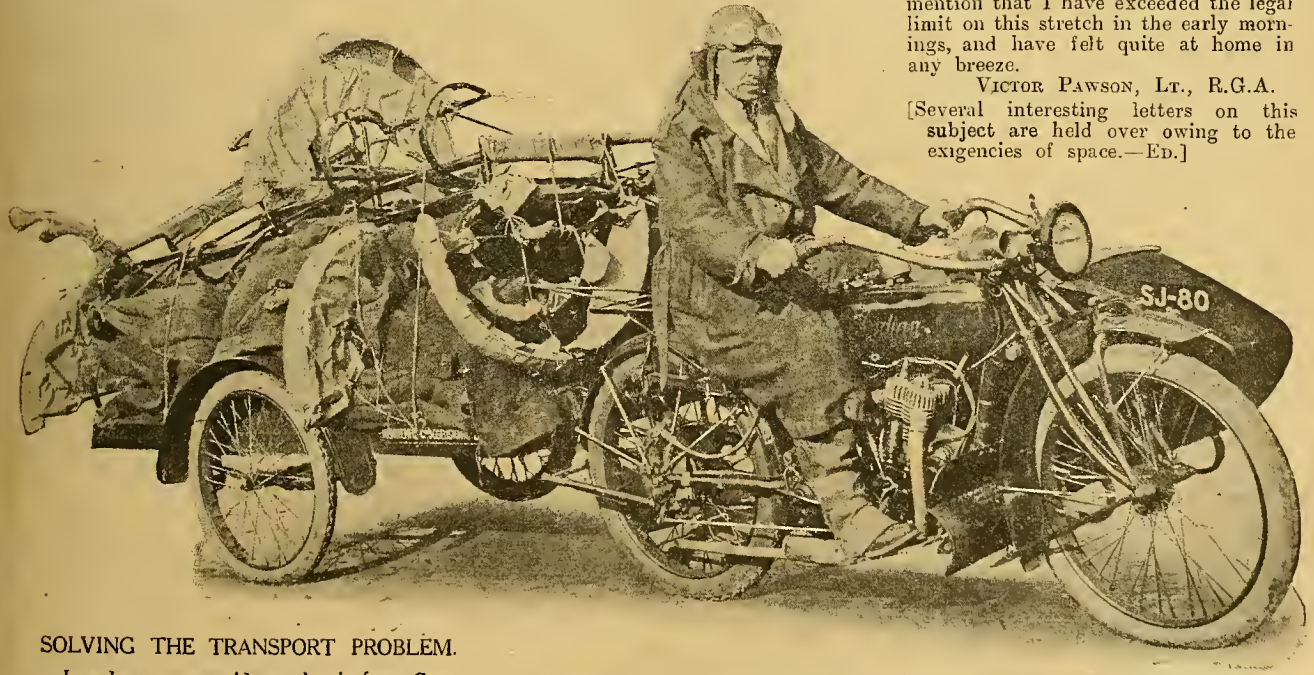
An Opinion from Malta.

Sir,—I see in a recent issue of *The Motor Cycle* that you invite any of your readers to state their experiences of disc wheels as fitted to solo mounts.

Well, shortly before leaving England, I repeatedly rode my T.T. Indian along the straight coast road from Worthing to Brighton, and, as no doubt some of your readers know, some fairly stiff breezes are encountered along there. At places the road is sheltered from the sea breeze, and it was upon coming from the sheltered part into the wind-swept portion that one noticed any difference between ordinary and disc wheels. The wind, I found, always had a tendency to cause the front wheel to assume a wobble, and it was only on my leaning my body and slightly tilting the machine into the wind that this was corrected. Of course, the wind came upon one in gusts and, personally, I have found that a stiff, steady breeze does not affect a disc-wheeled machine if the body is inclined slightly toward the wind. I may mention that I have exceeded the legal limit on this stretch in the early mornings, and have felt quite at home in any breeze.

VICTOR PAWSON, LT., R.G.A.

[Several interesting letters on this subject are held over owing to the exigencies of space.—ED.]

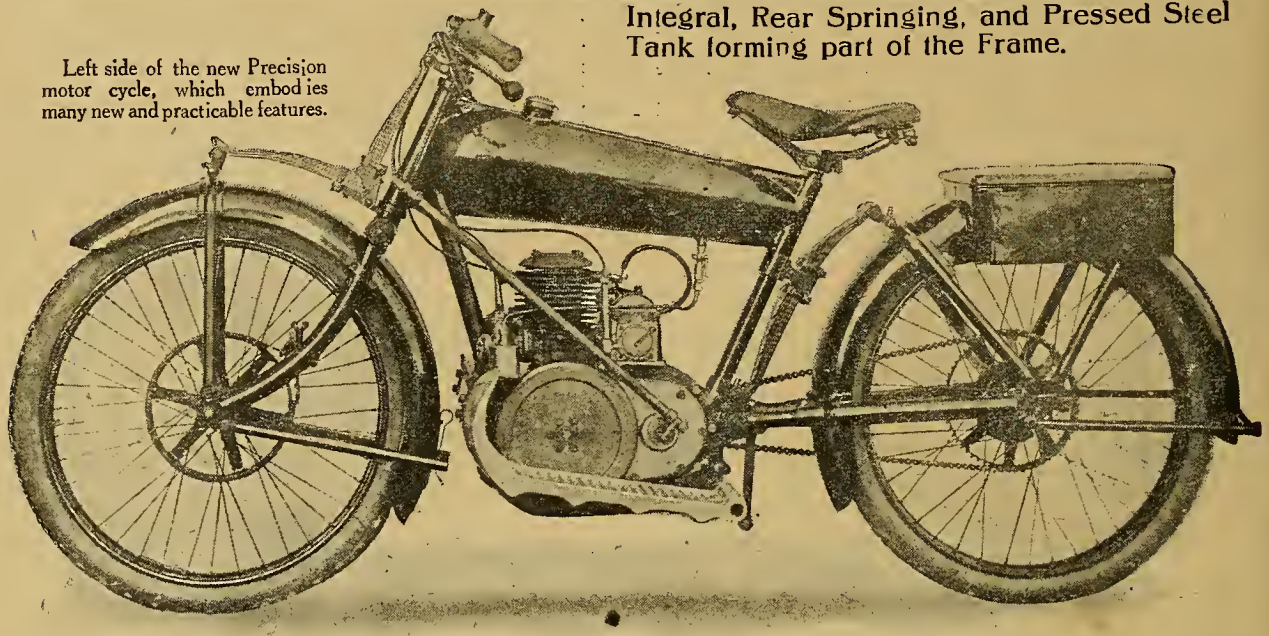


SOLVING THE TRANSPORT PROBLEM.

In order to convey sidecar chassis from Coventry to the London "Indian" depot, the above trailer was attached to a 1919 Powerplus outfit. Mr. E. Bridgeman is seen about to leave the City of Motors with a load of eight chassis, weighing altogether half a ton.

THE PRECISION MOTOR CYCLE.

An Unconventional Solo Machine, embodying 350 c.c. Two-stroke Engine, with Gear Unit Integral, Rear Springing, and Pressed Steel Tank forming part of the Frame.



Left side of the new Precision motor cycle, which embodies many new and practicable features.

ALTHOUGH we have known for some time that Messrs. F. E. Baker, Ltd., the makers of Precision engines, were experimenting with a novel design of complete motor cycle, we were not permitted to record this interesting fact until our issue of October 2nd. We may say we have watched the development of this design from its earliest stages, and are consequently in a position fully to appreciate the general idea behind the design.

Mr. F. E. Baker has often told us that he aspired to produce a motor cycle meeting his own requirements, which, he contended, would also find appreciation with a large number of potential purchasers who desired most of the comforts of a car combined with the undoubted advantages of the single track machine.

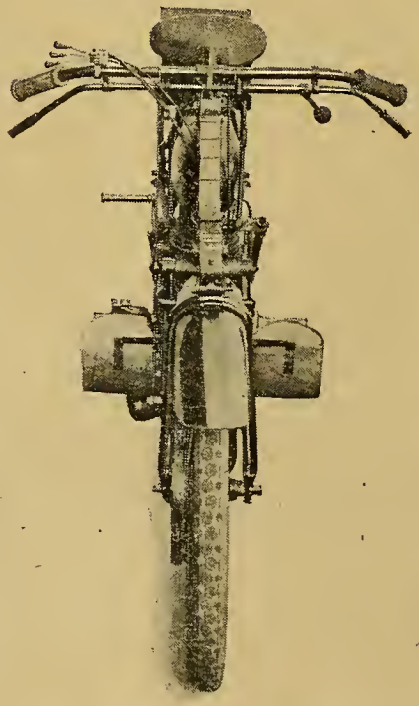
Mr. Baker has always been a motor cycle enthusiast, and for several years he has told us that, provided he could obtain the same comfort, as regards insulation from road shocks, as he had in a large car, he preferred the motor bicycle.

This first requirement meant a spring frame, which, taken in conjunction with other points considered to be essentials, was not quite so easy to design as its simplicity might imply.

Unconventionality.

Then other considerations were inspired by the road experiences of Mr. Baker and certain members of his staff on machines of all types. To produce a machine obviating the disadvantages and causes of irritation inherent with pre-war types was to be the aim. This, of course, was an engineer's ideal, but with these ideas on the one hand and manufacturing problems on the other, a very good compromise has been arrived at, which is a sound commercial proposition.

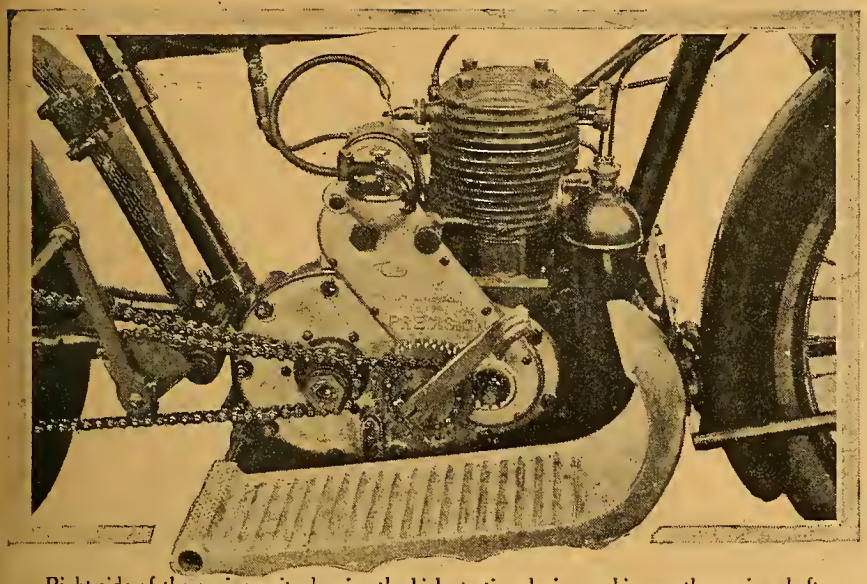
The new Precision motor cycle, while retaining the general outlines of the conventional machine, differs from it at almost every point, the main aim being to secure the essentials by the least number of units, with an entire absence of parts attached to the frame by clips. How far the designers have succeeded in this the reader will be able to judge from the illustrations and details of the machine which we are now able to give.



Front view of the machine. Note the roller lever system for operating the compression release and front brake and the short lever for changing gear

The Frame-tank Unit.

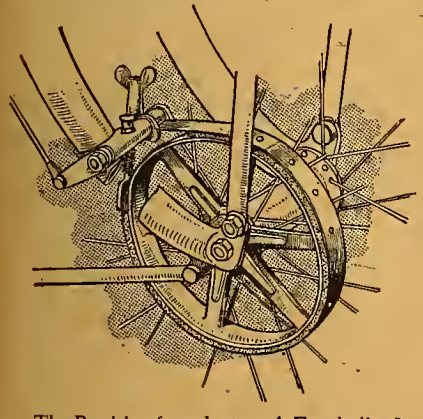
In the first place, the tank and mudguards form parts of the frame construction, and each is thus made to perform a double function. The tank is formed of two steel pressings, welded together, and takes the place of the two top girder tubes and detachable tank of the conventional machine, while the round section mudguards are made sufficiently strong to act as one of the sides in each of the triangulated wheel frames. While this is not the only instance of a tank being made integral with the frame, it is the first time steel pressings have been used in this manner. In building the frame, the head and front diagonal tubes are first welded together and then, with the seat tube, are enclosed by the two pressings forming the tank. The edges of the latter are machined before welding. For our especial benefit, Messrs. Baker had a stock frame cut through the centre in order that we might see the perfect joint so made, and we are able to give a photograph of these sections. It will be seen that such construction must be exceptionally strong without being unduly heavy. Two engine carrier lugs, another carrying the rear spring bracket, and the filler, are then brazed in their respective positions, and the main part of the frame is complete. The detail construction of the head and its bearings will be seen from the illustration on another page, the cups are pressed into position, but are renewable. The seat pillar is fixed by means of an expanding cone, similar to the almost general prac-



Right side of the engine unit, showing the kick-starting device working on the engine shaft and the pedal which operates the countershaft brake.

tice of fixing the handle-bars on first-class pedal cycles.

The present-day machine has frequently been criticised owing to cycle practice having been too slavishly followed. It is noteworthy that in the machine under review two points following cycle practice are embodied, which have either not been copied at all or copied but seldom in motor cycle construction. The first of these is the expanding cone fixing, just mentioned, and the second, the roller



The Precision front brake. A Ferodo-lined band contracts upon a 10in. drum.

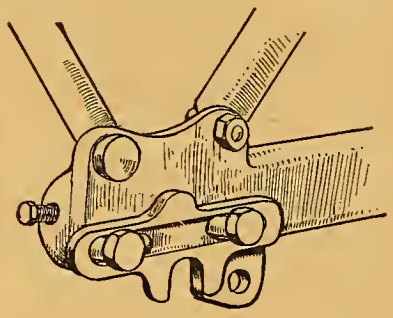
lever actuation of brake levers. These are the only points where the Precision follows previous cycle practice, and especially in the latter direction is the departure of interest, as it obviates the sharp bends usually present with cable front brake and compression release controls. Carried on a sleeve oscillating on the left hand lever, which operates the compression release, is another lever at right angles and fitted with a ball top. This actuates the gear change, and is sufficiently strong to be used for steering purposes while changing gear—a point which may be appreciated by the nervous solo rider.

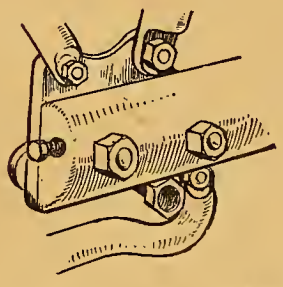
The Springing System.

Of the many springing systems reviewed in *The Motor Cycle*, the Precision design is one of the most simple. Both wheels are carried in triangulated frames, of which a portion of the mudguard in each case forms one side. The method of construction is good, and quite up to the work, perfectly rigid members being obtained. At one corner of the triangle the members are pivoted to the frame, the hub being at the second point, and the end of the spring at the third.

In the case of the front wheel springing, the wheel frame (or front fork) is pivoted to the steering tube by means of a long bracket fitted with ball bearings of the cup and cone variety. Immediately above this "joint," and forming part of the steering column, is the support for a V-shaped spring-saddle, to which the inner ends of the two-leaf springs are fixed by means of clips. This saddle is free to oscillate, and therefore gives the springs the same effect as would obtain were a single half-elliptic "cantilever" spring used as in the rear springing.

By this method the advantages of a long spring are secured in a compact form, and, in addition, the load is so distributed that heavy anchorages are not necessary. By an examination of the photograph, the reader will appreciate that, if a single longitudinal spring were used, the saddle would have to be fixed rigidly, and this would have to be extremely strong in order to withstand

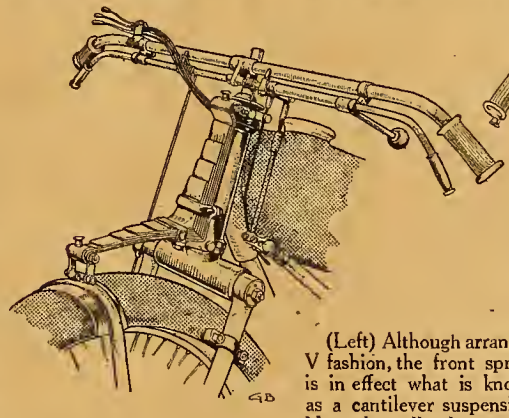


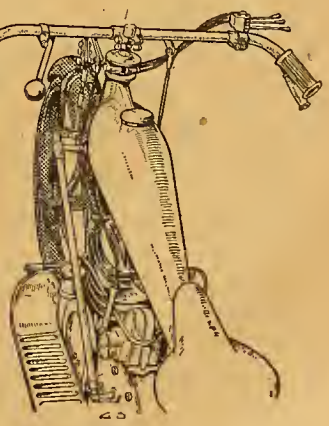


The rear fork end and sliding wheel carrier, by which the wheel may be removed without disturbing the distance between the chain sprocket centres.

the strains put upon it. The end of the two quarter-elliptic springs are shackled to the top of the steering tube and to the bridge on the mudguard, the shackle bolts being fitted with lubricators.

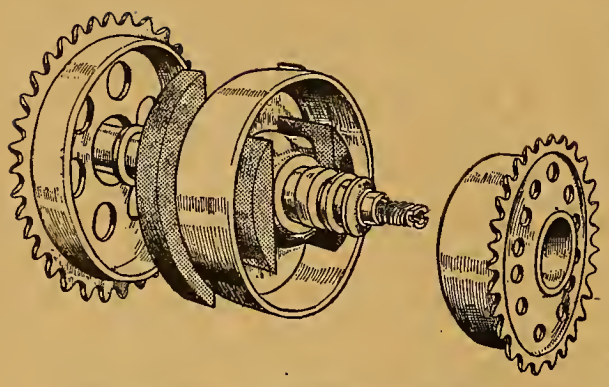
At the rear the springing is similarly arranged, but here a half-elliptic "cantilever" spring is used. The spring-saddle in this case pivots on a fixed member attached to the seat tube, and the lower and longer portion of the spring is shackled to the frame.





(Left) Although arranged V fashion, the front spring is in effect what is known as a cantilever suspension. Note the roller levers and front brake operating rod.

(Right) A rear view of the handle-bar and forward end of the pressed steel tank.



A perspective view of the gear unit, showing the segments which are expanded against the inner races of the drums connected to the two driven sprockets. The centre drum is the countershaft brake.

It will be seen that, apart from the shackles, there is only one oscillating part in each wheel frame, and as these are large bearings of ample dimensions, lateral rigidity is well provided. These bearings are capable of adjustment, but as the movement is so slight, and not to be compared in any way with the conditions prevailing in the case of a wheel hub, such adjustment should not be necessary very frequently.

The wheels fitted are 26 × 2¼in., and both may be dropped out of the fork ends in a vertical direction. The rear fork end particularly is worthy of mention, as the chain adjustment is entirely independent of the wheel fixing. This means that when the wheel is removed for any purpose it may be replaced exactly in the position it occupied before, the chain adjustment being undisturbed. This is obtained by the hub spindle being fixed in plates which slide on the fork ends, and are adjustable by draw bolts. The plates are secured by two bolts on each side, which are slackened off when chain adjustment is made.

Engine-gear Unit.

The 350 c.c. two-stroke Precision, which we described in our issue for May 29th this year, is more or less well known, and forms the main element of the power unit. This engine, it will be recalled, has a bore and stroke of 74 mm. and 81 mm. respectively, the capacity being 350 c.c., which makes it one of the largest single-cylinder two-strokes made at the present time.

In this engine there are several notable features, including automatic lubrication from a sump contained in the crank case casting, detachable head, and roller bearing big end. The new engine, however, embodies the countershaft within the base chamber, the transmission between the two being by chain on either side of the crank case proper, which is enclosed in the main casting. Chain adjustment is effected by two jockey sprockets, the bearings for which are mounted eccentrically and are accessible from the outside of the case, the flywheel having an aperture through which a special key can be inserted to adjust the sprocket.

The two chains drive sprockets which are free to revolve on ball bearings on the countershaft, which in turn carries, on the outside of the case, the small driving sprocket of the final transmission. Also fixed to the countershaft is the drum of the band brake, which takes the place of the more usual rear wheel brake. The band is of steel, anchored to a lug approximately on the centre line of the unit, and is actuated by a lever on a shaft to which, on the outside, is fixed a long pedal lever.

In principle, the gear is reminiscent of the old De Dion clutch, but is quite new in motor cycle practice, and probably unknown to the majority of motor cyclists. In principle, the gear is of the expanding clutch type, so that both gears are equally direct. The driven sprockets each carry a drum, against the inner faces of which are engaged, as desired, the clutch members revolving with the countershaft.

Expanding Clutches.

These clutches, consisting of two segments, are expanded by means of a rack running through the centre of the spindle and engaging with toothed wheels operating right and left-hand "jack screws." Provision is made for independent clutch adjustment, for which purpose the rack, which takes the form of a thread, is made in two parts, so that either may be rotated in order to give a worm and worm-wheel effect to the toothed wheels, and so open or close the clutch blocks. To prevent unintentional rotation of the rack, spring-operating plungers engage with flats on the side of the racks, and ensure the flats on each being in line, the threads of the two so mating that the joint between the two may pass either toothed wheel. The racks are held together by the actuating rod, which passes through the centre of both, balls being interposed between the nut on each end of the rod, and the outer end of each rack to form journal bearings to carry the rod and thrust bearings for the endwise movements. To effect adjustment, the parts are so proportioned that when either clutch is in operation, its rack protrudes from the spindle to allow of turning it by a suitable tool, and the amount it protrudes is an indication of the correctness of the adjustment.

The top gear of the machine at present is 4 to 1, on which ratio it is claimed that 50 m.p.h. has been attained, but probably a 5 to 1 ratio will be standardised.

As previously mentioned, the gear change lever is on the handle-bar. The actuation of this is quite simple, and merely involves slightly turning a diagonally disposed shaft extending from the centre of the countershaft to a support behind the lower ball race of the head. On the lower end is a small crank, which is connected to a toggle operating the rack engaging the worm wheels in the segment carriers.

The final transmission is by chain, which in finished production models will be protected by a guard. The difference between the respective positions of the countershaft and the pivoting point of the wheel frame is perhaps a little greater than is to be desired by the fastidious engineer, but is no more than is the case with the majority of spring frame designs, the ideal, of course, being to have the driving sprocket and the fulcrum of the wheel frame on the same centre.

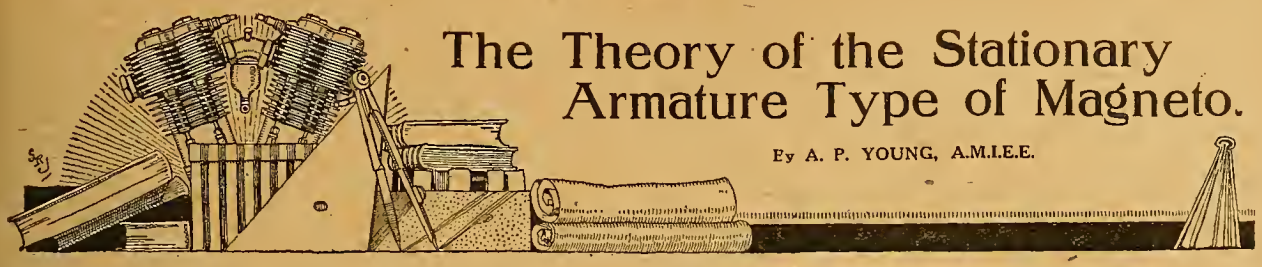
Other Notable Features.

Several other features are worthy of note, including the three lever fitting for operating the throttle, air, and magneto. For these three controls Bowden wires are used, the cables for which will be enclosed in a single tube.

Aluminium footboards of generous dimensions, a metal tool box with wooden lid integral with the rear mudguard, a Brooks B210 leaf spring saddle, and a large undershield form part of the equipment. The tank capacity is two gallons.

As regards its performance on the road, we await with interest an extended test, but from our five miles ride on it over rough and pot-holed roads we were very favourably impressed by its running and the efficiency of its springing. To those who have not ridden a spring frame mount, undoubtedly the extra comfort provided will come as a revelation and a new sensation in road transport. Probably it has only been the difficulty of providing a frame laterally rigid that has deterred many makers from abandoning the rigid frame. These difficulties appear to have been overcome in the Precision, and if, in the opinion of conservative motor cyclists, its appearance is not so graceful as perhaps it might be made, it must be remembered that designers who too closely study conventionality restrict their scope in bringing motor cycle design to finality.

For the especial benefit of *The Motor Cycle*, a frame was cut through the centre to reveal the construction. The above is an "untouched" photograph, and shows the perfect joints made by welding.



The Theory of the Stationary Armature Type of Magneto.

By A. P. YOUNG, A.M.I.E.E.

A Lucid Description of the Polar Inductor Magneto, in which the Windings do not Revolve. The Effectiveness of Laminated Pole Pieces.

IN a recent article on "The High-tension Magneto" appearing in *The Motor Cycle*, the theory of the rotating armature type of machine which is generally adopted on motor cycle engines was dealt with in a lucid and interesting manner. The main purpose of this article is to give a similar explanation of the working of the stationary armature type of magneto, to which the name polar inductor has been assigned by the writer.

A magneto with a stationary armature is no new thing, and a close study of the patent records of the past twenty years will reveal the interesting fact that in the very early days of the art, even before the familiar rotating armature machine had been perfected, the trend of magneto development (on paper, at any rate!) was in the direction of an inductor machine.

A British Pioneer.

Although the polar inductor magneto was first built commercially in America within the past few years, magnetos (of the low-tension type) were actually designed and constructed in this country some thirteen or fourteen years ago, by Dr. B. Murray, of the Albion Motor Car Co., and fitted to the engines manufactured by his company at that date. To Dr. B. Murray must go the credit of having first disclosed the basic principle (in his patent No. 14,737 of 1906) underlying the construction of the polar inductor magneto.

This form of magneto has not so far been seriously applied to motor car and motor cycle engines in this country, although during the war period it was used extensively on large multi-cylinder aeroplane engines having more than six cylinders. The B.T.H. Co. some two and a half years ago developed a magneto

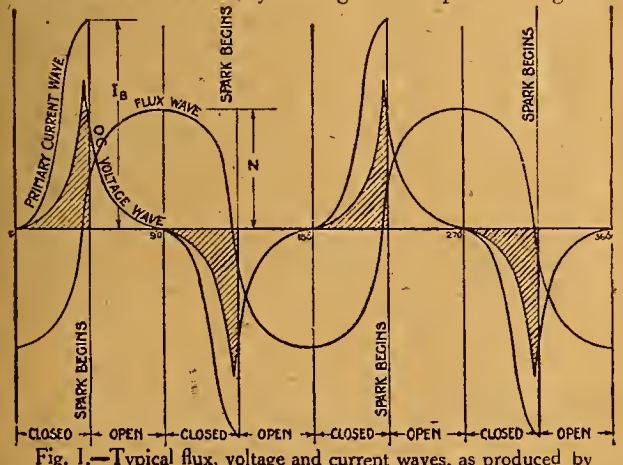


Fig. 1.—Typical flux, voltage and current waves, as produced by a high-tension magneto.

of this type, known as the type A.V., which has been standardised for use on most of the eight and twelve-cylinder aeroplane engines of British manufacture. This particular type of machine is designed to give four sparks per revolution, but the polar inductor principle is very flexible, and it is possible to build a magneto on these lines to give two sparks per revolution, corresponding to the orthodox two sparks rotating armature machine, or, on the other hand, a magneto can be designed to deliver six, eight, or even a greater number of sparks per revolution.

Every form of high-tension magneto has certain features in common, and these can be briefly classified as follows:

1. A magnet.
2. A laminated iron core carrying a primary and a secondary winding.
3. A mechanically operated contact breaker so designed that the primary winding is short circuited and open circuited at regular intervals, giving some

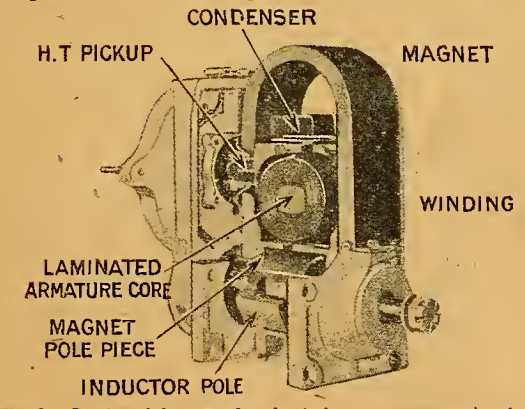


Fig. 2.—Sectioned four-spark polar inductor magneto, showing internal construction.

definite ratio between the period of short circuit and the period of open circuit.

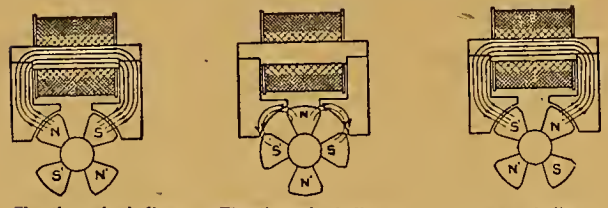
4. A condenser connected in parallel with the contacts for the purpose of wiping out arcing.
5. A high-tension distributing mechanism whereby the end of the secondary winding is connected to the particular sparking plug which will fire the charge, at the moment when the contacts separate, and the high tension spark is generated.

Basic Principles.

These features are embodied in every design of high-tension magneto, although the detailed construction of each component and their general arrangement in the form of a complete unit may be widely different. Apart from this consideration there is only one other

The Theory of the Stationary Armature Type of Magneto.—characteristic that may differ, namely, the method of generating an electric current in the closed primary circuit during the period when this winding is short circuited by the contacts. It should, of course, be understood that during this period, current gradually builds up in the primary winding as a result of the induced voltage produced by rotation, so that when the contacts are separated, a current of the order of four or five ampères is suddenly destroyed. The magnetic field associated with this current, which is interlinked with the large number of turns in the secondary winding, produces a very rapid "cutting" of the magnetic lines in suddenly collapsing, and thereby causes the voltage induced in the secondary winding to rise instantly to a very high value sufficient to initiate a spark at the electrodes of the sparking plug.

In the rotating armature magneto, the flux change in the armature core necessary to create a current in the closed primary circuit is produced by simply



Flux through windings, a maximum. Flux through windings, zero. Flux through windings, a maximum (reversed).

Fig. 3.—Flux changes in four-spark polar inductor magneto.

rotating the armature with respect to two fixed pole pieces. In the polar inductor machine, the armature core is fixed, and the flux change in it results from the rotation of a number of polar members which co-operate with fixed magnet poles on the one hand, and with the fixed laminated poles of the armature core on the other hand. For either construction the curves given in fig. 1 are typical. The flat-topped curve shows how the flux threading the armature core when the windings are open circuited is varied by rotation, thus giving us an alternating voltage in the primary winding which follows the peaky curve. The flux reaches the maximum value "N," and during the period when the primary is short circuited, the induced voltage generates a current which builds up in the manner indicated to the value "1B," this being the current broken by the contacts.

The Mechanical Details.

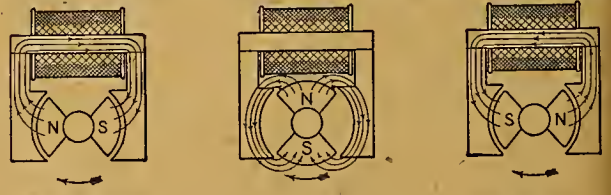
The general constructional details of a polar inductor magneto can be well understood by reference to fig. 2, which is a photograph of a B.T.H. type "AV" machine that has been sectioned. The rotating member comprises a straight-through shaft of non-magnetic nickel steel, which carries two inductors made of malleable iron. Each of these has two axial projections 180° apart, linked to a cylindrical boss which revolves with very fine clearance in the pole piece attached to one end of the magnet. Taking a sectional view of the rotor, therefore, as indicated in fig. 3, it is clear that there are four inductor poles spaced exactly 90° apart, these being alternately north and south.

In position 1, indicated in fig. 3, the flux from the north pole of the magnet flows through one of the corresponding inductor poles, across a small intervening air gap to one laminated pole of the armature core, through the armature core, back again to a south inductor pole, and thence to the south pole of the magnet. In position 2, after the rotor has revolved through 45°, the flux in the armature core is zero, whilst in position 3, corresponding to a further 45° movement, the flux in the armature core has reversed. Whenever the rotor takes up the position indicated in the middle diagram, the flux in the armature core is in process of reversing, and as this occurs four times in each revolution, there are in consequence four reversals of flux, and the design permits of the contact breaker opening and closing four times per revolution, thus enabling four high-tension sparks to be produced.

In the case of a machine designed to give two sparks per revolution, such as the type that has been developed in America for motor cycle work, there are two inductor poles only, and the laminated poles, fixed to the armature core, instead of being spaced 90° apart, are 180° apart. With this construction, the flux in the armature core reverses twice per revolution, thus enabling two sparks to be obtained, as clearly indicated in fig. 4.

Lamination of the Magnetic Circuit.

The construction of a polar inductor magneto permits of the thorough lamination of the whole of the iron circuit carrying the primary and secondary windings, and it is even possible to modify the design of the rotor so that the iron inductors can be laminated as well. The effect of thoroughly laminating the iron circuits through which the magnetic flux passes is to reduce the eddy current damping to a minimum, and in consequence the rise of the secondary voltage at "break" is particularly rapid. Ignition experts are now inclined to the opinion that one of the determining factors in the process of ignition is the rate of voltage rise in the secondary; and, other things



Flux maximum (positive). Flux reversing. Flux maximum (negative).

Fig. 4.—Flux changes in two-spark polar inductor magneto.

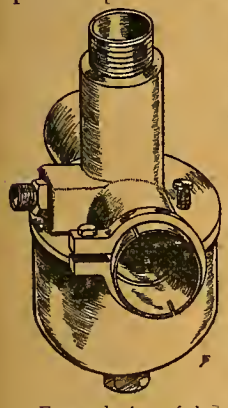
being equal, the machine that gives the most rapid voltage rise at "break," or, in other words, the steepest secondary voltage wave, will produce the best results from a purely ignition standpoint.

This feature of the polar inductor design has no doubt contributed largely to the great success that has been achieved with these machines in service on aeroplane engines. It should be pointed out, however, that in the latest designs of rotating armature magnetos now being built in this country, the solid cast-iron pole pieces, standardised by the Germans, have been replaced by laminated poles, with the result that the magnetic circuit for the flux is laminated almost as thoroughly as in an inductor machine. The electrical performance of this type of magneto has been greatly improved by this innovation that has been introduced by English designers.

The Mills Automatic Carburetter.

A One Lever Instrument with Adjustable Jet Float and Mixing Chambers Integral.

A CARBURETTER which dispenses entirely with the air lever is, if accurately designed, not only simpler in operation than the two-lever pattern, but is capable of providing approximately the correct proportion of petrol vapour and air most suitable for the engine at varying speeds. There is no doubt that the increasing number of single-lever carburetters goes to prove that this type is gradually coming into its own.

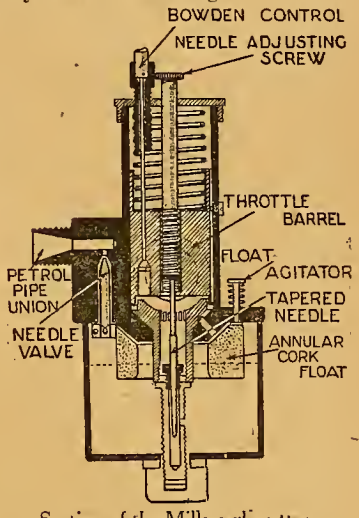


External view of the Mills carburetter showing the throttle slide removed

Simple in construction and provided with a variable jet which can be regulated whilst in the saddle, a single-lever carburetter has recently been produced by M. F. A. Mills, 19, Chalk Farm Road, Hampstead, N.W. The float chamber, located beneath the mixing chamber, considerably decreases the area usually monopolised by the conventional type of carburetter. The cork float at present employed is pivoted at one side on a small pin fixed to the body casting, which allows the float to rise and fall and at the same time withdraw a tapered needle, attached to the float lever, from a hole in the body casting connected with the petrol pipe, and consequently allow petrol to flow from the tank to the float chamber. At the base of the throttle barrel is a plug, curved in the centre to conform with the shape of the inlet pipe. Below this plug, through which five holes are drilled, the centre one to accommodate the jet needle, is attached a threaded brass tube, the lower end of which passes through a hole in the base of the float chamber and by means of a nut holds the latter in position. The hollow centre of this tube accommodates the lower end of the tapered needle, which, passing through the jet located above, permits the suction of the engine to draw a small quantity of spirit from the float chamber through a hole in the side of the jet tube, and out through the jet. The petrol is then drawn through the five holes in the base plug and, coming in contact with the air entering the mixing chamber, forms a gas which passes through the induction pipe to the cylinders. The cylindrical throttle slide is drilled and tapped in the centre, and accommodates the adjustable jet needle screw. The tapered needle is attached to the lower end of this screw, a small coil spring being placed below the screw in order to hold the needle in tension.

The tapered needle and throttle barrel showing how the needle is adjusted.

As the throttle slide is raised to admit a greater quantity of air to the cylinder, the needle is raised accordingly. The taper of the needle, however, is accurately turned, in order that a proportionately larger quantity of petrol may be liberated to mix with the air, and form the correct proportion of petrol vapour and air most suitable at various throttle positions. The Bowden wire attachment is located at one side, the nipple being inserted in a hole on the under side of the throttle slide. A return spring is placed between the slide and the milled cap screwed to the top of the throttle chamber. The tapered needle can be withdrawn from the jet with the greatest ease, by turning the milled head of the needle screw located on top of the throttle barrel, and consequently the mixture can be enriched or attenuated at any time while riding.



Section of the Mills carburetter.

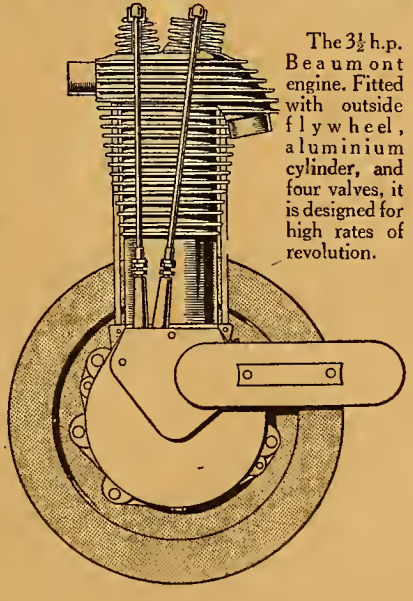
Our trial of the Mills carburetter on Mr. Mills's 4 h.p. Douglas was altogether satisfactory, notwithstanding the fact that he had an earlier pattern of vaporiser than that described here. Both acceleration and slow running were all that could be desired, while hill-climbing was highly satisfactory.

A High Speed Single Cylinder Engine.

The Beaumont Engine: Long Stroke (75 mm. × 113 mm. = 498 cc), Outside Flywheel, Aluminium Cylinder, and Four-valve Head.

THE influence of aero design is gradually extending itself into all branches of light internal combustion engineering, and many of those who came intimately in contact with aircraft engines during the war period are now crystallising their ideas in the shape of 1920 models.

Such a one is the designer of the 3½ h.p. Beaumont engine, which will shortly be incorporated in a motor cycle built by Beaumont Motors, Ltd., 78-82, Elland Road, Leeds. This engine is laid out on most modern lines with the object of obtaining the maximum speed from a unit of its capacity. An outside flywheel is employed, and the cylinder, which is fitted with a detachable head, is made of aluminium and contains a shrunk-in steel liner. The detachable head is also of aluminium, and has cast-iron valve seatings shrunk in.



The 3½ h.p. Beaumont engine. Fitted with outside flywheel, aluminium cylinder, and four valves, it is designed for high rates of revolution.

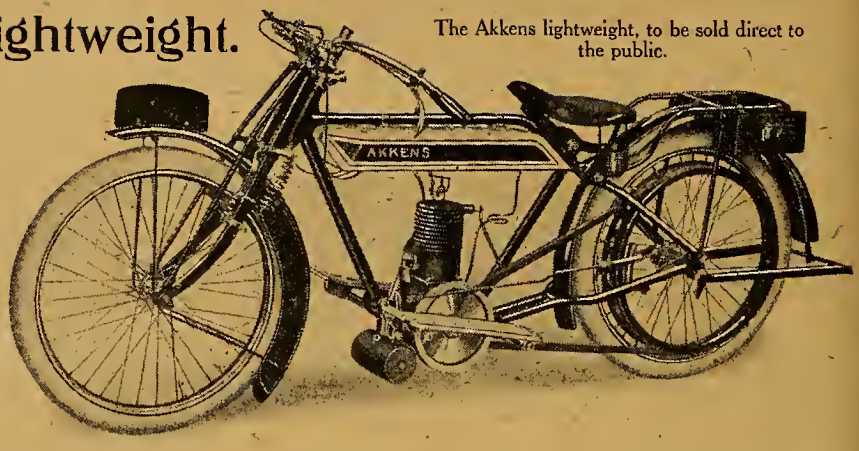
There are four valves per cylinder, all overhead, and the exhausts are inclined so as to provide the easiest possible exit for the gases. The head is interchangeable with a two-valve head, which is more suitable for ordinary road work. The use of the two-valve head necessitates the use of a cam of slightly different contour.

A decompressor is included in the timing case, and both valves are worked from the same cam. On the test bench the engine has proved itself capable of extremely high speeds, well over 5,000 r.p.m. having been attained. This result is, no doubt, due to the scientific lightness of the reciprocating parts, the connecting rod being of H section, suitably drilled, and the piston of aluminium of the Ricardo slipper type.

The engine will be built up in a light solo specification, and we look forward to its performance with great interest. The makers are also advancing well with their three-cylinder radial engine, which will shortly be incorporated in a three-speed solo lay-out of great attractiveness.

A Low-priced Lightweight.

The Akkens Two-stroke which will be Marketed Direct to the Public.



The Akkens lightweight, to be sold direct to the public.

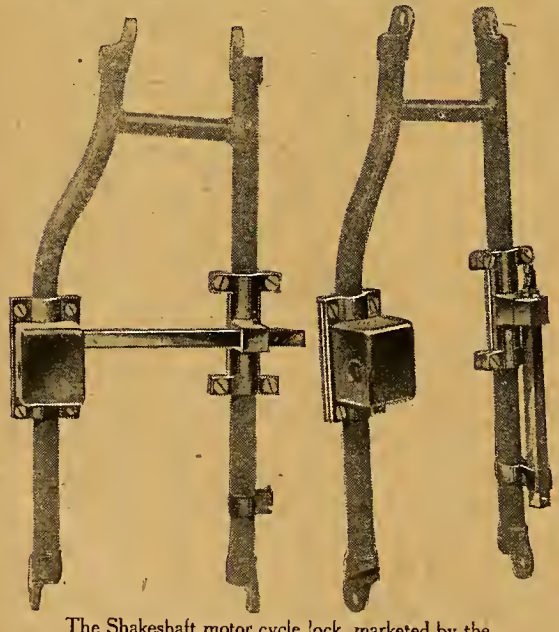
TO produce a motor cycle for sale direct to the public is perhaps a daring undertaking considering that throughout the development of the motor cycle industry the value of the "agent" as an intermediary has been recognised by the great majority of manufacturers. Notwithstanding, Messrs. Thomas and Gilbert, of Union Street, Smethwick, consider that, with manufacturing costs at present figures, there is an opening for a machine of good quality sold on the "cut price" principle direct to the user, and that there are sufficient potential buyers who prefer dealing direct to absorb their output of twenty-five motor cycles per week.

The "Akkens," as the machine is called, is built and equipped throughout in first-class style, the specifications including Druid, Brampton, or Saxon forks, Ericsson or E.I.C. magneto, Amac carburetter, Leatheries *De Luxe* saddle, Dunlop 26in. × 2in. studded tyres, Dunlop belt, and aluminium footboards. The engine is a 2¾ h.p. two-stroke having roller bearings, internal flywheels in addition to the usual external flywheel, and an adjustable pulley. The magneto is driven direct by the engine-shaft. Raised or semi-T.T. handle-bars are fitted as desired. The price has been fixed at thirty-nine guineas, at which figure undoubtedly it is a very attractive proposition.

To Foil the Motor Cycle Thief.

A New Wheel Lock capable of being fitted to any type of Motor Cycle.

SINCE the theft of motor cycles has become almost an epidemic, one is constrained to wonder why there have not appeared on the market locks to circumvent the thief. True, many readers have thought out ingenious devices to prevent a motor cycle from being stolen, but few firms have introduced a lock capable of being fitted to any existing machine without structural alterations. For this reason no doubt many readers who have lived in fear of losing their machines will be pleased to learn that a company has been formed—known as the Coventry Motor Lock Co., Ltd., with temporary offices in Queen's Road, Kenilworth—to manufacture motor locks of various types, among which two motor cycle models are included.


The Shakeshaft motor cycle lock, marketed by the Coventry Motor Lock Co.

5,000 Different Keys.

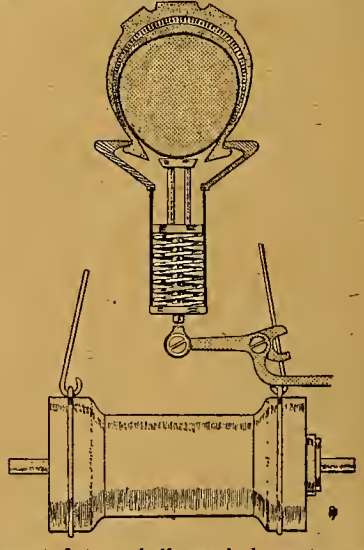
Briefly, the device consists of a Yale box lock, which is made to suit no fewer than 5,000 different keys, and a swivelling cross bar for inserting between the spokes of the wheel. The lock is fixed to the left side stay by means of four screws which are riveted into the recesses provided in the attaching member. When this is done it is utterly impossible to remove the lock without cutting it completely across on both sides, which, of course, is more than even the most enterprising thief could do in the time usually at his disposal.

Quickly Operated.

On the right side stay a swivel bar carrier is fixed in a similar manner, the bar of which is of hardened steel, having no shoulders or other abutments by which the lock could be forced. When not in use this bar falls into a position parallel to the stay, to which it is secured by a steel clip. The largest model of this lock, which is suitable for full and medium-powered machines, weighs about 3 lb., and is being marketed at £2 2s., but smaller and lighter types will shortly be available for lightweights and pedal cycles.

A PUNCTURE WARNING DEVICE.

THE invention which we illustrate is described in our French contemporary, *L'Auto*. It consists of a rod provided with a spring which abuts on the inner tube, so arranged that when the tyre is deflated it allows a short rod, connected to a bell crank lever to come into contact with a metallic disc, enabling the driver to stop the machine the very moment the tyre is deflated. It can be so adjusted that it comes into operation before deflation is complete.



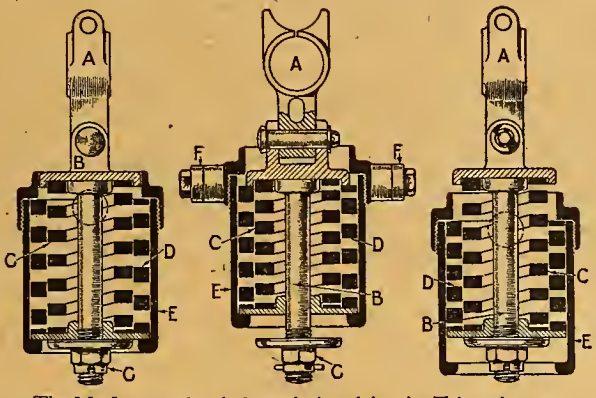
The MacLean Fork Spring System.

A Self-contained Self-damping Spring applicable to Many Standard Makes of Motor Cycles.

IN these days of rough roads, the question of springing is a most important one. Not only is good springing essential for the rider's comfort, but it saves the wear and breakage of parts, and prevents the shaking loose of nuts. Up to the present time, the MacLean fork spring has been specially adapted to Triumph and James spring forks, while an adaptation has also been manufactured for scooters.

In the form fitted to the Triumph motor bicycle, two helical springs are employed—a small diameter strong spring placed inside one of larger diameter. Both are totally enclosed, and the small spring butts up against a disc at the end of the head clip casting at one end, while at the same end the large spring butts up against the screwed cap on the spring casing. At the other end both springs rest against a large disc. Behind this disc is a washer, and behind the washer a nut, by means of which the tension of the inner spring may be adjusted so as to suit the weight the motor cycle has to carry.

In the MacLean system, which is sold by Tilston Engines, Ltd., Albion House, New Oxford Street, London, the springs are held in such a manner that they are *always* in compression, which cannot be the case when a spring is anchored at each end. The coils, moreover, are all of equal size, so that each one can do its full duty. In the case of springs with tapered ends the centre coils do the greater part of the work. In the MacLean system, however, the strong spring carries the principal load, while the large diameter spring comes into operation only when a serious pot-hole is encountered; consequently the spring system should cause the fork to be extremely sweet in action, since the large spring should act as a useful damper, effectively preventing rebound and dither, keeping the front wheel on the road, and thus saving excessive tyre wear and breakages of fork springs or mudguard stays. In the event of a broken spring, little harm can ensue, as it is unlikely that both springs will break at once, while it would not be difficult to render the fork rigid.



The MacLean spring fork, as designed for the Triumph motor cycle.

A. Head clip
B. Eye bolt hinged to head clip
C. Inner main spring
D. Light auxiliary and recoil spring.
E. Adjustable cylindrical casing
F. Fork ends (Triumph)
G. Nut for adjusting spring to suit load

Referring to the illustrations, fig. 1 shows the arrangement in the normal position. The inner spring is already slightly compressed by the weight of the machine, while the outer spring is at rest, and does not come into operation until the inner spring has moved ¼in., which is practically equal to ½in. on the front wheel.

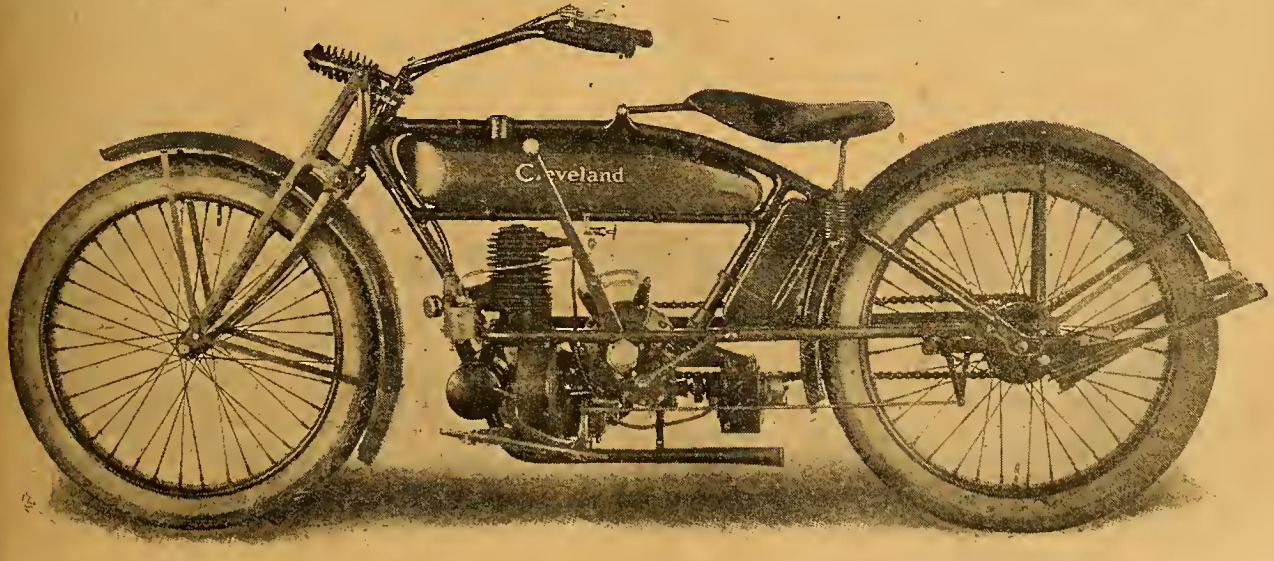
Fig. 2 shows what happens when a severe bump is struck. The inner spring is now compressed ½in. plus the original adjustment, while the outer spring has been compressed slightly.

Fig. 3 demonstrates what happens during the rebound. The inner spring returns to its normal condition, and the soft outer spring damps the recoil.

The device described can be fitted to Triumph motor bicycles in a few minutes.

The 1920 Cleveland Two-stroke.

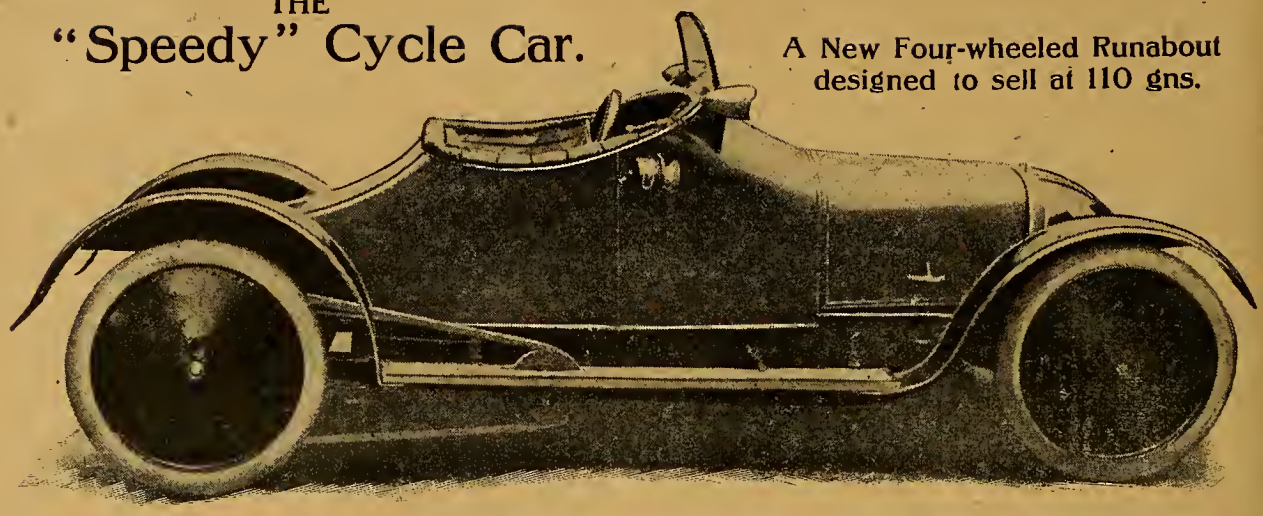
THE Cleveland two-stroke is America's leading lightweight, and, although it is not marketed in this country, our readers are more or less familiar with the appearance of the machine. For 1920 the general outlines have been altered—and improved—a so-called streamline tank being fitted, which is of two-piece steel construction. The frame has been strengthened by the addition of an extra horizontal tube, and the top tube is curved, giving a saddle position 28in. from the ground. Steel pressings are used for the front fork, which is of the Triumph type as in previous models. The power plant remains unaltered, and consists of a two-stroke engine placed across the frame, driving a two-speed gear box by shaft and worm; the magneto is shaft driven. The final transmission is by chain over sprockets of equal size.



The 1920 Cleveland, one of the few two-strokes made in America, in which the gear box is integral with the engine.

THE "Speedy" Cycle Car.

A New Four-wheeled Runabout designed to sell at 110 gns.



The "Speedy" cycle car, a newcomer in the runabout world, fitted with an 8 h.p. Chater-Lea air-cooled engine, two speeds, chain and belt transmission.

AS was to be expected when the prices of small cars rose into figures exceeding £300, a number of designers have realised that there is an opening for light four-wheelers on runabout lines. One of the latest machines in this class of vehicle will shortly appear on the market from the factory of Messrs. Pullinger and Co., Latona Works, Peckham, and will be known as the Speedy.

The weight of this new proposition is said to be 5 cwt., which, for a vehicle of this type and specification, is exceedingly light. The engine is an 8 h.p. air-cooled Chater-Lea, with its crankshaft across the frame. The primary drive to the gear box is by chain from a leather-to-metal cone clutch, which is located on the near side of the engine and connected directly to the engine-shaft. A decompressor is fitted to each cylinder with the object of dispensing entirely with the exhaust valve lifting mechanism. A single lever carburetter is supplied, and is operated, either by means of the Bowden lever in the centre of the steering wheel, or the accelerator pedal.

A Simple Specification.

Direct steering gear is employed, the steering column being clamped to a sleeve which is capable of revolving on the front cross member, thereby providing an adjustable rake. The gear box, containing two speeds forward and a reverse, is rigidly held to one of the tubular cross members. The gear change lever, operating in a gate, is situated in the centre of the floor, adjacent to which is a brake lever, sliding in a quadrant, operating a contracting band around a drum mounted on the countershaft. The foot brake, however, actuates two brake blocks on the belt rims of the rear wheels.

The countershaft, driven by chain from the gear box, consists of two separate shafts, one sliding within the other. The outer one, to which is attached the *inner* flange of the belt pulleys, rotates on two plain bearings bolted to the longitudinal chassis members. The inner one, however, which carries the *outer* flanges of the pulleys, is allowed to slide within the outer shaft by means of the longitudinal slot in which a key on the outer sleeve is fitted. The differential action of the countershaft is automatically actuated by the road wheels in turning a corner, expanding and contracting the pulleys.

Extensive premises at Clapham have recently been purchased entirely for the production of this cycle car, which will be manufactured in large numbers.

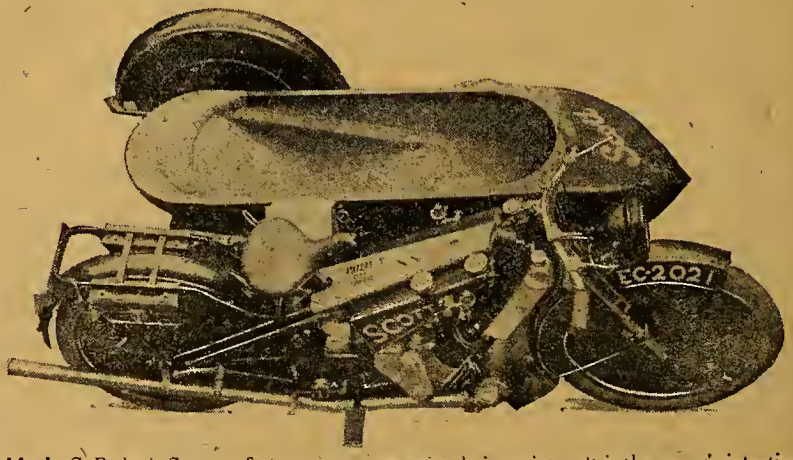
A Sporting Sidecar Outfit.

A Converted Scott with a Remodelled Engine.

KENDAL is a favourite rendezvous for North-country motor cyclists, many of whom are well acquainted with Mr. L. S. Parker, the enterprising agent at that town. Recently, when returning from a North-country trial, we paid Mr. Parker a visit, and were very much interested in his converted Scott machine, which was described fully in this paper some months ago.

A Rotary Distribution Valve.

As our illustration shows, this machine, with its low sporting sidecar, presents a most attractive and racy appearance, and could not but make a strong appeal to the younger generation of riders. It was therefore with considerable interest that we learned of there being a possibility of Mr. Parker's dreams materialising in the way of placing a similar mount of his own design and covered by his own patents on the market. Mr. Parker has



Mr. L. S. Parker's Scott outfit from an unconventional viewpoint. It is the owner's intention to market a two-cylinder rotary valve two-stroke motor cycle.

absolute faith in the two-cylinder rotary valve two-stroke, and certainly the results he has obtained from this mount, the all-round efficiency of which, both as regards running and fuel consumption, is exceedingly satisfactory, warrant his belief.

The rotary valve employed in this remodelled engine has stood prolonged tests without undue wear, its success being due perhaps to the lubricating system, which consists of drip feed into the induction pipe—attaining the same end as petroil without its objectionable features.

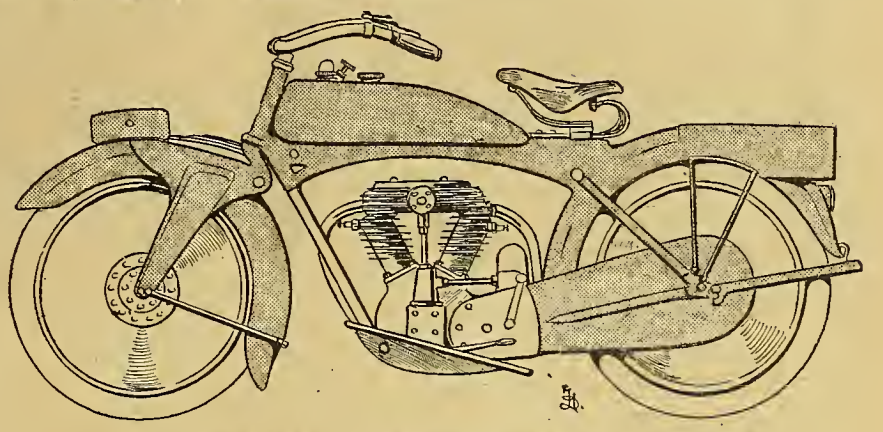
MOTOR CYCLES AT THE PARIS SHOW.

Notable Improvements in Design.

Up-to-date Machines exhibiting Great Originality introduced by New Firms.

Rear Springing Systems Common.

FOR some years past the motor cycling community of this country has shown but a lukewarm interest in the French motor cycle productions. Though our *confrères* across the Channel have often proved that they can produce excellent racing engines, they have, generally speaking, failed to produce complete motor cycles of outstanding merit. This promises to be altered now, and to those who have an opportunity of visiting the exhibition in the Grand Palais, which closes on the 19th inst., the enormous improvement in French motor cycle design must come as a considerable, though welcome, surprise. It is true that there are not a great many exhibitors, and that some of the most interesting machines are not attractive to the British eye. Yet such is the striking originality of the designs that our manufacturers would do well closely to observe the trend of French thought. Several of the 1920 models show a combination of the best points of British and American machines, with an admixture of truly French ingenuity, which marks a milestone in the history of Continental motor cycle manufacture. After half-hearted measures, the French industry is undoubtedly at last tackling seriously the problem of catering for the enormous potential market, and although British machines are still the most common on the streets of Paris, a change is more than likely to be effected in the immediate future.



The Louis Clément, one of the most advanced designs shown at the Paris Salon.

Clean Design.

Three-wheelers are attracting some attention, and four designs of pedal cycle attachments and one scooter are displayed. In the main, however, real lightweights seem to be disappearing, and giving place to medium or heavyweight machines, capable of hauling a sidecar with ease and comfort.

Perhaps the most noticeable feature to students of French motor cycle design is the absence of loose control rods and badly-fitted Bowden cables. The change is so complete that quite a large proportion of manufacturers have adopted twist-grip control. A further noticeable feature is that specially neat fixings for tool bags, speedometers, and other extraneous fittings are the rule rather than the exception. A stand-to-stand inspection reveals so many points of minor interest that only the more salient features are dealt with in the following review of the motor cycle exhibits in the Salon, the first important after-the-war show, and, incidentally, the first European exhibition for six years.

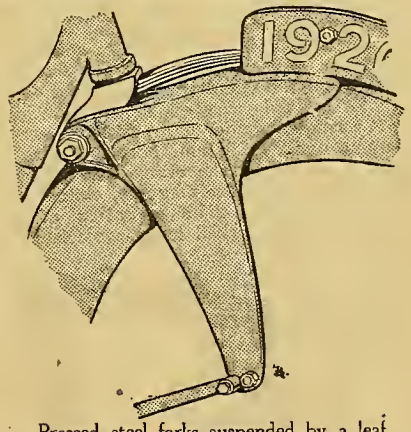
Louis Clement.

This machine, which is one of the most original motor cycles in the show, must not be confused with the well-known products of Clément Frères, who have unfortunately decided to retire from the motor cycle trade.

The whole of the Louis Clément motor cycle is extremely novel, and shows a careful study of the more advanced section of British thought combined with excellent design and ingenious construction.

A V type twin-cylinder engine having a bore and stroke of 62×90 mm. respectively is formed as a unit with a three-speed gear box of the sliding type. The clutch and front chain are entirely enclosed in the crank case casting, and the gear-driven magneto is mounted on the top of the gear box.

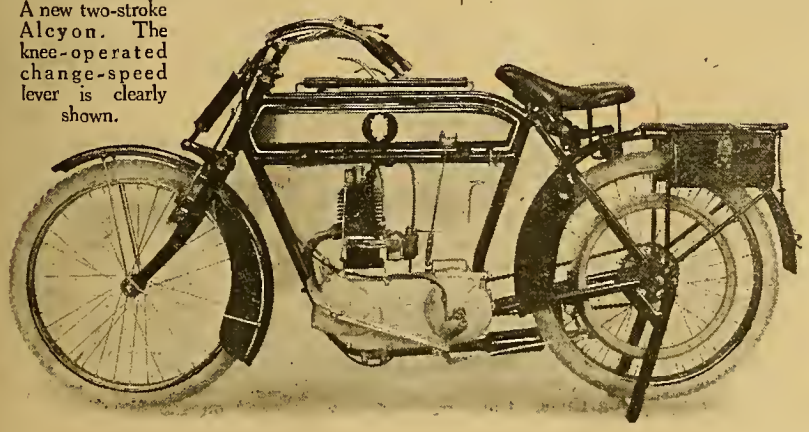
At first sight it would appear that the cylinders are joined by a common combustion space, but in reality the well-ribbed casting which connects the detachable cylinder heads forms a cover for the enclosed overhead valve gear and camshaft. The camshaft lies across the frame and vertically above the crankshaft. It is driven from the crankshaft by a vertical shaft and suitable bevels, the overhead valves being operated therefrom by rockers.



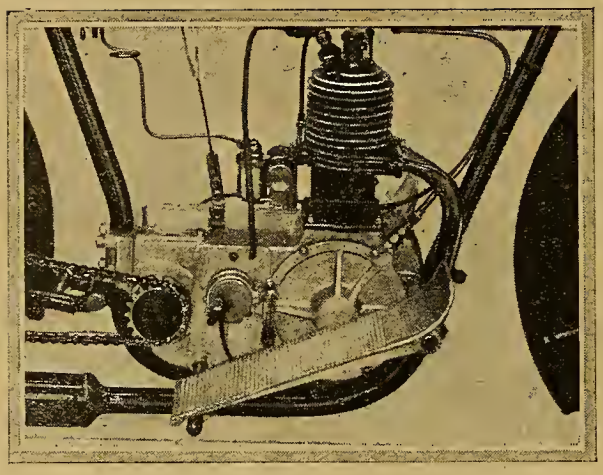
Pressed steel forks suspended by a leaf spring are part of the equipment of the Louis Clément.

The final drive from gear box to rear wheel is by means of a chain fitted with a shock absorber, and all wheels, which are of the disc type, are interchangeable, and fitted with internal expanding brakes. At present the engine is lubricated by a sight-feed drip, but it is intended to adopt a mechanical oil pump.

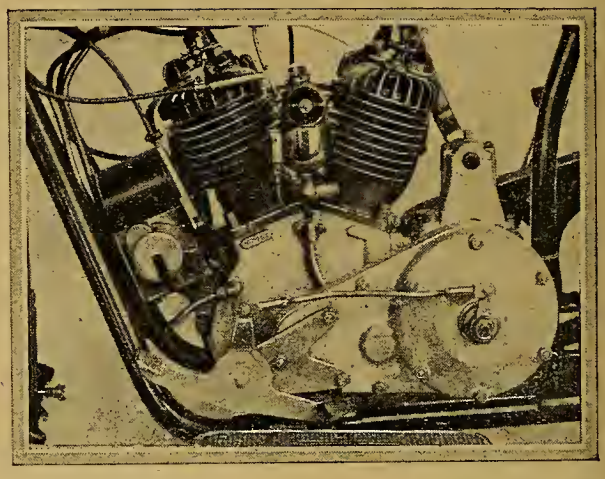
The frame is constructed partly of tube and partly of steel pressings. Pressed steel forks, whose motion is controlled by



A new two-stroke Alcyon. The knee-operated change-speed lever is clearly shown.



The combined engine and gear box of the Alcyon two-stroke. Note the magneto contact-breaker.



A view of the power unit of the new 4 h.p. Indian "Scout" model.

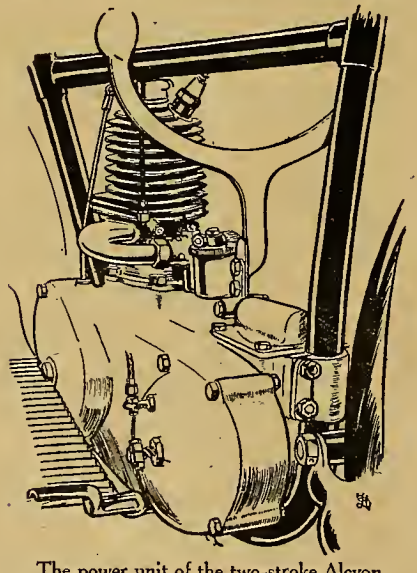
a leaf spring, are fitted to the steering head, which is solid with the main frame pressing. On this pressing, which extends rearwards to form the rear mudguard, saddle stay, and tool box, rests the tank and the saddle, the latter being mounted on three leaf springs. Aluminium footboards are extended to form a very complete undershield and a speedometer is neatly let into the tank.

Alcyon.

The Alcyon is one of the best known makes of French motor cycle, and the firm staged a small single and a twin of more or less orthodox design. But the feature of the stand was undoubtedly the Ballot-engined two-stroke. This machine has a single-cylinder three-port two-stroke engine of 75 × 80 mm. bore and stroke. An extension of the crank case encloses the silent chain, the magneto, clutch, and two-speed gear. The operation of the gears is by a forked lever projecting on either side of the tank, so that the rider can effect a change of ratio by the pressure of his knees. A hand control is provided for the clutch, and the magneto, which lies between the engine and gear box, is driven by the primary transmission chain, and, as mentioned above, it is entirely enclosed, except for the contact breaker, which projects through one side of the crank and gear box housing.

A feature of this very ingenious unit is that the right side footboard acts as a kick starter. This footplate is hinged at the front, and when depressed it causes the engine to rotate, and simultaneously brings the decompressor into action at the necessary period.

Final transmission is by roller chain, and, a loop frame being adopted, the machine has a very neat appearance. In addition to these models, a twin-cylinder four-stroke combined with two-speed gear box was to have been shown, but had not arrived at the time of our visit.



The power unit of the two-stroke Alcyon, showing the unusual type of change speed lever.

Gratieux.

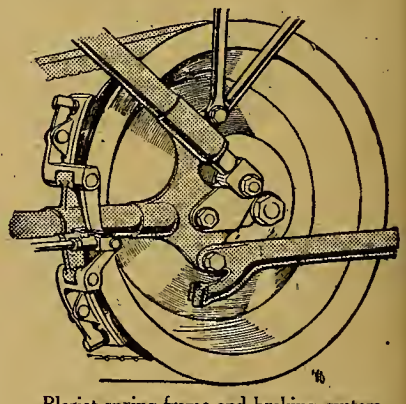
The 2¼ h.p. Gratieux two-stroke was described in our issue of the 9th inst. Three of these little machines are displayed.

Bleriot.

Quite one of the most important features of the Show is the fact that the well-known aircraft firm of L. Blériot have decided to enter the motor cycle market. Their production is well worthy of its originators, and though some may cavil at the type of engine selected, and the somewhat "stumpy" appearance of the complete motor cycle, there can be no two opinions as to the ingenuity of the design, or the excellence of the construction. The engine is a vertical side by side twin, having a bore of 60 mm. and stroke of 88 mm. (499 c.c.), having both connecting rods attached to a common crank pin.

The two cylinders of the engine are mounted close together, the exhaust valve being set in front and the inlet behind, both being of exceptional size. The valve springs are neatly enclosed by split covers, held together by spring rings. Combined with the motor is a two-speed gear box, having both trains of gears in constant mesh, a selective clutch mechanism being employed to determine the ratio. The change is normally carried out by means of a lever, but when the high gear clutch is in use a pedal provides an alternative method of declutching.

Lubrication is to a large degree automatic, a considerable quantity of oil being carried in the engine base. This oil is splashed to all working parts, including the clutch box, draining back to the base, and replenished when necessary through a sight feed drip. The final drive is by belt running over a very large front pulley.



Bleriot spring frame and braking system. Disc wheels form part of the standard equipment.

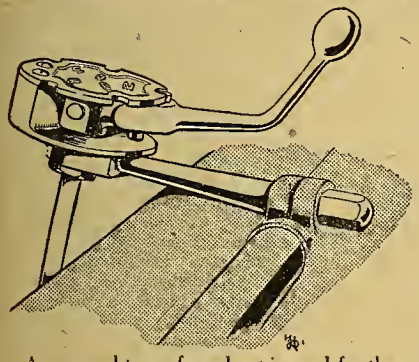
The frame is a sound piece of work, suspended in front by coil springs through a trailing link action, and the machine can be supplied with or without a spring frame. This springing is so neatly arranged as to be almost imperceptible, all springs being enclosed in the rear down tubes, and the necessary link action occupies but a small space. Both disc wheels are shod with 650 × 65 mm. tyres, and the rear mudguard is extended over the top of the belt rim.

Duplex tanks conceal the tank rails, and are joined on the lower sides by a combined tap and priming device.

As is the rule on French motor cycles, both brakes act on the belt rim, one above and the other below the chain stay, and the actuation is controlled by twin pedals placed side by side, so that either one or both brakes can be applied as desired. A refinement which will be appreciated by many is that the angle of the handlebars is easily adjustable. Twist-grip controls are installed, and a special compartment for tools is arranged in the tank.

Motosacoche.

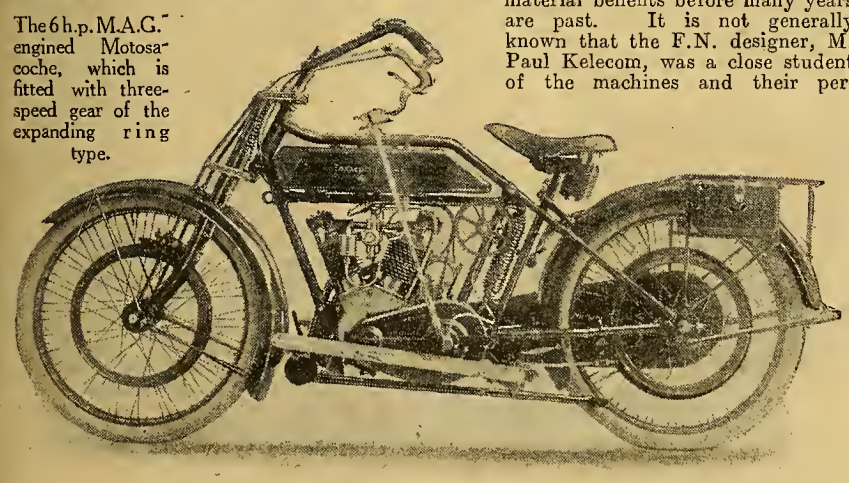
Our readers need no introduction to the Motosacoche either as regards its leading features or the excellence of its workmanship. There are, however, some interesting details incorporated in the new models, the chief of which lies in the new three-speed gear. This gear is similar to the Enfield two-speed in general layout; there are, however, three primary chain drives and three expanding clutches, the adjustment for each of which is independent and easily accessible. Another important feature is the springing system, which is arranged somewhat on the lines of the Bat and insulates the rider only, the saddle tube and footrests being supported by a large tension spring placed behind the down tube. All wheels are



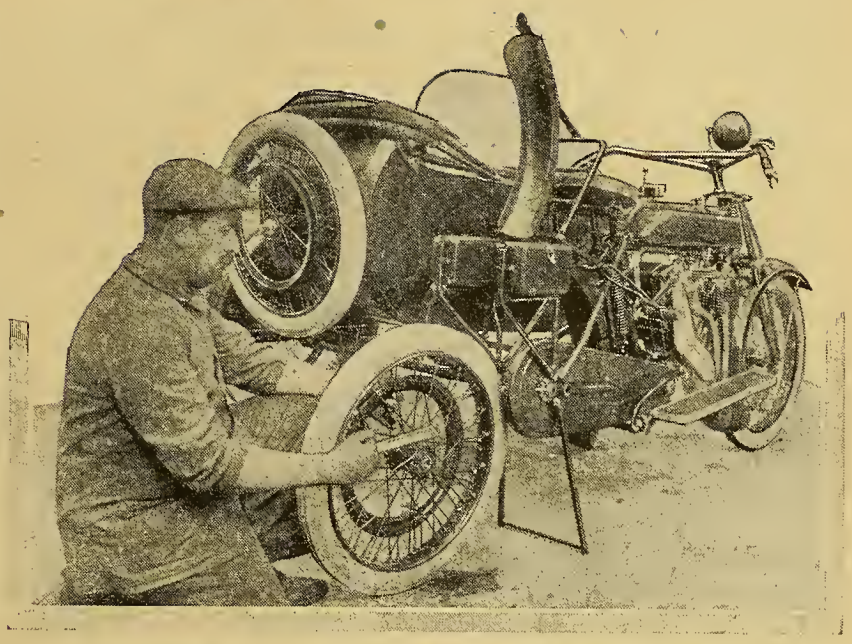
An unusual type of quadrant is used for the three-speed gear of the new Motosacoche.

now detachable and interchangeable, and fitted with special dummy belt rims in which both front and rear wheel brakes act. 4 h.p. and 8 h.p. models are shown, the former being a twin of 64×77 mm., and the latter a twin of 82×95 mm. All models are, of course, fitted with the well-known M.A.G. engine, which has undergone practically no alteration.

The khaki finish, combined with first-class fittings and entirely armoured tool-bags, gives the machine a very pleasing and clean appearance.



The 6 h.p. M.A.G. engined Motosacoche, which is fitted with three-speed gear of the expanding ring type.



The rear wheel of the 8 h.p. Motosacoche is quickly detachable. Note the neat tool-boxes.

F.N.

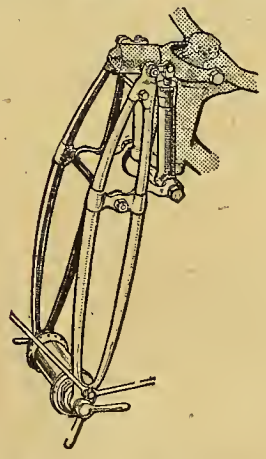
Everyone interested in the motor cycle industry must be glad to see an exhibit by the Fabrique Nationale, whose Liège factory is now emerging successfully from a most trying war-time experience. Both the 7 h.p. four-cylinder and 2½ h.p. single-cylinder models were on view at the Salon—and we have it on excellent authority that a revised edition of the four-cylinder machine will make its appearance before long. This firm has always been associated with the shaft and bevel transmission, in which respect it has suffered the usual lot of pioneers, but will undoubtedly reap material benefits before many years are past. It is not generally known that the F.N. designer, M. Paul Kelecom, was a close student of the machines and their performances in the A.C.U. Six Days Trials at Llandrindod, and the result is bound to be reflected in future F.N. designs.

Yvel.

Single-cylinder two-strokes, built almost entirely of British parts, form the attraction of this stand. A Villiers engine and Albion gear box are installed in an orthodox frame.

G.L.

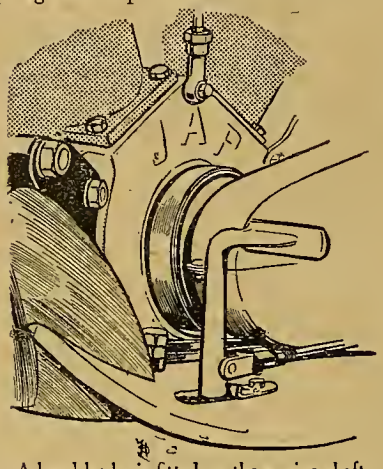
A most attractive exhibit was staged by the G.L. Both motor cycles and sidecars are beautifully finished. The machine was described fully in our issue



The G.L. front forks, which have a double movement.

for August 21st, and put up a good performance in the recent Six Days Trials in Wales. It will be remembered that the salient features are 4-5 h.p. twin J.A.P. or M.A.G. engines, Sturmey-

Motor Cycles at the Paris Show.—
Archer gear, all-chain drive, engine-shaft brake, and well designed spring fork and spring saddle pillar.



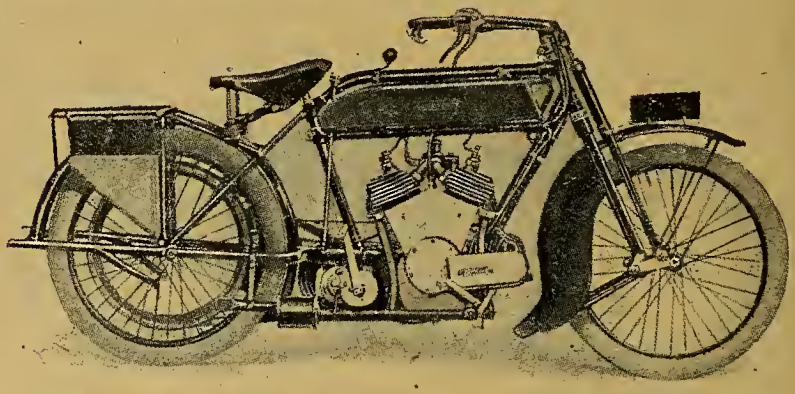
A band brake is fitted on the engine-shaft of G.L. machines.

Louis Janoir.

A large horizontally-opposed twin (85 × 85 mm.) forms the power plant of this very unorthodox vehicle. A disc clutch transmits the power to a three-speed gear box bolted to the frame just below the saddle (or front saddle, since the machine is designed for tandem use if desired). Final transmission is by roller chain, a sprocket for the speedometer drive being held in engagement with the driving side. Two internal expanding brakes are fitted one on either side of the rear wheel, and the wheels are quickly detachable and fitted with 750 × 85 mm. tyres. A very stoutly constructed tubular frame is suspended in front by powerful spring forks and at the rear by cantilever springs. Large detachable boxes for luggage are fitted on either side of the rear wheel, and very complete leg shields protect the rider from mud. Both crank and gear shafts are mounted on ball bearings, and the lubrication is effected under pressure by a gear pump.

Peugeot.

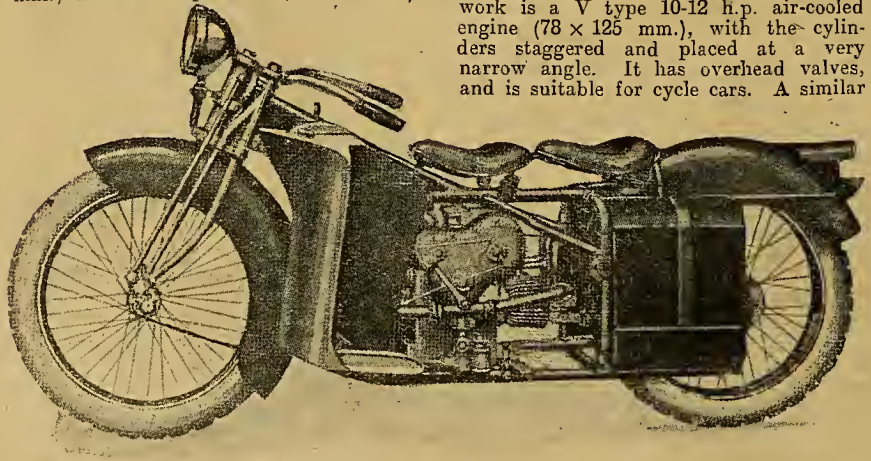
Two specimens of Peugeot motor cycles are shown, viz., a 3½ h.p. twin (56 × 70 mm.) and a 6 h.p. twin (70×96 mm.). Both machines are similar in layout, being fitted with primary chain drive, three-speed countershaft gear box, and final belt transmission. The valves are placed side by side and protected by a metal shield. Sidecar lugs are built integral with the frame of the 6 h.p. model, and the frame is somewhat unusual in that, though it is constructed on standard lines with a dropped top tube, the front is considerably higher than the rear. Both brakes act on the belt rim, and 650×65 mm. tyres are fitted. Armoured tool bags, adjustable foot rests, and a spring fork having single tubes and an enclosed spring are items of interest.



The 6 h.p. Peugeot, an exhibit conforming in general appearance to British design. A three-speed gear is fitted, and chain-cum-belt transmission.

Anzani Engines.

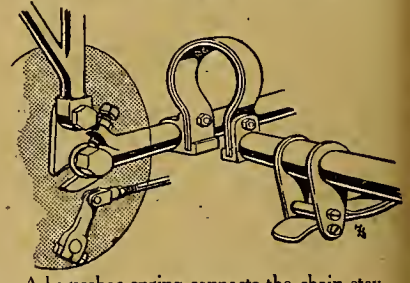
In addition to complete motor cycles several engine makers exhibit a goodly display of engines. No greater variety can be found than that on the stand of A. Anzani. They are beautifully finished, but in these and other engines we noticed an absence of adjustable tappets. The smallest Anzani engine shown is the 2-3 h.p. 75 × 80 mm., a single-cylinder, with a gear-driven magneto set at an angle. Another single-cylinder is the 3-4 h.p., 85 × 87 mm., fitted with a mechanical oil pump and crank case sump. A twin-cylinder of the same dimensions is made, and has the magneto placed in front, as on the Morgan-Jap. A particularly interesting example of Signor Anzani's work is a V type 10-12 h.p. air-cooled engine (78 × 125 mm.), with the cylinders staggered and placed at a very narrow angle. It has overhead valves, and is suitable for cycle cars. A similar engine of 12-16 h.p. (105 × 120 mm.) is also shown. The exhibit also contains several water-cooled models, both single and twin-cylinder. One of the most attractive engines on the stand is the side by side twin, the cylinders of which are cast in a pair, with an air space between. The dimensions are 60 × 90 mm. The magneto is placed at the rear, and the two-speed sliding gear is in the crank case. This is one of the few Anzani engines provided with adjustable tappets. A noticeable feature of most French motor cycle engines is the small diameter of the valve springs.



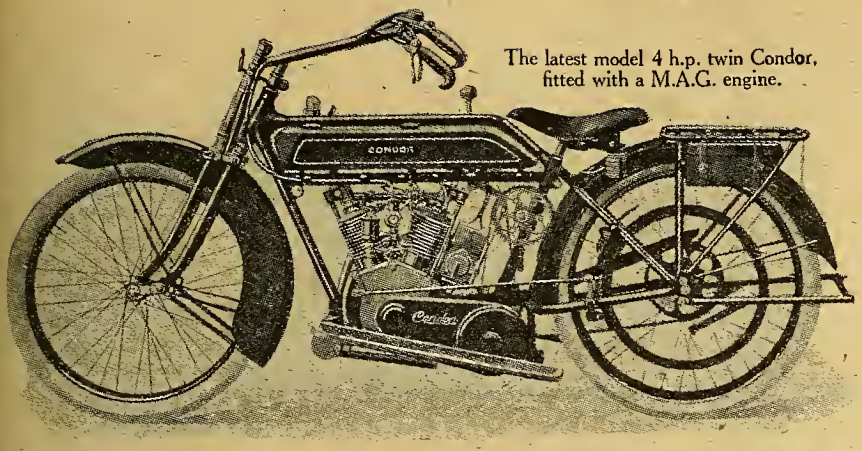
The 8 h.p. Janoir flat twin, designed for tandem use. Note the ample protection afforded the rider, and the large detachable luggage boxes.

A.B.C.

As already announced in *The Motor Cycle*, the A.B.C. is being manufactured in France by the Gnôme and Le Rhône Cie. The differences between the French and English machines are in detail only. Briefly, these differences lie in the fitting of a front stand, a new kick starter, stiffer springing, a Zenith carburetter, and a system of oiling in which the flow of oil from the tank to the pump is controlled. The novelty on this stand consisted of the new French sidecar constructed specially for the machine. It has a chassis composed of channel steel side members and tubular cross-members, rigidly attached to the frame of the motor cycle. The axle, however, is suspended on long leaf springs, a radius rod being fitted on the outer side. In addition, the axle is attached to the chain stay by means of a stiff leaf spring in the shape of a horse shoe, which is designed to give just sufficient flexibility to save the frame from undue strain. A comfortable sporting body is fitted to this smart outfit.



A horseshoe spring connects the chain-stay to the axle of French A.B.C. sidecar.



The latest model 4 h.p. twin Condor, fitted with a M.A.G. engine.

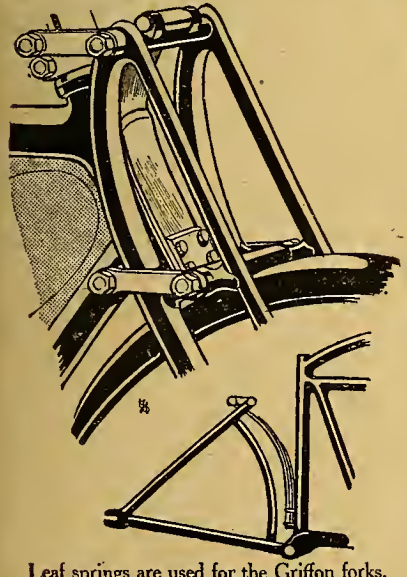
Condor.

Both single and twin-cylinder models are shown fitted with M.A.G. engines. For the purposes of description, the most fully equipped motor cycle will be used.

A primary chain drive with engine shaft shock absorber transmits power to an external band clutch, and a constant mesh two-speed gear, the control of which ensures clutch withdrawal when a change of ratio is made. The final drive is by belt, and both brakes act on the belt rim. Handle engine starting is employed, and the most striking feature of the frame is the use of double tubes wherever possible. A spring fork of the single or non-girder type insulates the front portion of the machine, and a combined spring saddle pillar and footboards may be obtained as an extra. It is interesting to note that the final drive leaves the gear box on the right hand side, and that the rear mudguard and carrier are quickly detachable from the back stays.

Griffon.

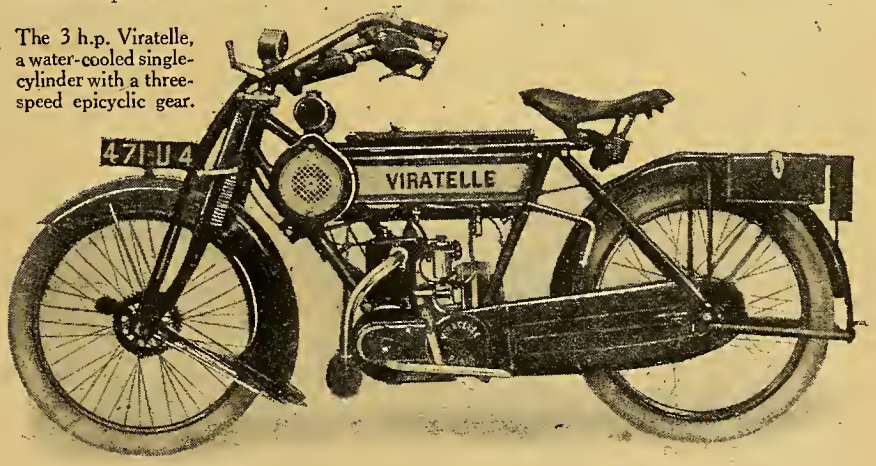
A 3 h.p. twin two-speed, with chain and belt drive, a 3½ h.p. single (ZL engine), single geared, and a 6 h.p. twin (Anzani engine), with Sturmey-Archer gear, comprise the models displayed on the Griffon stand.



Leaf springs are used for the Griffon forks. Inset, a diagram of the rear springing.

The 6 h.p. machine is the most interesting, having a very neat spring frame and forks. The rear part of the frame is pivoted behind the gear box, and the shocks are taken by a long leaf spring anchored to the base of the saddle tube. The rear portion of the frame is stiffened by an auxiliary down tube, on the lines of the new Clyno. A fork similar to the Druid is employed, but its action is controlled by a leaf spring lying parallel to the head and curved over at the top.

Staggered side by side valves are a feature of the Anzani engine fitted to this machine, the motor being a commendable piece of work.



The 3 h.p. Viratelle, a water-cooled single-cylinder with a three-speed epicyclic gear.

Viratelle.

A solitary example of water-cooling for motor cycles was the 3 h.p. Viratelle, an interesting machine having a single-cylinder engine with enclosed side by side valves behind the cylinder. The engine forms a unit with a very simple and ingenious three-speed epicyclic gear. This gear is the outcome of years of road experience, and runs on ball bearings throughout. A circular radiator is arranged in front of the tank, and inside the two halves of which it is composed lies a fan driven from the engine by a long belt.

A similar machine having two side-by-side cylinders is also manufactured, and drawings of a simple leaf spring fork were displayed. Combined spring footrests and saddle pillar may be fitted if desired.

Motosolo.

A very neat little two-stroke is shown under the above name. The engine is of the three-port type, but, contrary to usual practice it has the inlet and exhaust located at the rear of the cylinder. A chain-cum-belt drive is employed, a two-speed gear box being fitted to the bottom bracket. The frame has a sloping top tube, and Druid forks, with Terry links, are used.

Bianchi.

The new Bianchi described in our last issue was shown for the first time.

Moto Reve.

No very startling innovations were to be seen on this stand, but it was a pleasure once more to see a continental motor cycle which at one time obtained considerable popularity in this country. A small twin-cylinder machine with overhead inlet valves and a single with both valves in the head were staged. We noticed also a neat little engine shaft clutch.

Cyclotracteur.

Cycle attachments appear to be attracting the attention of French designers. The Cyclotracteur is a neat little four-stroke engine (50 × 55 mm.) with automatic pressure lubrication. The motor is carried by special front forks, and drives by friction on to the front tyre. A clutch is obtained by moving the friction wheel away from the tyre in a lateral direction.

Motor Fly.

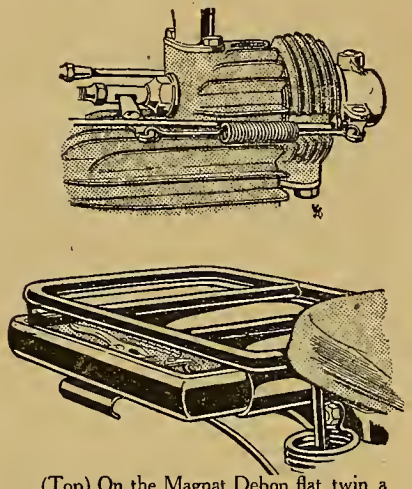
Another ingenious cycle attachment takes the form of a small inverted two-stroke, which drives by friction on to a fabric-faced drum on the rear wheel. This wheel is specially constructed, and consists of a disc dished back to one side of the wheel so as partially to enclose and protect the engine.

Rene Gillet.

The chief features of the production of this well-known firm are the very clean and well designed twin-cylinder engine and the two-speed epicyclic gear housed in a circular bottom bracket casting. Beyond these points the machine follows more or less conventional lines, and presents few novel features, but appears to be well constructed throughout. The gears are operated by pedal.

Magnat Debon.

A flat twin engine embodying several novel features is carried in a cradle attached to an equally unusual frame. In the sump of the engine is a simple two-speed gear, and a cone clutch is mounted externally, the final drive being by belt. Opposed valves are employed, the exhaust being overhead, and a single tension spring working through rockers



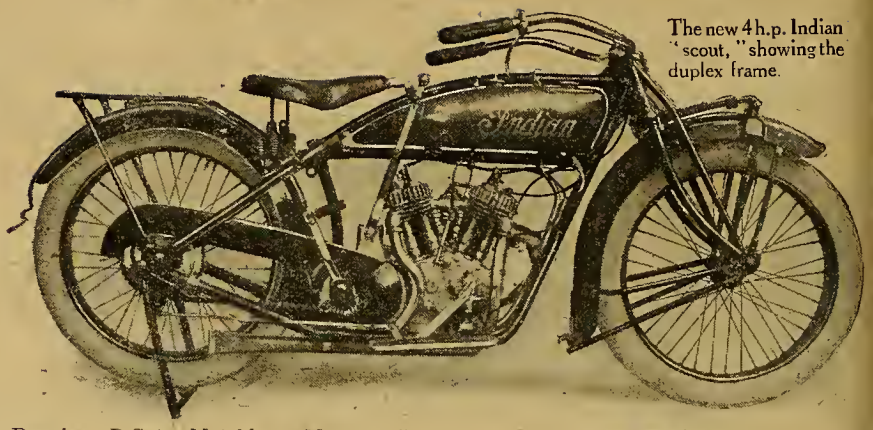
(Top) On the Magnat Debon flat twin a single tension spring returns both valves to their seatings. Below is shown the tool drawer under the carrier.

is utilised to return both inlet and exhaust valves. Mechanical lubrication is used.

In addition to spring forks both saddle-pillar and rear portion of the frame are sprung, and all springs are totally enclosed. An extremely neat metal tool drawer is fitted directly below the carrier and contains a very complete outfit of spares, as well as the necessary tools, each in its own special compartment.

British Machines.

There was a very representative display of British machines, which seem to have got a firm hold on the French market. Amongst the many were the Triumph, Douglas, B.S.A. Matchless, Morgan, P. and M., Triumph, Coventry Eagle, and Hobart, while the Velocette and New Imperial were amongst those which were unfortunately delayed by the railway strike.



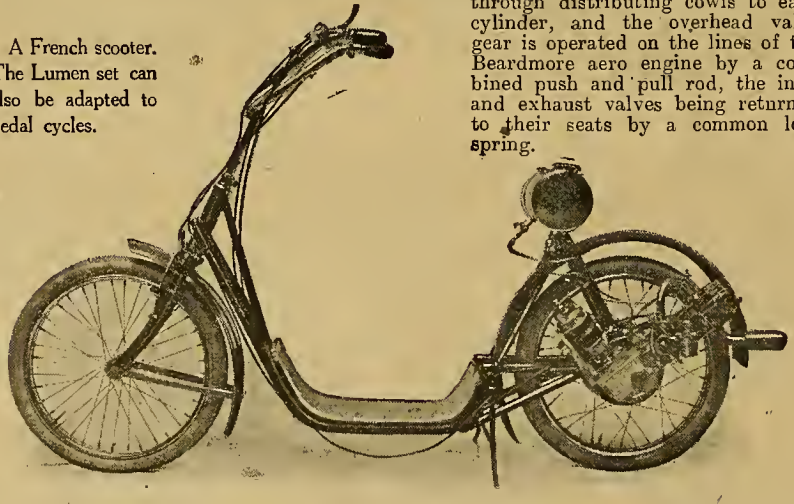
The new 4 h.p. Indian "scout," showing the duplex frame.

American Motor Cycles.

Two new comers from across the Atlantic were on view—the flat twin Harley-Davidson, which has already been described in these pages (August 14th), and the new 4 h.p. Indian, of which type we were able to illustrate the forerunner in our issue of September 11th. This is a very attractive medium weight machine with a smaller edition of the Powerplus engine built up into a unit with the gear box. The unit is carried in a duplex frame, the rear portion being unsprung and the front fork spring being modified.

Le Triauto Godet.

This is an interesting experiment in three-wheelers of the type which employs a twin rear wheel. A four-cylinder air-cooled engine (62 × 90 mm.) drives a two-speed bevel wheel gear box by shaft. The gear box is located at the rear of the channel steel frame, the final drive being by chain. The front suspension is by means of a long transverse leaf spring with auxiliary coil springs at the ends. The most notable features of the engine are the cooling and the valve actuation. A fan driven from the engine forces air through distributing cowls to each cylinder, and the overhead valve gear is operated on the lines of the Beardmore aero engine by a combined push and pull rod, the inlet and exhaust valves being returned to their seats by a common leaf spring.



A French scooter. The Lumen set can also be adapted to pedal cycles.

Train Engines.

One or two attractive motor cycle engines are shown by the Etablissements E. Train. They are chiefly conspicuous for their excellent finish. Two types of two-strokes are shown, the 2½ h.p., 65 × 74 mm. (245 c.c.), and the 3½ h.p., 76 × 76 mm. (345 c.c.). These engines can be had with either air or water-cooling. Three types of four-stroke engines are also shown by this firm—a single-cylinder 4 h.p., 80 × 90 mm. (498 c.c.), a 5-6 h.p. twin, 74 × 87 mm. (748 c.c.), and a 7-8 h.p., 80 × 99 mm. (995 c.c.). These models may also be obtained with water-cooling. The firm also produces a three-speed gear box, provided with enclosed kick starter, in which the change is effected by dog clutches. A mechanical oil pump of the piston type, driven by means of a worm and designed to work at $\frac{1}{16}$th of the engine speed, is also shown.

Moteurs Bi-temps.

Moteurs Bi-temps, Paris, specialise, as their name implies, in two-stroke engines, both air and water-cooled. These engines have ball bearings in the main bearings and big ends, and are of 2 h.p.

Lumen Scooters.

Scooters were represented only by the Lumen, a neat little power unit which is made in a form applicable to attachment to pedal cycles.

A small overhead valve motor of 55 × 60 mm. is attached to the rear forks in such a manner that the crankshaft passes through the hub, the flywheel being on the opposite side to the engine. The drive is through an epicyclic gear.

A circular magneto is used for ignition purposes, and in the case of the cycle attachment, both oil and petrol tanks form part of the rear mudguard.

Motor Cycle Accessories.

Very few accessories are to be seen, and the few that are visible are of British manufacture. The nearest approach to a well made motor cycle head lamp was to be seen on the stand of Willvey-Bottin, a Belgian firm with a London branch in Long Acre. Of ingenious tools and labour-saving devices, we saw none, but it is interesting to note that there are one or two cheap dynamo systems which can be adapted to motor cycles.

A neat acetylene lamp, primarily intended for pedal cycles, but none the less

Motor Cycles at the Paris Show.—

useful for motor cycles for short journeys in towns or as a sidecar lamp, is the Magnetic, sold by H. Picard. On the *lucus a non lucendo* principle, it is called the "Magnetic" because its source of light is calcium carbide.

Cycleauto.

A three-wheeler with a single steering wheel in front is by no means a new proposition, but the lay-out of the Cycleauto is unusual in many respects. A heavy motor cycle type spring fork is employed for the front suspension, and long semi-elliptic springs attached to the tubular frame are responsible for absorbing the road shocks at the rear. The engine is a two-cylinder water-cooled two-stroke, having side-by-side vertical cylinders. Transmission is by chain to an epicyclic gear on the countershaft, and two long belts running over large front pulleys provide the final drive. Driver and passenger are accommodated side by side in a comfortable body, provided with hood and screen. Steering is direct through a wheel and link motion. A radiator is placed in front of the engine.

Barrellier.

A quaint little three-wheeler with a single small front wheel is displayed on this stand. The *tout ensemble* is reminiscent of an invalid chair (for which type of vehicle the manufacturers are famous). Both single and two-seaters are made, and both are engined by horizontally-opposed two-stroke air-cooled engines combined with two-speed gears and fully enclosed magnetos. The final drive is by shaft and worm gear to a neat live rear axle.

Diable.

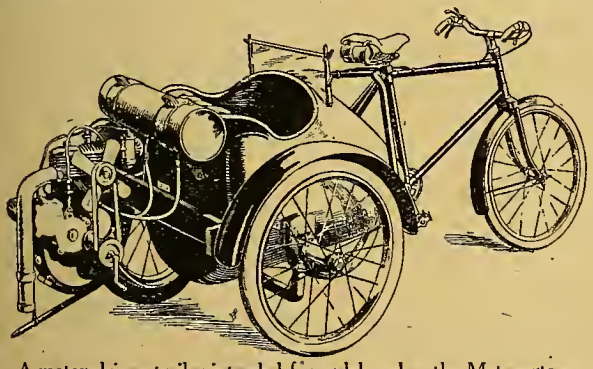
Possibly the neatest and most practical three-wheeler in the exhibition is the Diable, which is fitted with a remarkably clean looking 8 h.p. air-cooled V type engine. The engine forms a unit with a two-speed and reverse gear, a clutch being located behind the box. Shaft drive is employed throughout, the shaft being articulated at the point where the main pressed steel frame is joined to the spring rear portion. The final drive is by bevels, and the wheel is easily detachable. Suspension is by semi-elliptic springs in front and long cantilevers at the rear. One engine arm forms the steering gear bracket, and though the chassis was unfinished the vehicle displays a neatness and compactness which is more characteristic of French automobiles than of their lighter types of wheeled conveyances.

The Sulky.

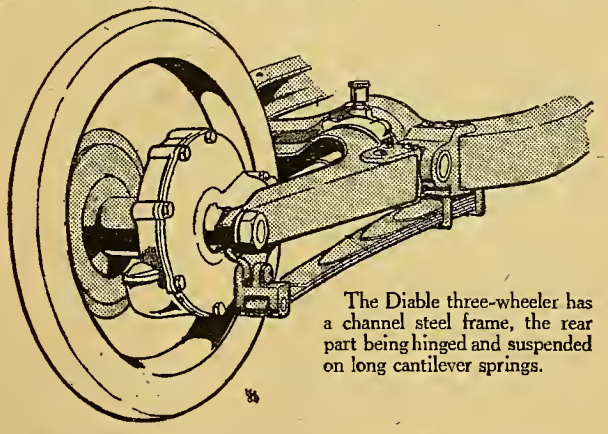
One of the many curiosities in cycle cars at the Show is the Sulky, made by the well-known aeroplane firm of Voisin. Its motive power is a two-cylinder engine fixed to the side of the frame, with the cylinders placed tandem fashion, and equipped with overhead valve gear. Thence the drive is by propeller-shaft to a small friction wheel, which engages with the inside of the near side wheel disc, the only wheel that is driven.

Motoporteur A.R.M.

One of the most curious vehicles in the motor cycle exhibit was a self-propelled trailer intended for attachment to pedal cycles. A small sidecar body contains the passenger, and the outfit is propelled by a single-cylinder Anzani engine through an almost incredibly short belt drive.



A motor-driven trailer intended for pedal cycles, the Motoporteur A.R.M.



The Diable three-wheeler has a channel steel frame, the rear part being hinged and suspended on long cantilever springs.

CLUB NEWS.

Future Events.

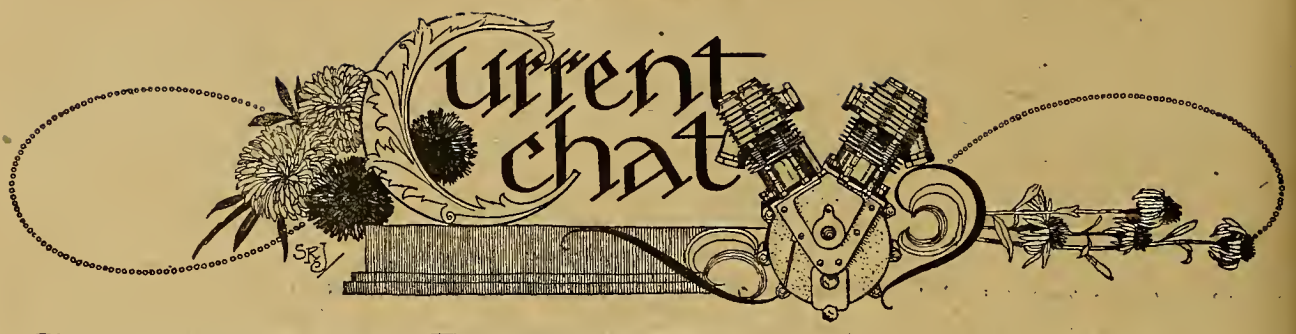
Oct. 17.—Welcome Home Dinner to Birmingham Service Motor Cyclists, Grand Hotel.
Oct. 19.—Ilkeston and District M.C.C. Run to Crick.
Oct. 19.—Rochester, Chatham, and District M.C. Run to Battle.
OCT. 25.—LIVERPOOL M.C. OPEN TRIAL FOR RELIANCE CUP.
Oct. 25.—N.M.C.F.U., Sheffield. First Winter Social.
Oct. 25.—South Birmingham M.C.C. Trial for Sangster Cup.
Oct. 26.—Rochester, Chatham, and District M.C. Run to Bodiam.
Oct. 26.—Ilkeston and District M.C.C. Run to Chatsworth.
Oct. 31.—Meeting of Birmingham Club Officials to discuss Question of Amalgamation, Chamber of Commerce, Birmingham.
NOV. 1.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR PALMER CUP.
Nov. 8.—Birmingham M.C.C. Closing Run.
Nov. 29.—N.M.C.F.U., Coventry. Run to Olympia Show.

N.M.C.F.U.

A meeting has been arranged to be held at the George Hotel, Lichfield, at 6 p.m., on the 18th inst., to which all motor cyclists are invited. Mr. E. S. Shrapnell-Smith, O.B.E. (president), and Mr. A. W. Torkington (chairman) will speak on important subjects of interest to motor cyclists.

The Birmingham and Coventry Branches meet at 2.30 p.m., at the Stonebridge Hotel, and will make the run together.

Southend-on-Sea and District A.C. Gymkhana. Mr. Byford (Douglas) riding along a 9in. plank in the Blondin race.



Times to Light Lamps.

GREENWICH TIME.

Oct.	16th	... ...	5.35 p.m.
,,	18th	... ...	5.31 ,,
,,	20th	... ...	5.27 ,,
,,	22nd	... ...	5.23 ,,

Manchester Hill-climb.

The hill-climb originally arranged by the Manchester M.C. for October 5th will be held on the 19th. Members will assemble at 2 p.m. at Sparrow Pit.

Petrol Imports.

During September 14,770,911 gallons of petrol were imported into this country, a quantity 1,500,000 gallons in excess of August figures. More than 20,000,000 gallons of what is described as fuel oil was also brought over last month. These are very satisfactory figures, and there is very little question that the temporary shortage of petrol at various garages throughout the country will soon be remedied.

The First Motor Cyclist Police.

The fact has already been made public that motor cycles are to be used in the Metropolitan Police Force. Now the Metropolitan area, which is protected by the Metropolitan Police, is a very large district consisting of numerous divisions. These divisions vary considerably in size, and the outlying ones occupy a far greater area than those in the heart of London, and it is to enable certain inspectors in these outlying areas to perform their duties that it has been decided to mount them on motor bicycles.

The idea at the present time is to provide ten sub-divisional inspectors with Douglas motor bicycles, as the authorities feel that this means of transport will be more rapid and more effective than that of inspectors mounted on horseback. It will be very interesting to see how the scheme develops, as we are given to understand that the authorities have further plans in view to develop the use of motor cycles.

IMPORTANT DATES.

Athens Motor Show	Oct. 13th to Nov. 14th.
Olympia Car Show	Nov. 7th to 15th.
Olympia Motor Cycle Show,	Nov. 24th to 29th.
Brussels Show	Dec. 8th to 13th.
Paris Aero Exhibition	Dec. 19th to Jan. 4th.
New York Show	Jan. 3rd to Jan. 10th.
Paris-Nice Trial	Feb. 13th to 16th.
Birmingham British Industries Fair	Feb. 23rd to March 6th.

The Institution of Automobile Engineers.

The inaugural meeting of the Institution of Automobile Engineers, which was postponed from October 1st owing to the strike, will now be held at the Royal Society of Arts, John Street, Adelphi, W.C.2, on Wednesday, October 22nd, at 8 p.m., when Mr. Thos. Clarkson will deliver his presidential address.

The meeting of the Midland Centre will be held on Thursday, October 23rd, in the hall of the Chamber of Commerce, New Street, Birmingham, at 7.30 p.m.

An inspector of the Metropolitan Police on one of the fleet of Douglas motor cycles which will be used by inspectors for work in outlying districts.

Special Features.

PARIS SHOW.
AN UNCONVENTIONAL BRITISH DESIGN.
POLAR INDUCTOR MAGNETO.

A New Four-cylinder American Machine.

An American contemporary reports that Mr. W. G. Henderson, the designer of the Henderson four-cylinder motor cycle, has left the Excelsior-Henderson Co., and is associated with a new company, which will introduce a new four-cylinder machine, which was mentioned in our American news letter in the issue for October 9th.

Lighting Regulations.

The necessary lamps which the motor cyclist should display in order to comply with the law (existing at the moment) are as follows: A solo machine must carry a head lamp and a rear light. If the latter illumines the rear number plate the front plate may be ignored. If the rear numbers are not easily legible the front plate must be illumined *on both sides*. A sidecar outfit, in addition, must carry a second lamp facing forwards to show the extreme width of the vehicle, and the rear light must be placed at the off side.

Six Days Motor Cycle Trial.

The publication of the Judges' Report of the Auto-Cycle Union's recent Six Days Reliability Trial is being urged on as rapidly as possible, but, owing to the difficulties encountered in securing attendance at meetings due to the railway strike, there has been some little delay in this work. The official report will deal with every aspect of the Trial, and will give to the public all information possible as to the reasons for the Judges' deductions of marks and award of medals. It should prove of great value and interest to motor cyclists and intending purchasers of machines.

Surplus Army Motor Cycles in U.S.A.

A total of 1,341 American surplus army motor cycles have been transferred by the War Department to other departments. Thirty-one Cleveland lightweights and 1,057 Indians have been turned over to the Post Office authorities, 140 Indians to the Public Health Service, fifty-seven Indians and forty-seven Harley-Davidsons to the Navy and Marine Corps, and several smaller lots to other departments. Over 34,000 machines were delivered to the War Department, including 15,000 Harley-Davidsons and 18,000 Indians. 1,476 Cleveland lightweights were delivered. Altogether the American Army used over 30,000 sidecars.

Police Trap.

We are informed that a police trap is working between Kentish Town Station and Camden Town Station (Hampstead Tube).

An American Six Days Trial.

The motor cycle world in the U.S.A. are enthusiastic about our Six Days Trials, both the English and Scottish, and an attempt will be made to hold a trial of a similar nature in that country next year.

Flying Kilometre Races in Belgium.

In flying kilometre races held by the Antwerp Motor Club, on the 6th inst., the solo motor cycle class was won by Vanheurck (Indian), and the sidecar class by Depret (Rudge). The Indian rider won the special cup offered for highest speed, and rode the kilometre with flying start at the rate of 65.8 m.p.h. Flying kilometre races were held on Sunday, and a good entry was secured. Among the British machines were Douglas, Clyno, Rudge, Triumph, B.S.A., Rex-Jap, and James. America was represented by Harley-Davidson, Indian, Reading Standard, and Excelsior.

Imports and Exports.

The imports of motor cycles for September did not vary greatly from the previous month. Twenty-two more complete motor cycles were sent over, but fewer parts and accessories.

IMPORTS, SEPTEMBER.

	1917.	1918.	1919.
No. of motor cycles	—	—	188
Value of motor cycles, including parts, tyres, accessories, etc.	£1,144	£2,421	£16,581

The export figures for September did not reach the level of those of August. Certainly there was only £1,500 difference, but it would have been more satisfactory to have found the export curve upwards instead of downwards.

EXPORTS, SEPTEMBER.

	1917.	1918.	1919.
No. of motor cycles	952	166	664
Value of motor cycles, including parts, tyres, accessories, etc.	£79,006	£27,415	£108,390

Spanish Championship.

A motor cycle race, over a distance of about 250 miles, was to have taken place on Sunday last, for the motor cycle and sidecar championship of Spain, the winner to receive a challenge cup presented by the King of Spain.

Benzole Prices.

The National Benzole Co. has issued the following authorised list of retail prices of National benzole: Two-gallon tins 2s. 9d. per gallon; fifty-gallon drums 2s. 8d. per gallon. The deposit for a steel barrel or drum is 70s. In Scotland 1d. per gallon extra may be charged.

Average Second-hand Prices.

The subjoined list of average second-hand prices is not nearly so complete as the last one published in the issue of October 2nd. Many well-known makes, which are usually well represented in the second-hand market, are noticeably absent at the moment—the strike, no doubt, inducing many to retain machines which would have otherwise changed hands. On the whole, prices show a decided upward tendency, especially so in the case of certain much-sought-after makes.

A.J.S., 1916 and later, 6 h.p., sidecar	£165
Ariel, 6-7 h.p., sidecar	£155
Bradbury, 4 h.p., single-speed, solo	£26
,, 4 h.p., 2-speed, and sidecar	£48
B.S.A., 4¼ h.p., 3-speed, sidecar	£111
Calthorpe-J.A.P., 2¾ h.p., 2-speed	£35
Clyno, 2-stroke, 2-speed	£40
,, 5-6 h.p., 3-speed, sidecar	£110
Douglas, 2¾ h.p., W.D.	£61
,, 4 h.p., 3-speed, sidecar	£112
Enfield, 1917, 3 h.p., twin, 2-speed	£64
,, 6 h.p., sidecar	£132
Harley-Davidson, 3-speed, sidecar	£159
Humber, 3½ h.p., 2-speed, sidecar	£54
Indian, 1914, 7-9 h.p., 2-speed, sidecar	£107
Matchless, M.A.G., sidecar	£147
New Imperial, 2¼ h.p., 2-speed	£47
P. & M., 1919, 3½ h.p., solo	£95
,, 1919, 3½ h.p., sidecar	£105
Rover, 1918-19, 3½ h.p., T.T.	£80
,, 1919, 5-6 h.p., 3-speed, and sidecar	£130
Rudge-Multi, 3½ h.p.	£89
Scott, solo	£64
,, and sidecar	£82
Sunbeam, 3½ h.p., and sidecar	£152
Triumph, 3½ h.p., single-speed	£32
,, 3½ h.p., 3-speed hub	£54
,, 4 h.p., 3-speed, countershaft, solo	£90
,, 4 h.p., 3-speed, countershaft, sidecar	£127
Zenith, 6 h.p., solo	£77
,, 6 h.p., countershaft, and sidecar	£91

Storage of Fuel.

The following regulations concerning the storage of petrol and benzole were issued in June. We repeat them for the benefit of readers whose knowledge on the subject is vague, and who may be anxious to keep a quantity of fuel in stock, in view of the recent disturbances.

Notwithstanding anything in No. 10 of the regulations dated 31st July, 1907, petroleum spirit may be kept for the purposes of light locomotives in iron or steel drums or barrels of a capacity not exceeding fifty gallons, provided the following conditions are observed:

(*a*) The storehouse must be situated at a distance of at least twenty feet from any other building or any highway or public footpath.

(*b*) Provision must be made by excavation or by the erection of retaining walls to prevent outflow of the spirit in the event of fire if such outflow would be likely to endanger life or cause damage to the property of others.

(*c*) Notice shall be given to the local authority, and the duly authorised officer of such authority shall be allowed to inspect the spirit in the same manner as is provided in No. 7 of the said regulations.

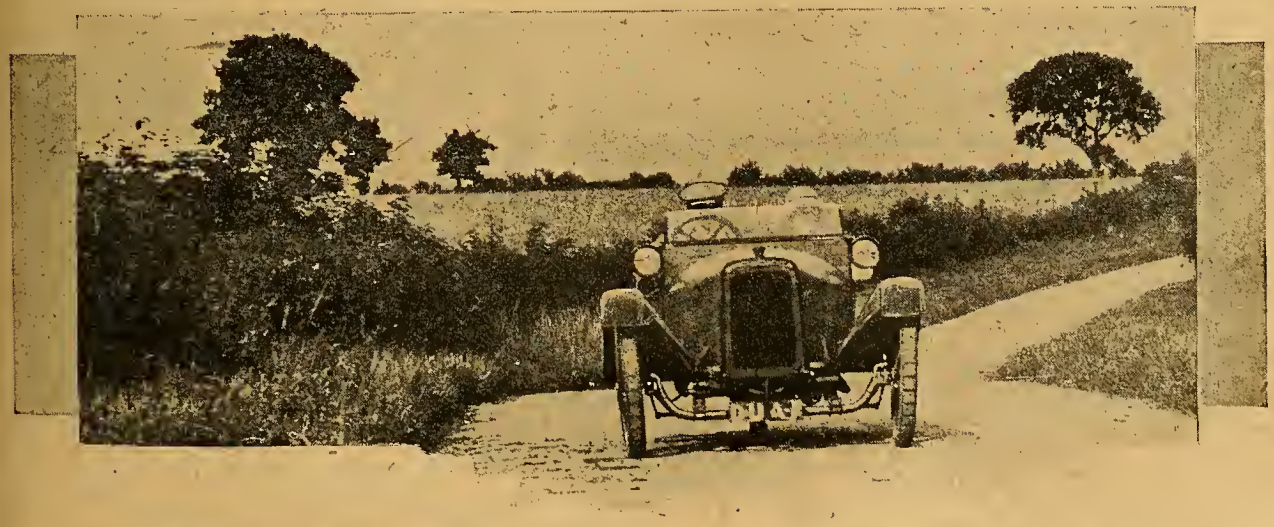
This regulation shall remain in force until 31st December, 1923, unless sooner revoked.

Standardisation of Chains.

The Association of British Driving Chain Manufacturers announce that they have now completed the standardisation of roller chains up to ⅜in. pitch. For the convenience of chain users, and to ensure complete interchangeability, they have also standardised chain wheel tooth forms. These new tooth forms, while not being identical with any of the existing forms, incorporate the essential features of each.

Particulars of the standards set up by the Association of British Driving Chain Manufacturers are to be published in pamphlet form, and will be obtainable from the secretary of the Association of British Driving Chain Manufacturers, Bassishaw House, Basinghall Street, London, E.C. The Association comprises the following well-known firms: Alfred Appleby, Ltd., Birmingham; Brampton Bros., Ltd., Birmingham; "The Coventry" Chain Co., Ltd., Coventry; Perry and Co., Ltd., Birmingham; Hans Renold, Ltd., Manchester.

Full details of the cutter dimensions for the manufacture of standardised chain-wheels are being prepared, and will be made public as arrangements proceed.



The new Premier runabout on the road. A detailed description of this little three-wheeler will appear very shortly.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

BELT PUNCHES.

Sir,—Looking through the advertisements in your paper, I notice that belt punches are never mentioned by any firms advertising accessories. Are these tools unnecessary nowadays, or are they still banned by D.O.R.A.?

W. G. CARDEW.

EASY STARTING.

Sir,—A very successful method of starting my motor cycle, which I have discovered, and may be of use to others who have the same trouble, is to carry a small oilcan full of petrol. As my engine has overhead valves, no compression taps are fitted and, priming being impossible, flooding is resorted to. To avoid this waste, I squirt petrol through the carburetter intake, which effectively drenches the gauze and slides, enabling a very easy start to be made.

Hoping this may be of some use to other of your readers.

Monmouth. M.O.H.V.

PRICES AND PRINCIPLE.

Sir,—There has been a lot of correspondence lately in the motor papers about the exorbitant prices asked for new machines, and I think it only fair that the names of agents who have stuck to list prices should be made known.

No doubt most of your readers know that I am one of the largest motor cycle dealers in England, and, as such, it has cost me hundreds of pounds to turn away the many enticing offers I have received. Nevertheless I have not sold a single new machine above the makers' list price, and hope that when things become more normal the public generally will not forget this important fact. S. JULIAN.

DISSOLVED ACETYLENE.

Sir,—The remarks of Mr. B. H. Davies in *The Motor Cycle* of September 18th on lighting arrangements lead me to the conclusion that he has never tried dissolved acetylene.

Since taking this into use in 1912 I have had no lighting troubles whatever, and it is difficult to understand why the majority of competitors in such arduous trials as the old London to Exeter night run prefer to carry two generators or a pocketful of carbide, when a D.A. cylinder, which will burn for twenty hours, would last out the longest night and require no attention at all.

To the normal rider it is very economical, as there is no waste, and an exchange will only be required every few months, depending, of course, on the amount of night riding.

When I stored my machine in 1914 my D.A. cylinder was about half exhausted, and on taking it into use again early this year it showed the same pressure, and I got a further two months' use from it.

No more messy carbide and water for me.

J. W. PEPPER.

COMPRESSION RELEASE V. EXHAUST VALVE LIFTER.

Sir,—The frequent references to driving on and burning exhaust valves raises the following question to me—Why fit exhaust valve lifting mechanism at all? Handle-bar controlled decompressors (two-stroke method) would fill the bill with advantage in lieu of lifting exhaust valves. Many inexpert owners are deceived when adjusting by poorly designed valve lifters partially lifting tappets, so that when the "postcard clearance" is obtained the valve is often deprived of its correct lift. Again, could we not expect better braking effect from the engine?

Running downhill with throttle closed and decompressors slightly opened (determined by experience), would not this give a retarding "dash-pot" effect to the pistons for three out of the four strokes, viz., suction, compression, and explosion? Also, a Bowden cable, releasing compression by this method, would give longer trouble-free service than one that has to compress two powerful exhaust valve springs.

Cylinder priming could be accomplished *via* this device even if fitted with pipes to silencer. GEO. MAGGS.

MOTORPHOBIA IN SWITZERLAND.

Sir,—I have just read in Current Chat your lines about motoring restrictions in Switzerland, and beg to inform you that the information does not apply to Geneva.

I am Genevese myself, and an old motor cyclist, and can tell you that there is no place where motor cycling is in such favour as in Geneva.

The mentioned prohibition refers to the neighbouring canton of Vaud, where restrictions have always been in vogue, as well as all sorts of taxations and prohibitions.

Kindly rectify, for the sake of the birthplace of the M.A.G. engines. CHARLES J. DE LAPALUD.

MOTOR CYCLING IN ASSAM.

Sir,—I have just received an appointment as engineer and general assistant to a tea company in Assam (India). As I have never been East before, I should be glad to receive information from any of your readers who have had experience with motor cycles in that part of the country.

(1.) I propose taking out an A.B.C. and sidecar, if I can obtain delivery before sailing in November or December. (I have had one on order since last March.) Would this type of motor cycle prove satisfactory in a hot climate?

(2.) Failing delivery of the A.B.C., would a Triumph be satisfactory, or is a chain-drive preferable?

(3.) Can insurance be effected in this country, or should it be done on the spot?

(4.) Will the machine have to be re-registered?

E. T. LYCETT BURD.

HAND BRAKES.

Sir,—Why, in these days of new models and altered design, do not makers fit a band brake with the orthodox quadrant and pawl as fitted to all cars? The foot brake may be accessible, but for my own part I should prefer a hand brake which could be put to stay on, on a long hill with a loose surface where the foot is being constantly jerked off the small area of the brake pedal, which makes a heavy machine with a big load no easy thing to handle at places like the Blue Bank, for instance, on the Whitby Road. I have never seen a standard machine yet which is fitted with this undoubted safeguard.

GILBERT T. COPP.

BUTSER HILL.

Sir,—I should very much like to know if any of your readers have experienced an apparent loss of power when ascending Butser Hill, and, if so, can they give a possible reason? I have done this ascent on very many occasions on really fine machines, but yet all seem to find a little trouble in getting up.

There is a slight down hill run from a railway bridge to this hill, and although I have "blinded" down this slope, and barely taken the bend at the foot of Butser, I find my speed reduced to almost 20 or 25 m.p.h. Yet I have made good ascents considering what others have been doing whenever I met anyone. (Perhaps someone with a "posh" machine will lie in waiting for me now.)

Now about a mile or so after Butser there is another similar hill, yet all machines positively roar up that one without any trouble whatsoever. B. S. NORTSUNBEAM.

Gosport.

SIDECAR SPRINGING.

Sir,—I notice on page 377 of October 2nd issue of *The Motor Cycle* a letter and illustration dealing with sidecar springing, signed by "C.M."

No doubt the conversion from the old type of springs on this sidecar to the type illustrated has been a vast improvement.

I feel it necessary, however, to point out to you that the suspension shown has been used on one of the Henderson model sidecars for the past four years, a patent being granted to me for this in 1915, patent number 2,514.

Although your contributor has used this type of suspension very effectively, I would point out that it seems hardly fair for users to use special features such as the one referred to, which are only associated with Henderson sidecars, in an attempt to make some other type of sidecar serviceable.

HENDERSON SIDECARS,
LEONARD B. HENDERSON, A.M.I.A.E., Managing Director.

SPARE PARTS.

Sir,—Regarding recent letters published in your valued paper *re* makers' attention in supplying spares, I hope you will publish this as it takes some beating. I undertook a journey from Leeds to Bridlington, and on arrival had it pointed out to me that the top part of my front fork spring was broken. I may say here that the machine acted so well with the spring broken that had I not been told I should not have noticed it. However, it being a 1919 model, I felt a little disappointed and wrote to the makers who sent me, by return, *free of charge*, a new spring, and new nut and bolt I had also lost (or, perhaps, had it begged). My machine is a 4¼ h.p. B.S.A. The Leeds agent, Mr. Armitage, has also shown most prompt attention to a little adjustment I wanted, although the machine was not supplied by him. Usual disclaimer. C.N.S.

Leeds.

Sir,—Many motor cyclists are now stating their experiences in regard to obtaining spare parts, and I would like to add mine.

I purchased a 2¼ h.p. Levis in December, 1915, and have ridden it continuously ever since; it has been a marvel. The makers, Messrs. Butterfields, Ltd., have treated me very well indeed. Stock spares have been sent by return of post, and I had a new double stay made leading from the seat-pillar to the back fork, fitted to the old frame, and delivered in seven days. I broke the threaded portion of my oil tap, and, as they had no similar taps, they offered to repair the old one. I posted it on the Friday, and had it back on the next Thursday, and no charge made.

I have been highly satisfied with Terrys, Ltd., who replaced a broken spring link by return. Also with the Lodge Sparking Plug Co., who promptly repair plugs at a very small charge, and who have replaced free of charge two defective plugs, one of which had been in use some time.

I may have been lucky, but I have not yet encountered a bad case of service up to now. J. FAIRLAM HORN.

Sir,—I have, in the immediate past, had occasion to require from the following firms various spares: Messrs. Alldays and Onions, Ltd., and Messrs. John Marston, Ltd.

Not only have I received the spares to time, far in excess of most optimistic expectations, but really courteous treatment as well.

I would specially mention the Sunbeam Co. for doing nearly the impossible for me, and by so doing making possible an enjoyable 1,000 miles tour. I would add the usual disclaimer. W. J. DARBY.

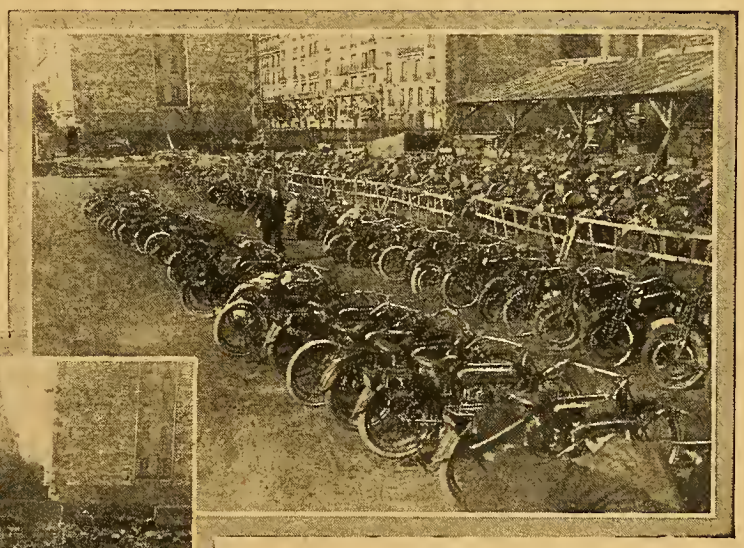
Rotherham.

Sir,—Recently I purchased a Big Four Norton, which has created a very good impression on all my friends, although in Bilbao singles are being superseded by twins.

During my first trip to San Sebastian the petrol tank began to leak, and was repaired on the road. As the job was not very well done, on my second trip the faulty tank leaked again.

I wrote a letter to Messrs. Norton, asking them for a new tank, and I am glad to say they have already forwarded a new one free of charge, not even trying to ascertain the truth of my complaint. As things are nowadays, we seldom hear that commercial firms treat their customers in this way, and, thinking this is very nice on their part, I shall always praise Messrs. Norton for their treatment towards me.

I have no interest in the above firm, but I am a satisfied owner of a fine machine.



SURPLUS MOTOR CYCLES OF THE AMERICAN ARMY.
(Left) Harley-Davidson sidecar outfits to be sold by auction in Paris.
(Right) Some of the British-made solo mounts used by the American Army.

If any of the English motor cyclists should ever come touring near the Spanish frontier of the Cantabrian coast, let them not be afraid of passing across. It may be that somebody will tell them that they will be murdered on the road, but these are eighteenth century stories. As long as they pass through villages with low speed they have nothing to fear. In a small town near San Sebastian several cars have been attacked with stones, but it must be stated that in a fortnight one person was killed by a car and two children injured on account of the terrific speed.

The roads of Guipuzcoa and Vizcaya are as splendid as the best roads in England, and scenery is very beautiful, abounding in hills four to six miles long. San Sebastian in summer time is one of the most attractive towns in Europe.

Bilbao, Spain. JOAQUIN URQUIJO.

BENZOLE IN THE ISLE OF WIGHT.

Sir,—In the interests of benzole users in the Isle of Wight, perhaps I may call the attention of the National Benzole Association to the absolute non-existence of their fuel here.

Occasionally, small consignments of the Anglo-American Oil Co.'s benzole arrives, but for the last two or three weeks there has been no benzole whatever in the Isle of Wight.

Merston, I.W. BENZOLE.

STANDARDISATION OF CONTROLS.

Sir,—May I suggest a precedent for the adoption of the carburetter control lever which opens outwards?

Consider the throttle and the air slide as valves (which, of course, they really are). Now the average valve used in general engineering practice is controlled by a wheel. When this wheel is rotated in a clockwise direction it closes the valve, and *vice versa*. This practice is almost universal, the history of it being, of course, its convenience for incorporation with the right hand screw thread. If the control lever is now considered as one spoke of the valve wheel, it is obvious that to move it outwards is equivalent to the anti-clockwise rotation, and should open the valve, while the inward movement, being clockwise, should close the valve.

Practically, I believe your contributor "V.A.H." makes a very sound case for the outward opening lever with his anatomical reasons, as I think anyone who has had experience of the Senspray thus arranged will agree.

S. LATOUR HORDLE.

Sir,—I am glad to see the interest you and your readers are taking in this matter. The subject of the standardisation of controls is one of the many points that are under the consideration of the British Engineering Standards Association.

I have the honour of being a member of the sub-committee dealing with this matter of the standardisation of controls on automobile vehicles, and shall be glad to see any further views that are expressed on the subject in connection with motor cycles, not only as to the carburetter control, but also brakes and clutches.

I may say that my view at present is that, apart from other considerations, the best arrangement in connection with the carburetter control is to make the movement of the throttle lever outward or upward to increase speed, and to make the movement backward or downward to decrease speed. But in these matters a great predominance in the use of an opposite form of control should have considerable weight. These, as I say, are my own private opinions, and I am quite prepared to consider and be swayed by what may be, in fact, standard by prevalence of practice.

Those of us particularly who are accustomed to ride a number of different machines, realise the necessity for some standardisation of control, as we often find that, having got used to one style, a change to another is very liable to lead to serious accidents if the controls are materially different in direction and operation.

DOUGLAS LEECHMAN.

THE A.C.U. TRIALS.

Sir,—I am rather surprised to see that "Ixion," in his "Occasional Comments" of October 2nd, rather suggests that a manufacturer should fit special engines and gears for the Six Days Trials. At any rate, that is how I interpret his remarks. Now, I have always understood that the A.C.U. set out, by means of this trial, to perfect the motor cycle, and, as clearly stated in their advertisement in your issue of September 23rd, to show the public which machines would be "good investments to the potential purchaser." This can only mean that the A.C.U. design their trial to test machines as and in the coudition that they are sold to the public, which object would be at once defeated by adopting the plan suggested by "Ixion."

The obvious deduction is that "Ixion" does not think the trial suitable to standard productions, and this is certainly supported by the fact that specially low gear ratios were adopted by some manufacturers for the trial. It would be an interesting addendum to the official results to have published a comparison of gears used in the trial and those issued on similar machines for public sale.

We must, however, ourselves plead guilty to a slight alteration of our machines, as the three which obtained silver medals had a low gear of 8 to 1, instead of 7½ to 1, which we usually use. Incidentally, our machines were geared higher on low gear than any others in the trial, and we are gratified to note that *The Motor Cycle* says that they "climbed marvellously."

Now the point I am coming to is this. As the A.C.U. advertises that machines which in this trial gain *premier* awards are good investments, it should take steps to see that only standard productions are used with standard engines and standard gear ratios, and, as a logical preface to this, it should select such a route as would be ordinarily used by ordinary riders. Freak hills and practically unused tracks necessitate freak machines, and so the A.C.U. itself defeats its declared object.

If I may impose upon your space a little further, I should like to mention one or two other matters connected with this trial.

1. DR. LOW'S AUDIOMETER.—It is not reasonable to introduce a new feature of this description into a trial which has world-wide influence without previously allowing manufacturers to test their machines against it. I submit that it has yet to be shown exactly what effect is produced on this instrument by varying the "note" of the exhaust. It is quite conceivable that a high note may lose a competitor more marks than a low note; but what manufacturer could possibly determine this? The test is obviously unreasonable, in my opinion, even though our machines came off excellently as compared with some others. I see that your photograph shows the instrument placed on the "near" side of the road, and I would like to ask whether *previously* a sidecar machine was tested both from "near" side and from the "off" side, and, if so, what difference could be noticed from the interposition of the sidecar which should have a dampening effect on the noise.

2. C.D.T.—This again defeats the object of the trial as defined by the A.C.U. advertisement, as it is purely a test of the judgment of the driver.

3. MARKS DEDUCTED FOR BRAKES.—It appears that marks were not deducted solely on the score that the brakes did not function effectively, but on the grounds that at least one of the judges did not approve of the type. If any particular type was going to be penalised notice should have been given, or marks should only have been deducted on actual results.

4. FINAL EXAMINATION.—I have asked the A.C.U. what allowance, if any, was made for the age of a machine, and await its reply with interest. Capt. Charlesworth states that his Zenith was four and a half years old, and he feels that he has a genuine complaint, as in the actual running he only lost four marks (and that on the C.D.T.), but lost his gold medal on the points deducted for silence (5) and final examination (7).

There are several other points in the trial which one could mention, but those above stated should perhaps open up a very interesting discussion as to the usefulness of this trial from the point of view of the private purchaser, in whose interests the A.C.U. says it designed and held this trial.

W. G. BOWER,
Director and Manager Zenith Motors, Ltd.

SUMMARY OF CORRESPONDENCE.

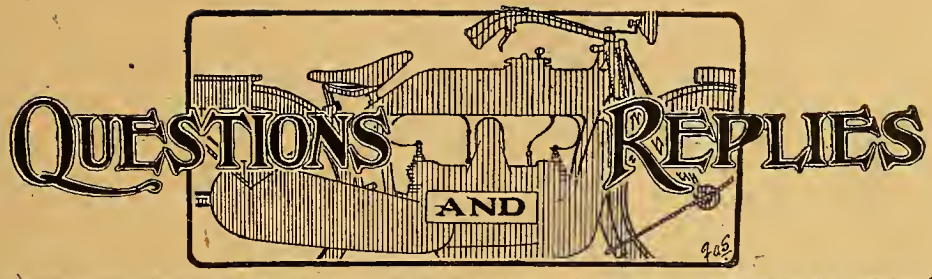
"A.C.H." has picked up a tool roll between Dover and Deal, and would like to return it to the owner.

BOOKS AND MAPS FOR MOTOR CYCLISTS.

Issued in conjunction with "*The Motor Cycle*."

	Price net.	By post.
"MOTOR CYCLES AND HOW TO MANAGE THEM." The standard handbook on the motor cycle, its care and management. Twentieth Edition. 286 pages. 400 illustrations	2/6	2/10
"HINTS AND TIPS FOR MOTOR CYCLISTS." Containing over 400 useful "wrinkles" and helpful hints in regard to motor cycles. Sixth Edition. (Second Reprint.)	2/-	2/3
"TRACING MOTOR CYCLE TROUBLES." A reliable system for tracing motor cycle faults and of remedying any trouble when found. Fourth Edition	2/-	2/3
"THE MOTOR CYCLE" ROAD MAPS. England and Wales. Scotland. London (showing roads into and out of London and avoiding London). Mounted on linen. Set of three, complete in case	4/6	4/10

Obtainable by post (remittance with order) from ILIFFE & SONS Ltd., 20, Tudor Street, London, E.C.4, or of leading Booksellers and Railway Bookstalls.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Broken Forks.

My mount is a 1913 3½ h.p. single, and I have had the misfortune of the fork breaking right across at the fork crown. Can it be brazed to be safe for sidecar work? If it is likely to be unsafe when brazed, can Druids be fitted?—P.S.

The fork could be repaired by refitting a new blade, if one could be obtained. Alternatively, you could fit Druid forks. The makers of the latter will supply you with all the information you will require regarding dimensions.

Welding a Gear Box.

I have a 1913 8 h.p. combination, and the gear box is cracked. It is impossible to get another, as the makers say they are now obsolete, and advise welding. Do you consider this will be entirely satisfactory?—S.H.P.

We should certainly recommend you to have the gear box welded. Several firms who are experienced in this work advertise regularly in *The Autocar* and *The Motor Cycle*.

A Story of Good Intentions.

I was travelling at 12 m.p.h. on a byroad which is in bad condition, and a cyclist was coming towards me on his wrong side. The road was badly rutted, but just where I was it was better than the part where the cyclist was. I put out my hand to show him that I would pass him on his wrong side, and thought he understood, as he did not alter his course until I started to go in the middle of the road to be able to pass him. He did exactly the same thing, so we crashed, and his machine was damaged considerably, but he himself was unhurt. My motor cycle was not damaged at all, but I was bruised and shaken up. He admitted his carelessness and went off. Ten days later he came to my father and claimed 30s. for the damage done to his cycle; this was paid to him, much to my annoyance. Was his claim legal, as he threatened to take the matter to court if he were not paid? He has no witnesses to call, as the place was deserted at the time of the accident.—H.E.R.

In the case you describe the cyclist was clearly to blame, but in the event of an action your case has been seriously prejudiced by the payment made by your father.

Speeds at Weston.

I should be obliged if you could tell me the record speed done by a motor cycle on Weston-super-Mare sands, also the type of machine and year when it was done?—E.C.

The record speed on a motor cycle on Weston-super-Mare sands in 1913 was one mile in 1m. 14⅖s. This time was accomplished by George Clarke (Rudge) and George Griffiths (Zenith), the Rudge in the 500 c.c. class, and the Zenith in the Unlimited class.

Gear Ratio.

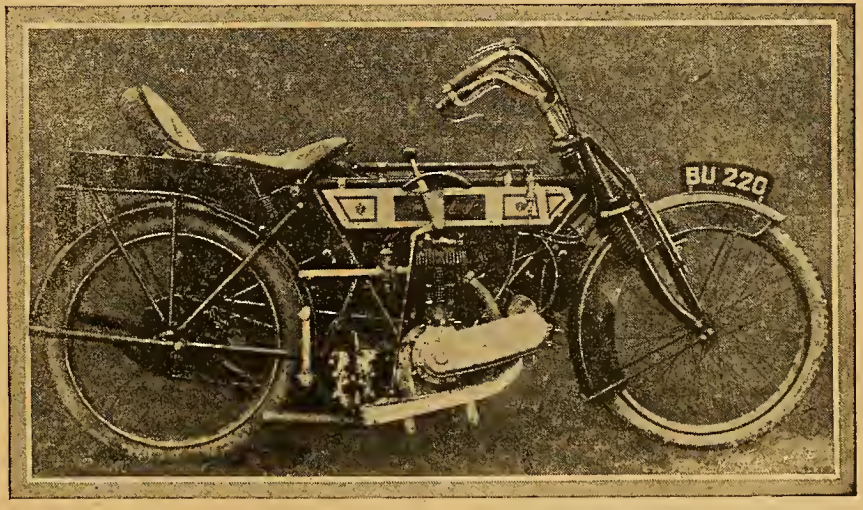
I have a 4½ h.p. coachbuilt outfit, all-chain drive, through a B.S.A. gear box. The numbers of teeth on the sprockets are as follows: Engine shaft 15, gear box (1) 35 teeth, gear box (2) 14 teeth, back hub 35 teeth. This makes a top gear of 5.8 to 1. (1.) What top gear do you advise if the machine is used chiefly for solo work? (2.) How many teeth on the second gear sprocket would be required to effect the change of ratio? (3.) The clutch slips, and all efforts to remedy it have failed. Are new plates needed?—W.A.B.

(1.) A top gear of 5 to 1 should be suitable. (2.) By the second gear sprocket we presume you mean the one giving the final drive. Seventeen teeth would give 4.8 to 1; sixteen teeth 5 to 1. (3.) Clutch slip may be due to the use of unsuitable oil, wear of the clutch plates, or weakness of the clutch springs. The most suitable oil to use in the B.S.A. gear box is the light gear oil specially made for the purpose. Heavy engine oil should on no account be used. If the plates are worn new ones will be required. See also "Reader's Reply" from A. E. Seamans, on next page.

Rudge Questions.

I have ordered an I.O.M. Rudge Multi. (1.) Of what speed should it be capable on the level and under fair conditions? (2.) Is it possible to lower the ratios, so as to give, say, a 4 to 1 top gear without making any structural alterations? (3.) Given fair treatment, is the multi gear entirely satisfactory as regards—(*a*) wear on belts, (*b*) belt slip, (*c*) its own wearing qualities?—R.A.G.

(1.) The T.T. Rudge-Multi should be capable of any speed up to 60 m.p.h. on the level. (2.) It is impossible to lower the ratios without making alterations to the machine. (3.) (*a*) If used judiciously without making sudden changes from low to high gear, the wear on belts is quite normal. (*b*) Provided the belt adjustment is kept in order, you will not experience slip under normal weather conditions. (*c*) The wearing qualities of the multi gear are quite good.



A new 4 h.p. single-cylinder Bradbury seen at a recent hill-climb in the North. Three-speed gear with chain drive is employed, and Mark II. Druid forks are fitted. The engine has been largely redesigned, having a simplified timing gear and detachable head.

R. Blackburn, 7-9 h.p. Harley-Davidson, who came in third in the recent Johannesburg-Durban handicap race. He covered the distance of 421 miles in 11h. 16m. 8s., an average of 36·8 m.p.h., establishing a new record for this blue riband event of South Africa.

Gear Adjustment and Jet Sizes.

I have a 3½ h.p. Premier combination. It has an Armstrong three-speed hub gear, which has two oil caps on the hub. (1.) Does one oiler supply the gears and the other supply the clutch, which is contained in the hub, or are both gears and clutch in a common chamber? (2.) What is the best oil for this type of gear? (3.) The quadrant carrying the three-speed lever has a notch between middle and high which does not appear to have been caused by wear, although it is very slight, but yet sufficient to keep the lever in that position. I have tried several adjustments to find out if the lever in this notch gives neutral, but there is nothing doing, and I can see no advantage in a neutral position when a clutch is fitted. What is the purpose of this notch? (4.) Can I obtain drawings of the gear, and, if so, where? The engine is fitted with a Senspray carburetter (without pilot). (5.) What is the size of correct jet? (6.) What would be the size of a pilot jet suitable for a 3½ h.p. single-cylinder engine? (7.) What are the approximate lowest revolutions obtainable on such an engine (running light) —*(a)* without pilot jet, *(b)* with pilot jet? (8.) What is the relation between numbered sizes of jets and diameters of holes in them, in, say, $\frac{1}{1000}$ths of an inch?—A.A.H.

(1.) That on the right supplies the clutch; the other, on the near side, the gears. (2.) Use rather thin lubricating oil. (3.) The notch X is a neutral position, and is used for adjusting the gear control. When the lever is in this notch the gear should be free—that is, with the clutch in. The back wheel should revolve quite freely and without noise. (4.) We do not suppose you can obtain drawings anywhere, as the company is no longer in business. (5.) A 38 jet. (6.) A pilot jet suitable for 3½ h.p. single-cylinder engine should be about .008in. in diameter. (7.) With a good carburetter on a single-cylinder engine in good tune, you should get perfect slow running without the use of a pilot jet; about 300 r.p.m. (8.) The carburetter jets are usually numbered according to the size in $\frac{1}{1000}$ths of an inch, although the numbering is not always strictly accurate.

Unobtainable Parts.

When placing grease in the gear box of my two-stroke Triumph motor cycle some metallic substance was apparently contained in the grease, which has stripped the pinions. Failing the ability of the makers to supply immediately, could you recommend any firm specialising in gear cutting where I could have the work done fairly quickly?—H.E.G.M.

We think it would be far better to wait for the manufacturers' parts for your Triumph gear box than to attempt to have them made by any other firm, as in all cases the makers are better able to secure interchangeability.

READER'S REPLY

Clutch Slip.

Re the enquiry from "C.W.R.E." in *The Motor Cycle* dated September 25th, in connection with "Clutch Slip," I think my experience of identical trouble in a 1915 B.S.A. machine may prove useful in effecting a cure. I repeatedly tried flushing with paraffin, fitting new plates, new springs, also additional plates and varieties of oil without making any appreciable difference. As a final resource, and to avoid returning the gear box to the makers, I removed the clutch drum and shaft from the gear box and made an examination, with the following result: I found that the keyways in the clutch drum were not smooth, and also discovered that the bronze plates were an easier fit in a certain position with regard to the keyways. I came to the conclusion that the trouble was caused by a binding of the plates in the keyways causing a slight buckling to take place when the spring pressure was applied, thus preventing the full area of all the plates to come into operation. As the clutch drum is hard, it is rather a difficult matter to remove any roughness that may be present, but a slight improvement can be made by rubbing the sides of the keyways with a small square stick of carborundum or similar abrasive. I carried this out until each keyway was without any roughness likely to prevent free movement of the plates, and then carefully selected the easiest position for each bronze plate, if necessary removing a little metal from the plates, also any burrs that could be detected on the plate keys. As a test, I made each plate free enough to fall through the keyways by its own weight, having the shaft in position to keep the plate square. The clutch drum and each plate should be marked to ensure that correct assembly is made when fitting into the gear box. Any plate that is not flat should be discarded. This method effected a perfect cure in my case, and I am now able to carry heavy loads up the steepest of hills without any difficulty. I was several months in finding out a cure for this annoying trouble, and feel sure your correspondent would be glad to have the full power of this splendid machine available once more. As a final suggestion, I would advise "C.W.R.E." to make quite sure that the clutch slip is not aggravated by belt slip.—A. E. SEAMANS.

RECOMMENDED ROUTES.

CONGLETON TO GLOUCESTER.—W.P.A.

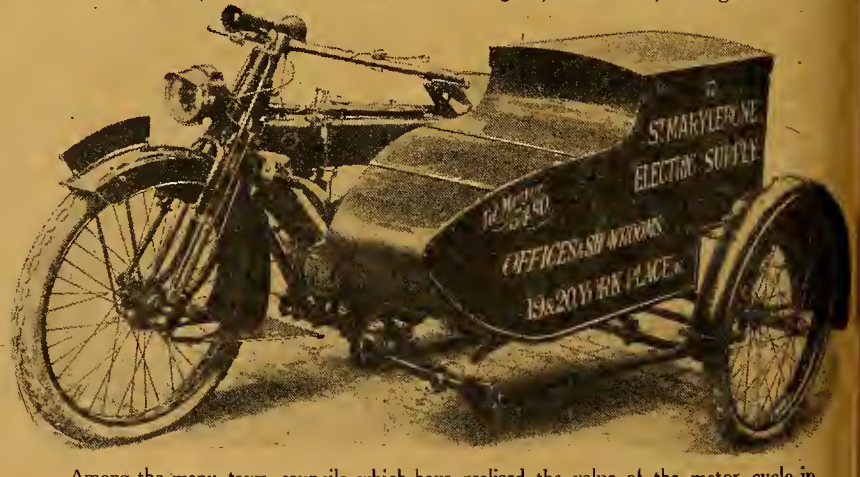
Congleton, Newcastle, Eccleshall, Newport, Shifnall, Bridgnorth, Bewdley, Stourport, Worcester, Tewkesbury, Gloucester. Approximately 120 miles.

BARGOED TO PORTMADOC.—A.D.

Bargoed, Abergavenny, Hereford, Leominster, Ludlow, Montgomery, Welshpool, Llanfair Caereinion, Dinas Mawddwy, Dolgelly, Barmouth, Harlech, Portmadoc. Approximately 140 miles.

LEICESTER TO GLASGOW.—I.M.

Leicester, Melton Mowbray, Grantham, Newark, Retford, Bawtry, Doncaster, Ferrybridge, Sherburn, Tadcaster, Boston Spa, Collingham, Harewood, Otley, Ilkley, Skipton, Gargrave, Settle, Kirkby Lonsdale, Kendal, Shap, Penrith, Carlisle, Longtown, Lockerbie, Moffat, Abington, Hamilton, Glasgow.



Among the many town councils which have realised the value of the motor cycle in municipal work may be mentioned that of St. Marylebone. The P. and M. shown is an outfit purchased for use in emergency service in connection with the repair o breakdowns in the Corporation's electrical circuits.

The *Indian* and GODFREY'S.

IT was in 1910 that Godfrey's entered into their first contract for "Indian" machines.

Ridden by the late O. C. Godfrey, the red "Indian" became a feature on the Brooklands racing track, and at all important trials, winning innumerable prizes and medals, and finding its way into favour with the motoring public all over the country.

For ten years Godfrey's, Ltd. have represented the "Indian"—each year contracting for larger numbers as the merits of the machine became more widely known.

It is gratifying for us, as agents, to look through our file of old advertisements, and to note how the laudatory descriptions written years ago have been borne out by time. Here is one advertisement written before the War, and not a single word needs revising:

There are motor cycles which proclaim their horse-power by roaring, reverbrating explosions.

There are machines where power is the master, and refuses to be governed in traffic.

With other motor cycles the sale price is not the whole price, and one has to spend money for speedometer, lighting set, and horn.

The "Indian" passes these on the road in dignified silence.

With the "Indian" power is the servant, and, governed by the pilot jet, makes riding in traffic an easy task for the veriest novice.

The "Indian" is fully equipped with electric head light, electric tail light, electric horn, and speedometer.

Godfrey's have contracted for a very large number of the 1920 models, and can with every confidence recommend them to their friends as the last word in power, efficiency and comfort

There will be two models :—

7 h.p. Spring frame, power plus twin, with electrical equipment,
4 h.p. Rigid frame, power plus twin,

and illustrations and specifications will shortly be available.

Don't delay placing your order. If you order at once you insure delivery in the early Spring, and the satisfaction of possessing a machine equal to any and every demand.

As a combination you will find our description (in 1913) "The express de-luxe of the road" not a mere figure of speech, but a statement of fact which experience will confirm.

Phone:
7091 Mayfair
(2 Lines)

GODFREY'S Ltd.,

208, GT. PORTLAND ST., LONDON, W.1.

Official Thanks to Members

The Home Office
Ministry of Food
Ministry of Transport
Postmaster-General

and the

Chief Commissioner of Police

have expressed keen appreciation of the invaluable services rendered by Members of the Automobile Association during the Strike period.

The Executive Committee

cordially thank all Members, Agents, and Repairers and Friends whose prompt and generous response to the Call enabled the Association to be of such value to the State.

W. JOYNSON-HICKS,
Chairman.

STENSON COOKE,
Secretary.

THE AUTOMOBILE ASSOCIATION & MOTOR UNION,
FANUM HOUSE, LONDON.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable & Co. to ILIFFE & SONS Ltd., and crossed & Co. Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. 000, c/o "Motor Cycle," 20, Tudor Street E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the car offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, 1 %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2930

LIVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsman, Ltd., 9, Parr St., Liverpool. [0003

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London, E.C.4.

For square deals and Values....

City Agents for all the leading makes of Motor Cycles & Combinations

If you place your order with us for a 1920 mount, you will be certain to get every attention.

We deal with exchanges and easy terms off our own bat.

We are noted for

RELIABILITY

and for giving every satisfaction to our customers.

Prospective buyers come to us because our reputation is well known in the motoring world, and they are assured that their interests will be looked after. It has been a difficult problem in recent times, but has been thoroughly carried out in every instance. A testimonial letter just received states: "I place my order with you, because the firm that has always been spoken of amongst my brother officers as the most reliable one is

WAUCHOPE'S"

The latest 1919

6 h.p. J.A.P. Twin Cylinder Engines

From Stock. Trade Supplied. Terms on application; these include extras. 50 Engines for immediate delivery, £37 10s. each.

Second-hand Engines taken in part payment. GOOD PRICE ALLOWED.

Makers' Guarantee

Wauchope's, 9, Shoe Lane, London

'Phone: Holborn 5777

MOTOR CYCLES FOR SALE.

A.B.C.

1915 A.B.C. 3½h.p. Flat Twin, spring frame, 4-speed countershaft, dual control clutch, kick starter, perfect condition; best offer.—Earnshaw, Cloth Hall St., Huddersfield. [X5453

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

A.B.C.—Early position on our waiting lists occasionally become vacant again owing to clients preferring immediate delivery of other makes; probably it is well worth your writing us; large July deliveries expected; 200 A.B.C.'s due this season.—Dunwell's Garage, Wigan. [X4664

Abingdon.

ABINGDON, 1914, 3½h.p., with cane sidecar, good running order, Bosch mag., 2-speed, new lamps, good tyres, and several spares; £50 cash.—Casson, Williton, Somerset. [X5633

3½h.p. Abingdon King Dick, 2-speed, clutch, handle starter, lamps, Stewart wareer, new tyre and inner tube on back, first-class running order and appearance, with £4 insurance policy; nearest £55.—135, Norwich Rd., Ipswich. [X5138

A.J.S.

A.J.S., 2¾h.p., 1915, very good condition, complete; £65.—Longney, Oswestry. [X5584

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

A.J.S. 3½h.p., gear box, all accessories, good condition; £60.—22, Campbell Rd., Hanwell. [8632

A.J.S. Combination, just delivered; will take £175.—Madden, Tower Lodge, Crofton, Wakefield. [X5465

A.J.S. 2¾h.p., cylinder rebored, new piston and rings fitted; £3/15.—Lawry, 13, Clifton Rd., Sidcup. [8268

2¾h.p. A.J.S., 1916, 3-speed and clutch, excellent condition; £65, or nearest offer.—46, Scorer St., Lincoln. [8561

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

A.J.S., 1919, 6h.p., military model, brand new, just delivered from makers; £135; Cambridgeshire.—Box L4,744, c/o *The Motor Cycle*. [8113

1914-15 6h.p. A.J.S. Combination, 3-speed, excellent condition, few minor repairs required; 100, or best offer.—Lornie, Alyth. [X5561

1918 A.J.S. 6h.p. Combination, complete with hood, screen, spare wheel, and tools; £135.—56, Waterloo Rd., Wolverhampton. [X5635

A.J.S. 1915 6h.p. Combination, interchangeable wheels, hood, screen, speedometer, spare tubes; trial; £110.—110, High St., Merton, S.W. [7966

A.J.S. 1919 Combination, lovely condition, Lucas lamps, complete; first cheque £185.—Marshall, 35, Sir John's Rd., Selly Park, Birmingham. [8435

A.J.S. 5-6h.p. Combination, 2-speed, lamps, horn, speedometer, hood, wind screen, running order; £85.—69, Higham Hill Rd., Walthamstow, E. [8653

1919 Model New 6h.p. A.J.S., with Sunbeam sidecar, electric light, all complete; 180 gns.—62, Hampstead Rd., N.W.1. 'Phone: North 1519. [7944

1919 (July) A.J.S. Combination, spare wheel, hood, screen, lamps, horn, perfect condition; best offers.—David, 1, Riverside, Newbridge, Mon. [X5560

A.J.S. 1918 5-6h.p., military model, with Sunbeam sidecar, Lucas accessories, complete; £170.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0552

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries. [0007

A.J.S. 1912 5h.p. Sidecar Machine, recently overhauled, excellent condition, lamps, horn; any trial, appointment by letter.—Lovett, 48, Chaddock St., Preston. [X5631

A.J.S. 2¾h.p., latest model, 3-speed, Lucas lamps and horn, 3 toolbags, platiog and enamel perfect; expert examination invited.—H. Woolley, Bloxwich Rd., Willenhall, Staffs. [X5494

1918 A.J.S., 2¾h.p.; 3-speed and neutral, handle-bar clutch, kick start, perfect condition; price £85; are you interested?—A. H. Sanson, 49, Hoe St., Walthamstow, Essex. [X5590

1918 A.J.S. 6h.p. Combination, complete with spare wheel, screen, apron, Lucas lamps and horn, splendid condition; £165.—Burlinson, 15, Elmsthorpe Av., Nottingham. [X5563

FOR Sale, 2¾h.p. A.J.S. 3-speed, hand clutch, speedometer, fitted with fine front lamp and rear lamp, tyres in good condition, bike in good condition; £68.—Apply, J. A. Evershed, 23, Iffley Rd., Oxford. [8558

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S. Twin and Sidecar 2 bodies, wind screen, 3 lamps, kick starter, new chains, hand clutch, good running order; £90.—Allsop, Halfway Green, Walton-on-Thames. [8410

A.J.S. 1913 2¾h.p., 2-speed, kick start, hand clutch, lamps, horn, speedometer, tools, excellent condition; £50.—Apply, Sidney Hodges, jun., 58, Darlington St., Wolverhampton. [X5599

6h.p. A.J.S. 1917 Combination, coachbuilt sidecar, hood and screen, interchangeable wheels; £145.—Vivian Hardie and Lane, Ltd., 24, Woodstock St., off Oxford St., Bond St., W.1. 'Phone: Mayfair 6559. [8556

1919 A.J.S. Combination, electric lighting, 3 lamps, hood, screen, spare wheel, spring saddle pillar, Lucas horn and Klaxon horn, also brand new Watford trip speedometer, special A.J.S. model, fully insured; the whole of the outfit is in brand new condition, and is open to any trial; £185.—1, Pilgrim Hill, West Norwood, S.E.27. [8322

Alecto.

ALECTO 1919 3½h.p. 2-stroke T.T., 2-speed, clutch, K.S., not done 50 miles, lamps, horn, aluminium numbers, all accessories, very smart, fully insured owner ordered away; £95. After 5.—7, St. John's Rd., Brixton, S.W.9. [8246

Alldays.

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [0017

ALLON 1916 2-stroke, 2-speed, perfect, as new; £50. —26, Bryanstone Rd., Crouch End, N.8. [7970

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2931

ALLDAYS Matchless, 1915, 2-stroke, 2¾h.p., lamps, etc., excellent condition; £35.—64, Hillier Rd. Clapham Common, S.W. [8513

1916 Alldays Allon, 2-speed clutch model, tip-top condition throughout, fully equipped; £55. Parker's, Bradshawgate, Bolton. [X5672

ALLDAYS Allon 2½h.p., 1919, not done 200 miles. Lucas lamps and horn, 2-speed, clutch, kick start; £75.—Johnson, 145, Sutherland Av., Maida Vale. [8452

LATE 1917 Alldays Allon, 2-speed, lamps, Klaxon, legshields, mileage 1,000, everything as new; bargain, £55.—Ralph, 21, Champion Park, Camberwell. [8199

ALLON 1919 2¾h.p., brand new, actually in stock —F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead, N.W. (near Hampstead Tube) 'Phone: 3752. [6331

BRAND New 1919 Alldays Allon, just received, a first-class machine, fitted with 2-speed gear, hand-controlled clutch and kick starter, special leg shields, Lucas horn, head lamp and generator and rear lamp, cost £95; will accept close offer to this figure, as daily expect long ordered combination.—Box L4,809, c/o *The Motor Cycle.* [8676

Ariel.

ARIEL Combination, 3½h.p., new last week; offers wanted.—47, Newland Av., Hull. [8211

ARIEL 3½h.p., Bosch, B. and B., new tyre on back; £28.—21, New North Rd., Reigate. [7972

JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

1917 3½h.p. Countershaft Ariel Combination, complete, lamps, horn; £95.—Eveson, The Dingle Stourbridge. [X5348

ARIEL, 3½h.p., 1914, 3-speed, and canoelet sidecar, appearance and condition as new; £88.—Longney, Oswestry. [X5585

1919 Ariel 3½h.p. Combination, 3 lamps, acetylene, horn, perfect turnout; £115, or offers.—East End Farm, Pinner, Middlesex. [7968

ARIEL Combination, 6-7h.p., Aug., 1919, mileage 600, electric lighting, as new; £145.—Hall, 31, The Broadway, Cronch End, London, N.8. [8146

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare part stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

ARIEL, 1919, 6-7h.p., luxurious coachbuilt sidecar by Dunhill, perfect condition; accept £135 for immediate sale.—Beechfield, Haywards Heath. [8219

ARIEL 6-7h.p. Combination, delivered Sept., 1919 lamps, horn, mat, watch, tools, spares, 12 months insurance; £160.—Platt, 2, Sheffield Rd., Warmsworth, Doncaster. [7992

ARIEL 4h.p., 2-speed, clutch, C.B. combination, tyres and belt as new, special saddle; £55, or best offer; ride away.—Austin, 272, Durnsford Rd., Wimbledon Park, S.W.19. [7967

1919 Ariel 6-7h.p., 3-speed, K.S., head, rear lamps, 2 generators, horn, new 6 weeks, specially tuned, recently awarded medal in A.C.U. trials; £125.—Saint, 8c, North End Rd., Golder's Green. [8052

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AUTO-WHEEL, De Luxe model, shock absorl stored 4 years, just overhauled, topping conditi 12 gns.; after 6 p.m.—54, Cecil Av., Enfield. [8

AUTO-WHEEL, with Sunbeam cycle, thoroughly o hauled, new tyres, new mag.; owner disabled war; £24.—Parr, Brenkspear Rd., Abbots Langley, He [8

WALL Auto-wheel, 1914 pattern, little used, g condition, new tyre, fitted with shock absorl very powerful; £15.—Stark, Pitchcroft, Grove Pa Wanstead. [X51

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6h.p. Bat, 1915, spring frame, 3-speed, K.S., la sidecar hood, screen; £95.—King, 9, Goold St., Knowle, Bristol. [X56

BAT-J.A.P. 1916 4-5h.p. Twin, 2-speed countersha not done 500 miles, all accessories; owner bou Morgan; £80.—98, First Av., Bush Hill Park, Enfie [72

BAT-J.A.P. 6h.p. Combination, 2-speed gear, engi rebushed throughout and new piston ring price £65.—Stevenson's Garage, Tunbridge Wel Tel.: 425. [85

BAT-J.A.P. 8h.p., luxurious combination, Fren grey, 3-speed clutch, kick starter, special spru saddle and sidecar wheel, mechanically perfect, exc lent appearance; any trial or examination; £135 Parker's, Bradshawgate, Bolton. [X56

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BLACKBURNE 1918 Coachbuilt Combination, pe fect condition, just overhauled, wind screen, lamps, Klaxon, 2 new tyres; seen by appointmen £120.—83, Ulverston Rd, Walthamstow. [84

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4h.p. Bradbury C.B. Combination, as new, genuin £60.—Hoare, North Cadbury, Bath. [X54

BRADBURY 4h.p., 1914, 2-speed, excellent cond tion; £39.—Crescent Garage, Crescent Lane, Cla ham, S.W.4. [82

BRADBURY, 4h.p., 2 speeds, free engine, thorough overhauled, will take a sidecar; £38.—103a, Hi St., Wandsworth. [85

BRADBURY 1919 4h.p., T.T., brand new, stock; £82.—Elce and Co., 15-16, Bishopsga Av., Camomile St., E.C.3. [04

BRADBURY 1912 4h.p., just overhauled and n N.S.U. gear fitted, all lamps; £35.—G. Salmon, St Martin's, near Oswestry, Salop. [X56

4h.p. Bradbury Combination, 3-speed, clutch, go condition throughout, lamps, tools, etc.; £55. Dunkley, Brackley, Northants. [83

4h.p. Bradbury, N.S.U. 2-speed. Rally coachbui sidecar, splendid condition throughout; £48. Apply, letter first, Bliss, Dockyard, Sheerness. [X56

1913 4h.p. Bradbury, N.S.U. gear, Bosch, n belt, nearly new tyres, lamps, etc., good co dition; £45/10.—33, North Rd., Wingate, Durham. [81

FOR Sale, old 3½h.p. Bradbury, coil ignition, B. a B. carburetter, good tyres, complete, less sadd brakes, and footboards; £6.—27, Tudor Rd., Hay End, Middlesex. [82

BRADBURY 4¼h.p. 1914 Coach Combinatio Sturmey-Archer 3-speed gear, clutch, Bosch ma lamps, spares, 3 heavy Dunlops, perfect running ord overhauled fortnight ago, owner going abroad; £70. Fox, c/o Abbott, 5, Spear Mews, S.W.5 (close Ear Court Tube Station). [81

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1h.p. Bradbury Combination, 2-speed, new bushes, 4 gudgeon, crank pin, piston, 2 new Palmer es, Beldam 4-ply oversize sidecar and back; first 5; ride away anywhere.—Fairfield, Imperial Rd., klock. [X5709

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ROUGH 3½h.p., 2-speed, Model H, T.T., 1916, lamps, etc.; £70; after 6.—Fritton, Alderman's l, Palmer's Green, N. [8656

OUTH Lancashire, North Cheshire, and Isle of Man Only. Brough enquiries.—J. Blake and Co., cial Dealers. Liverpool and Manchester. [7039

1916 3½h.p. Brough, 3-speed S.A., kick start, and hand-controlled clutch, perfect condition; £80; trial, any time.—Horrell, Raunds, Northants. [8090

ROUGH, 1916, 3½h.p. horizontal twin, Sturmey 3-speed countershaft, h.c. clutch, footboards, knee ps, Pedley grips, lamps, horn, spares, speedometer; ; cash; appointment.—H. Robinson, Rydal House, ytou, Liverpool. [X5136

1h.p. Brough, flat twin, 3-speed countershaft, lamps. 2 Stewart horn, in beautiful condition, with coach-lt bulbous back sidecar, spare front and back wheels mplete with tyres, many spares; 95 gns.—Englemere, ulgrave, Bakewell. [X5353

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BROWN 4h.p., 3-speed Sturmey gear, with sidecar excellent running order and condition; £50.—ight, Gonville Manor Rd., Barnet. [8095

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B.S.A. 1915 K., 3-speed countershaft, re-enamelled, plated, running order; 60 gns.—21, Newton Av., ton (side gate). [8372

B.S.A. 3½h.p., free engine, clutch, pedal start, in good condition; best offer.—Bolt, 8, College Precincts, Worcester. [X5484

1914 B.S.A. 4h.p. Coachbuilt Combination, 3-speed, clutch, kick start; £70; seen after 7 p.m.—36, melagh Rd., Ealing, W. [8570

1916 4h.p. B.S.A. Combination, all-chain, 3-speed, kick starter, perfect condition, new tyres; £100. Dale, Chemist, Burton-on-Trent. [X5622

B.S.A., 1915, 3 speed, 4¼h.p., all chain drive, and 1919 Coronet coach sidecar; £96.—Halifax Motor xchange, Union St. South, Halifax. [8070

B.S.A. 1914 4h.p., free engine model, new tyres and belt, mechanically perfect, new Amac, excellent achine; £55.—Evans' Stores, Talgarth. [X5592

1919 B.S.A. Combination, 4¼h.p., 3-speed, chain-cum-belt, Watford, P. and H. lamps, as new; £105. 50, Crystal Palace Park Rd., Sydenham. [8337

B.S.A. Coachbuilt Combination, 1914, 4¼h.p., 2-speed, fully equipped, splendid condition; £75.—9, Widmore Rd., Bromley, Kent. 'Phone 351. [8390

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B.S.A., 1919, basket S.C., 100 miles; owner going abroad; £120, or nearest offer; after 6 p.m.—Merivale, 101, Esmond Rd., Bedford Park, London, W.4. [8097

B.S.A., 1913, 3½h.p., 2 speeds, F.E., Bosch, lamps, all accessories, good tyres, been stored 3 years; bargain, £38.—Whitley, 43, Burton Rd., Hugglescote, Leicester. [X5580

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B.S.A. 1916 Model Combination, 4¼h.p., chain-belt, 3-speed countershaft, clutch, kick starter, tyres new, Stewart speedometer, Lucas lamp; £80, no offers.—Apply, Blair and Co., Dockhead, Dumfries. [X5657

B.S.A., 4¼h.p., 1919, 3-speed, clutch, kick starter, complete with canoclet sidecar, lamps, horn, etc., etc., few weeks old, indistinguishable from new; £135.—Frank Woitworth, 139, New St., Birmingham. [8183

B.S.A. Combination, Model H, 1916, 4½h.p., de luxe sidecar, all chain, 3-speed, countershaft, kick start, speedometer, electric and gas lighting, horn, spares; trial given; bargain, £120.—176, Ardgowan Rd., Catford, S.E. [8014

B.S.A., Model H, and No. 2 sidecar, 1919, as new, mileage 700, complete with luggage grid, screen, hood, Lucas electric dynamo lighting set, speedometer, horn; £156.—Stanley Preston, 133, Sloane St., S.W.1. [X5470

B.S.A. 3½h.p., clutch model, Bosch, new B. and B. (pilot jet), heavy tyres, perfect condition throughout, takes sidecar; 42 gns.; will exchange for good 2-stroke and cash.—Wearn, Station, Oakham, Rutland. [X5385

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3½h.p. B.S.A., late 1913, 2-speed and free engine, and Gloria spriog-wheel sidecar, both in splendid condition and order, accessories and spares, stored 4 years; trial; seen by appointment.—Write, Harries, 7, Tokenhouse Yard, E.C. [8124

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1917 Calthorpe, 2-speed, 2-stroke; £45.—Wood, 7, Hopton Rd., Streatham. [8017

CALTHORPE-J.A.P., 2¾h.p., 2-speed, good running order; £35.—Poole, 47, Claremont Rd., Staines. [X5304

CALTHORPE 1915, 2¾h.p. J.A.P., Enfield 2-speed new condition; £40.—63, Solon Rd., Brixton. [3682

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CALTHORPE 2-stroke, 1915, 2-speed, excellent mechanical order; £35, or offer.—52c, Hackford Rd., Brixton, S.W.9. [8177

CALTHORPE-PRECISION 2¼h.p., 2-speed, good running order, new heavy Dunlop and belt; £28.—End, Sunningdale, Berks. [8134

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1915 Twin Calthorpe-Jap, coachbuilt sidecar, 2-speed countershaft, long exhaust pipes, adjustable pulley, excellent condition; £80.—Harpswood, Mount Pleasant, Weybridge. [8080

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CHATER-LEA-FAFNIR 4½h.p., single speed, mag., B.B., in running order; £22, or nearest.—Sargent, Little Common, Bexhill, Sussex. [8046

Chater-Lea-Jap.

CHATER-J.A.P. Combination, 5h.p. twin, 3-speed, clutch, tyres good, lamp, horn; £75.—Heath, 14, St. Andrew's Rd., Enfield Town. [8186

CHATER-J.A.P. Twin, 8h.p., C.B. sidecar, 2-speed, clutch, fully equipped, electric lighting; £100.—10, The Exchange, London Rd., Thornton Heath. [8135

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CLYNO, 1914 6h.p., coachbuilt sidecar, hood, s carrier, lamps, 2 spare wheels, good running £100.—Box L4,731, c/o *The Motor Cycle.*

6h.p. Clyno Coach Combination, 1912, 2 s clutch and kick start, mechanically perfect; near offer.—20, Kingston Lane, Teddington.

CLYNO Combination, 1914, 5-6h.p., 3 speeds, changeable wheels, spare wheel, splendid tion, tyres practically new; £105; any trial.—F 48, Brettell St., Dudley. [2

1915 6h.p. Clyno Combination, 3-speed, kick lamps, speedometer, new tyres, not used 2 take a prospective purchaser any distance for £100.—4-5, Bow Common Lane, London.

CLYNO 5-6h.p. Coachbuilt Combination, 3 kick start, clutch, spare interchangeable speedometer, 3 lamps, horn, spares, tools, nearly back and front tyres; seen any time; 90 gns Linzee Rd., Hornsey, N.8.

CLYNO 6h.p. Combination, been overhauled, 2- kick-start, wind screen, electric light, meter, new tyres back and front; £86, or o offer received; must sell, sent anywhere on rail.- soo, 27, Peel St., Sunderland [2

CLYNO Combination, 6h.p., 2-speed, kick underslung coachbuilt sidecar, speedo lamps, etc., stored during war; seen week-end; or offer. Wanted, lower power machine.—Parkir Haydon's Rd., South Wimbledon.

Connaught.

CONNAUGHT 2¾h.p., 1914, pump, lamps, tyres in excellent running order; 28 gns.—14, M Sq., Aylesbury.

Coulson.

SOUTH Lancashire, North Cheshire, and Isle of Only.—Coulson B. enquiries.—J. Blake and Official Dealers, Liverpool-Manchester

1919 2¾h.p. Coulson-B., 2 speeds, and spring just delivered and unregistered; best offer list price, 85 gns.; owner bought car.—Newman Stall St., Bath. [2

Coventry Eagle.

2½h.p. Coventry Eagle, almost as new; £42; e p.m.—30, Beaufort Rd., Reigate.

Dalm

DALM 2-stroke, 1915, perfect condition; £ 51, Maplethorpe Rd., Thornton Heath.

De Dion.

DE DION, 6h.p., 3 speeds, reverse; £55; trial Dafforne Rd., Upper Tooting.

Diamond.

DIAMOND-J.A.P. 2¾h.p., Enfield gear, new 1919, hardly soiled; nearest £60.—25, H Fields, Wolverhamptm. [2

1916 Diamond-Jap, 2¾h.p., 2-speed Enfield perfect running order; £55.—Jones, 4, Wo Parade, North Finchley, N.12.

1919 Diamond 2-stroke, Villiers engine, not packed, just delivered; accept list price plus carriage.—A. Flower, The Harpenden Ga Harpenden.

Douglas.

DOUGLAS 1915 2¾h.p., 2-speed, excellent cond £50.—63, Solon Rd., Brixton.

DOUGLAS 2¾h.p., 2-speed, lamps, horn, as new —88, Leigham Vale, Tulse Hill.

1914 2¾h.p. Douglas, 2-speed, very fast; £4 Bellingham Terrace, Catford.

1915 Douglas, 2-speed, T.T. bars; £50.—J. and Co., 16, Hampstead Rd., N.W.

1917 4h.p. Douglas, 3-speed, powerful mount; —1, Bellingham Terrace, Catford.

DOUGLAS, 4h.p., 3-speed, Millford sidecar; 29, St. Leonard's St., Bromley-by-bow.

DOUGLAS 1916 2¾h.p., fine condition; £55. wards, 7, Exhibition Rd., S. Kensington.

DOUGLAS, 1916, 2-speed, as new, guaranteed; —51, Maplethorpe Rd., Thornton Heath.

60 Gns.—2¾h.p. Douglas, like new, very fast, exhaust.—Miller, 62, Hampstead Rd., N.W.

MOTOR CYCLES FOR SALE.

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h.p. Douglas, 1917, good condition: £73, or near offer.—9, Kelland Rd., Plaistow, London, E.13. [8026

OUGLAS.—Now delivering new 1919 model 4h.p combination; £123.—Moffat, Yeovil. 'Phon 50 [110?

OUGLAS, 2¾h.p., Bosch mag., perfect running order; £25.—23, Rowland Grove, Sydenham. [X5393

OUGLAS 2¾h.p., just overhauled, top-hole condition; £38.—Gallipoli, King's Ride, Camberley. [8524

911 Douglas, perfect; accept first good offer.—B. Johnson, 2, Winchester Rd., Highgate, N.6. [8164

OR Sale, 2¾h.p. Douglas, 1916 war model, run about 500 miles.—Sheldon, 2, Austin Friars. Tel. all 1529. [8033

OUGLAS 2¾h.p., 1915 W.D., guaranteed perfect; £58.—Frost, "Bridport News" Office, Bridport, orset. [8096

OUGLAS 2¾h.p., Bosch, new tyres, 2-speed; first £30 secures.—231, Block Lane, Chadderton, Oldm. [X5406

OUGLAS, 2¾h.p., Bosch mag., requires slight repair; £15, or offer.—177, Earlsfield Rd., Wandsorth. [X5508

OUGLAS 1913-14, 2-speed, lamps, etc., new tyres, lovely order; £48.—261, Mitcham Lane, Streatham, W. [8345

OUGLAS W.D. 2¾h.p., excellent order and condition, lamp and horn; £50.—26, Brambleberry Rd., ainstead. [8321

OUGLAS 1919 4h.p. Combination, plate clutch model, just delivered; £145.—A. Davis, 12, Hyde ark Place, W.2. [8023

OUGLAS, 2¾h.p., 1915, in good condition, all accessories; £55.—E. Perry, 3, Farethorpe St., utney, S.W.15. [8010

OUGLAS, 2¾h.p., bought new 1918, T.T., 2-speed, makers' colours, perfect; £58/10.—5, Victoria v., Surbiton. [X5620

918 Douglas and Sidecar, 4h.p., 3-speed, kick starter, good as new; £100.—136, Lavenham Rd., Southlds, S.W.18. [8270

915 2¾h.p. Douglas, 3-speed, Cowey speedometer, condition as new; any trial; £65.—Nixon, Brampn, Cumberland. [X5411

916 Douglas 2¾h.p., 2-speed, buffer spring frame, overhauled and renovated; £47.—357a, North nd Rd., Fulham. [8473

OUGLAS 2¾h.p., W.D. model, lamps, Klaxon, excellent condition; £80; appointment.—F., 8, Chepow Mansions, W.2. [X5389

OUGLAS, late 1916, 4h.p., 3-speed, clutch, K.S., splendid condition; £75.—12, Cornwall Mews, loucester Rd., S.W.7. [8251

OUGLAS 1913 2¾h.p., new tyres, lamp set, single speed, good condition; £45, no offers.—43, Sarsfeld d., Balham, S.W.12. [8263

OUGLAS, 1913-14, 2¾h.p., 2-speed, Bosch mag., excellent running order; best offer over £45.—5, Iverna Gardens, W.8. [8115

OUGLAS Combination, 4h.p., August, 1919, electrically equipped, mileage 200, 1920 clutch; £145. 38, Burlington Rd., W.2. [8082

OUGLAS 2¾h.p., single speed, good tyres, magneto and engine overhauled; any test; £30.—15, Temple d., Bollo Lane, Acton. [8053

h.p. Douglas Combination, 3 speeds, clutch, kick starter, smart condition; 90 gns.—Loweth, 6, lount Pleasant Rd., Ealing. [8358

OUGLAS 1918 Combination, 4h.p., 3-speed, enamel and plating perfect, a very smart outfit; £97.—145, lackhorse Lane, Walthamstow. [X5008

914 T.T. Douglas, 2-speed, just completely overhauled, splendid puller; £45.—A. Flower, The arpenden Garage, Harpenden. [8274

3¼h.p. Douglas, 2-speed, 1911, new tyres and tubes, just overhauled, condition good; what offers?—ates, Hughenden, Titchfield, Hants. [8486

OUGLAS 2¾h.p., 1915, new tyres, good running order, W.D.; 48 gns.; after 7 o'clock.—112, ortobello Rd., N. Kensington, W.11. [8397

OUGLAS 1914 2¾h.p. T.T., 2-speed, excellent condition, accessories; £50; seen by appointment.—ones, Bamford House, Harrow Weald. [8078

OUGLASES, 2¾h.p., 2-speed, 1915 and 1916; from £48; call and inspect.—Rey, 173, Gt. Portnd St., W. 'Phone: Mayfair 879. [7325

OUGLAS 2¾h.p., 2-speed, re-enamelled, replated, as new, lamps, horn, etc.; £55, or nearest.—ield, 26 Rowan Rd., Bexley Heath. [8392

OUGLAS, 1914, 2¾h.p. T.T., not used during the war, excellent condition, all on, speedometer; £60. Box L4,764, c/o *The Motor Cycle*. [8221

916 Douglas 2¾h.p., 2-speed, W.D., special buffer fork, fine condition, very fast; £56.—H. S. Smith, 6, Royal Parade, Ripple Rd., Barking. [8001

OUGLAS, 2¾h.p., 1915, overhauled and in perfect condition; £55.—Smith's, 10-16, Haverstock ill (opposite Chalk Farm Tube Station). [8044

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DOUGLAS 2¾h.p. Sporting Model, fitted with T.T. bars, and Philipson pulley with hand operation; £75.—Parker's, Bradshawgate, Bolton. [X5676

DOUGLAS W.D. 2¾h.p., 2 speeds, sprung buffer head, good running order; 50 gns., or near offer.—10, Crena Gardens, Richmond, Surrey. [8651

DOUGLAS 1915 W.D. Model, 2¾h.p., 2-speed, lamps, generator, horn, tools, 2 new inner tubes just fitted; £45.—21, Weston Park, Crouch End, N.8. [X5668

1920 Douglases.—By one who knows; delay is dangerous.—Order yours now from the Douglas Specialist, Cibb, Gloucester. 'Phone: 852. [6340

W.D. Douglas 2¾h.p., in excellent condition, good tyres, new mag., new belt and chain, seen and tried any time; £55.—Elsden, Sutton, Ely. [X5718

4h.p. Douglas Combination, late model, beautiful condition, climb a mountain; £85.—Ayers, 1, Knivet Rd., North End Rd., Fulham, S.W. [8577

1918 Douglas 4h.p. Combination, 3 speeds, electric lighting, excellent condition; £110; after 6 p.m.—1, Colosseum Terrace, Regent's Park, N.W.1. [8032

DOUGLAS, 2¾h.p. and 4h.p., solo or combination; reasonable; call and inspect, any trial; all as new.—56, Kirkdale, Sydenham. 'Phone: 1078. [8151

1919 Douglas 4h.p. Combination, absolutely as new, complete set of lamps, horn, wind screen, storm apron, etc.; £160.—Cooke, 21, Gray's Inn Rd., W.C. [7962

2¾h.p. Douglas, 1914, speedometer, lamps, horn, all accessories, appearance and mechanical condition as new; 54 gns.; after 6.—3, Foxbury Rd., Brockley. [8089

1919 Douglas 2¾h.p., long exhaust, 2 lamps, Klaxon, knee-grips, spare valve and tube; bargain, £76, no offers.—349, West End Lane, West Hampstead. [8456

DOUGLAS, late 1916, 2¾h.p., T.T., 2-speed, new lamps and Klaxon, little used, very good condition; £55.—Wainwright, 95, Wardour St., London, W. [X5462

DOUGLAS 4h.p. Combination, 1914, lamps, horn, speedometer, spares, enamel, coachwork, and engine as new; £90.—Chalkley, Brand St., Hitchin. [X5429

DOUGLAS 2¾h.p., delivered June, 1919, lamps, horn, perfect condition; owner gone abroad; £75, or near offer.—Lund, Park View, Blyth, Northumberland. [X5350

2¾h.p. Overhead Valve Racing Douglas, with light aluminium Bax sidecar, previously owned by Sir J. Alcock.—Baxter, Totterdown, Bristol. [8205

DOUGLAS 1915 2¾h.p., 2-speed, lamps, horn, spare tube, pump, tools, etc., brand new C.A.V. mag. just fitted; £62, or offer.—11, Avenue Gardens, Acton, W.3. [7961

DOUGLAS 2¾h.p. War Model, £15 just spent on new pistons, rods, crankshaft, valves, chain, etc., mechanically perfect; £60.—Bomford, Kingsmuir, Sutton. [8015

1919 Douglas 2¾h.p., W.D., makers' colours, practically new, complete tools, mechanical horn, spare valves, lamps (not new); £80.—Bell, Hospital, Loughborough. [8335

1915-16 Douglas, 2¾h.p., 3-speed, T.T., Lucas lamps, horn, original tyres mark you, excellent condition; £59/10, no offers.—Elim Place, Leamore, Walsall. [X5662

3½h.p. Douglas, late 1914, 2-speed, done under 3,000 miles, stored 5 years, perfect condition; £85.—23, Maresfield Gardens, Hampstead, London, N.W.3. [8176

1919 Latest Model 4h.p. Douglas Combination, just delivered, after waiting 4 months for delivery; now unrequired; 150 gns.—Capt. Vegler, Beacon Hotel, Crowborough. [8061

DOUGLAS 4h.p., 1918 model, and Douglas C.B. sidecar, almost new, with all accessories; a bargain, £110; any trial.—174, Barcombe Av., Streatham Hill, London, S.W.2. [8449

SMITH'S, opposite Chalk Farm Tube Station, have for sale Douglas 1916 2¾h.p., in excellent condition, tyres new; 50 gns.; also 4h.p. 1916 combination; 85 gns. [8040

2¾h.p. Douglas, 1916, 3 speeds, F.E., complete with new lamps, horn, tools, and spare belt, etc., top-hole condition.—Hodgkison, 33, Florendine St., Amington, Tamworth. [X5605

4h.p. Douglas, 1919, W.D., as new, mileage 300, splendid condition; £125; complete with lamps and Klaxon.—Write M., Batchworth Heath House, Rickmansworth, Herts. [8207

2¾h.p. W.D. Douglas, in exceptionally good condition, complete with horn, pump, tools, and spares; £55; appointment between 6 and 8 p.m.—68, Lytton Rd., Leytonstone, E.11. [8368

1919 4h.p. Douglas Combination, blue tandem body, small mileage, all spares, etc.; best offer accepted over £125; write for trial, etc.; insured.—Also 1911 Douglas.—Douglas, 73, Victoria Rd., Barking. [8084

DOUGLAS, 1913, 2¾h.p., 2-speed, stored during war, enamelling and plating as new, complete with lamps, speedometer, mirror, toolbag, and numerous spares, engine perfect; £55.—18, Cheselton Rd., Fulham, S.W.6. [8166

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Douglas.

DOUGLAS New 2¾h.p. W.D. Model, covered 100 miles only; cost £83, will sell £75; owner buying Indian sidecar; apply after 6 o'clock.—Rawlings, 16, St. James's St., Piccadilly. [8261

2¾h.p. Douglas, 1913, 2-speed, splendid condition, very fast, 2 new heavy Dunlop covers, lamps (back and front), horn, tools, bag; £46/10.—24a, Edgington Rd., Streatham. [8600

1914 2¾h.p. Douglas, 2-speed, fitted for clutch and kick start, just overhauled, like new, mechanical horn, faultless running; £52.—W. Moor, 2, Woodland Hill, Upper Norwood, S.E. [8505

1916-17 Douglas, W.D., 2¾h.p., 2-speed, footboards, 2 armoured toolbags, very fast, guaranteed, complete with pump, horn, spare belt, tools, etc.; 67 gns.—Taplin, Woolhampton, Berks. [X5648

DOUGLAS 2¾h.p., W.D., new August last, splendid condition, complete, Bosch, mag., spare belt, owner going India; £78 cash lowest.—2, Barrow Rd., Streatham Common, S.W.16. [8466

DOUGLAS 1916 4h.p. Combination, heavy Dunlops, mechanical horn, tools, spare valve, trial; 90 gns.; would cousider 2¾h.p. Douglas as part exchange.—56, High St., Tooting. [8497

DOUGLAS 1914 2¾h.p., 2-speed, splendid condition throughout, brand new tyres, speedometer, accessories, small mileage; 50 gns.; private owner.—Seen at Pearse, 17, Chobham Rd., Woking. [8471

1915 Douglas, 2¾h.p., Colonial model, excellent condition and running order, new tyres (Dunlop heavy) and tubes, Douglas tool kit, insured; £60.—15, Gt. George St., Westminster, S.W.1. [8255

DOUGLAS 2¾h.p., 2-speed, uncrated in June, all-black model, absolutely perfect, very fast, mileage about 800, beautifully equipped, heavy Duolops; £65.—60, Wallingford Av., N. Kensington. [8081

1918 4h.p. Douglas, 3-speed, kick starter, lamps and accessories, hardly been used, £85; also a combination, nearly new.—2a, Sistova Rd., Bedford Hill, Balham, S.W. 'Phone Streatham 352. [8129

DOUGLAS 1918, W.D. 2¾h.p., 2-speed, new January, 1919, complete, all accessories; first offer £60 cash secures; seen after 2 p.m. Saturday, or any time Sunday.—68, Pepler Rd., Old Kent Rd., S.E.15. [8055

DOUGLAS Motor Cycle, W.D. model, just been delivered in crate; 99 gns., at quarter down, 12 monthly payments.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [8532

DOUGLAS (December, 1916) 4h.p. Combination, kick-starter, 3-speeds, clutch, C.B. sidecar with wind screen, perfect condition; £105, or near offer.—Williams, 83, Upper St. Islington, N.1. [8464

4h.p. Douglas, 1915, new sidecar, electric lights, Klaxon, in good condition, £120; also a 1914 2¾ h.p. 2-speed model, £52; can be seen any time.—Singleton, 15, Enmore Rd., S. Norwood, S.E.25. [8342

2¾h.p. W.D. Douglas, brand new; one or two early deliveries at £72, plus carriage; pamphlets with particulars.—Robioson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [8362

DOUGLAS 4h.p. Combination, coachbuilt, spring upholstered, 3-speed, new Dunlops, spare tyre, storm sheet, lamps, etc., equal new; expert examination; £90 offers; by appointment.—Power, White House, Tatsfield, Surrey. [X5679

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0966

DOUGLAS 2¾h.p., Hutchinson tyres, 26×2¼, rubber-studded non-skid, run only 200 miles, Dunlop belt, powerful, fast, good condition guaranteed, trial, accessories; bargain, £28/10.—45, Charles St., Exmouth St., Stepney. [8399

DOUGLAS 4h.p. (1920) and G.L. Sidecar, as new, ridden by doctor only one week, perfect condition, wind screen, hood, all accessories, ready to ride away; on view Hardie, 24, Woodstock St., Oxford St.—Owner, Dr. Vincent-Bates, University College Hospital, London, W.C. [8173

4h.p. 1919 Type Douglas Combinations, with improved type of clutch; one or two early deliveries at £123, plus cost of crate and carriage; pamphlets with specification.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [8363

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2¾h.p. Edmunds, spring frame, J.A.P. engine and 2-speed gear, a really smart and comfortable machine; extended payments if desired.—Harrods Motor Showrooms, 116-118, Brompton Rd., opposite Main Building, London, S.W.1. [7958

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ELSWICK, 2-stroke, good tyres, footboards, head, tail lamps, horn, extra gallon tank fitted, a useful lightweight; £35.—Teague, 6, Coleherne Mews, Earl's Court, S.W. (After 2 p.m. Saturday.) [8156

Enfield.

ENFIELD 2-stroke, 2-speed model, brand new, in stock.—Moss. Wem. [X5146

BRAND New 8h.p. Enfield Combination for sale—Box 577, c/o *The Motor Cycle*. [X5133

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ENFIELD 3h.p., late 1916, K.S., in perfect condition; 62 gns.—H., 190, High St., Stoke Newington. [8104

ENFIELD 1917 3h.p., excellent order, lamps, horn; £70.—Edwards, 7, Exhibition Rd., S. Kensington. [8540

1919 Enfield, 2¼h.p., 2-stroke, perfect condition; best offer over £50.—A.B.W., 'Phone: Holborn 26. [8237

1914 6-8h.p. Enfield Combination, hood, screen, lamps, etc., lovely tune; £90.—32, Monega Rd., Forest Gate. [8376

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2920

ENFIELD, 2¾h.p., 2-speed, twin, lamps, etc.; £32, carriage paid.—Poole, Hampton Loade Station, near Bridgnorth. [X5305

ENFIELD 6h.p. Combination, latest model, excellent condition; £135.—Edwards, 7, Exhibition Rd., South Kensington. [8538

6h.p. Enfield Combination, 1916, Lucas, hood, spare tyre; £110.—Adams, School, Albion Hill, Lewisham, S.E. (After 5.) [8116

2¾h.p. Enfield, 1913-14, 2-speed, clutch, K.S., lamps, horn, tyres as new, just overhauled; £40.—73, Millbrook Rd., Southampton. [8038

1919 6h.p. Enfield Combination, just delivered, complete with speedometer, lamps, horn, etc.; £145.—98, Moncrieff St., Peckham. [8646

ROYAL ENFIELD 3h.p., late 1916, kick start, guaranteed not to have done 2,000 miles; £55.—D. O'Reilly, Ballieboro', Co. Cavan. [X5490

1916 Enfield Coachbuilt Combination, in very fine order; £120.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [8043

1913 6h.p. Enfield, coach sidecar, 2 speeds, lamps, and speedometer, in good order, engine just overhauled; £75.—Wadlow, Orpington, Kent. [7982

1919 Royal Enfield, 2-speed, 2-stroke, mileage about 200, Lucas lighting set, horn, etc.; £60.—R. Spackman, 85, Bath Rd., Swindon, Wilts. [X5721

ENFIELD 3h.p. Twin, 1916, 2-speed, F.E., all chain drive, lamps, pump, tools; £55, no offers.—48, Berkshire Gardens, Bowes Park, London, N. [8122

ENFIELD, 6h.p., 1915, C.B. sidecar, wind screen, Lucas lamps, etc., in splendid condition; £110.—Gilbert, 4, St. Helens Gardens, North Kensington. [8250

ROYAL ENFIELD 2¾h.p. 2-speed Twin, in good running order, just overhauled; any trial; first cheque £42.—14, St. Mary's Hill, Stamford. [X5431

ENFIELD, 3h.p., 2-speed, clutch, kick start, fast, good condition, lamp, speedometer, horn, tools, spares; £55.—44, Russell Terrace, Leamington. [X5137

3h.p. Enfield, 1915, 2-speed, kick start, Bosch, Amac, Palmers; £50, or exchange 6h.p. solo, cash.—Noble, Helstonleigh, London Rd., Norbury, S.W. [8107

1916 Enfield Combination, 3h.p., twin, all accessories good condition; price £90 or near offer.—Underdown Bros., 64, Bellamy St., Balham, S.W. [8569

ENFIELD 3h.p., 2-speed clutch, semi T.T., fully equipped, and in fine order; £52/10.—Moore (opposite International Stores), Hersham, Surrey. [8565

1916 6h.p. Enfield Combination, thoroughly overhauled, re-enamelled, and plated, genuine bargain; £110.—J. Smith and Co., 16, Hampstead Rd., N.W. [8585

ENFIELD 6h.p. Combination (1913-14), Binks carburetter, £5 worth spares, horn, lamps, etc., condition excellent; 105 gns.—Robinson, 2, Railway Rd., Ormskirk, Lancs. [X5409

ENFIELD 6h.p. Combination, lamps, horn, recently overhauled, excellent condition; trial; £95, or near offer; before 6, or appointment.—Garaged, Dewick, 200a, Blackstock Rd., N.5. [6758

1918 (November) Enfield Combination, 6h.p., date guaranteed, lamps, Klaxon, hood, screen, Palmer cords, some special fitments; £132.—55, The Ridgeway, Chingford. 'Phone 61. [X5617

ENFIELD Combination, 1916, fully equipped, engine good condition, Lucas lamps, Klaxon horn, 700×80 tyres, Palmer, hood, triple screen; 100 gns.—Gould, Market Place, Fordingbridge. [8453

1919 8h.p. Enfield, new August 15th, Lucas King Road set, Klaxon and Lucas horn, Tan-sad, fully insured, absolutely perfect condition; £155; Midlands.—Box 588, c/o *The Motor Cycle*. [X5720

ENFIELD 1916 6h.p. Combination, perfect condition, lamps, speedometer, etc., new tyres and chain; £115; owner buying a car.—The Rectory, Cockayne Hatley, Potton, Beds. [8145

ENFIELD Combination, 1916, 6h.p., been stored until 3 months ago, Palmer's 700×80, lamps new, cost £10, mileage 1,600, condition new; £133.—140, Crescent Rd., Plumstead, S.E. [8560

ENFIELD 1916 6h.p. Combination, 3 lamps, wind screen, perfect condition, not done 4,000, driven by owner only; seen by appointment; 900×80 tyre on back wheel, no fault anywhere; price £160.—Oliver, Draper, Abersychan. [X5432

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
Telephone: 620 City.

Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

COLONIAL AND FOREIGN AGENTS:
UNITED STATES—The International News Agency, New York. CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
AUSTRALIA—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).
NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin INDIA—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
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The Lighting Regulations.

WE never imagined that the absence of the red rear light on vehicles would be tolerated in this country for very long, but the return to sanity has come even more quickly than we thought. It behoves us to be very careful of what we write on this subject, for the vials of abuse have already been poured upon us from certain quarters, and statements which we never made and were never likely to make have been attributed to us, and then demolished with bitter logic (a method of carrying on an argument which always betokens a very bad case).

Because accidents have happened occasionally to cyclists and others carrying rear lights, it has also been argued that a rear light is no protection. This is, of course, absurd. It is true that some accidents have happened when rear lights have been carried (accidents have also happened in broad daylight, and are by no means always the fault of the overtaking motorist), but it must also be true that very many accidents have been prevented by the presence of a red light. When meeting a very bright light, such as is carried by many cars, it is almost impossible to see what else is on the road, unless it is lighted, and the head lights carried by cyclists can only occasionally be seen from behind. The pedestrian, certainly, is unlighted, but for some reason or other he is more easily seen than the cyclist; moreover, he can easily step on to the grass or footpath when occasion arises, which the cyclist cannot do.

We welcome also the return of the regulation making two head lights showing the full width of the vehicle necessary upon cars, sidecars, and other vehicles having two tracks. A single light should always denote a single track.

While on the subject of lighting, we should like to suggest to car owners the desirability of turning out their head lights while their cars are standing at the side of a road. A car standing on its right-hand side of the road and having dazzling lights is a very real danger, since there is a danger of oncoming traffic keeping to the left of the lights and colliding with the bank or footpath, whichever happens to be there. The same danger also exists in less degree when approaching from the rear, owing to the position of the tail lamp. Indeed, we think that it should be illegal for vehicles to remain stationary on the "wrong" side of the road after dark.

Olympia.

ALL keen motor cyclists and a mass of prospective buyers are looking forward with interest to the forthcoming exhibition at Olympia. November 24th, the opening date, is not far ahead, and this year's Show will undoubtedly be the most important event of its type ever held. The numbers of motor cyclists are constantly increasing, and manufacturers will have a difficult task to keep up with the demand. This fact must be borne in mind when studying 1920 models, for it forms one of the most powerful arguments in favour of the "no change" policy.

It is not suggested that no novelties will be exhibited, for we know of several ingenious and practical inventions which will be seen. On account, however, of the delay which would be caused by introducing entirely new models, many of the best-known British makers will stage machines which differ only in detail from previous models.

Startling departures from pre-war standards will largely be confined to young firms who have no production models to scrap. In future years this may prove a handicap to the old-established concerns, but this need not be the case provided that such firms get to work at once on experimental work and try out their ideas during the forthcoming year, so as to have something ready when the right moment occurs. Those who do not adopt this policy are likely to be left in the lurch, for the development of motor cycles will proceed by leaps and bounds.

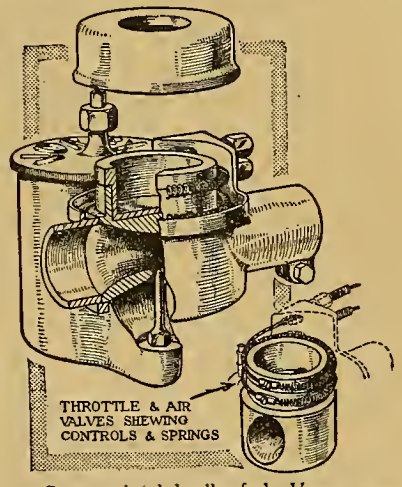
An index to the advertisements in this issue will be found on the page facing the back cover.

A SIMPLE CARBURETTER.

A VERY desirable form of carburetter for motor cycle use is, in our opinion, one which is to all intents and purposes automatic in its action, but yet provides a handle-bar lever for the occasional control of the air supply. Several carburetters on this principle have already been designed, and the Vortex carburetter, which we are about to describe, is a further addition to the list.

The throttle is a revolving barrel, through which an orifice is cut in the shape of a venturi tube. In the centre of the tube, at the bottom, is a small hole, below which the jet is situated, and at the top, sloping towards the engine at the full throttle position, a larger hole to admit extra air. When the throttle is fully open the venturi tube is in no way obstructed, as the jet does not project into it, as usual, but is placed just below. Throttle and main air, of course, open and close together, but the air closes slightly before the throttle. This causes a greater flow of air through the jet orifice, and provides a small amount of rich mixture, which is ideal for starting purposes and slow running.

The extra air is controlled by a smaller cup-shaped barrel which revolves in the



Constructional details of the Vortex carburetter. The inset shows how the throttle and air barrels are operated.

throttle barrel. This can also be used for priming the engine through the extra air orifice.

As the throttle, when wide open, provides a venturi tube to the engine without any obstructions the air will pass the jet at a high velocity and ensure complete atomisation of the fuel.

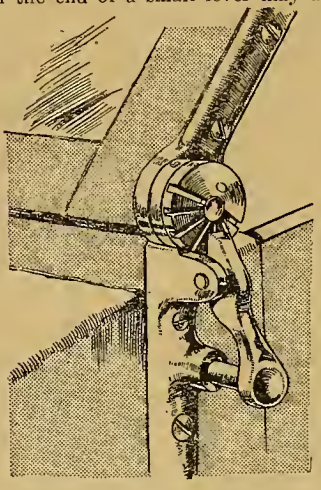
Supposing the engine is running at a moderate speed with full air, and it is desired to slow down for a corner, closing the throttle cuts off the extra air and provides a stronger mixture momentarily just when it is needed.

The float chamber is large, and is hollowed out right under the jet. There is, therefore, no small tube which might accumulate dirt.

We are promised an extended trial of one of these carburetters shortly, and shall then have something more to say of its performance.

A POSITIVE LOCKING WINDSCREEN JOINT.

A NEAT and simple locking device for the hinge of a windscreen is incorporated in the products of the R.V. Sidecar Co., 92, Humber Avenue, Coventry. It is designed to replace the usual joint which embodies wing nuts in conjunction with friction or serrated washers. The registering and locking arrangement consists of a disc having radial slots, into which the end of a small lever may drop.

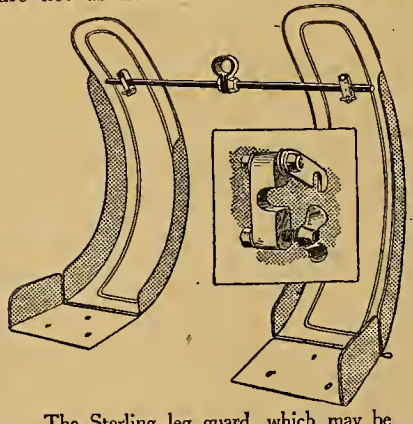


The R.V. windscreen joint which may be rigidly locked at various angles.

The lever is attached to the fixed part of the joint, and the disc rotates with the movement of the screen. The lever is normally engaged with the slots by means of a spring, and, in consequence, the screen is permanently retained in position, but is instantly released by pressure of the thumb on the outward end of the lever.

THE STERLING LEG-GUARD.

IT is at this time of the year that motor cyclists think of matters appertaining to mudguarding, and as the value of leg shields has long been recognised, it is rather surprising that such fitments are not as numerous on the market as



The Sterling leg guard, which may be fitted to any make of machine. Inset shows the method of fixing the guard to the cross-bar.

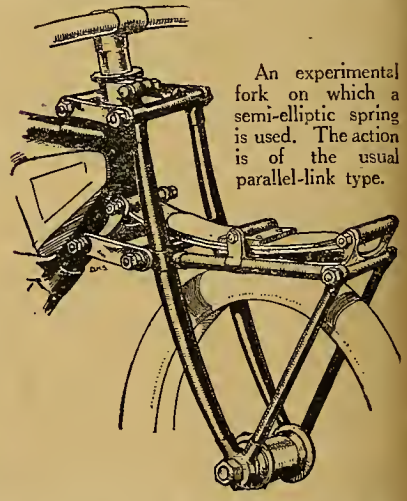
other necessities. Devices of this character are usually the product of the experienced rider, and the Sterling leg-guard illustrated is the patent of Mr. R. E. Wintle—a competition rider well known in the Midlands as a James exponent—who has a garage, known as the Highgate Motor Co., at Highgate Road, Moseley Road, Birmingham. The great advantage of this guard is the fact that it can readily be fitted to any make of machine, and once fitted can be removed and refitted in a few seconds.

As will be seen from the illustration, each guard consists of two parts coupled together by a simple form of hinged joint. The lower portion is fixed to the footboards, and the upper part may be swung round towards the rider to the most convenient position, and fixed by a crossbar clipped to the tube under the tank. A single nut fastens the crossbar to the tube by means of a split lug.

In the case of a machine fitted with footrests, the hinged portion is replaced by a long stud fixed on the end of the footrest support bolt. The guards are very well made (no solder being used in their construction) of rolled section, much after the fashion of some car wings, which adds to their strength and enhances their appearance. The retail price of the complete set is 50s.

A LEAF-SPRING FORK.

THE spring fork illustrated in the accompanying sketch is one which has lately been noticed on the road in the Midlands. It will be seen that a semi-elliptic spring is employed, and this is shackled at one end to the steer-



An experimental fork on which a semi-elliptic spring is used. The action is of the usual parallel-link type.

ing column and at the other to the forward portion of the triangulated wheel frame. The load is applied to the centre of the spring through a trunnion bearing. The design is quite neat and sturdy, and with suitable provision for greasing the shackle bolts, following car practice, should be long wearing and noiseless in action. Being above the position which the mudguard will occupy, the spring may be amply protected from mud and water. Since the motion follows the usual parallel-rule action, the only advantage appears to be in the elimination of coil springs, with their bouncing propensities and tendency to occasional breakages.

A Point About O.H.V.

THE technical experts have reminded us *ad nauseam* that valve steels have improved to a pitch at which a maker can guarantee there will be no valve fractures. Public timidity may or may not require these assurances; personally, I think we all perceive no maker dare sell overhead valves by the thousand unless he knew none of them would ever break. On the other hand, the user requires a word of warning. An overhead valve can do in a cylinder and piston without a fracture occurring; if the locking device of the valve spring comes adrift, there is nothing to stop the valve from dropping into the engine. Of course, the maker fully grasps this possibility, and guards against it by testing samples taken from every batch of springs, and also by using a suitable metal for his cotters or other locking devices. For absolute safety, therefore, it is essential that the user should not experiment with odd springs in the endeavour to get more power, nor improvise emergency cotters if he mislays the original fitting during an amateur overhaul. The toughness of these two parts is quite as essential to safety as the material from which the valve itself is made, and only the official spares should be used.

A Bag for Overalls.

I HAVE just paid some four guineas for a waterproof motor cycling suit. The tailor concerned assures me it is worth the money, for it is not only guaranteed to keep one bone-dry in a Scottish Six Days, but has a cut calculated to bring the most disdainful flapper to heel at the first wireless. If all this is true, I marvel much that it does not occur to the motor cycling tailors to supply dustproof cases in which such suits may be packed on the carrier. I am, therefore, now busy flaying an old armchair of its American cloth to construct such a case for the overalls as any practical manufacturer would supply with the clothes. This will, I think, fill the bill; but a murrain on that tailor, notwithstanding.

Waterproof Caps.

WHILE I am on matters sartorial, may I suggest to some artist in the tailoring trade that we motor cyclists generally look dreadful objects in wet weather. Omit the adjective "wet" from the last sentence, says some cynic. Pardon me, under normal circumstances we are distinctly handsome as a class. Our chins show determination, our nostrils courage, our eyes have a far-away, do-or-die expression. But in wet weather our typical beauty is camouflaged by a headgear. Who can appear presentable with half a yard of sodden tweed sagging over his scalp-line? Who can inspire romance when the slip-stream is hoisting the tailplane of his sou'wester so that the stout elastic hooked under his chin scarce restrains the hat from doing a vertical climb? The last rain-storm caused me to throw one of Tress's best tweed caps in the dustbin, and the one before had inspired me to present my sou'wester to the postman. I then splashed 10s. on a waterproof cap, replete with a neck apron and ear flaps. When it is fully rigged, I look like a cross between a hoopoe and a Bisley prize-man. When it is furled, I look such an appalling little tick that a newsboy would never call me "sir" if I gave him half a crown for a *Star*. Will somebody please design a headgear that will keep us moderately dry without making acquaintances ashamed to recognise us in the street? Incidentally, my expensive purchase does not ward the stinging raindrops off my eyes, nor yet stop icy rivers from trickling down my back. Its sole merit is that you can wear it more than once without its losing all semblance of being a cap. I ought to add that I had to purchase it by post, since no local garage or tailor had ever heard of the kind of maniac who takes a motor cycle out when rain is falling.

On Kick-starters.

A FEW weeks ago, I penned a note about the imperfections of the average kick-starter, and since then I have been carefully observing the conduct of the amateur riders among my neighbours. Not one of them ever uses his kick-starter unless he has to. It is obvious that anything is preferable to a push start if one is burdened with a heavily laden sidecar or stalled with a big solo mount in a dip between two fierce hills. Under these circumstances, anybody would try to operate the least effective kick-starter rather than employ the alternative method. On questioning the owners, their evidence was that their kick-starters were uncomfortable and uncertain. The pedal was usually either so high up or so far back that it was awkward to administer a hearty kick, and, as a consequence, the kick was generally feeble, and the engine failed to start. Take one of my own mounts as an example of bad practice. I can kick-start at the first attempt with some certainty if (a) the engine is warm, or (b) if the machine is tilted over sideways so that the pedal is not too high off the ground. Modern machines in the Six Days Trials, I was glad to observe, showed considerable improvement in the matter of kick starter design; one or two machines had entirely new mechanism—we progress! By the way, what are the A.C.U. judges doing with that much overdue Six Days Trial report?

Extraordinary enthusiasm is shown by the American public in motor cycle speed events. As will be seen from the illustration, a big crowd witnessed the start of the 200 miles "World's Championship Race" at Marion, Indiana, when riders of Harley-Davidson machines secured the first three places.

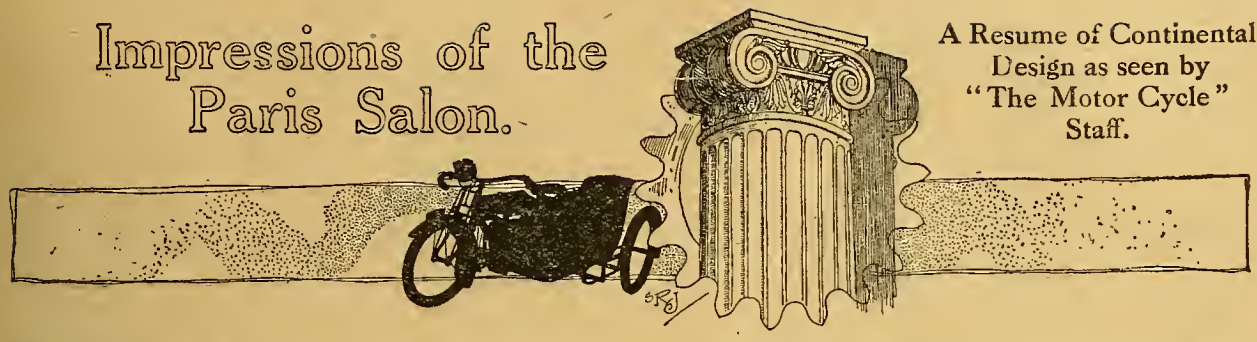
Reserve of Power.

IT seems only yesterday that I used to write and descant on the delights of reserve power. The biggest tourist machines of that era were always a little scared by the approach to any renowned hill; and no lightweight owner ever tackled more formidable going than the Great North Road. We have changed all that. At the termination of any big trial, freely sprinkled with the freakiest of freak hills, judges, reporters, and riders announce that they never opened their throttles fully on second gear; the most cumbrous and fully-equipped sidecar outfits come through the most searching routes without ever demanding full throttle on bottom gear, quite possibly without dropping below second gear. These novel experiences suggest two allied lines of thoughts. The first is that some of our bigger touring machines are either overpowered, or undergeared on their lower ratios. If a medium-powered touring car is put at a hill like Sutton Bank, it never has a great deal left in hand—certainly not a whole gear plus half the throttle opening. Smaller engines or higher emergency gears would fill our bill in very many cases. Secondly, the value of the gear box as a substitute for engine power is thrown into high relief. In 1914, when air-cooling was still crude, there were limits to the lowness of a gear ratio, or at least to the time for which an ultra-low gear ratio could be kept in engagement under load. These limits have been largely extended: and the outlook for lightweight machines is correspondingly bright. Excessive horse-power and under-gearing are the offspring of the dual-purpose machine, intended for solo and sidecar work indiscriminately. There is seldom a rational difference between the gear ratios supplied for the two kinds of service with any given engine.

Variations in Steering.

IN recent weeks I have described in some detail how enormously machines of several first-class makes differ as regards ease of steering. On normal roads and at normal speeds these variations are not tremendously obtrusive. But if a rider strays into rough by-lanes, or if he opens his throttle lavishly on main highways, he soon learns to distinguish between one make and another. There appear to be several factors in these variations; and as some of our correspondents display interest in the matter, I set the points out as they appear to me. The first is the efficiency of the front fork springs. It is obvious that a rider cannot coax his machine delicately if his front tyre is only making periodic contacts with the ground. The second is the distribution of weight; one and the same machine may evince different steering qualities according as it is fitted with dropped or raised bars, the former throwing more of the load on the front wheel, and thereby accentuating the leverage which it exerts over the hinder part of the machine. The third is unquestionably the design of the fork, irrespective of its springs. Wheelbase should probably be added to this list. Translated into practical terms, the difference may be such that on machine A one never thinks of steering, but performs it as subconsciously as one walks; whereas on machine B any patch of awkward going—ruts, grease, stones, etc.—puts the wind up a rider and makes him tighten his wrists.

Impressions of the Paris Salon.



A Resume of Continental Design as seen by "The Motor Cycle" Staff.

SINCE the earliest days of motor cycles, when Continental manufacturers led the way and British experimenters copied, there has been a steady reversal of *rôles*. Design in this country, after a period of difficulties, went ahead by leaps and bounds, whereas Continental designers appeared to concentrate on cars, and the motor cycle industry lost ground.

As a direct result of the improvements in motor cycles, an important industry sprang up in England, and its products reached almost every corner of the globe. More recently America became a serious rival, but though a few first-class motor cycles have been produced in France, Belgium, and Italy, British machines have been adopted as patterns by most European designers.

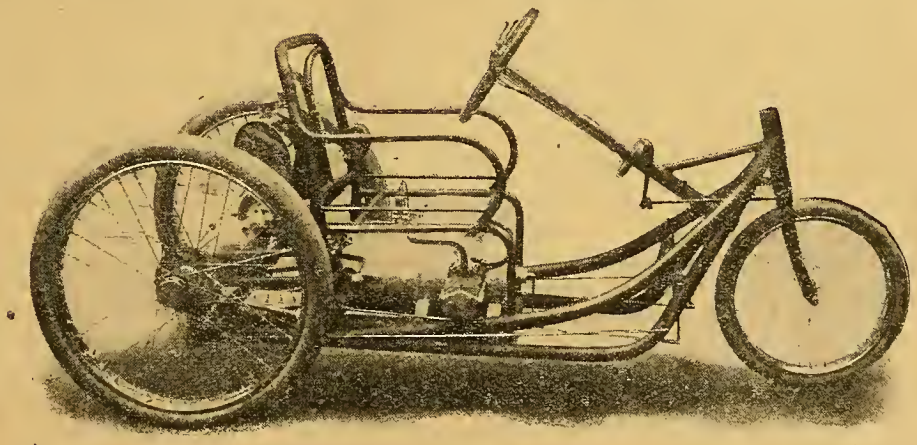
The war has been responsible for many changes, and has brought into prominence the extraordinary capabilities of the motor cycle to such an extent that we find that France is once again taking a lively interest in the production of two-wheelers, and not only is she taking advantage of British and American improvements, but also she has introduced many original features of her own.

This is only as it should be, for a country of such brilliant mechanical genius is not likely to allow other nations to have things all their own way in the world's motor cycle market. So great are the differences that it is not an easy matter to compare the motor cycle exhibits in the Grand Palais exhibition of 1913 with those of the 1919 Salon.

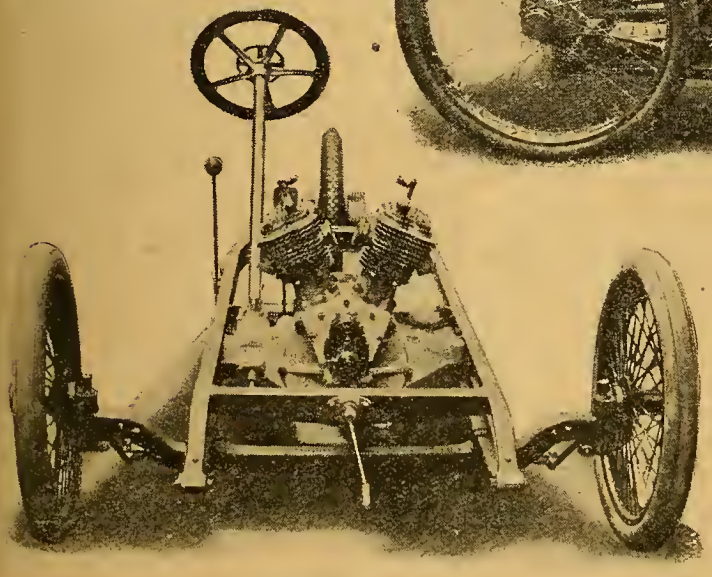
In 1913 there was, it is true, much originality, but the few exhibitors had not learned how to make a neat and workmanlike machine, though some of the mechanical features showed great promise.

In 1919 neatness of detail is an outstanding feature, and some of our own manufacturers might well take a hint from French designers in this respect.

FRENCH DESIGNERS TAKE UP THE THREE-WHEELER.



The Barrellier, a three-wheeler fitted with a flat twin two-stroke engine.

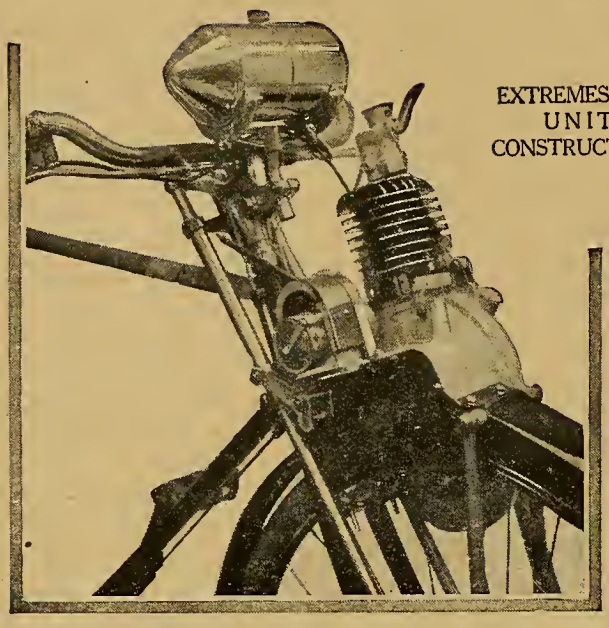


The Diable, a three-wheeler of sound design and construction.

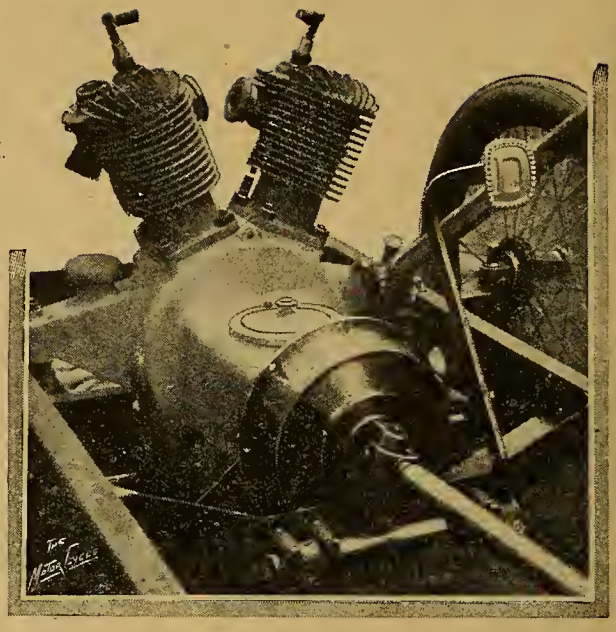
Novel Lines.

It is true that the majority of French machines differ in general appearance from the lines to which we have become accustomed, but they are not necessarily any the worse for that. One is apt to get into a groove and consider as a freak anything that does not conform to accepted practice, but this is quite a mistaken attitude to adopt, and, unless other people's ideas are carefully studied, we shall find that, not only will our export trade fail to increase, but that new and dangerous competitors will arrive in our home market.

EXTREMES OF UNIT CONSTRUCTION.



The Cyclotracteur, specially designed as an attachment to pedal cycles. Transmission is by friction drive on to the front tyre.

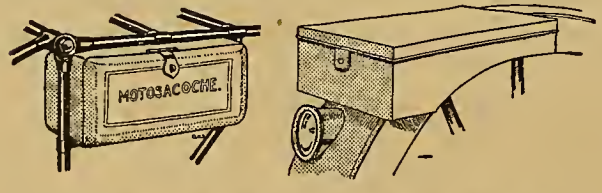


An extremely neat 8 h.p. engine and gear box fitted to the Diable runabout.

Perhaps the most noticeable tendencies of modern French design are the prevalence of unit engine and gear boxes, and rear springing. The former is a point on which there has already been much discussion, and which, in our opinion, is eminently desirable; the latter is a feature which is universally accepted as a desirable point in standard equipment.

Unit Construction.

Let us dwell for a moment on the possibilities of unit construction as exemplified by the Blériot, Louis Clément, Alcyon, and other machines. First, it is possible to construct a clean unit in which the primary drive is entirely enclosed and runs in an oil-tight compartment; next, the unit can be made in such a manner as to present a clean and smooth exterior which will collect a minimum of dust and mud and will be easy to clean. It should also be possible to save a certain amount of weight, especially in the matter of attachments, and, if the magneto is carried on the top of the gear box, a further saving is effected in the weight and cost of a special magneto bracket.



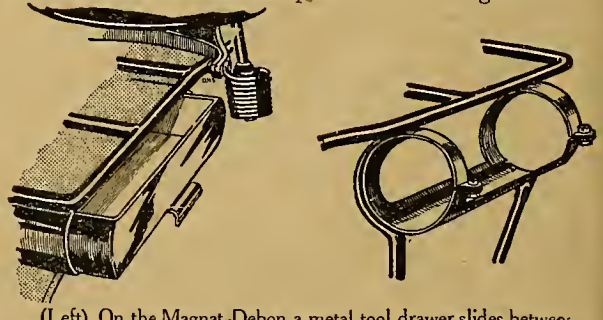
(Left) One of the neat metal pannier tool cases on the Motosacoche. All the angles are rounded off and the finish harmonises with the rest of the machine. (Right) The flat top of the tool box on the Louis Clément forms the carrier, and is integral with the mudguard.

Against this must be set the fact that more work is entailed if it should become necessary to strip the entire engine for examination. But how many touring motor cyclists ever remove more than the cylinders? And, if the engine is periodically examined, the gear box usually undergoes the same operation at the same time, or at any rate it should do so.

Frame Design.

Some alteration in frame design might be necessary, but this is a good point rather than otherwise, as, though modifications of the diamond frame have proved satisfactory if sufficient metal is employed, it by no means follows that it is the best and lightest construction.

The frame of the Louis Clément motor cycle is an example of advanced construction, being largely constructed of steel pressings, and yet conforming in a great degree to general outlines of standard motor cycle practice. In this machine the tank rails and saddle tube are discarded in favour of pressings, which form, in the first instance, an admirable platform for the tank and saddle fixings, and, in the second case, a combined rear mudguard and frame stay. Again, the front forks are of pressed steel, and are light, strong, and easy to clean, and the combined toolbox and carrier are formed as part of the rear guard.



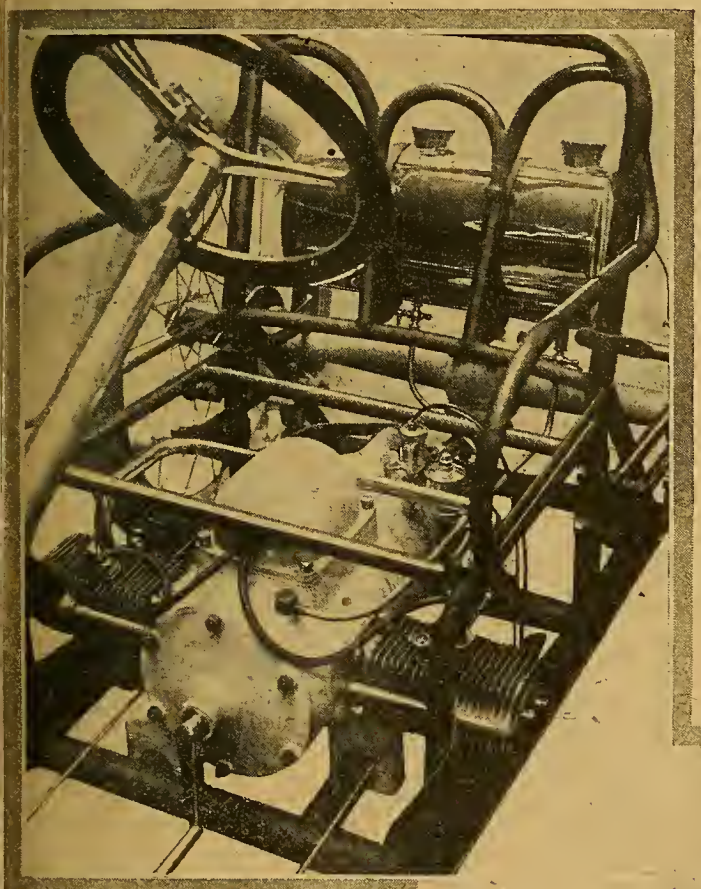
(Left) On the Magnat-Debon a metal tool drawer slides between the carrier and mudguard. (Right) The carrier stays of the G.L. embody large diameter clips, which are adapted to receive either a standard D.A. cylinder or a tubular tool case.

mpressions of the Paris Salon.—

Pressed steel frames are, of course, only suitable or mass production, but, given favourable circumstances and good design, they save weight, money, and cleaning, and provide a most admirable form of construction.

Disc Wheels.

Both Clément and Blériot motor cycles are fitted with permanent disc wheels, the rear wheel of the Blériot with its integral belt rim being a particularly fine piece of work. Opinions are divided as to the merits of this type of wheel for solo riding; but for sidecar work, at any rate, the permanent type has its advantages.



Showing the layout of engine and gear box of the curiously designed Barrellier runabout.

Carrying the Tools.

As already mentioned, details have been cleaned up to a large degree, and considerable ingenuity has been displayed in the construction of tool-carrying arrangements.

The Magnat-Debon is perhaps the neatest in this respect, having a shallow drawer below the carrier with a compartment for each necessary tool and spare part; but if steel pressings were used, it should be possible to construct the lid of the toolbox so as to form the carrier, and thus save a number of parts and joints.

Circular metal boxes on either side of the carrier are used by the G.L., and either may be replaced by a D.A. cylinder if desired; and the new Motosacoche provides perhaps the neatest example of an entirely armoured toolbag.

Rear Springing.

Rear springing systems of all types were to be seen, from the leaf spring systems of the A.B.C., Janoir, Griffon, etc., to the type which insulates the rider only, as exemplified by the Motosacoche, Condor, Viratelle, etc. In between come such devices as those employed on the Blériot. This particular example is very neat, the springs being entirely enclosed in the frame tubes, and an adjustable friction device being incorporated in the link action.

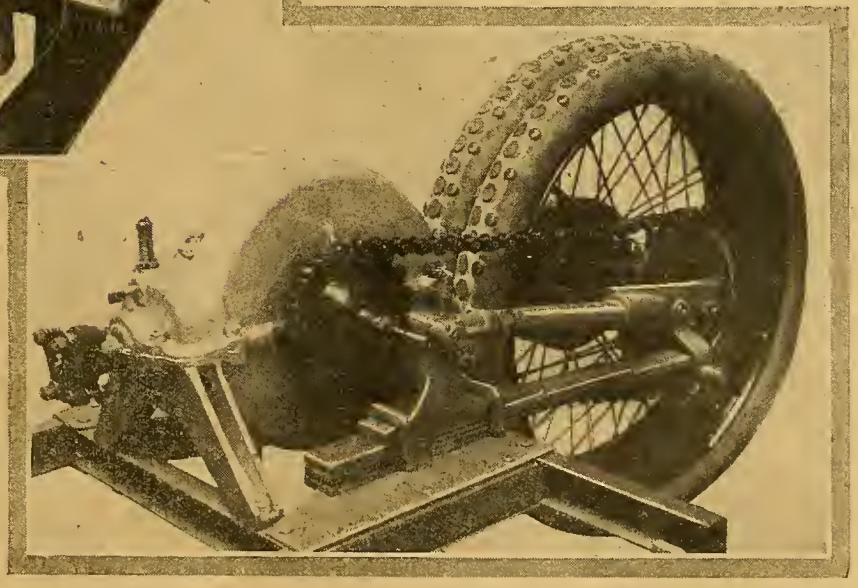
The Magnat-Debon employs a spring saddle-pillar in addition to a spring frame.

Most Continental motor cycles have two brakes operating on the rear wheel: an item which is influenced to a certain degree by the design of spring forks.

Engines.

Engines show rather an interesting trend of thought, for there is a decided tendency to adopt the side-by-side vertical twin both for two and four-stroke types.

One of the best examples is that installed in the Blériot motor cycle. Both connecting rods are mounted on a common crank pin, so that the impulses are evenly spaced, though the balance cannot be better than a single. Detail engine design is good, with the curious exception that adjustable tappets are rare, and very



The springing of the Triauto Godet three-wheeler

Impressions of the Paris Salon.—

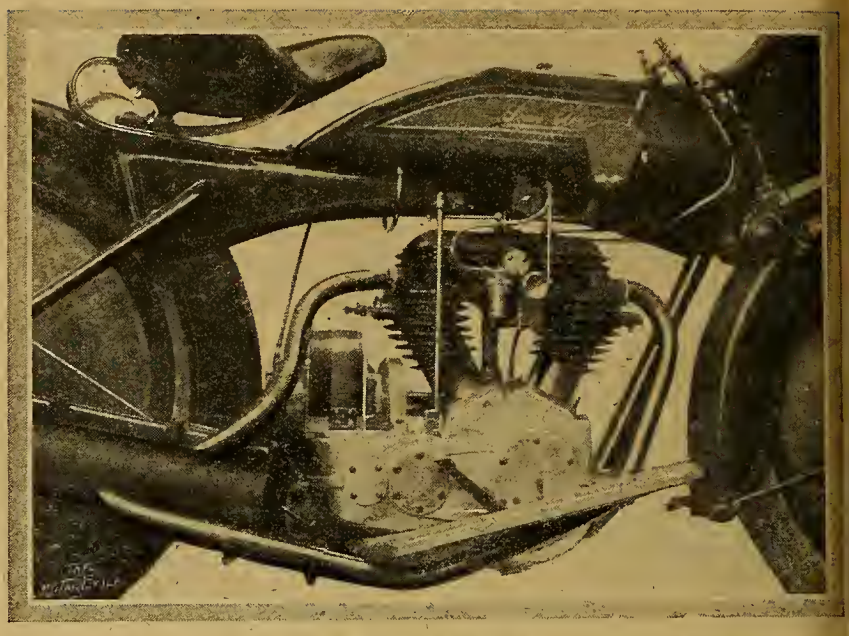
small diameter valve springs are employed.

The Viratelle is alone as a water-cooled motor cycle engine, and, though only a single-cylinder machine was staged, a vertical twin cylinder is also made by the firm. This machine is interesting, too, on account of the very neat three-speed epicyclic gear embodied with the engine unit. Horizontal twins were shown on the stands of Janoir, Magnat-Debon, and A.B.C., the last being, of course, similar to the English A.B.C., but built by the Gnôme and le Rhône Co.

Two-strokes.

Of the French two-strokes, the Alcyon is the most interesting (described in our last issue), though the Motosolo is a very neat machine of the lighter class.

Pedal cycle attachments are common and uniformly ingenious. This subject seems to have received greater attention in France than in this country.



The power unit of the Louis Clément, the three-speed gear box of which is integral with the crank case.

Three-wheelers show great originality, though, in the main, the designs would not attract British buyers. An exception, however, is the cycle car Diable. This has a very sound and straightforward chassis, and the layout is about the last word in practical simplicity.

In conclusion, there are many lessons to be learned from modern French designs, and though, perhaps, we could teach more than we could learn, it would be most unwise to pass by the possibilities without very serious consideration.

Fuel Economy and the Jet.

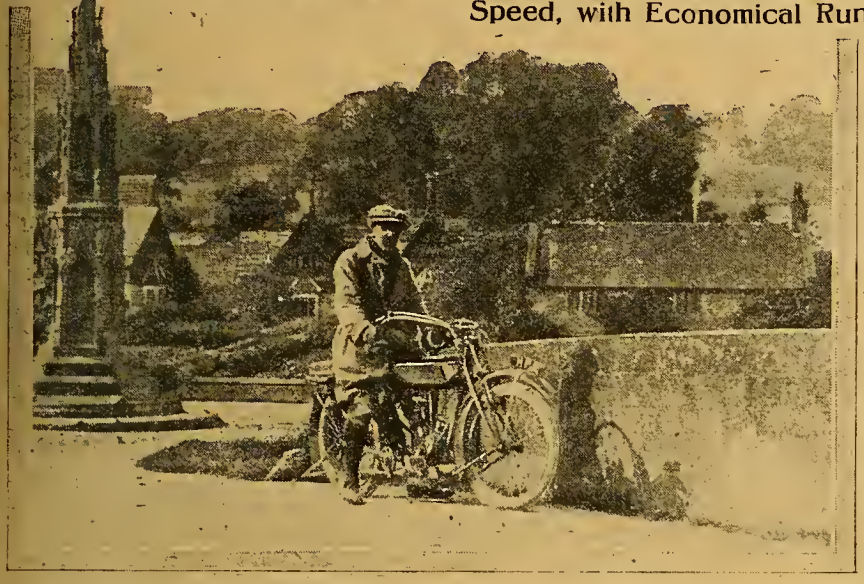
A Few Notes with Reference to Carburetter Timing.

CARBURETTER manufacture and designing are, in these days, a highly specialised business, and it is as well for the ordinary rider to bear in mind, when tuning his machine, that, however excellent his knowledge may be as regards the carburetter he favours, he naturally knows a good deal less about it than the man who designed and made the instrument. If a machine is giving good results, it is generally impossible to improve matters by tampering with the carburetter. Many riders suffer from the delusion that herein lies the secret of super-tune—nothing of the sort. Super-tune is chiefly a matter of workshop experiment, requiring more than insulation tape and a pocket "King Dick," and, given the proper size of jet, clean gauzes, etc., the rider can rest pretty well assured that the makers of the instrument have seen to it that the petrol level and so forth are set to the best all round advantages. Having said so much, I will now proffer a little encouragement to those who, anyway, will ignore the above, and whose old machines, sold to juvenile cousins, are now suffering from senile decay brought about by excessive carburetter tinkering in their youth.

Carburetters, like life itself, are a compromise by which one can obtain a variety of different results in a variety of different ways. The most common error with regard to them is concerned in the size of jet. Nearly every rider is of the opinion that a weak mixture—or rather that a small jet—naturally means fuel economy. He loses sight of the fact that there are two common ways in which a petrol engine can be governed—one by regulating the *strength* of the charge, and the other by regulating the size of the charge. If the mixture is too weak, it is necessary to admit a much larger charge to the engine than if the mixture is correct, and more petrol is used by running on a weak, large charge than by running on a small and moderately rich charge. Moreover, the engine runs hotter on a weak charge, does not tick over so comfortably, uses more oil, is liable to knock, and generally experiences a rougher time than if a jet of the proper size were used. Therefore the gentleman who goes to some pains in order to sniff down the amount of petrol going through the jet must not imagine that thereby he is sure to save his pocket. Variable jets—excluding the variety regulated with the throttle—are all right if intelligently used, but there is usually more to be gained by running on a large jet with a small throttle opening than by using a small jet and having to bang open the throttle in order to obtain a few ounces of extra power. Personally, I have found that a really vigorous kick, consistent with the amount of petrol consumed, is most easily arrived at by employing a low petrol level and a large jet, although with this setting the engine is at its best chiefly at high speeds. CHINOOK.

Road Experiences with a Rudge-Multi.

A 350 Mile Test of a Standard 3½ h.p. Sporting Solo Mount. Comfort and Speed, with Economical Running.



The 3½ h.p. Rudge-Multi on the bridge at Ilam, a picturesque village in Dovedale, Derbyshire.

AMONGST the ever-changing variations of design introduced by our leading manufacturers from year to year, it is not without interest to enquire into the reasons which have induced one or two firms to adhere to an originally conceived layout during an extended period.

Such an instance is found in the policy of Rudge-Whitworth, Ltd., of Coventry, who have remained faithful to the same specification, barring slight detail improvements, since its inception. A recent test run on one of their standard roadster multi-speed models amply demonstrates the reason for their conservatism.

For the high speed tourist, and it is mainly to meet the demands of this class that the machine is offered, nothing more is to be desired than the combination of a lively engine with a simple form of transmission, allowing the use of an exceptionally high gear for the open road and a low enough ratio to enable any main road hill to be climbed with certainty or to render traffic safely negotiable.

The 3½ h.p. Rudge-Multi unites these desiderata in the form of the well-known overhead inlet valve engine and the ingenious multi-gear which permits the selection of any ratio between the limits already mentioned as necessary. A standard touring model drawn from a batch of fifteen which passed off road test in the ordinary course the same morning was placed at our disposal. The starting was accomplished with one downward pressure of the starting pedal, the throttle of the Senspray carburetter being one-quarter open, and, after noting that the pannier bags had their usual equipment of an excellent tool kit and repair outfit, we left the works for an eight-mile spin to get the "feel" of the riding position and controls.

This was soon acquired, thanks to the perfect steering, which is attributable to the spring fork design and scientific rake of the head. Incidentally, we have always considered the steering of the Rudge to be beyond criticism even at the highest speeds. Complaints of "speed wobble" have arisen on occasion, but we found the present mount totally free from this defect. This was possibly owing to the three-rib tyres fitted, which, we were previously informed, eliminated the directional uncertainties sometimes experienced when other pattern tyres were used.

Next morning we left Coventry at 6.30 to witness the open one-day trial of the Redditch M.C.C.

The whole course of 150 miles was covered, excepting one short stretch containing abnormal hills requiring a low gear of at least 10 to 1. Being a brand new engine, it was deemed wise to pay repeated attention to the oil-pump pedal, conveniently situated below the right footrest, and, as a result, two stops due to a sooted plug were experienced.

A journalist's mount comes in for much rough handling, since, after observing on one hill, it is necessary to "blind" on to the next in order to overtake the field. The Rudge was equal to this treatment, and showed no falling off in tune at the end of the day.

Two hundred and twenty miles were covered altogether, and, owing to the comfortable riding position obtained by drop-pedal device, not the least fatigue was experienced.

Twycross Church, one of many peacefully rural scenes encountered on the test run of the 3½ h.p. Rudge-Multi from Coventry to Dovedale.

Road Experiences with a Rudge-Multi.—

The following day being fine, a run to Dovedale was undertaken over roads which, though narrow and twisty, are singularly free from traffic and towns. Owing to the experiences of the previous day, which showed that the Rudge engine enjoyed "revving" when climbing, the gear was lowered early on hills, thus enabling a better average speed to be maintained than is possible by hanging on to top gear. Sudden changes should also be avoided, as nothing is more conducive to excessive wear of the belt ends.

After taking a few photographs in Dovedale, admiring the scenery and enjoying tea, the homeward run was commenced in the cool of the evening, and Coventry was reached in extremely good average time considering the nature of the narrow tortuous lanes.

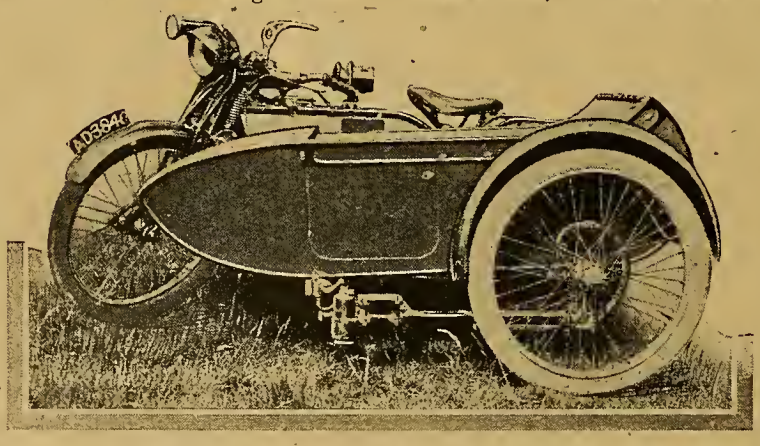
On our return the general condition of engine and fittings was carefully observed. Nothing untoward was noticed. The crank case, which is a much cleaner casting than of old (indeed all the external finish is thoroughly good), was practically free from oil; the adjustments were all in order, the cycle bearings entirely free from shake, and even the dull plating of the exhaust pipe was quite untarnished, thus proving the cool running of the engine.

The belt was in good condition and tight, although had it stretched it could easily have been adjusted by the neat little tension device at the end of the rear axle, without having to cut the belt. Petrol consumption for the 350 miles total running was three and a half gallons—an excellent result amply demonstrating the economy of running on high gears.

SIDECARS FOR LIGHT MACHINES.

Some Mechanical Details Frequently Overlooked by the Owners of Low-powered Outfits.

THOUGH in these days motor cycles are so excellently designed and constructed that, with proper attention, no harm results from reasonable overloading, it is quite as well that one should realise fully just what is being asked of the machine when it is put to a use for which it was not intended. How many motor cyclists realise what enormously increased strains are put upon the machine when a sidecar is attached? A large number of riders seem capable of thinking no further than their engines, and so long as they have engine power enough and to spare for solo use, they talk about "sticking a sidecar on it," as one would talk of sticking a coat of enamel on the handle-bars. Indeed, it can be said that the average motor cyclist is quite a good engineer as regards his motor, but an appallingly bad engineer as regards his cycle, and when it comes to attaching a sidecar to a solo machine, the engine, in these days of three-speed gears and excellent design, is by no means the most overtaxed member of the machine. "Change early and keep up your revolutions," and any amount of sidecar slogging is not likely to harm the engine, but unless the cycle is strong enough for the purpose it must inevitably suffer. I do not, however, mean entirely to discourage the use of sidecars with machines which are primarily designed for solo riding.



A lightweight sidecar de luxe—the Richmond, a Bristol production—attached to a 2¾ h.p. Douglas, with which it forms a most attractive lightweight outfit.

Wheel Bearings.

Take, for example, the wheels. In solo riding the wheels and wheel bearings are opposed to no side strains whatever. When cornering the machine leans one way or the other, so that the spokes are always directly in tension, but when a sidecar is attached very considerable side strains are in operation the whole of the time. These strains are, of course, at their greatest when taking a corner, for the machine is now rigidly upright at all times, so that the whole of the energy expended in turning the outfit from a straight course to a curved one falls in the way of side strain on the hub members.

It is rather remarkable that the ordinary type of motor cycle wheel bearing stands up as well as it does on sidecar machines, for it is not designed to meet these strains, and as a rule it suffers from neglect.

When attaching a sidecar, then, the first thing is to bear in mind that you are increasing the wear and tear on the wheel bearings by more than 100%. These bearings, therefore, should be carefully watched for slackness, which must be taken up immediately or the bearing will deteriorate very rapidly indeed. Given proper attention, they should not suffer unduly, but if ridden slack it only needs the introduction of a little grit, and new bearings will be required within a month.

Of course, the third wheel of the sidecar relieves the motor cycle wheels of some of the weight, but it is generally ridden on a softer tyre than the other two, and it does not do its share. Motor car wheels are set at a rake and provided with special bearings to meet these side strains, and they can be very considerably reduced by aligning the motor cycle so that it leans slightly out of the vertical and away from the sidecar.

CHINOOK.

A Wonderful Lightweight Performance.

An Examination of the 2¼ h.p. Levis which obtained a Gold Medal in the Six Days Trials.

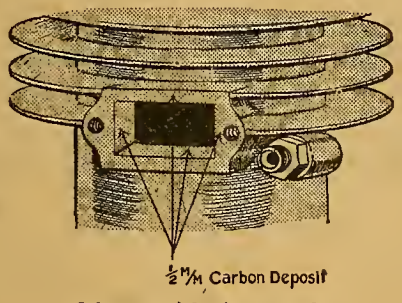
P. Pike and the 2¼ h.p. Levis, on which he qualified for a gold medal in the Six Days Trials.

ONE of the features of the recent A.C.U. Six Days Trials was the consistent performance of some of the little two-strokes. So marked was their success that it made a deep impression, not only on the thousands of prospective lightweight owners, but also on manufacturers, both British and Continental, who took a keen interest in the trials with a view to future productions. Our readers will remember that on the way to Llandrindod Wells the latest model Levis had the misfortune to develop tank trouble of a sufficiently serious nature to spoil its chances of competing successfully in such a strenuous trial. Nothing daunted, Mr. Pike, the well-known Levis exponent from the West Country, decided to ride at all costs. As a consequence a telephone message was sent to the firm's works at Stechford in the hope of obtaining another mount.

It happened that the only available machine was a standard 2¼ h.p. Levis, fitted with specially low gear ratios, which Pike had been using for certain lubrication experiments. This engine, we are told, had already about 3,000 miles to its credit, but, nevertheless, it was hustled off to Llandrindod by road. On arrival the cylinder was removed and decarbonised, and the machine was cleaned up and adjusted preparatory to competing in this trial of trials.

The performance of the 2¼ h.p. Levis throughout the event is now a matter of history, and it is sufficient to state that no hill proved too much for the engine with a low gear of 15.2-1, and, although the top gear was 6.4-1, Pike succeeded in keeping up to time throughout.

At the conclusion of the trial the machine was ridden back to Stechford, and we took charge before the seals were broken in order to satisfy ourselves that the engine had lost none of its tune. After a few minutes' inspection in the works, we passed out into the Birmingham traffic, and on this occasion, as on subsequent trips, the little engine behaved perfectly.



Inlet port of Levis two-stroke.

Two features which may rather surprise those who are inclined to disparage two-strokes were the remarkably low consumption of fuel and oil. We were told by Mr. Butterfield that the consumption of petrol throughout the Six Days Trials had been in the neighbourhood of 125 miles per gallon, and though we were unable to make an accurate test, we can truthfully state that our experiences went to show that this was not an exaggeration. Owing to the Levis system of lubrication, in which oil is fed directly to the piston and main bearings, a minimum quantity is wasted, and we were particularly struck by the small amount which was necessary to keep the little engine running sweetly.

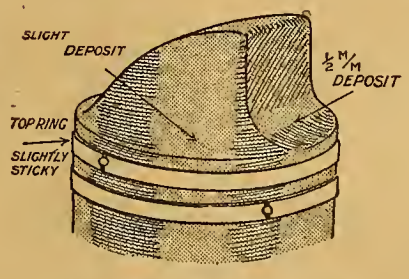
An Examination of the Engine.

After a week of short trips the machine was returned to the makers to be stripped under our observation, and for the first time the A.C.U. seals were broken. As might be expected, the greatest accumulation of carbon was on the deflector, but even here we could find no spot where the deposit was perceptibly over ½ mm. deep. The piston head was almost free from deposit, and the underside of the piston had but a moderate coat. The exhaust port, which is usually the first part to cause trouble owing to excess of deposit, was remarkably clear, and the average depth of carbon was approximately ½ mm. distributed evenly over each surface. The top piston ring was rather gummy, but was easily freed by the fingers.

Next we examined the bearings, which were in excellent order throughout. Even after washing all oil from the surfaces there was no more perceptible play in the crank bearings than might be allowed in manufacturing limits. There was just perceptible rock in both big and small end bushes, but no lift. Every wearing part was carefully tested with a micrometer, a standard Levis engine being used as a pattern, and the greatest variation was within the error allowed by manufacturing limits.

When the piston was measured we felt sure that some symptoms of ovalty would be evident after such a severe trial, but the difference between the smallest and largest diameters at any level was only .00075in.

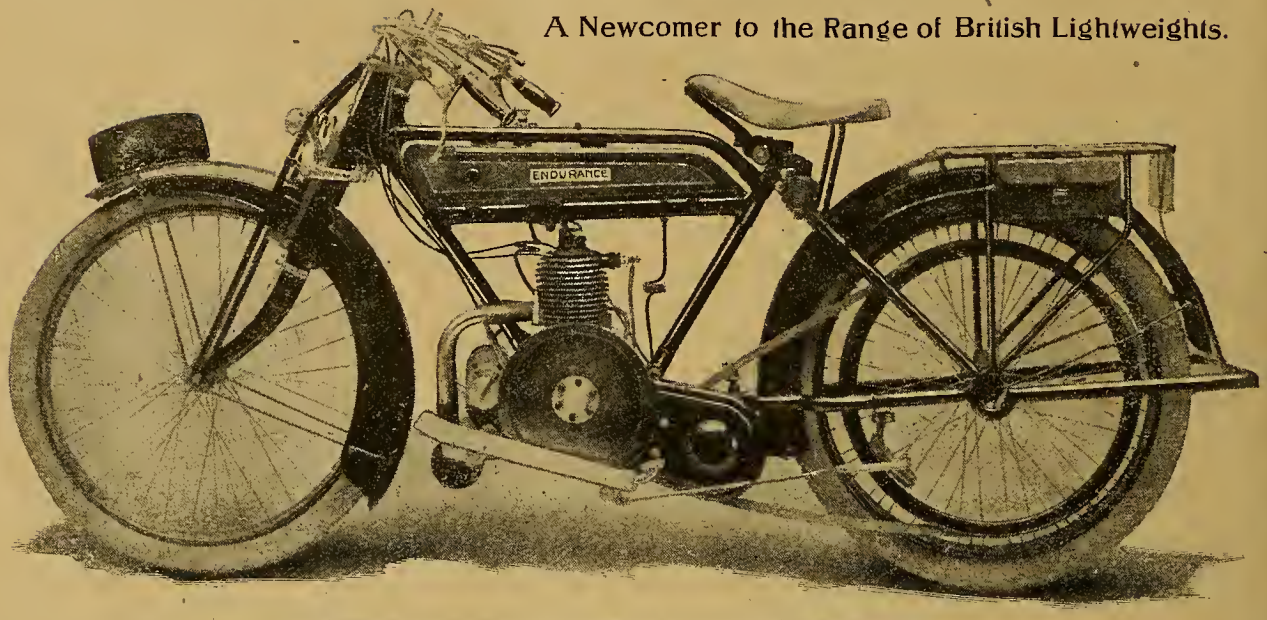
Even the compression space was checked and found correct, and we have reason to congratulate Messrs. Butterfield, Ltd., not only on the performance of their standard machine, but also on the accuracy of the workmanship and the undoubted excellence of material in their engines.



Showing where deposit occurred most thickly on the piston and rings.

The Endurance Motor Cycle.

A Newcomer to the Range of British Lightweights.



The Endurance two-stroke, which is fitted with the new Arden engine of 269 c.c.

THE Endurance Cycle Co. is one of the oldest-established firms in the cycle and motor cycle trade, but since the bulk of its products goes overseas, it is not so well known in the home country as it deserves to be. For 1920, however, a certain proportion of the output will be sold in this country, among which will be included the Endurance motor cycle. Following conventional lines, the Endurance lightweight is fitted with a two-stroke power unit of a new make—the Arden—which is described below.

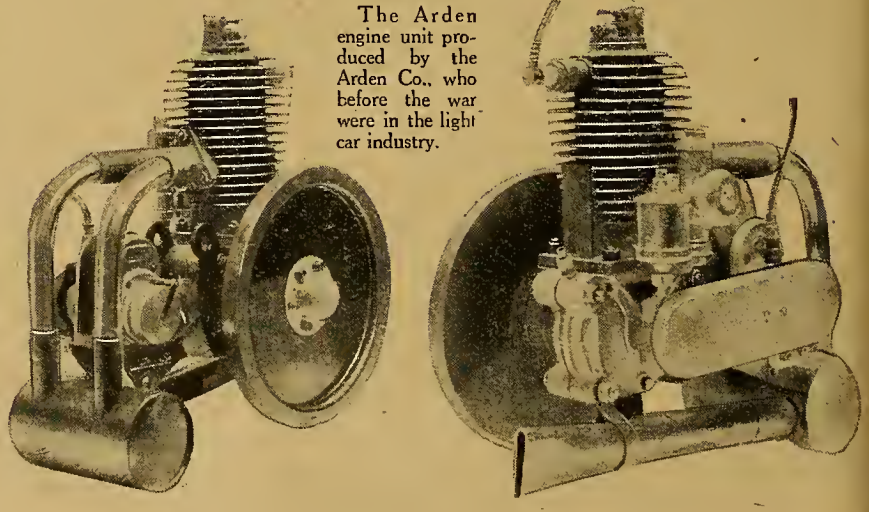
The Endurance is well made and finished, and is fitted with an Albion gear box, Saxon, Druid, or Brampton forks, Dunlop tyres and belt—in fact, all the equipment is of the highest quality, no attempt being made to produce the machine to a price. Aluminium footboards and a neat chain guard also are fitted, and altogether the little mount is one which should be a welcome addition to the lightweight market. The makers' address is Endurance Works, Sheepcote Street, Birmingham.

The Arden Two-stroke Engine Unit.

A New Proprietary Engine Unit made by an ex-Light Car Firm.

TWO-STROKE engine units have been in such demand during the present year that it is not surprising that they are receiving the attention of engineering firms who, on the signing of the Armistice, had to decide upon a new peace programme. The Arden Motor Co., of Berkswell, who before the war made the Arden light car, were one of those firms who appreciated the fact that, while a strong demand existed for certain types of engine, it would be folly to introduce an entirely new design necessitating long experimenting. For this reason the Arden two-stroke engine follows well known and accepted practice. Having both bore and stroke of 70 mm., the engine embodies roller bearings throughout, and is well made. In order to avoid a sharp bend in the exhaust pipe or a special duplex frame tube, twin exhaust pipes are fitted, which give the engine a more symmetrical appearance than is the case when a single pipe is fitted on one side of the front down tube of the frame. A C.A.V. magneto, Amac carburetter, steel barrel silencer, and engine plates form part of the equipment. The Arden Co. are in a position to produce large quantities of this engine, which is standardised throughout. The sole selling agents are Messrs. C. B. Harrison and Co., Sheepcote Street, Birmingham. who have an extensive business as frame manufacturers to the trade, at home and abroad.

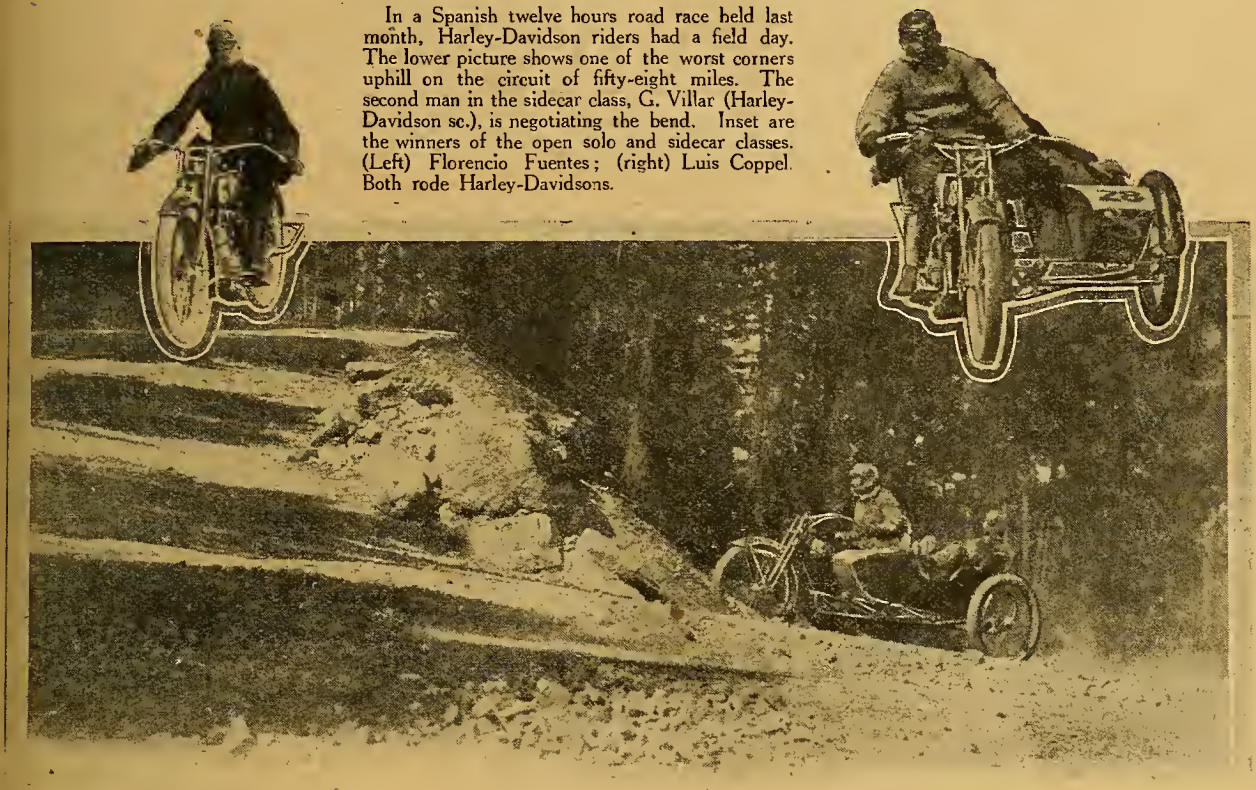
A NEAT TWO-STROKE ON STANDARD LINES.



The Arden engine unit produced by the Arden Co., who before the war were in the light car industry.

A Spanish Twelve Hours Road Race.

Success of American Machines in an Event Totalling 1,465 Miles.



In a Spanish twelve hours road race held last month, Harley-Davidson riders had a field day. The lower picture shows one of the worst corners uphill on the circuit of fifty-eight miles. The second man in the sidecar class, G. Villar (Harley-Davidson sc.), is negotiating the bend. Inset are the winners of the open solo and sidecar classes. (Left) Florencio Fuentes; (right) Luis Coppel. Both rode Harley-Davidsons.

ON the 14th of last month an important twelve hours race took place in Spain on a circuit of over fifty-eight miles, which was covered eight times by the winners, making their distance about 465 miles. The event was held near Madrid, and was remarkable for the consistent running and excellent performances of riders of the Harley-Davidson machines, both solo and sidecar models. There were five of these machines in the open solo class, and they finished first, second, third, fourth, and ninth. Two Indians occupied the fifth and seventh places, and a James the sixth position.

In the open sidecar class there were six Harleys, and they occupied the first five places, the remaining machine being eighth. Two Indians were sixth and seventh.

In the 300 to 550 c.c. class the only competitor rode an Indian, and in the 300 c.c. class there was likewise only one—a rider of a Baby Triumph. Florencio Fuentes was the winner of the open solo class, with an average speed over the whole distance of 38½ m.p.h. Luis Coppel, who won the open sidecar class, finished the course with an average of 35 m.p.h. The fastest lap time was made by the second rider, Manolo Fuentes, 1h. 27m. 11⅘s. for approximately ninety-four kilometres, which works out at about 40 m.p.h. The fastest lap on a sidecar was that of the third man in this class, José Alvarez, viz., 1h. 34m. 25⅘s., which equals a speed of about 37 m.p.h.

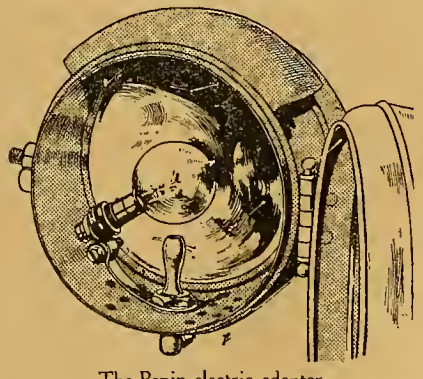
The accompanying photograph shows one of the worst bends on the course, also the rough state of the road surface and the stiff gradient at the bend.

Inset are pictures of the winners of the solo and sidecar classes on their Harley-Davidson machines taken at two different points of the circuit.

To Convert Gas Lamps to Electric.

THE ever-increasing popularity of electricity for lighting purposes on motor cycles no doubt augurs that eventually electric lamps will be the rule rather than the exception. In the meantime, large numbers of owners of gas lamps will convert them, and in this connection the little fitment illustrated will be of interest.

Although very simple in construction, the Papin adapter has several important advantages to recommend it. It consists of a flat steel arm drilled at one end to be fixed by the nut holding the burner, from which point it may be swivelled as desired to adjust the focus. On its outer end it is dished to hold an ordinary small lamp holder, and also is so shaped that it may be used to hold the gas burner, if this is carried. The patentee of the device is Mr. G. H. Papin, 59, Kingsway, Coventry.



The Papin electric adapter.

British Wins in France.

Greame Fenton, riding an A.B.C., won no less than six prizes in a hill-climb recently held at Mont Ventoux, his total wins in this one event being: 500 c.c. solo class, first on formula, second on time; 750 c.c. solo class, first on time; 1,000 c.c. solo class, second on time; stopping and restarting test, first; general classification on formula, first. The A.B.C. machine he rode was made by the French Gnôme and le Rhône Company, so that it cannot be described as all-British; but British brains are responsible for it.

Current Chat

Times to Light Lamps.

GREENWICH TIME.

Oct. 23rd	...	...	5.20 p.m.
,, 25th	...	...	5.16 ,,
,, 27th	...	...	5.13 ,,
,, 29th	...	...	5.9 ,,

What's in a Name?

The following little gem appeared in a recent number of a Welsh provincial paper: "3½ Premier, white and poppy, single-speed, £18."

The Ubiquity of "The Motor Cycle."

The Motor Cycle has appeared on the stage. True it was only carried by one of a crowd in a street scene in a Vaudeville sketch, but it served its purpose in making the setting real.

Police Trap.

We are informed that a police trap is in operation on the Duffield Road, Derby. It commences at Highfield Road and finishes at Belper Road (Five Lamps), where a constable is hidden in a doctor's garden. Heavy fines have been inflicted. Derby is also applying for a 10 m.p.h. limit.

Sheepshead Bay Race Meeting.

At the motor cycle race meeting at Sheepshead Bay the American championship was won by Eugene Walker on an Indian.

The other races resulted as follow: Two miles race.—First, Otto Walker (Harley-Davidson). Fifty miles race.—First, Ray Wishaar (Harley-Davidson). Hundred miles race.—First, Albert Burns (Harley-Davidson).

A New Company.

A new company under the title of Middlemores (Coventry), Ltd., has been registered to take over the whole of the assets of the Coventry branch of Middlemore and Lamplugh, Ltd., who are in voluntary liquidation. Liabilities of the old company will be discharged in full. Middlemores (Coventry), Ltd., is a private limited company, and Mr. W. A. De Lattre, who has had sole control of the Coventry business, is still retained as managing director with a seat on the Board, and, associated with him are Mr. H. J. Mason, managing director of D. Mason and Sons, Ltd., of Birmingham and Wolverhampton, saddlery and harness manufacturers; Mr. J. H. Bromielow, engineer, formerly of Kynochs, and Mr. Alf. Bednell, whose name needs no introduction to the cycle and motor cycle trades.

Self-Sealing Rubber Co.

The directors of the above company recommend a dividend of 15% free of income tax to be paid for the year ending August, 1919.

French Kilometre Record Attempts.

The Automobile Club of France held flying kilometre races, and kilometre races with a standing start, on the Achères road last Monday. The events were open to motor cycles and cars.

Italian Road Race.

Suisini, riding a Rudge, beat all comers in the 500 c.c. class of the Toscane motor cycle race in Italy, on the 28th ult. The distance was about 143 miles, and the time 5h. 35m. 16s. In the 1,100 c.c. class, Harley-Davidsons were first and third and an Indian second.

Stolen Motor Cycles.

As a warning to prospective vendors of motor cycles, we would ask our readers especially to beware of the man who calls in reply to advertisements of motor cycles for sale, asks for a trial run and does not return. No trials should be given unless the money is deposited in notes with the owner of the machine. A case of this kind, recently reported in the daily papers, tells how Maurice McAdoo, age seventeen, was sentenced to six months imprisonment on a charge of stealing machines from a dealer at West Ham, and also six months for wearing a uniform and decorations to which he was not entitled; twelve months imprisonment in all. He sold five motor cycles worth £209 for £60, and appeared in court wearing the R.A.F. uniform and five ribbons, including the D.S.O. and D.S.C.

Special Features.

IMPRESSIONS OF THE PARIS SALON. ROAD TESTS OF NEW MODELS.

Police Activity.

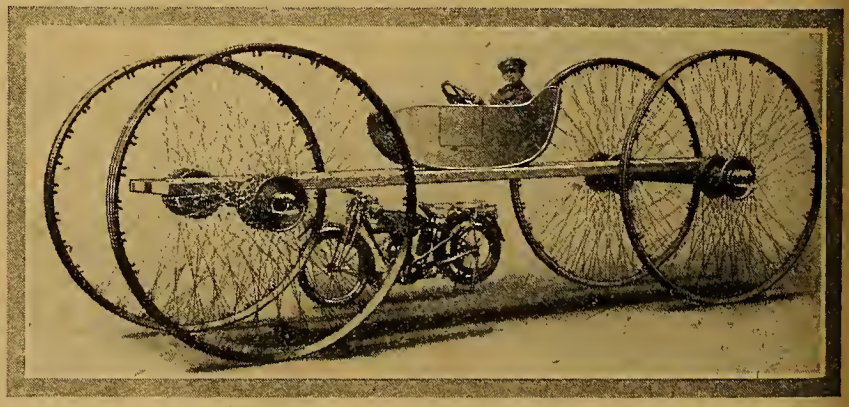
Motor cyclists are cautioned when riding in the neighbourhood of Brixton, as a police trap is in operation between Brixton Church and the George Canning.

Noisy Motor Cycles.

The majority of our readers doubtless know that "any noise annoys an oyster, but a noisy noise annoys an oyster most." If, without wishing to be too personal, we substitute "non-motoring public" for oyster, we arrive at the head and fount of the motor cycles offending. The subject was thoroughly discussed in the leading article in last week's issue.

Rear Lights and Accidents.

The National Council of the Commercial Motor Users' Association has had under consideration the regulations governing the lighting of road vehicles, with particular reference to their relation to accidents, and has informed the Ministry of Transport and the Home Office that it welcomes, in the interests of the public safety, the temporary reimposition of the provisions of Part 1 of the Lights (Vehicles) Order, and is of opinion that these provisions should be made permanent, at the same time urging upon the Government the wisdom of the reimposition of the Lights (Animals) Order. Road transport will be unsafe, alike to cyclist, pedestrian, animal drover, and vehicle driver, if any of the provisions of either Order should be allowed to lapse.



Wire wheels manufactured by Rudge-Whitworth, Ltd., for aerial ropeway conveyors. Their comparative size may be judged in contrast with the Rudge-Multi in the background. The "Heath-Robinson" vehicle, facetiously assembled for the photographer's benefit, will *not* be included in the 1920 Rudge programme!

Petrol and Profiteering.

The Board of Trade announces that the Profiteering Act, 1919, Maximum Prices Order No. 2, which fixed maximum prices for the sale of motor spirit, has been revoked. We wonder why!

A £40 Motor Cycle.

A new machine fitted with a 2¾ h.p. two-stroke engine, Brampton or Druid forks, E.I.C. magneto, Amac carburetter, and 24 × 2in. tyres will shortly be placed on the market by Mr. F. A. Wastell, of High Street, Orpington.

A Three-cylinder Radial-engined Car.

A remarkably light car design—the Cosmos—fitted with a three-cylinder Y type air-cooled radial engine and three-speed gear box, will be described and illustrated in this week's issue of *The Autocar*, dated 25th inst.

Cars at Olympia, November 7th to 15th.

The first of the Special Olympia Show Numbers of our parent journal, *The Autocar*, will be published to-morrow, Friday. The main contents are devoted to accessories. Next week the Buyers' Guide of 1920 model cars, with all leading chassis details, will appear, followed by the Olympia Show Forecast and Guide on November 8th, and the Report on November 15th. Motor cyclists (particularly those migrating to the light car), who desire to keep themselves *au fait* with developments in the automobile world, should order copies of *The Autocar* Special Olympia Show Numbers.

Motor Speeds at Hitchin.

The local police have informed the Royal Automobile Club that, owing to the excessive speeds at which motorists have been driving in Hitchin, they are instructed strictly to enforce the provisions of the Motor Car Act. The R.A.C. is accordingly co-operating with the Hertfordshire Constabulary to prevent illegal driving in and about the town, and the Club desires to issue a warning to all motorists residing in or passing through the locality. The Club has also informed the Chief Constable of Herts. that it is quite willing to provide R.A.C. "Please Drive Slowly" signs for erection at the principal entrances to the town.

A.C.U. Consulates.

There is every reason to believe that the consular service of the Auto-Cycle Union will soon be a very valuable feature of the facilities offered by the Union to members. Application for the post of local consul is invited from members.

An International Conference.

Mr. T. W. Loughborough, Secretary of the Auto-Cycle Union, is calling a conference of national bodies in his capacity as Secretary of the Fédération Internationale des Clubs Motocyclistes. The meeting will probably be held in London next December, when the curious situation which has arisen in America in connection with motor cycling competitions will be discussed. The representative American body associated with the F.I.C.M. is the Federation of American Motor Cyclists.

The Ford Type of Motor Cycle.

If present plans fructify, there will be more than one machine on the market next year designed to sell at a popular price. One of these is a large two-stroke intended for solo or sidecar work, which, it is expected, will be sold at the price of present-day lightweights.

An Autumn Trial in Wales.

Everything is being done by the secretary and officials of the Liverpool Motor Club to make the autumn trial a great success. This will be held next Saturday over a 115 mile course in Wales. The trial will start and finish at Birkenhead, and at about twenty miles from the start there will be an acceleration test, followed immediately by a brake test. These tests will take place between Northop and Holywell, and at Ruthin, where the first competitor is due at 12.15. There will be a one and a half hour lunch stop. The start will be from Hamilton Square, Birkenhead, at 9 a.m., and the finish at the Woodside Ferry Hotel at 4.58 p.m. An average of 18 m.p.h. is the schedule speed.

Benzol or Benzole?

At the Delegates' Meeting of the N.M.C.F.U., held in Lichfield on Saturday evening, Mr. S. Henshaw, of the National Benzole Association, was asked, among other questions, if he would explain the adoption of the spelling "benzole" by the Association, as opposed to the spelling "benzol" often used. He replied that the word "benzol" had a particularly German flavour, the spirit being so called in all their text books on manufacturing chemistry, whilst English chemists consistently adopted the spelling "benzole." When the N.B.A. was formed, the question of spelling was deliberated upon, and it was unanimously decided to use the latter form—in short to add the "e" and make it thoroughly British. Incidentally, we would point out that this spelling has always been used by *The Motor Cycle*.

A Reunion of D.R's.

With a view to arranging a reunion of D.R.'s of the 3rd Signal Squadron, R.E., we have been requested to ask all D.R.'s who served with this unit, or with the 6th, 7th, and 8th Signal Troops, to send their address to R. Channon, 6, High Street, Dorchester.

A Welcome Home.

We congratulate Mr. Humphreys, the chairman, Mr. R. H. Henderson, the secretary, and the committee on the great success which has attended their dinner, referred to on pace 460, and hope similar success will be attained with the suggested extension of the scheme.

French Kilometre Records.

The French official kilometre records, which were held in the suburbs of Paris during the Show, did not bring together many competitors. The trials had to be postponed twice on account of the weather, and when finally held, on October 15th, the conditions were only moderately good.

In accordance with the international rules, the kilometre had to be covered in both directions and the average time taken. Of the five motor cycles the fastest was Pean's 500 c.c. Peugeot, which established the record of 32 3-40s. for the flying kilometre. This is equivalent to 69.5 miles an hour. On his outward run Pean attained a speed of 74.5 miles an hour. The following are the results, the time given being the average for the out and home run:

SOLO (250 c.c.).—Alcyon, 60 1-40s.
SOLO (350 c.c.).—Alcyon, 35 11-40s.; Alcyon, 36s.
SOLO (500 c.c.).—Peugeot, 32 3-40s.
SIDECARS (1,000 c.c.). — Harley-Davidson, 47 18-40s.

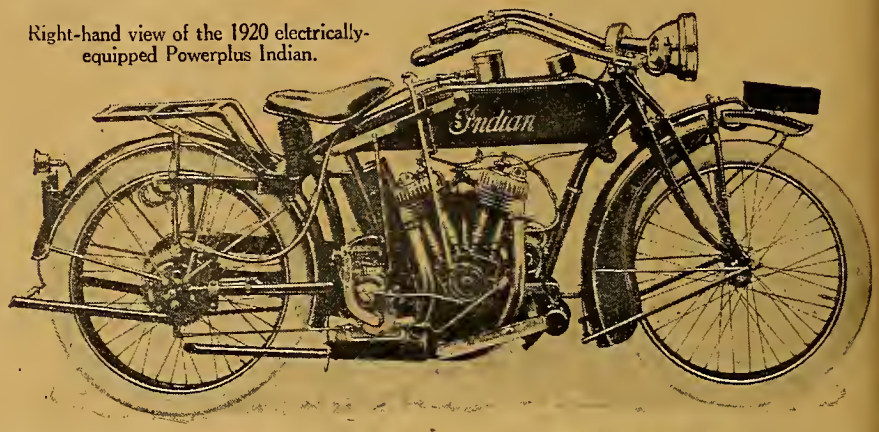
A flashlight photograph taken at the Grand Hotel, Birmingham, last Friday, when 200 local motor cyclists who had served in the war were entertained by those "who stayed at home."

THE 1920 INDIANS.

Two Models: 596 c.c. Scout and 997.6 Powerplus.

WE have received advance details of the Indian models which will be actually on view at Olympia, but the machines themselves have not yet arrived, though we had an opportunity of inspecting the Scout Model G20 at the Grand Palais, to which reference was made in the last issue. This is an attractive medium-weight mount, which should be ideal for solo work, but at the same time quite powerful enough for a sidecar. It is new in conception, new in design, and shows several novel constructional details; moreover, it is powerful, strong, and 100 lb. lighter than the Powerplus.

Right-hand view of the 1920 electrically-equipped Powerplus Indian.



Power Unit of the Scout.

The engine is of the same type as the Powerplus, but has a bore and stroke of 70×78 mm. (596 c.c.). The nominal rating is 5 h.p., though it actually develops 11 h.p. on the dynamometer. Roller bearings are fitted to the connecting rod and mainshaft. Large valves are used, so that a maximum efficiency is obtained, while the engine, with clutch and three-speed gear, forms a unit power plant.

Transmission to the gear box is by wide face spiral gears running in an oil bath. A steel disc clutch also running in oil is provided, which forms a smooth and positive engagement, and is worked by a rocker pedal on the near side footboard. The gears are actuated by a direct-acting change speed lever on the casing of the gear box, enabling an easy change to be made. The rear drive is by a ⅝in.×⅜in. chain, which is protected by means of a chain guard. The gear ratios are 5 to 1 high gear, 7.7 to 1 second gear, and 12.2 to 1 low gear. A kick starter is provided, acting on the mainshaft of the three-speed gear.

Carburetter and Ignition.

The carburetter is the Indian-Schebler, and though of the automatic variety it is capable of being altered to suit atmospheric conditions. We have had considerable experience with this type of carburetter, and find that it is capable of instantaneous acceleration without choking, while the slow running is all that can be desired. A Splitdorf Aero high-tension magneto, totally enclosed so that it is dust and waterproof, provides the ignition. Lubrication is by means of the well-known Indian system of mechanical oil pump, aided by an auxiliary hand pump.

The Cycle Parts

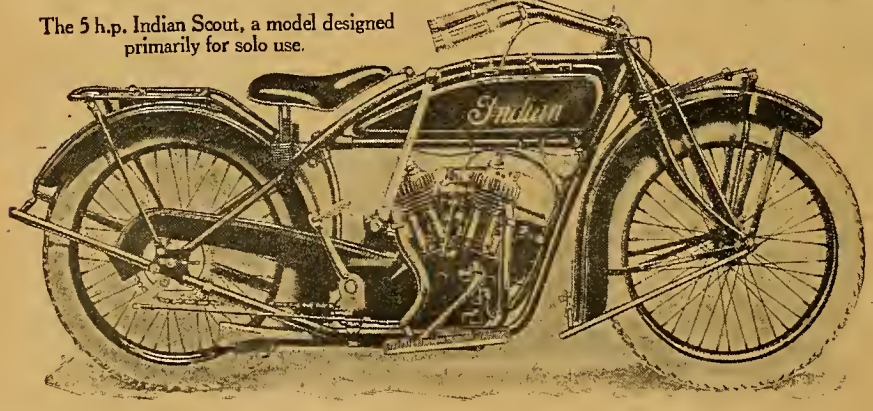
The frame is of the Indian double tube type, and is composed of special steel tubing and heavy drop forgings. The power unit is suspended at three points, and has a low centre of gravity, but yet ample clearance. At the same time, it is protected by the frame-member which passes below it.

Spring forks of the Indian triple stem type with double anchorage for the handle-bars are used. They are reinforced by truss rods, and the bushings for the movable parts are renewable in case of wear. Double brakes are provided, the internal brake being foot applied, while the external brake is actuated by lever on the handle-bars. Both brakes are independently adjustable.

The wheels are 26in. × 3in., and are provided with flat base rims. The wheel hubs, rims, and spokes are finished black, while withdrawable axles to the front and rear wheels are provided, allowing easy detachability. Front and rear stands are provided, and have "anti-rattle" mountings.

The petrol tank holds 2½ imperial gallons of fuel, and the oil compartment 2½ imperial quarts; there is a priming squirt in the petrol filler cap, and the lubricating pump is enclosed in the oil compartment.

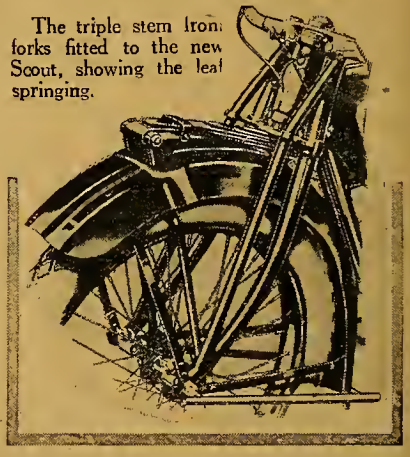
The 5 h.p. Indian Scout, a model designed primarily for solo use.



The Powerplus Model.

The Powerplus electrically equipped model has already attained a high degree of popularity in this country. Its engine has been improved by the fitting of larger inlet and exhaust valves; its bore and stroke are 79.3 mm. × 100.8 mm. respectively (997.6 c.c.). Roller bearings are fitted to the big end and mainshaft.

The triple stem Indian forks fitted to the new Scout, showing the leaf springing.



In the main the Powerplus model has not been altered to any very great extent. It is still supplied with the Splitdorf Aero high-tension magneto, giving a maximum spark intensity at all speeds. This is kept entirely separate from the Splitdorf direct current generator, which is driven by a spring wire belt directly from the engine. The petrol tank holds nearly three gallons of fuel, and is divided into two compartments, each with its separate filler cap and petrol tap. The oil tank holds 2½ quarts of lubricant.

The Transmission.

Transmission is by Renold chains amply protected by chain-guards, and the gear ratios are 4.75 to 1 high gear, 7.12 to 1 second gear, and 11.87 to 1 low gear.

The frame is the Indian cradle spring pattern, which has proved its excellence during the last seven years. It is composed of chrome Vanadium steel tubing and heavy drop forgings, while the head

The 1920 Indians.—

is webbed and of one piece, giving additional strength. The brakes are arranged in a manner similar to that adopted in the Scout model. The tyres are 28in. × 3in. on flat base rims, and the finish of the hubs, rims, and spokes is the same as on the previous model.

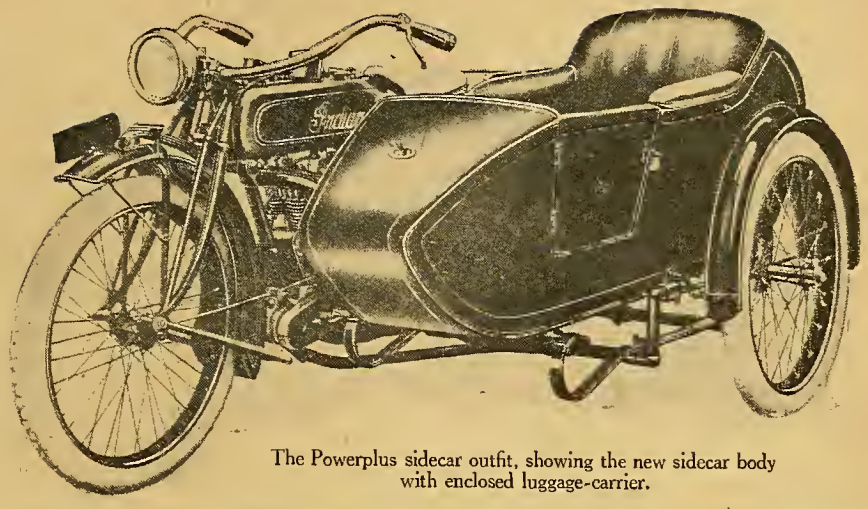
Enclosed Kick-starter.

The starting mechanism is on the right-hand side and enclosed, with the quadrant and pinion running in oil. As before, twist grip control is fitted. An improved design of bell crank levers on the forks gives greater strength and increased bearing surfaces.

Minor details are a larger carburetter, larger filler caps, and numerous other small innovations.

Reverting to the electrical equipment, there is an ammeter on the top tube which indicates at all times the amount of current going to the battery and shows the condition of the entire electrical installation.

So far as the sidecar is concerned, the body has been entirely redesigned for 1920. The seating accommodation for the passenger is most luxurious, and at the back of the sidecar there is a large receptacle, which is sufficiently roomy to take a considerable amount of luggage as well as extra petrol and oil.



The Powerplus sidecar outfit, showing the new sidecar body with enclosed luggage-carrier.

THE 1920 BAT MACHINES.

Renewed Energies of an Historic Firm. Two Powerful Passenger Machines.

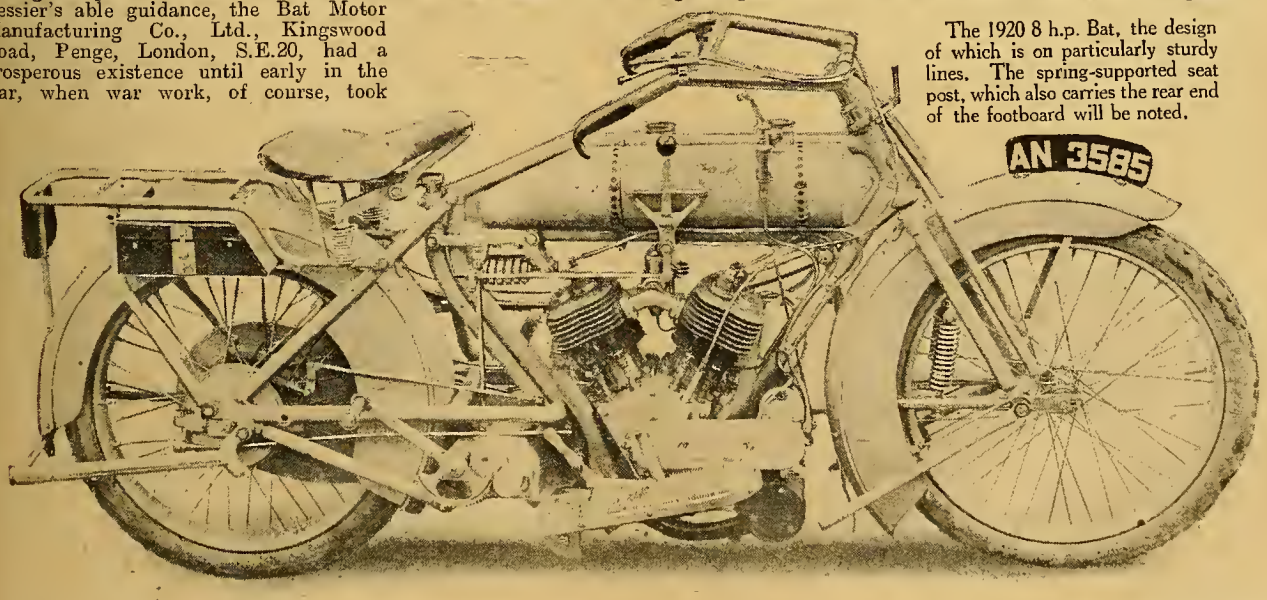
THE Bat motor cycle has been so long with us that any reference to these machines cannot fail to interest our readers. A brief history of the company is worth recording. The Bat first appeared in 1902, and, ridden by those famous experts, the brothers Chase, soon leapt into prominence by gaining a long series of records on the Crystal Palace track. Towards the end of 1904 the original firm died, but was revived by Mr. T. H. Tessier, who had ridden these machines with considerable success during the previous season. Under Mr. Tessier's able guidance, the Bat Motor Manufacturing Co., Ltd., Kingswood Road, Penge, London, S.E.20, had a prosperous existence until early in the war, when war work, of course, took preference over motor cycle manufacture, so that it was with great pleasure that we heard early this year that it had once more been revived, with the son of its old managing director, Mr. S. T. Tessier, as works manager.

6 and 8 h.p. Models.

Two practically identical models are now being manufactured—a 6 h.p. and an 8 h.p., with J.A.P. engines. The old and long tried system of springing is retained, which consists in isolating the seat-pillar and footboards from the rest of the frame, the shocks being absorbed by a coil spring in tension.

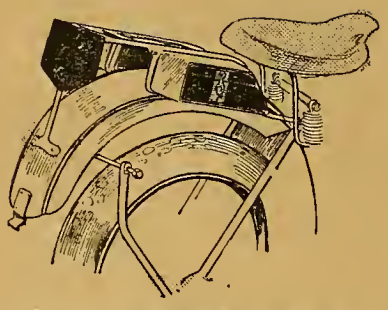
A feature of considerable interest lies in the method of holding the gear box, as, instead of being suspended from a bracket, it rests upon a platform, which is supported at its forward end close against the crank case and at its rear-most end by tubes running from the back fork ends below the chain stays. The gear box is held by means of bolts running through longitudinal holes, and the fact that it is not hanging by its own weight renders it quite easy to slide it back and to take up any slackness there may be in the chains.

It will be noticed that the kick starter has a partially enclosed pinion on the gearshaft, and that it is designed to give the leverage which is necessary when turning over a powerful engine. Another excellent feature of the gear box is that it is provided with a large inspection cover which can be removed without interfering with the adjustment of the striking mechanism.



The 1920 8 h.p. Bat, the design of which is on particularly sturdy lines. The spring-supported seat post, which also carries the rear end of the footboard will be noted.

The 1920 Bat Machines.—



The Bat rear mudguard, lifted up and resting on the bolt, previously withdrawn from the carrier stays, thus allowing access to the tyre.

In many respects the present model Bat closely resembles the pre-war pattern, but several details and refinements have been embodied with a view to its improvement.

The spring forks, however, which have been so long associated with this model are still retained, and it is interesting to note that the fork arms work on adjustable ball bearings, so that any play which might occur after prolonged use can be taken up at once.

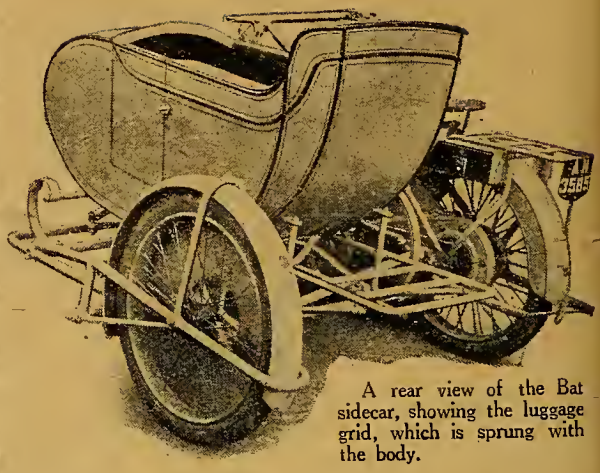
A Rear Wheel Clutch.

The rear mudguard is now capable of being lifted up so as to allow of easy access to the back tyre, and this is effected by withdrawing the long bolt beneath the luggage carrier just behind the large metal enclosed tool case.

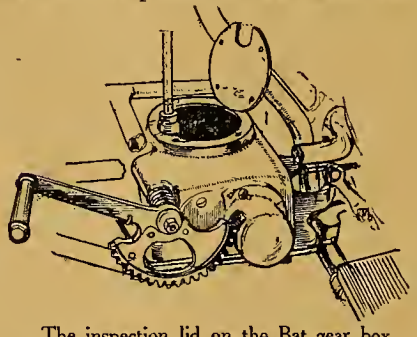
Contrary to the practice followed by most makers, the clutch is carried in the rear hub, and consists of an internal expanding phosphor bronze ring. There is one pedal on the near side, the first movement of which withdraws the clutch, any further movement applying the external band brake on the back hub. On the off side of the machine is another pedal, which actuates an internal expanding brake in the same drum as that to which the external brake is applied.

The transmission is entirely enclosed, and the chain cases are easily detachable. The mudguarding has been well designed, and both front and rear guards are deeply valanced.

In the case of the sidecar, the comfort of the passenger has been carefully studied; it is well-upholstered, and the wheel is sprung, the movable portion of the mechanism running on ball bearings. A substantial and spacious luggage carrier is attached to the sidecar body, so that the luggage is as well sprung as the passenger. The machines are finished in light grey, and have an exceedingly attractive appearance.



A rear view of the Bat sidecar, showing the luggage grid, which is sprung with the body.



The inspection lid on the Bat gear box may be removed without disturbing the striking mechanism.

The Bat on the Road.

We had a short run on the machine, which was driven by Mr. S. T. Tessier, and found that it pulled well and was exceedingly comfortable, not only from the passenger's point of view, but from the driver's as well.

From whatever point of view the Bat machines are regarded, it is obvious that the road experience of practical riders has dictated the main essentials of the design, which is characterised throughout by great strength and robustness.

THE 2½ h.p. P. & S.

A Fully-equipped Two-stroke Lightweight.

THIS is a motor bicycle of which we have had some considerable riding experience but under another name. The machine is now handled by Messrs. Pearson and Sopwith, 60, Mortimer Street, London, W.1, and is a handy, moderate-priced little mount, well equipped and highly suitable for those who prefer a lightweight two-stroke which is capable of going anywhere.

Since our last reference to the machine, it has undergone one or two improvements. The tank is of larger dimensions and now holds 1¼ gallons of petrol and a quart of oil, sufficient fuel being carried for 130 miles, which is a great improvement on the previous model, the tank capacity of which was distinctly limited.

The power unit is a 2½ h.p. Villiers, and the gear box is a Burman, provided with a kick-starter.

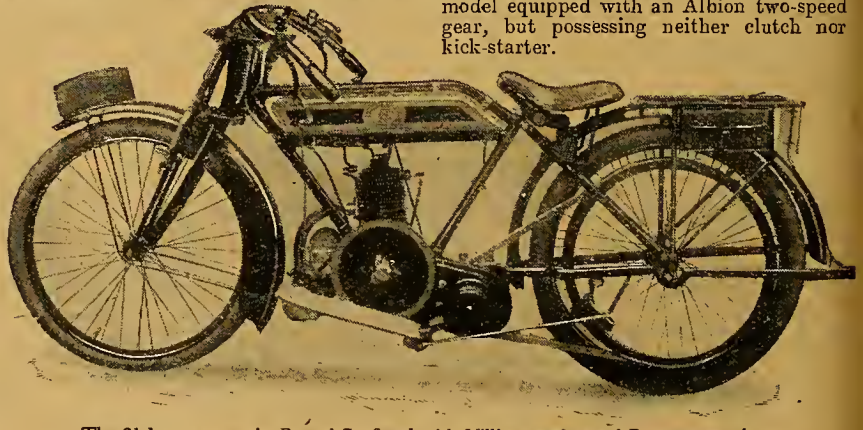
Formerly, the position of the brake pedal at the rear of the comfortable aluminium footboards caused the rider's heel to come in contact with one of the gear spindles when actuating the brake, causing considerable damage to the boot. This has been overcome by placing the pedal in a more convenient position forward of the footboard, so that it is actuated by the ball of the foot, and the gearshaft having been shortened is no longer in the way. In actual practice, we found the two-speed gear, clutch, and kick-starter to work admirably.

A further improvement lies in the introduction of a chain guard and of a valance to the rear mudguard.

Reverting to the speed gear, the clutch is actuated by a lever on the handlebars, and very little effort is required to effect its withdrawal.

The machine is well-equipped, has a comfortable Lycett pan saddle, Best and Lloyd drip-feed lubricator, C.A.V. magneto, and either a Brown and Barlow or Amac carburetter. Two-inch tyres on 26in. wheels are supplied.

There is also a simpler and cheaper model equipped with an Albion two-speed gear, but possessing neither clutch nor kick-starter.



The 2½ h.p. two-stroke P. and S., fitted with Villiers engine and Burman gear box.

The N.M.C.F.U. Delegates' Meeting at Lichfield.

ON Saturday, delegates from many branches of the National Motor Cyclists' Fuel Union assembled at the George Hotel, Lichfield, to be present at the executive and delegates' meeting, which took place at 6 p.m. Thanks to the splendid weather conditions prevailing, the majority journeyed there by road, and spent the afternoon inspecting the antiquities of the old town. A large party from the Coventry and Birmingham branches met at Stonebridge, and joined forces on the run to Lichfield, while amongst others noticed at the meeting were representatives from Derby, Sheffield, Liverpool, Portsmouth, London, and Barrow.

The chair was taken by Mr. E. S. Shrapnell-Smith (president), while Mr. A. W. Torkington (National chairman), Mr. W. Ellis (secretary), and Mr. T. W. Loughborough (the secretary of the A.C.U.) were also present.

As questions largely relating to the selling prices, quality, and distribution of benzole occupied a prominent position on the agenda, Mr. S. Henshaw (vice-chairman of the National Benzole Association) was invited to attend, and during the course of the meeting gave some interesting information.

Dealing first with the benzole question, resolutions were read strongly condemning the variations in price and overcharges common in many districts, and specific instances were given.

Mr. Henshaw, replying, said that benzole manufacturers who were members of the N.B.A. (and this included the majority) had made no recent advance in price. They agreed to sell to the dealers in bulk at 2s. 3d. per gallon, or in tins at 2s. 4d. per gallon, and that dealers were authorised to sell at a profit of 5d. per gallon; therefore any retailer charging more than 2s. 9d. per gallon was clearly profiteering, and the N.B.A. was most anxious to have such cases brought to its notice.

Speaking of the present price of benzole as compared with the charge of 1s. 3d. per gallon (retail) common in 1913 and 1914, he mentioned that coal, which then cost 9s. per ton at the distillery, now cost 28s., while coke-oven men, who before the war received 5s. daily, now had a wage of 14s. per day, plus a small bonus. All other costs were similarly increased; therefore, rather than the present price of 2s. 9d. per gallon being a matter for complaint, he considered that the manufacturers were to be congratulated on keeping it at this figure. The output of benzole in this country he stated to be over twenty million gallons annually, and still increasing; therefore it merely required improved distribution to supply all the needs of motorists in this country. Distribution was improving, and, given the co-operation of private motorists, it would soon be possible to establish its general use.

A resolution, proposed by the Leicester branch, was next made strongly opposing the abolition of the Order necessitating rear lights on cycles, cattle, and slow-moving vehicles, and in the discussion which followed, Mr. F. Murray (Birmingham), speaking both as a member of the N.M.C.F.U. and of the Clarion Cyclists' Club, suggested that the rear light Order should be maintained, but that, in the case of cycles, a properly designed reflex "light" should be considered as complying with the law. The carrying of rear lights was not objected to by the majority of cyclists, provided they were protected from the petty persecution of the authorities on account of the rear lights being extinguished by jolting over bad roads.

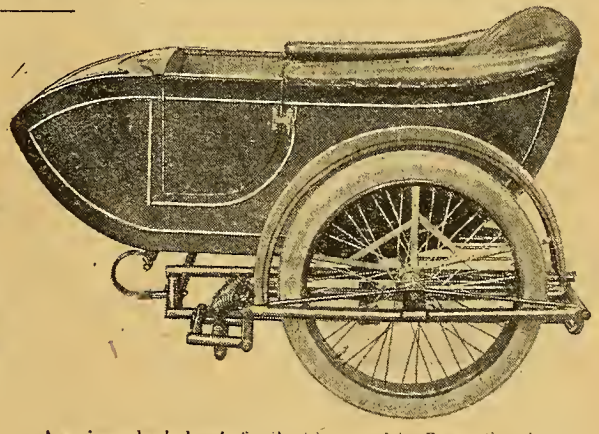
A further amendment was added that solo motor cycles shall be regarded as "cycles."

The next matter of general interest dealt with the proposals which are likely to be made by the Chancellor of the Exchequer regarding an all-round revision of motor taxation, and Mr. Shrapnell-Smith remarked that it was felt, in comparison, for example, with a heavy hire car paying a 15s. hackney carriage licence, that the motor cycle was disproportionately taxed.

The resolution to be put forward was that taxation should be upon the wheel basis, and that motor cycles should pay 2s. 6d. per wheel per annum. This suggestion met the views of all present and will form part of the propaganda programme of the N.M.C.F.U. when these proposals are brought up at the next annual general meeting, which will be held on December 6th at the Imperial Hotel, Birmingham, at 6 p.m.

The Use of Welding in Sidecar Construction.

The Bamco Chassis from which Brazed Joints are Eliminated. A Novel Type of Wheel Springing is Incorporated.

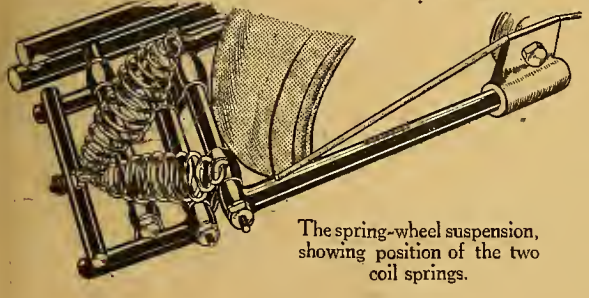


A spring-wheel chassis fitted with a special "Bamco" body

MUCH experience has been gained during the last few years in the employment of the oxy-acetylene welding process in conjunction with aircraft construction, and it has revealed its manifold advantages with regard to ease of manufacture and durability.

Based on this experience, the Birch Manufacturing Co., Willesden Green, N.W., have applied the process to a chassis which they propose to place on the market at no distant date.

A popular model, incorporating a new spring wheel design, is shown in the illustration. The sidecar wheel is held by means of a "knockout" bolt through the hub at the centre of the two longitudinal tubes, which, with the rear cross member on which they are pivoted and the front cross member, form a cradle sprung with the wheel. This cradle is attached at the forward end by two links to a rectangular member free to rock on an extension of the chassis, and two coil springs control its movement. The action of this suspension is very simple, and is made quite clear by the sketch.



The spring-wheel suspension, showing position of the two coil springs.

The springing of the sidecar body is, although of standard pattern, interesting, as the two coil springs on which the rear of the body is held are suitably enclosed, thus excluding dust and mud and presenting a smart appearance. The coil springs are provided with a bolt which passes through a slot in the spring container, and is then attached by means of a clip to the rear cross-member, to which the body is bolted. The front springs are of the conventional C spring type. Substantial three-point mudguard attachments are fitted to all sidecar chassis, thereby decreasing the one possibility of a breakage, the welded chassis having proved its strength during the extensive and searching trials recently carried out.

Although not at present available, we understand that other spring wheel designs will appear shortly. Three other models will also be produced by the designer, Mr. H. E. Monti; all of these, however, are rigid. The medium-weight and standard models have 26in. wheels.

C9

The Midlands Honour Service Motor Cyclists.

A Successful Welcome Home.

BIRMINGHAM probably has more motor cyclists per thousand of its population than any other city in the world. Add to this the large numbers of riders in the immediate surrounding districts, and one is not then surprised that the Midlands were well represented by these motor cyclists in every branch of the services fighting in the great war.

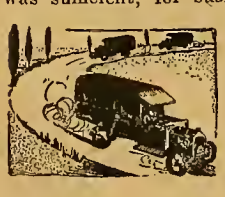
Last Friday evening, two hundred of those who had returned were entertained at the Grand Hotel, Birmingham, by a committee representative of the sport, pastime, and trade in the Midlands.

Immediately on arrival at the rendezvous, it was clear to us that this was more than a reunion of local motor cyclists, although, even as such, it was undoubtedly a great success. What impressed us more was the significance of such a meeting—a further proof that motor cyclists form a fraternity such as does not exist among participants in any other pastime—and proof, too that the brotherhood's part in the war has not been, and will not be, forgotten by those who "stayed at home." The committee's scheme is not finished with a dinner and entertainment, and endeavour is to be made to ensure that those who helped to win the war, and incidentally to place the motor cycle above the category of a sporting machine in the eyes of the public, will not suffer through difficulties in re-establishing themselves in their proper place in civil life. Such was the spirit behind "the welcome home to Birmingham's service motor cyclists," at which Col. Sir William Bowater presided last Friday.

Reunions.

Although there were a large number of clubmen present, we think the majority were "unattached riders."

Among these we noticed several cases of the meeting of men who were comrades in the various fields of war, which shows that in large cities there may be hundreds of old comrades who are out of touch with their fellows, and that a reunion of this nature must be a great source of pleasure to men who have battles to fight again. Representatives of all grades of the motor cycling public were present—but all were motor cyclists, and that was sufficient, for such is the fraternity of motor cyclists that class and distinction of any kind are not recognised. The man who, before the war, saved enough to buy and run a second-hand machine of ancient make and the owner of perhaps a stud of machines *de luxe* had common interests; motor cycles before the war, motor cycles during the war, motor cycles of the present and the future.



The cover of the menu designed by S. Kempson Jones—one of the committee and also a guest.

A 6in. plaque was presented to each guest—a handsome souvenir inscribed "A symbol of the courage and sacrifices displayed by Birmingham and District motor cyclists who served in H.M. Forces."

Many of the guests bore scars of battle, some were maimed, a few disfigured. When the company rose to drink a silent toast to those who had fallen, one was reminded that the sport of motor cycling had lost many enthusiasts who had helped to make the modern motor cycle the efficient war machine it proved itself to be.

The President's Address.

The president of the movement, Col. Sir William Bowater, gave a very suitable address of welcome and referred to the difficult tasks of motor cyclists in the war, and paid tribute to the patriotism of Birmingham motor cyclists in particular. Mr. Frank Gazard, D.S.M. (the Navy), Maj. Wilson (the Army), Capt. Joseph, R.A.F., D.F.C. and bar (Air Force), and Mr. Howard R. Lane (despatch riders) responded.

Other speakers were Mr. Chas. Hyde (B.S.A. Co.), Mr. A. W. Torkington (president A.C.U.), Mr. Ernest Humphries (chairman of the committee) and Mr. R. W. Henderson (secretary).

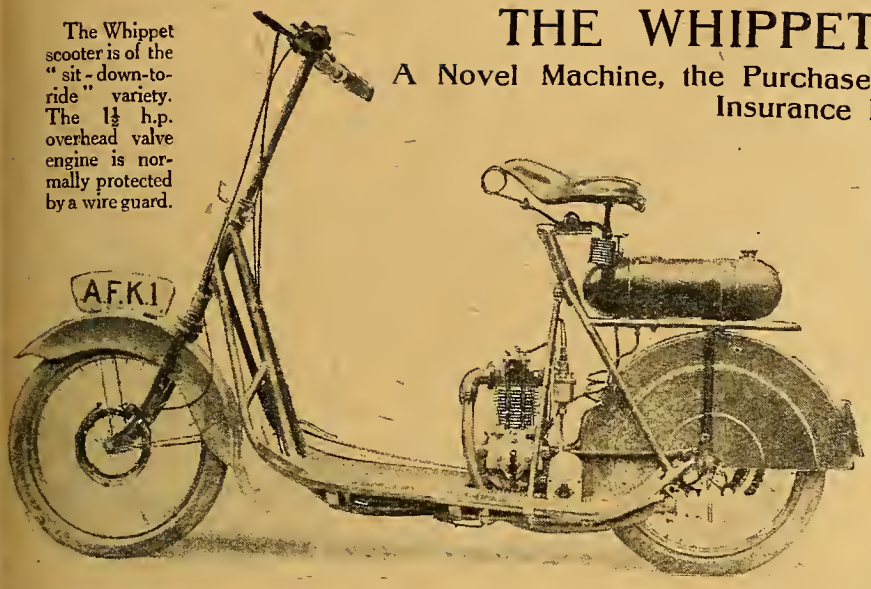
During the evening each guest was presented with a handsome copper plaque suitably inscribed—a photograph of which is reproduced on this page. A capital musical programme concluded a most brilliant evening.

A Good Scheme.

We should like to see similar gatherings in other motor cycling centres. Undoubtedly it means a great deal of labour and tenacity successfully to obtain the funds to carry such schemes into effect; in which connection it is interesting to know that the Birmingham function was brought about by a citizen committee through the instigation of Mr. Ernest Humphries of the O.K. firm. It is perhaps rather surprising that the stronger Birmingham clubs did not take a more prominent part in the work; in fact, we heard more than one criticism of the clubs in this connection, one very energetic clubman venturing to remark that the only official acknowledgment of a member's return to civil life being a civil demand for his subscription. The donations that were collected by the committee amounted approximately to a total of £400.

THE WHIPPET SCOOTER.

A Novel Machine, the Purchase of which includes a Free Insurance Policy.

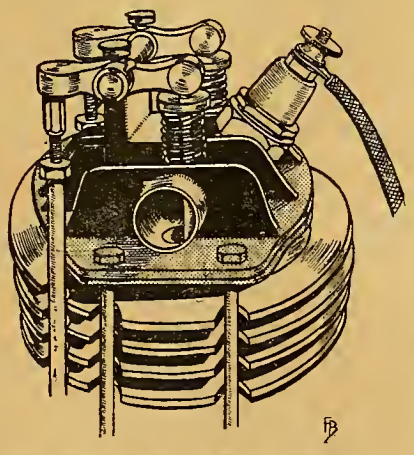


The Whippet scooter is of the "sit-down-to-ride" variety. The 1½ h.p. overhead valve engine is normally protected by a wire guard.

MANY have been the designs of motor scooters since the first idea of elaborating a foot-propelled machine set the ball rolling. A considerable amount of controversy has also arisen with regard to the most suitable position for the power unit, and some designs have suffered through the weights and stresses being unsuitably distributed. A sound method of construction, however, has been adopted by W. G. C. Hayward and Co., Ltd., Beaufort Works, Cambridge Park, Twickenham, who have based the design of the Whippet scooter on motor cycle principles.

Features of Design.

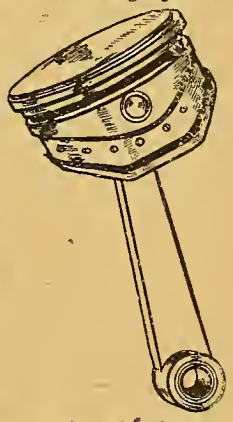
The foremost of the many features incorporated in the design is the 1½ h.p. four-stroke engine, which is mounted in front of the rear wheel, and protected by a collapsible wire cowl. An aluminium cylinder, machined all over, is shrunk on to a steel liner, and mechanically operated overhead valves are housed in the cast iron detachable combustion head, which is securely held in position by four long bolts. A patented exhaust lift or half compression device is incorporated, which consists of a shaft sliding within the cam wheel bush, and provided with a small cam which can be removed beneath the exhaust valve rocker. A steel crankshaft of orthodox pattern is employed. An unusually long phosphor bronze bush, however, is used on the external flywheel side of the crank case, and an aluminium piston, having two cast iron rings, is fitted. Lubrication by splash feed has been found satisfactory, the oil being fed by a hand pump from the tank, which has a capacity for 250 miles. The large portion of the tank holds 1¼ gallon of petrol, which passes through a filter to the standard pattern Amac carburetter. All-chain transmission conveys the drive to the rear wheel, the countershaft being situated in rear of the tubular saddle member. The position of the magneto is somewhat unusual, it being mounted practically out of sight, on the near side of the countershaft, from which it is driven. The large chain sprocket on the off side of the countershaft incorporates a shock absorbing device, and the gear ratio at present employed gives a reduction of 9½ to 1.



Cylinder head and overhead valves of the Whippet 1½ h.p. engine.

Internal Expanding Brakes.

The chassis is constructed of twin steel tubes throughout, and domed front and rear mudguards are provided. Internal expanding brakes are employed, that fitted to the front wheel being operated by a Bowden lever on the wide handlebars, whilst the rear is foot-operated. The silencer, which is of special construction, consists, broadly, of a restricted venturi tube, with cooling rings cast about its circumference.



The piston and connecting-rod. The former is of aluminium with two cast iron rings, and has a recessed oil trap. Its unconventional shape is due to its being cut away to clear the crankshaft bob-weights

During the searching tests to which it has been subjected, the Whippet is said to have exceeded 25 m.p.h., and has carried three persons up a gradient of approximately 1 in 6. The price of forty-seven guineas includes a free insurance policy for the period of one year.

PRICES IN 1920.

AT the present time there are many rumours concerning the price of 1920 machines. In some quarters opinion is freely expressed that few full-powered sidecar outfits will be less than £200 next year, while in other directions there are signs that prices may be lowered. One cannot imagine, however, that prices of the present type of vehicle are likely to undergo any considerable modification on account of the high cost of raw material and labour. On the other hand, it is quite on the cards that we shall see passenger machines which differ radically from our present ideas and from conventional practice.

The question arises, however, as to whether the motor cycle public, which, to say the least, is a most conservative body, will be prepared to subordinate its preconceived ideas to the notions of the more advanced school of designers. We would remind our readers that it is quite possible to produce a perfectly satisfactory article at a price suited to the pocket of the average motor cyclist, provided that exception is not taken to somewhat unconventional appearance.

IMPORTANT DATES.

Athens Motor Show	Oct. 13th to Nov. 14th.
Olympia Car Show	Nov. 7th to 15th.
Olympia Motor Cycle Show,	Nov. 24th to 29th.
Brussels Show	Dec. 8th to 13th.
Paris Aero Exhibition	Dec. 19th to Jan. 4th.
New York Show	Jan. 3rd to Jan. 10th.
Paris-Nice Trial	Feb. 13th to 16th.
Birmingham British Industries Fair	Feb. 23rd to March 6th.

The Four-cylinder Henderson on the Road.

Some Experiences with an Increasingly Popular Type of Power Unit.

The 10 h.p. four-cylinder Henderson, the engine of which is 69.85 × 76.2 mm. = 1,168 c.c.—an example of a type which is being considered by British manufacturers.

FOR many years we have realised the possible future of the four-cylinder motor bicycle, and have made a special study of the type, having had road trials of each model of the Henderson ever since its first appearance in this country. We have exceedingly pleasant recollections of the earlier models, but the new one, which was described in our issue of July 17th last, is certainly a distinct improvement on its predecessors. Only those who have driven a four-cylinder motor bicycle can appreciate its charm when compared with existing single or twin-cylinder models, for the sensation of driving is exactly like that obtained in the handling of a powerful four-cylinder car. The machine has a wonderful acceleration, is an excellent hill-climber, and is beautifully controllable in traffic. Both clutch and change-speed gear perform their various functions in an irreproachable manner, the saddle is most comfortable, and the spring forks are excellent.

Our experience with the 1919 model, in contrast with those of previous years, was with a sidecar. As a solo machine it is ideal, despite its somewhat heavy weight, although in this respect it compares very favourably with most of the American twin-cylinder machines.

Its Performance in the Team Trials.

While the machine was in our hands, it was put to a pretty strenuous test. Being brand new, it was first of all driven fairly easily in gently undulating country, but, before it left our hands, it had to negotiate the stiff course selected for the M.C.C. Team Trial for *The Motor Cycle* Cup. It will be remembered in that trial that there were numerous stiff hills with rough surface, and every one of these was negotiated faultlessly.

The only point which we criticise is the somewhat unnecessary inaccessibility of certain parts; for instance, to detach the rear band brake, which we had to do in order to replace the lining material, the whole wheel had to be taken out, and we sincerely hope that in future models the design will be simplified so that such extensive dismantling will not be necessary.

As we have said before, the running of the machine was beyond all praise, while its speed on the level was all that could be desired. We have had for many years a strong belief in a successful future for the four-cylinder, and it is after riding a machine such as the Henderson, which was placed at our disposal by Mr. J. Robertson-Brown, of Messrs. Robertsons Motors, Ltd., 157b, Great Portland Street, London, W.1, that we feel that our dreams are at last being realised.

Novel Application of a Well-tried Chain.

WE recently spent a very interesting afternoon at the works of the Coventry Chain Co., and there inspected the many processes through which a motor cycle chain passes as the raw material is converted into the complete chain ready for use. Much of the automatic machinery seemed to be endowed with almost human intelligence in the way it handled the parts entrusted to it, and more than human diligence in the way it stuck to its work so long as the necessary material was supplied. The automatic feeding arrangements were, too, most ingenious and very fascinating to watch, as the small parts were thrown into position from the supply reservoir and thrown back again if they did not take their place correctly for the succeeding process.

The Coventry Chain Co. is particularly noted for that type of chain which is designed to take up a different position on its sprocket teeth as wear (generally called stretch) occurs, and known as the "Inverted tooth" chain. (Incidentally, a chain of this type, illustrated on page 275 in our issue for September 11th, is a Coventry noiseless chain, fitted to a Rover motor cycle.)

While we were at the works Mr. Watts showed us a chain which is new in its application to motor cycles and cycle cars, but not new in itself, for it is but a small edition of the chain used to drive the "Tanks," and supplied by the Coventry Chain Co. It is, in fact, a double roller chain, and it has an advantage in strength, weight, neatness, and smoothness of running over the larger chains designed for the same purpose, but to set against this is the small disadvantage that the sprockets are slightly more costly, as one extra process is required in their manufacture, and the chain itself contains more parts. This chain being rather wide suits cycle cars better than motor cycles.

Club News

Rochester, Chatham, and District M.C.

A prize distribution, whist drive, and dance is being held at the end of November. Those members who require tickets for themselves and friends should inform the hon. sec. The date has not yet been fixed. Hon. sec., Mr. S. White, 3, South Avenue, Rochester.

Southend-on-Sea and District A.C.

The recent gymkhana proved a great success and included events for motor cyclists and car owners. These were of a novel character, such as changing a sparking plug between starting and finishing lines, a "Blondin" race, in which solo motor cyclists had to keep on a track consisting of boards 9in. wide, musical chairs, and a slow race.

Ulster Hill-climb.

The Ulster Centre of the Motor Cycle Union of Ireland concluded its competitive season with a hill-climb near Carrickfergus. The sidecar class did not secure the necessary number of entries, but the two solo classes were well supported. Result: Novices.—W. W. Johnston (3½ Norton), 1; W. T. White (3½ Norton), 2. Open—E. Thompson (3½ Rudge), 1; J. B. Johnston (3½ Norton), 2; W. W. Johnston (3½ Norton), 3.

Hill-climb at Cork.

A hill-climb was held recently by the Cork and District Motor Cycle Club, the results being determined on formula. The times and placings in the various classes were as under:

CLASS I.—SOLO MACHINES UNDER 300 C.C.

1. J. Mulligan (2¾ Triumph) ..... 55⅘s.
2. R. Cogan (Wolf) ..... 67⅘s.

CLASS II.—SOLO MACHINES, 300-350 C.C.

1. R. S. Russell (2¾ Sunbeam) ..... 43⅘s.
2. F. Harrington (2¾ Coulson-B.) ..... 46⅘s.
3. O'Donovan (2¾ A.J.S.) ..... 50⅘s.
4. H. Burns (2¾ A.J.S.) ..... 48s.

CLASS III.—SOLO MACHINES, 350-600 C.C.

1. C. S. Hosford (4 A.J.S.) ..... 38⅘s.
2. J. Gibbings (4 Triumph) ..... 37⅘s.
2. R. T. Popham (3½ Norton) ..... 37⅘s.
4. J. A. Wilson (3½ Ariel) ..... 39s.
5. J. Mendelson (3½ Sunbeam) ..... 40⅘s.

CLASS IV.—SOLO MACHINES OVER 600 C.C.

Walk over. C. M. Ryan (8 New Imperial) .... 35⅘s.

CLASS V.—SIDECAR MACHINES UNDER 600 C.C.

1. Mahony (3½ B.S.A.) ..... 55s.
2. W. Williams (3½ Triumph) ..... 64⅘s.

CLASS VI.—SIDECAR MACHINES OVER 600 C.C.

1. Duggan (6 Enfield) ..... 50⅘s.
2. J. Ryan (7 Indian sc.) ..... 51⅘s.

In the Pike cup a handicap confined to those who did best on formula in their respective classes, the result was as follows:

	Time.	Handicap.	Handicap Time.
1. C. S. Hosford (A.J.S.) ..	37⅘s. ..	⅘s. ..	37s.
2. R. J. Popham (Norton) .	38⅘s. ..	Scr. ..	38⅘s.
2. J. A. Wilson (Ariel)	40s. ..	1⅘s. ..	38⅘s.
4. J. Mendelson (Sunbeam).	43⅘s. ..	3s. ..	40⅘s.

Future Events.

Oct. 23.—N.M.C.F.U., Leeds. Smoking Concert, "Green Dragon."
OCT. 25.—LIVERPOOL M.C. OPEN TRIAL FOR RELIANCE CUP.
Oct. 25.—N.M.C.F.U., Sheffield. First Winter Social.
Oct. 25.—South Birmingham M.C.C. Trial for Sangster Cup.
Oct. 25.—Finsbury Park C. and M.C. Tea and Lantern Exhibition, "The Mitre," Barnet.
Oct. 26.—Rochester, Chatham, and District M.C. Run to Bodiam.
Oct. 26.—Ilkeston and District M.C.C. Run to Chatsworth.
Oct. 31.—Meeting of Birmingham Club Officials to discuss Question of Amalgamation, Chamber of Commerce, Birmingham.
NOV. 1.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR PALMER CUP.
Nov. 8.—Birmingham M.C.C. Closing Run.
Nov. 13.—N.M.C.F.U., Leeds. Annual General Meeting.
Nov. 21.—N.M.C.F.U., Leeds. Whist Drive and Dance.
Nov. 29.—N.M.C.F.U., Coventry. Run to Olympia Show.

Finsbury Park C. and M.C.

A tea, followed by a lantern exhibition, has been arranged for Saturday next, at the Mitre, Barnet. Hon. secretary: Mr. J. Evans, 33, Springdale Road, Stoke Newington, N.16.

South Birmingham M.C.C.

The Birmingham Motor Cycle Club reliability trial for the Sangster Cup will be held on November 8th; entries close on November 5th. The trial is organised as a sporting run, and a circular route of about one hundred miles has been chosen which introduces new ground to Midland competition riders. Full particulars may be obtained from Mr. T. Silver, trials hon. secretary, Frederick Road, Stechford, Birmingham.

West Lothian M.C.

A new club with a membership of fifty has been formed in Bathgate, Linlithgowshire. The hon. secretary is Mr. J. S. Cox, 93, South Bridge Street, Bathgate.

Liverpool Reliance Cup Trial.

The Liverpool Motor Club has a very sporting course in North Wales laid out for next Saturday's Reliance cup reliability trial. The trial promises to be a successful event, as more than forty entries have been received.

Kidderminster M.C.C.

There were forty-five entrants in the various events of the Kidderminster M.C.C. hill-climb held recently near Cleobury Mortimer. The gradient of the hill was 1 in 8 for 200 yards, the remainder averaging 1 in 20. Results:

CLASS 1.—350 C.C.

		Time.
1.	Pritchard (2½ Viper-Jap)	1m. 1s.
2.	Griffiths (2¾ Douglas)	1m. 1⅘s.
3.	Hayes (2½ Wolf-Jap)	1m. 22⅘s.

CLASS 2.—500 C.C.

†	Moule (3½ Rudge Multi)	48⅘s.
†	Fletcher (3½ Norton)	48⅘s.
3.	Pritchard (2½ Viper-Jap)	57⅘s.

† Dead heat.

CLASS 3.—600 C.C.

1.	Moule (3½ Rudge Multi)	47s.
2.	Hill (3½ Norton)	50⅘s.
3.	Radcliffe (4 Triumph)	51⅘s.

CLASS 4.—750 C.C.

1.	Moule (3½ Rudge Multi)	46⅘s.
2.	Radcliffe (4 Triumph)	47⅘s.
3.	Fletcher (3½ Norton)	49s.

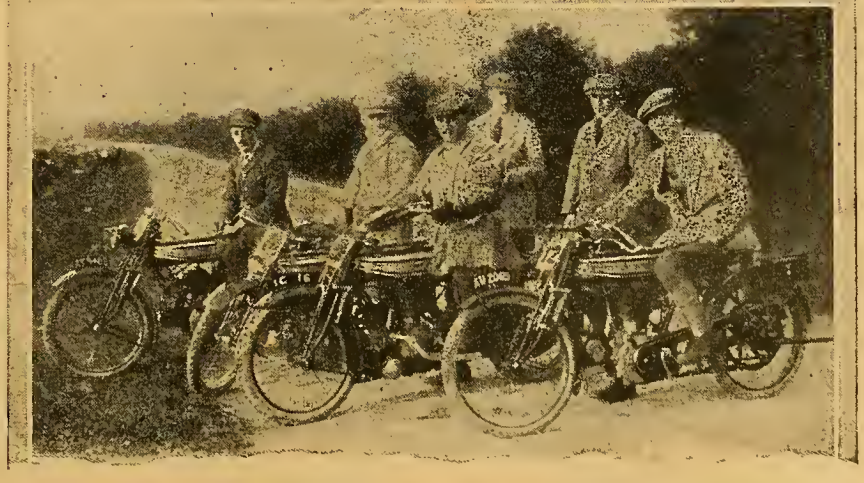
UNLIMITED CLASS.

1.	*Fellows (6 James)	42⅘s.
2.	Lowe (10 Henderson)	45⅘s.
3.	Moule (3½ Rudge Multi)	46s.

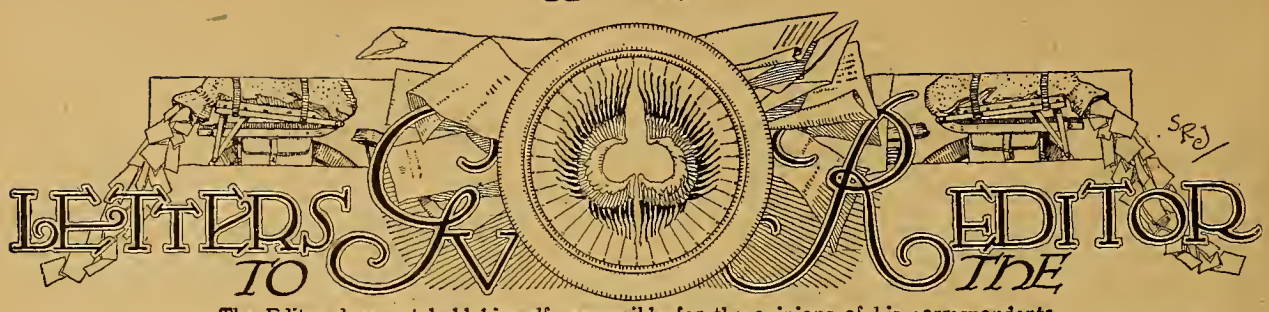
* Fastest time of the day.

CLASS 6.—SIDECARS ON FORMULA.

1.	Rhodes (4½ B.S.A.)	1m. 6s.
2.	Ivens (10 Henderson)	1m. 7⅘s.
3.	Lowe (10 Henderson)	1m. 15s.



A group of Norton owners at the recent speed trials held by the Nottingham and District M.C.C.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accomoanied by the writer's name and address.

DISSOLVED ACETYLENE.

Sir,—Will Mr. J. W. Pepper, who writes to the editor in last week's issue of *The Motor Cycle* as to the advantages of dissolved acetylene, kindly state where the D.A. cylinder he speaks of can be obtained? I have been on the look out for it for months, but have not found anyone who stocks or makes it. R. SMART.

MOTOR CYCLING IN ASSAM.

Sir,—In reply to E. T. Lycett-Burd, who writes in *The Motor Cycle* for October 16th enquiring about motor cycling in Assam, I may be able to give him a few hints, as I have lived in India fifteen years, and have had all sorts of motors whilst there.

(1.) *Re* A.B.C. and sidecar, I cannot give any opinion on this particular make, as I have yet to see one, but from accounts it should be quite satisfactory.

(2.) See above; the Triumph is excellent, but I am now riding a Sunbeam.

(3.) In this country.

(4.) Yes, English registration is *not* recognised out there.

I may add that your correspondent must not lose sight of the fact that, with the exception of the road from Gauhati to Shillong and Cherrapoongee, there is hardly a single road in Assam *worth the name*. Also, in the rains, he will not be able to do much, as the roads, being "kutcha," *i.e.*, only made of soft material, not stone, soon become quagmires.

I have had plenty of motoring experience in India, but if Mr. Burd has the means, the best he could do would be to buy a Ford car *there*, which he can do at less than he can get one here and take it out. I am a very keen motor cyclist, but for Assam roads the Ford is the best proposition I know. Petrol is cheap there, being obtained from the Assam Oil Co. at Digboi. G. F. L. ALEXANDER.

SPEED WOBBLE.

Sir,—With regard to the interesting discussion on "Speed Wobble," which I have followed in your paper, I do not claim to have any experience of this phenomenon, although I find a 6 h.p. combination very useful. The reason, no doubt, for my lack of experience may be found in the facts that (1) I am a poor man (which I know), and (2) I am a poor bargainer (which I shrewdly suspect), so that I have never whacked a machine up to 65 m.p.h. on the road, never having found the requisite machine under me.

I have a theory, however, that the "wobble" may be due to two causes:

(1.) The camber of the road.

(2.) The gyroscopic action of the engine flywheel and heavy moving parts at high engine speeds which, when combined with high bicycle speed and, possibly, therefore, with cause (1) above, may produce "wobble" as follows: The axis of the gyroscope is, in this case, at right angles to the line of advance or fore and aft line of the machine.

The rider, having "whacked up" to the requisite 65 m.p.h., sees some roughish looking stuff a little ahead of him, and swerves to avoid it. In doing so, he leans over (you *must* lean at 65 m.p.h.); this tilts the axis of the gyro, which causes it to "precess" (as the term is known), *i.e.*, turn in its vertical plane, or, in plain language, it endeavours to alter the direction of progression of the bicycle—but which way, you say? Now for the heavy guns of all our scientific friends, I say (without a reference book) it tends to alter the direction of the bicycle in the *same direction* as the swerve; it tends to increase the swerve; the rider corrects this, and leans the other way—more swerve. But, even if its enormous force tends the other way, the effect will undoubtedly be disturbing.

We now come to the point as to why slowing down does not correct this "wobble," and I can only submit the theory that the various movements of the rider get more agitated as he finds that his efforts are meeting with no success, and that, although the gyro speed is reduced, the rider's movements out of the vertical plane get more sudden, as I am concluding that the whole thing from "Speed Wobble Symptoms" to "Nirvana," or acquaintance with the "Macadam Clan," is a pretty short interval. The causes (1) and (2) are possibly combined with cause (3), *i.e.*, failure to sit and grip tightly, as the experienced riders seem to recommend.

It is hardly necessary, perhaps, to remind those who try to solve the "wobble" problem of the enormous force exerted by gyroscopic action. I venture to state that the problems connected with, say, the gyroscopic action of a big car flywheel as opposed to that of a motor bicycle flywheel whose axes are 90° different in plane may possibly prove interesting.

It will at once be objected that machines on first gear with engines racing ought to "wobble." I can only answer that they probably do and it does not matter, or that the rider does not lean over so much, hence less gyro action.

Dalton-in-Furness. THEORY.

Sir,—With regard to the cause of "speed wobble," may this not be due to unbalanced road wheels? Few people realise the enormous effect which an unbalanced tyre valve can have, especially at high speeds. The unbalanced weight of the double thickness of the inner tubes where it is joined also has an appreciable effect on the wheel. In fact, when timing a motor cycle for speed work this question of balance is much more important than any question of fancy valve or magneto timing. If the steering wheel were mathematically true in the vertical longitudinal plane in which the machine is moving, the lack of balance would not affect the steering until it had once been moved out of the longitudinal plane or the straight ahead position. But once the handlebars had been moved the slightest fraction vibration would be set up. The higher the speed, the greater the vibration, and the longer it would last.

Again, if the wheel is not dead true in its bearings, vibration would occur without moving the handle-bars at all. Anyone who has had experience of the destructive effect on the bearings of a large untrue flywheel will readily confirm this fact. S. LATOUR HORDLE.

COMPLEXIONS.

Sir,—Now that the cold winds are upon us again, we lady occupants of sidecars have seriously to consider our complexions, and from the various uncomfortable means that I saw used last winter I think a hint would be acceptable to many. The loose gauze veils often worn really cause serious chafing of the skin, and an ordinary net veil alone is of little use, but I find that if one first ties on *tightly* a fairly thick Russian net veil *under* the hat, and then drapes *over* the hat a loose gossamer motor veil, this may be lowered when driving and the under veil prevents any chafing. I have driven all day with this arrangement, and find it an admirable protection in every way, but the net veil must be tight. Now, a word of warning to my younger sisters—"flappers" I believe they are called—do not persevere unveiled when the wind blows from the north or east, or you will rue it later. W.M.D.

Golders Green.

SIDECARS IN THE SIX DAYS TRIAL.

Sir,—Our attention has been drawn to the statement which recently appeared in our announcement to the effect that the Triumph was the first single-cylinder sidecar combination to gain full honours in any Six Days Trial.

This claim was made quite in good faith—in fact on the strength of a report contained in the motor cycling press.

We regret the error that has crept into our announcements, as both Messrs. the James Cycle Co., Ltd., Birmingham, and Messrs. Bradbnry Co., Ltd., Oldham, assert that a similar performance has been achieved by one of their machines in previous trials. It is not our wish to claim any performance that is not rightly ours.

Will yon kindly give publicity to this in an early issne of your paper? TRIUMPH CYCLE CO., LTD.

JET SIZES.

Sir,—In reply to "C.T." in *The Motor Cycle* of October 9th, my Snnbeam has an Amac carburetter, and runs on 31 jet with a Terry vaporiser. I recently got 80 m.p.g. with this with three up—one in the sidecar, one on Tan Sad, and the driver (total weight 25 stone); this under normal running conditions. C. J. SIMS.

Sir,—In reply to "C.T.'s" qnery in *The Motor Cycle* for Octoher 9th, I would like to say that I have fitted a W.S.R. adjustable jet adapter to my Douglas, and am more than satisfied with the results. The workmanship and design of these little gadgets are without reproach.

Possibly "C.T.'s" valve timing is not right, with consequent "blow back"; otherwise, with the jet properly adjusted I am at a loss to account for his high petrol consumption.

By slight turning of the milled wheel an adjustment can be made practically to the corresponding makers' numbers of the jets required for each particular purpose.

If this meets the eye of any D.R.'s with whom I have made acquaintance, I should be glad if they would write to me. H. EVANS LEACH.

[Letters addressed c/o The Editor will be forwarded.—Ed.]

Sir,—With reference to "C.T.'s" letter in *The Motor Cycle* for Octoher 9th, *re* jet sizes, he asks for experiences with an Amac carburetter jet adapter (presumably, the W.S.R.). I tried this adapter on my 4 h.p. Douglas, with the results he stated, but on altering the level of the petrol I have obtained splendid results. I think that after a few trials with different levels "C.T." will not be disappointed with his purchase. I may add that I have no interest in the makers of the W.R.S. AN O.G.

Oxford.

TEAM PLACINGS IN THE A.C.U. TRIALS.

Sir,—There is a small error in the provisional list of awards in the A.C.U. Six Days Trial. The aggregate marks of the Morgan team are given as 498. It was actually 520 —Morgan 185, James 174, and Greaves 161. The mistake arose becanse F. E. Jones (Ariel) was erroneously included in the Morgan team instead of F. W. James. Jones's score was 152, which, added to the totals of Messrs. Morgan and Greaves, makes 498. The mistake was pointed out at the time to an official and admitted, but doubtless there was not time to correct it. The prompt manner in which the returns were made is most praiseworthy, and will, one must hope, be followed by other clubs. This small mistake is not to he wondered at. The Morgan team was fifth, not seventh, and was second of the passenger teams.

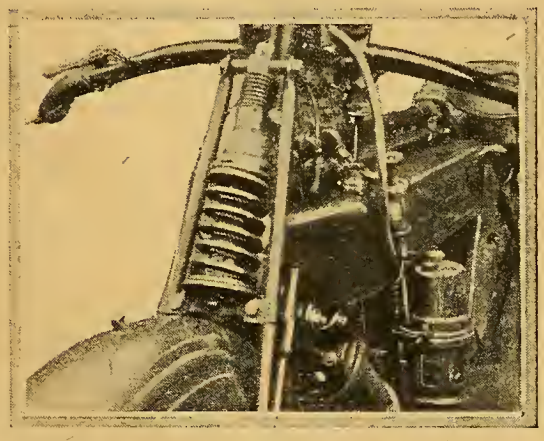
MORGAN MOTOR CO., LTD.

HONOUR TO WHOM HONOUR!

Sir,—I should like to make use of a little space in your valuable paper to express my appreciation of one of those firms that add a zest to the sport of motor cycling. At the beginning of the month I was stranded at a little place called Chilham, near Canterbury, on a Sunday evening. My chain was broken in two places, and I had no spare. My wife was with me, so I could not ask her to walk eight miles—the distance to the nearest town from which I could get a train. I had great difficulty in getting the use of a telephone, hut you can imagine my disgust on getting through to a garage to hear a man at the other end telling me he could do nothing for me at that time of night. That aort of thing would have disheartened a less seasoned rider. However, by good chance, I hit on the number of G. R. Barrett, St. Peter's Street, Canterbury, and, though it was now past nine on a Sunday evening, he at once volunteered to send out a car. Having towed me into Canterbnry, the manager (I believe it was) rung up an hotel and secured rooms for us, then told me the machine would be ready as early as I wished next morning. Sure enough, at 8.30, in calling at the garage, I found the machine had been fitted with a new chain, the tank filled, and everything ready for me to continne my journey with the least possible delay. The A.C.U. met the claim for towing courteously and without grumbling. Usual disclaimer. G. L. ROBBINS.

STRENGTHENING SPRING FORKS.

Sir,—Perhaps the enclosed photograph will be of interest to you as an addition to a P. and M. spring fork fitted out in France. The spring (originally from a Crossley clutch) is nearly 3in. diameter, and is supported at the top by a turned phosphor bronze bush, resting against the head-piece and shouldered to fit the spring. At the bottom is a steel plate, also shouldered, resting on the crossbar of the forks. The original main spring is retained, and runs through the centre of the lot.



The auxiliary springs fitted to R. W. Payne's P. and M.

The idea successfully prevented a tendency of the forks to "crash" on bad *pavé*. R. W. PAYNE.

THE A.C.U. TRIALS.

Sir,—Referring to the 1919 Six Days Trial, one cannot help noticing, with regret, what a very poor percentage of British-built motor cycles entered for this famous event. We are told in the motor cycle press that the A.C.U. Six Days Trial is organised for the purpose of showing the public, as a whole, the latest models and improvements in motor cycle design, and also to *prove their worth* in reliability and hill-climbing. We heard rumours of weird and wonderful designs to be kept absolutely secret until this event, but the result ia most disappointing—I do not think one machine could show anything at all startling or revolutionary in design.

On page 317, in your issue of the 18th ult., a list is given of the competing motor cycles, and I can only connt twenty-eight different British makes. Upon making an observation in the advertisement columns of the same issne, however, I count no fewer than eighty odd different machines of British make. Why, then, have so many manufacturers failed to show us what their motor cycles can do? Where were such well-known makes as the Bradhury, Premier, Brough, New Hudson, Singer, Williamson, Rudge, N.U.T., etc.? Where, also, were the lightweights—the Calthorpe, O.K., Allon, Ivy, etc.? Some members of the puhlic were doubtless waiting to see how these machines behaved, but they have been disappointed. Is the lack of entries due to fear of failure, mechanical or otherwise? Surely not. Were manufacturers unable to produce their latest model in time? I doubt it. In my opinion, the reason is that manufacturera are so overwhelmed with orders that they *will not be bothered* with entering for *the one* event of its kind in the year. E. MEESON.

COMPETITIONS.

Sir,—I do not agree with your leader in the issue of October 9th that open events should be open only to professional riders. It is quite true that the reputation of a machine may seem at times to suffer through "bad amateur performances," but, nevertheless, the manufacturer should welcome the amateur with open arms. In the first place, a number of amateur entries is an indication of the popularity of a machine and the trust which its owners place in it. Moreover, although the public are no doubt interested to know the best that a machine can do, they are at least equally interested to know what it may accomplish in the hands of amateurs like themselves. Also to bar the amateur brings in the old difficulty of the definition of "professional." The public should consider the successes of a machine rather than its failures so long as amateurs are allowed to compete. The failures may be due to faulty driving, but the successes can only be attained by the excellence of the machine.

H. GEORGE MORGAN.

WEIGHT OF LIGHTWEIGHTS IN THE SIX DAYS TRIAL

Sir,—The adverse comments *re* weight of 250 c.c. lightweights in the Six Days Trial seem to me to be quite unreasonable. It should be borne in mind that the weights included all accessories, tank full of petrol, lamps charged with carbide and water, and oil tank full; all spare tools and everything necessary for a long tour.

The performances of these machines in the trial prove that they are capable of doing the ordinary work of a motor cycle. Now what weight is to be cut? How can it be done when comfort, cleanliness, and utility are necessary? Of course, design and better material are slammed in front of us, as if we did not know anything about them or were too lazy to trouble. The fact is, experience shows where weakness exists, and this is not all found out in a Six Days Trial. It generally takes years to prove whether a design is satisfactory. When a machine has stood the test of years, one feels confident that it is right.

A motor cycle frame is subject to all sorts of stresses, and deflection laterally usually results in skidding. Vibration from the engine and torque of the engine, due to driving, sets up further stress. The clumsiness or otherwise of the driving, and the falls and bumps it receives, all make it practically impossible to design a frame strictly from computation of stresses, hence reliance upon experience.

Cost of production is also a factor.

Engines cannot be reduced much in weight unless we are to speed them up, and this will bring along a whole batch of troubles to the ordinary rider.

Gears on the whole are not too heavy. Of course, if reduction in weight is the sole object, cut them out and lose utility of the machine. Weight can also be saved by reducing capacity of petrol and oil tanks. No rider, however, will agree with this as a good move. Lighter tyres can be fitted—and who wants them! Footrests instead of footboards will save about 2½ lb. Weight may also be saved by cutting down the following items: Mudguards, tools and spares, saddle, lamps, and other accessories.

I think that most riders will agree that the items mentioned are none too substantial nor any too comfortable at present; and we cannot see how the increased demand for greater comfort and more substantial fittings can be complied with if they are to be reduced a good deal in weight. Where then? I say it cannot be done yet, if the machine is to give satisfaction through years of use and be able to complete a Six Days course.

It is worthy of note that the lightweight necessarily carries equal weight to that carried on a heavier machine, *i.e.*, rider, tools, lamps with generator, speedometer, pump, horn, and repair outfit, etc. PERCY J. GOODMAN.

THE ADVANCING PRICES OF MOTOR CYCLES.

Sir,—There is a considerable amount of confusion in the minds of the buying public at the moment regarding the way that prices of motor cycles are apparently soaring without limitation.

It appears to the layman looking on from outside that manufacturers are thoughtlessly striving, without restraint, to attain the highest standard of charge that their customers will stand. Profiteering suggests itself, and dissatisfied grumbling results.

A careful survey of a few very apparent facts helps to clear the air of a considerable amount of misunderstanding, and clearly illustrates the conscientious endeavour with which the British motor cycle manufacturer has striven to produce an article to suit the pocket of his patrons.

The only basis upon which can be estimated the value of a present-day commodity is comparison with pre-war prices. We are already paying 100% or more advance upon our present food and household goods and chattels. The cost of everything is doubled. The reason is not difficult to trace. The war with its trail of waste has to be paid for. A slight advance in the cost of living heralds a demand by labour for higher wages. Higher wages mean higher cost of production, with a further advance in cost of all commodities.

This state of affairs has been developing for some time now, and, commonly known as the "vicious circle," has advanced the rate of wages to somewhere 100% beyond pre-war standard.

New motor cycles, in common with other manufactured articles, are produced from raw material extracted from the earth. These raw materials are actually as free as the air, with the exception of the cost of labour that extracts them. Here we begin to see light.

The cost of labour that extracts the raw materials is up 100%, the cost of labour that manipulates the material is up 100%, and the cost of labour that completes the work is up 100%. But has the price of finished motor cycles yet reached an advance of 100% over pre-war standard? The answer is decidedly "No." It is therefore fair to suppose that until this level has been attained prices will continue to soar.

Motor cycle manufacturers, when faced with the matter of post-war production, gamely tackled the problem of estimating selling prices in their works. Subsequently, where production has been attained by a few firms, it has been found that these prices have been seriously underestimated.

The makers of castings, tubing, components, etc., are repeatedly advising their advances; no definite basis can yet be arrived at, and daily strikes and other disturbing conditions arise. No wonder the lot of the manufacturer is difficult, and no wonder prices soar! The high water mark that suggests itself is double pre-war standard. When this has been reached, no doubt prices will stand firm.

There is, however, a gleam of hope for the future. When labour questions have been settled, strikes no longer occur, and steady production can be maintained, massed output will be possible, and a steady decrease in prices must surely result.

Lack of understanding causes confusion, and is unconvincing. A considerable amount of present confusion arises through manufacturers advertising prices when they have not yet reached production. Subsequent events will prove in many cases that these prices cannot hold good when deliveries commence. Comparison is made between these advertised prices and the advanced prices of manufacturers who are actually delivering the goods. The well-advised intending purchaser will bear these points in mind, make his selection, and place his order now before prices advance further, rather than risk disappointment through indecision.

F. ASLETT COULSON ENGINEERING CO.
FRED A. COULSON, Proprietor.

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QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Cylinder Dimensions.

(1.) Could you tell me the bore and stroke necessary for a 1½ h.p. two-stroke engine? (2.) Would it be the same for a four-stroke engine?—J.A.S.

(1.) An engine of 1½ h.p. should have a c.c. of about 175. A bore and stroke of 60 × 60 mm. would give you approximately this power. (2.) The same rating is employed for both two and four-cylinder engines.

3½ h.p. Sold as 5 h.p.

I answered an advertisement offering a 5 h.p. Indian combination, 1915 model, and forwarded the price asked. I found, however, on delivery that the machine was only a 3½ h.p. model, and I accordingly wrote the seller, asking him either to remit me a portion of the purchase money, or to take the combination back, as he had misrepresented it in the advertisement. He refuses to do either of these things, and states that his reason for taking this course is because he himself bought the combination as a 5 h.p. Your advice on the subject would be appreciated.—S.W.N.

We should advise you to place the matter in the hands of a local solicitor; in any case, insist on the seller accepting the return of the machine. You will be fully justified in doing this.

Cylinder Removal.

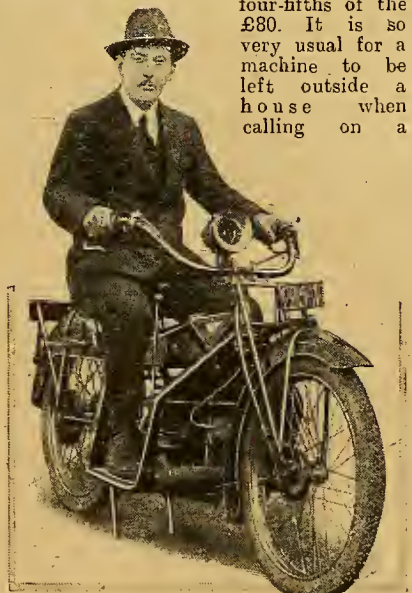
Will you please inform me: (1.) Whether a 1915 7-9 h.p. Indian has cylinders which can be removed for decarbonisation without taking the engine out of the frame, and is it an awkward job? (2.) After this machine has been going fast or up hills, the crank case gets so hot that I can only just bear my hand on it, and it cools slower than the cylinders. Is this right? It goes very well, but the front cylinder compression is not as good as the rear.—C.L.W.

(1.) The cylinders of the 7-9 h.p. Indian cannot be removed completely without taking the engine out of the frame. The cylinder heads, however, are detachable, and you can remove them for decarbonising purposes. (2.) The heating of the crank case may be due to conduction from the cylinders. It is possible, however, that the piston rings are worn, or that the slots have worked into line, and that a certain amount of the gas leaks into the crank case. Reasonable heating of the crank case is usual, and will not adversely affect the running of the engine.

An Unsatisfactory Insurance Transaction.

Having my cycle insured against theft, can I claim the full insurance, *i.e.*, £80, for which it is insured? The insurance company claim that it was negligence on my part to have had the machine stolen, and thus will not recompense me. The machine was stolen while I was calling on a friend, when I left it outside the house for about five minutes.—T.B.

The reply to your query depends upon the wording of the policy. If there is no average clause in the policy then the amount you would be able to claim would be the £80 you mention, provided the motor cycle is worth that amount or more, but if it is worth less, you would only be able to claim its actual value. If there is an average clause, and the motor cycle is worth more than £80, you would only be able to claim a proportion of your loss, according to the relationship the £80 bears to the value of the motor cycle, thus, if the motor cycle was worth £100, you would only be insured for four-fifths of its value, and would, therefore, only be able to claim four-fifths of the £80. It is so very usual for a machine to be left outside a house when calling on a friend that one would hardly imagine that any insurance company would regard it as an act of sufficient negligence to deprive you of your right to the insurance money.



Mr. Graeme Fenton, general manager of the French A.B.C. Company. Mr. Fenton, who is an Englishman, has spent most of his life in France, and is well known as a competition rider. He was formerly connected with Clement Frères.

Obscure Troubles.

Will you advise me on the following points? (1.) My sidecar pulls the machine over to the left to a painful extent. The wheels are upright, and the sidecar wheel is turned very slightly inwards. The sidecar axle is about three inches in front of the rear wheel hub. When I have no passenger, and put a hundredweight sack on the sidecar carrier, the machine runs straight. I have had the body moved two inches backwards, but this has had no effect. (2.) When engaging the clutch it refuses to take up the drive, unless the engine is running very slowly, which makes it impossible to start on a hill. If the engine is running fast, letting in the clutch makes no difference. When once going, I have no trouble; the clutch does not slip, and it is easy to change gears.—W.H.D.T.

(1.) The alignment of your sidecar appears to be in order, and we are therefore at a loss to suggest the cause for the difficult steering. You might try setting the sidecar wheel very slightly outwards, so as to bring it parallel with the motor cycle. (2.) In the first part of your query you suggest that the clutch is slipping, but later you state definitely that it does not slip. We think that as you are quite close to the manufacturers, your best course would be to submit your machine to their inspection.

Two-stroke Lubrication.

I have a lightweight two-stroke motor cycle. It is lubricated by a drip feed method, which is not satisfactory, as one cannot see the oil dropping when riding, it being fixed to the bottom of the tank, and when hill-climbing or going at high speed the engine overheats. Would the petroil system be satisfactory in this case, and what are the disadvantages of the system (if any)?—O.A.G.

We should not advise you to change to the petroil system, which is exceedingly messy, though it is otherwise satisfactory. A better method would be to fit a different form of drip feed of the Benton and Stone or Best and Lloyd type, in which the flow of the oil can be clearly seen.

Electric Lighting.

Will you kindly tell me what, in your opinion, is the best method of electric lighting for a motor cycle and sidecar (not dynamo)? Something cheap, as I do not run one motor cycle long. Is it advisable to convert gas lamps into electric.—L.B.

If you do not wish to use a dynamo, and only require the lamps occasionally, we should recommend an accumulator set. Gas lamps may be converted into electrics, and various converters are on the market for this purpose; they are advertised by many accessory houses.

N.S.U. Gear Repair.

I have an N.S.U. two-speed gear with adjustable pulley which is slipping on low gear. All the internal mechanism is in perfect order. I have had it down several times, and I might also mention that it is properly put together, but still unable to pick up drive in low gear—only screams.—H.F.

The N.S.U. gear does not usually slip badly on low. Possibly the low gear clutch plate is badly worn, or maybe the forked U piece having the inclined planes which withdraw the operating bolt is worn, or does not rise enough fully to engage the low gear clutch.

Licences and Taxes.

I am going to buy a second-hand motor cycle. Would you be kind enough to tell me how much I shall have to pay in licences, and where to obtain them?—W.W.

Before commencing to use a motor cycle it is necessary that it should be registered (5/-) and the Inland Revenue tax (£1) paid upon it. You should also hold a driving licence (5/-) yourself. Registration is effected by the local police authorities. The Inland Revenue tax is paid at the post office, and the driving licence is usually obtained from the same authorities as the registration number. You will get all the necessary information from the local municipal offices.

Compensation for Accident.

When going round a bend recently, I collided with another combination, the driver of the latter being on his wrong side. I had not a chance to pull up, as I did not see him until too late. As it was, I managed to swerve a little to the centre of the road, thus minimising the crash. He admitted his liability, inasmuch as he at once paid me a sum of money. I have witnesses to prove he was to blame. On getting an estimate for repairing my sidecar, I find it more than double the sum he paid to me. (1.) Can I claim the full damages from him? I gave him no receipt for the money. (2.) Could he claim the settlement to be complete, as I nominated the sum he paid?—W.E.C.

(1.) If the driver with whom you collided made a payment as compensation at the time of the accident, he certainly admits responsibility, and you will be able to claim the full damage from him. (2.) By the second question, we presume you mean that you are not entitled to make a further claim upon him, as you asked for a certain amount, which he paid you. We do not think that this has any bearing upon the settlement of the final claim unless you stated definitely on a receipt or otherwise that the money received was in complete settlement of your claim.

Fitting a Twin Magneto.

(1.) Would a 45° twin magneto fitted to a 50° twin engine work satisfactorily? (2.) Would it improve magneto to file 5° off one of the segments?—G.C.

(1.) It would be possible to use a 45° magneto on a 50° engine. (2.) You may find a slight alteration to the cams necessary, but we should advise that you first experiment by using the magneto as it is. In any case it will not be necessary to remove more than 2½° from the cams, and it would be best to take half of this from each cam.

Maximum Speed Attainable.

Would it be possible for a specially built racing motor cycle to attain a speed of 80 m.p.h. on a clear and level stretch of road? By "attain a speed of 80 m.p.h.," I mean to touch that speed in a spurt of approximately 300 yards, and *not* to maintain it for any length of time. Also, what is the maximum speed attainable under the same conditions?—G.E.M.

It is easily possible to obtain a speed of 80 m.p.h. on a specially built racing motor cycle. The maximum speed attained in this country is slightly over 93 m.p.h. for one kilometre distance, the machine used being a 7-9 h.p. Indian.

RECOMMENDED ROUTES.

CONGLETON TO HALIFAX.—W.P.A.

Congleton, Buxton, Chapel-en-le-Frith, Glossop, Dunford Bridge, Honley, Huddersfield, Elland, Halifax. Approximately 60 miles.

LEICESTER TO SCARBOROUGH.—I.M.

Leicester, Melton Mowbray, Grantham, Lincoln, Brigg, New Holland (ferry), Hull, Beverley, Driffield, Bridlington, Filey, Scarborough.

SOUTHPORT TO CAERPHILLY.—W.W.

Southport, Liverpool, ferry to Birkenhead, Chester, Whitchurch, Bridgnorth, Cleobury Mortimer, Ludlow, Leominster, Hereford, Abergavenny, Pontypool, Maesy-Cwmmer, Caerphilly.

NEWPORT TO BURY ST. EDMUNDS.—C.W.M.

Newport, Gloucester, Cheltenham, Stow, Chipping Norton, Banbury, Brackley, Buckingham, Stony Stratford, Wolverton, Newport Pagnell, Bedford, St. Neots, Cambridge, Newmarket, Bury St. Edmunds. Approximately 170 miles.

BIRMINGHAM TO LAKES (AVOIDING BLACK COUNTRY AND LANCS).—C.W.B.

Birmingham, Tamworth, Ashby-de-la-Zouch, Castle Donington, Long Eaton, Nottingham, Mansfield, Worksop, Doncaster, Ferrybridge, Sherburn, Tadcaster, Boston Spa, Harewood, Otley, Ilkley, Skipton, Gargrave, Settle, Ingleton, Kirkby-Lonsdale, Kendal, Windermere.

Avon Extensions.

The Avon India Rubber Co., Ltd., have recently opened new branches in Leeds and Belfast.

M-L Magnetos in the Six Days Trials.

Out of the 111 machines which started in the Six Days Trials, ten were equipped with M-L magnetos, and nine of them, representing five different makes of motor cycle, secured medals.

Triplex Goggles.

We have lately seen a pair of goggles which are specially suited to ladies' use, being fitted with an adjustable elastic band. They are made by the Triplex Safety Glass Co., Ltd., 1, Albemarle Street, London, W.1, and owing to their non-splintering qualities should appeal to motor cyclists of either sex.

The Rigby Gear.

Mr. E. J. Rigby, patentee of the Rigby selective clutch gear, designed to fit existing machines, has made arrangements for these conversion sets to be made by Messrs. Newcombe Brothers, automobile engineers, Zelland Road, Stockton-on-Tees. Particulars of these sets can be obtained on application to Mr. E. J. Rigby, Prescot Road, St. Helens, Lancs., or from the makers as above.

Wilkin Motors, Sheffield.

We regret that an error occurred in this column recently (page 380, October 2nd), when we stated that Mr. G. W. Wilkin, of Sheffield, had withdrawn his activities from the firm of Wilkin Motors. Mr. Wilkin actually owns the latter firm, and the business in which he has relinquished his interest is that of G. W. Wilkin and Co., which now trades under the style of Wilkins and Co.

Amalgamation.

We are informed that the businesses of Brown Bros., Ltd., London, and James Thomson and Son (Motor Factors), Ltd., Edinburgh, have amalgamated. Mr. J. Albert Thomson, chairman and managing director of the Edinburgh company, becomes one of the managing directors of Brown Bros., Ltd., while several of the London company's directors will join the Edinburgh board.

A Satisfactory Lubricant.

It is interesting to note, in connection with that portion of the A.C.U. English Six Days Trial which refers to the famous test hill, Bwlch-y-Groes, on which so many machines failed, that Rex Mundy on his Matchless combination, with a twelve-stone passenger, experienced no trouble whatever. Mundy was a gold medallist, and also received a fuel prize. He used Coolie oil throughout for engine lubrication, and found it entirely satisfactory, and had no trouble with any of the hills at any time during the trial, although his low gear was only 12 to 1.

MOTOR CYCLES FOR SALE.

A.J.S.

1919 A.J.S. Henderson, Elite sidecar, Lucas dynamo lighting set, spare wheel, mechanical horn, etc., as new; £180, or best offer.—Tomkinson, Clifford House, Crewe. [X5959

A.J.S. 5-6h.p. Combination, 1914, all accessories, just returned from makers after overhaul, in perfect condition; £125.—Maynard, 29, Lansdowne Grove, Neasden, London. [X6134

A.J.S. 1914 Combination, heavy tyres, speedometer, perfect condition, small mileage, Gloria sidecar, wind screen; any trial; £130, or offer.—8, Dysart St., Finsbury, E.C.2. [8969

A.J.S. 1914-15 6h.p. Combination, everything as new, tools, lamps, horn, speedometer, tyres perfect; £125; by appointment.—C.S., 6, Neville Court, St. John's Wood, N.W. [8942

1919 A.J.S. Combination, fully equipped regardless of cost, carefully driven by expert mechanic; any trial and examination here to prospective purchaser; 180 gns.—4, Oxford St., Lincoln. [X6299

A.J.S. Combination, 6h.p., 3-speed countershaft gear, chain drive, £16 recently spent on complete overhaul, enamel and plating excellent, tyres as new, Cowey, luggage carrier; £105.—3, Regent St., Rugby. [X4600

1919 A.J.S. Combination, not done 500 miles, lamps, horn, screen, spare wheel, etc., like new in every respect; what offers?—Apply, E. F. Rider, Rectory Farm, Low Catton, Stamford Bridge, York. [X4140

A.J.S. 1918, 6h.p., new April, 1919, spare wheel, Henderson Elite sidecar, wind screen, apron, Lucas lamps, Klaxon, mirror, condition as new; any examination; £155, no offers.—Knight, Farndon Fields, Newark Notts. [8695

A.J.S., 6h.p., 2-speed, countershaft, kick start, hand clutch, Phœnix torpedo coachbuilt sidecar, 3 new lamps, 3 heavy tyres just fitted, smart reliable machine; £80, or near offer; seen after 6 p.m.—140, Harley St., W. [9204

A.J.S. Combination, 6h.p., 3-speed countershaft, clutch kick start, Amac, Cowey speedometer, 3 lamps, horn, luggage and petrol carriers, stored 3 years, fully insured; best offer over £95.—Cookson, 12, Spring St., Trawshwhooth, near Manchester. [X6235

3h.p. 1914 A.J.S. and sidecar, smart, reliable machine, all-chain drive transmission, 3-speed countershaft gear, including hood, screen, lamps, sidear lamp, Stewart warning signal; the complete combination £110.—Wauchope's, 9, Shoe Lane, Fleet St., London. [9439

1916 4h.p. A.J.S. Combination, as supplied by firm, lamps, mechanical horn, apron, tools, in splendid condition, stored 2 years during war; expert examination and trial run invited; seen any time after 1 p.m.; price £115.—H. Perry, Lower Writhlington, Radstock, near Bath. [X6069

1918 Russian Model A.J.S. Combination, spare wheel, Easting wind screen, 3 electric lamps, perfect mechanical order and condition, 710×90 steel-studded tyre back wheel, 700×80 on others, practically new; £160; with complete insurance policy.—Haddon, North St., York. [8735

A.J.S. and Sidecar, 1918, military model, 6 weeks old, makers' guarantee, speedometer, D.A. set Easting screen, spare wheel, for sale after October 15th, absolutely perfect, extra tyre, tube, valve, and tools, best offer over £175; also £10 deposit on Premier super-runabout, offers?—Collins, 2, Water St. Rhyl. [X5796

Alldays.

ALLON.—Caffyns, Ltd., Easthourne, for delivery shortly. [0017

ALLON 2¾h.p., 2-speed, accessories, little used; £48.—3, Syr David's Av., Cardiff. [8756

ALLDAYS Matchless, 4h.p., 3-speed, clutch, C.B. sidecar, Bosch; £65.—7, Fieldway Crescent, Highbury. [9238

ALLDAY Allon, 2¾h.p., 2-speed, in perfect order; £46; fully equipped.—262, Blackhorse Lane, Walthamstow. [8885

ALLON, 2-speed clutch model, tip-top condition throughout, lamps, horn, tools; £50.—Parker's, Bradshawgate, Bolton. [X6191

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2931

2¾h.p. Alldays Allon 2-speed, 1916, tyres nearly new, engine perfect; bargain, £45; after 6 p.m.—189, Grove Lane, Camberwell. [8820

1919 Alldays Allon, fitted with Lucas lamps and horn, mileage 400; £75.—Charles Moxham and Co., 32, Torwood St., Torquay. [8800

1916 Alldays Allon, 2¾h.p., enamel and plate unscratched; bought combination; £38.—Hinton, Butcher, Mitcham Rd., Croydon. [9321

ALLDAYS-VILLIERS, 1915, 2½h.p., lamps, horn, fast; £35; Saturday after 1 o'clock.—27, St. Mark's Crescent, Regent's Park, N.W.1. [9124

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JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2929

1919 3½h.p. Ariel Combination, head, side, and rear lamps, new condition; £115, or nearest.—Slade, Garage, Penn, Bucks. [9304

ARIEL 1914 3½h.p., 3-speed, kick start, and trade sidecar, excellent condition; £55; would separate.—Hobbs, Meadvale, Redhill, Surrey. [9262

1919 3½h.p. Ariel Combination, delivered last week, too late for owner; £130, or best offer.—Statham, Packington Rd., Ashby-de-la-Zouch. [X6218

ARIEL 3½h.p., 1919, new, kick starter, 3-speed, immediate delivery; London agents; £110.—Dr. Gibbons, Globe Hotel, King's Lynn. [9343

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare part stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

1919 Ariel Combination, Ariel sidecar, delivered June, head, sidecar, rear lamps, horn, £4/15 insurance; bargain, £143.—Ellis, Ogle Terrace, South Shields. [8694

1914 3½h.p. Ariel Coachbuilt Combination, 3-speed, hood, wind screen, lamps, speedometer, tools, etc., excellent condition; £68/10.—436, Whitehorse Rd., Thornton Heath. [9276

1914 4h.p. Ariel Combination, 2-speed, F.E., 1919 B. and B., U.H., decompressor, spares, head, rear lamps, tools; no dealers; £68.—76, Station Rd., Huncoat, Accrington. [X5997

ARIEL 3½h.p., 3-speed, kick starter, believed 1918, fitted with Ariel best sidecar, hood, screen, Binks carburetter, speedometer, pulls like a six; 95 gns.—Driscoll, 58, Woodfield Rd., Ealing. [8693

ARIEL 1917 3½h.p. Combination, coachbuilt sidecar, 3-speed countershaft, kick starter, clutch, electric lighting, splendid condition; reasonable trial, appointment; £95.—56, Wellington St., Hertford, Herts. [X5973

ARIEL 1919 (April) 6h.p. Combination. 3-speed, countershaft, Millford sidecar, lamps, horn, tools, spares, Tan-Sad, overalls, insurance; nearest to £140.—Oglesby, 12, Leaside Av., Muswell Hill, N.10. [9413

F.O.C.H. have a 1919 6-7h.p. twin Ariel coach combination, fully equipped, small mileage, perfect throughout.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9459

ARIEL 5-6h.p. Twin Coachbuilt Combination, 3-speed countershaft, 3 electric lamps, switchbux with ammeter, good tyres, spare valves, covers, belt, outfit in good condition; any trial; £100, lowest; after 6 evenings.—Simpson, 77, Netherwood Rd., W.14. [X6233

1919 Ariel 6-7h.p., 3-speed, K.S., handsome new sidecar fitted with screen, complete with lamp, horn, and all accessories, delivered August, as new; price £140, or near offer. This outfit is a bargain, and cost over £150.—Ormerod, Wroxham, Norfolk. [X6377

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ARNO, 3½h.p., 3-speed hub gear, tyres good, in good running order, with wicker sidecar; £38, quick sale.—Enfield Farm, Godmanchester, Hunts. [8749

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AUTO-WHEEL, first-class order, all fittings; 10 gns.—29, King's Rd., Reading. [8892

AUTO-WHEEL Model de Luxe, good condition; first £9 secures.—Brierley, 30, Brewerton Rd., Oldham. [9323

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Auto-Wheels.

AUTO-WHEEL, little used, £13; 20in. front wheel with tyre and tube, £2.—29, Marcus St., Carnarvon. [X6180

WALL Auto-Wheel, small mileage, in running order; £12, or offer. — J. Young, Inwood, Cookham Dean, Berks. [8726

AUTO-WHEEL, late model, excellent running order, fast, powerful; £15; call Sunday.—10, Baronsmead Rd., Barnes. [9089

AUTO-WHEEL and Rover cycle, in good condition; £15; would separate.—King, The Stores, Coxheath, near Maidstone. [X5992

AUTO-WHEEL, with cycle, splendid condition; £20. —18, Bellevue Gdns., near Swan, Stockwell, Clapham Rd., S.W.9. [9376

AUTO-WHEEL, attached gent's cycle, all accessories, new Dunlop tyres, excellent condition; £27/10.—Wigginton, 10, Walpole Gardens, Chiswick. [8953

WALL Auto-Wheel, £12/10, splendid condition, original tyre; Chater-Lea tandem, £12/10, bargain; trial.—33, Guildford Rd., South Lambeth. [8713

WALL Auto-wheel, with gent's Rudge-Whitworth cycle, £14; without cycle, £10; carriage paid; bargain.—Kimber, The Forge, Patsham, near Brighton. [X6104

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BAT-J.A.P. 6h.p., countershaft, 3-speed, clutch, kick start, combination, perfect running order; trial; £75; take part in old car, condition essential.—W.W., 16, Brantwood Rd., N.17. [9105

BAT 8h.p. Luxurious Combination, 3-speed, kick starter, clutch, J.A.P. engine, fully equipped, condition as new throughout; trial or examination.—Parker's, Bradshawgate, Bolton. [X6192

LATE 1914 Bat and coachbuilt sidecar, 5-6h.p. J.A.P. engine, Bosch mag., chain-cum-belt drive, Stewart speedometer, horn, lamps, and complete set accessories, in splendid order; price £80.—Apply, 94, Bishop's Mansions, Fulham, London, S.W.6. [X5961

1919 6h.p. T.T. Bat-Jap, spring frame, 3-speed, kick start, complete with Canoelet sporting sidecar, painted to match, disc wheels, combination just delivered, very fast; price £155.—81, Lakeside Rd., Palmer's Green, London, N. 'Phone: Palmer's Green 828. [8711

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BLACKBURNE, 4h.p., 1919 (Sept.), used about 100 miles; best offers.—Jas. Ross, 36, Mansfield Av., Cambuslang. [8883

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1919 4h.p. Blackburne, in stock at list price plus delivery charges, brand new.—Wright's Garage, Saffron Walden, Essex. [X6374

1919 4h.p. Blackburne, sporting model, 2-speed, brand new; £85. 'Phone: Gerrard 4227.—Write, Box L4,919, c/o *The Motor Cycle*. [9029

Bradbury.

BRADBURY 4h.p. 3-speed Combination; £65, bargain.—Ridge Cottage, Coleridge Rd., N. Finchley. [9087

BRADBURY, in good order, with 2-speed and side-car, lamps, etc.; £48.—85, Church Rd., Willesden. [8704

BRADBURY 1915 4h.p. Combination, Sturmey-Archer 3-speed; £60.—298, Lees Rd., Oldham. [X6293

BRADBURY 4h.p., 1913, T.T. bars, good order, ride away; £34.—Arnold, 85, Suffolk St., Poplar, E. [9298

4h.p. Bradbury, 1914, renovated by makers, new B. and B., pilot jet, lamps, etc., tyres good; about £36.—McCormack, Avenue, Northwich. [X6259

6h.p. Bradbury and Sidecar, 3-speed, hand clutch, all chain, just overhauled, new tyres, 1914; £95.—43, Sydenham Hill, S.E.26. [9059

BRADBURY 4h.p., 3-speed, Bramble coachbuilt sidecar, good appearance, sound, fully equipped, speedometer, etc.; trial; no offers; £65.—8, St. James' Terrace, Leicester. [X6283

BRADBURY, 1914, 4h.p., 2-speed N.S.U., F.E., K.S., Bosch waterproof, large aluminium footboards, spring forks, nearly new heavy Dunlop back, mechanically perfect; £48.—Seen, Brentham Garage, Queen's Walk, Ealing. [9398

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1919 Brough 5h.p., done 300 miles, and new sporting sidecar, lamps, horn, smart and speedy; £150, or nearest.—Advertiser, 1, Park Parade, Cambridge. [X6376

BROUGH 1915 3½h.p., 2-speed, lamps, Klaxon; no reasonable offer refused, or Douglas taken in part exchange.—Whitehead, 77, Marylebone Lane, Oxford St., W.1. [9408

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Brown.

3½h.p. Brown, good running order; £23.—3, Foxley Rd., Kennington. [8085

3½h.p. Brown; cheap; just been rebushed; evenings. —Avery, 443, High Rd., Streatham. [8827

BROWN, 3½h.p., Grado gear, tyres perfect; any trial; £30.—Brown, Beechcroft, Devizes. [8961

B.S.A.

1919 B.S.A., 4¼h.p., brand new; £105.—143, Peckham Rye, S.E. [X6319

B.S.A. 1917 4¼h.p., countershaft, all-chain; £70.—10, Crowborough Rd., Tooting. [X6304

B.S.A.—Prospects of early delivery. Secure your order now.—Parker's, Bradshawgate, Bolton. [X6195

B.S.A., 3-speed countershaft, Millford sidecar; bargain, £73.—365, King St., Hammersmith. [9119

JULY (1915) B.S.A., all-chain, Mills-Fulford sidecar, good condition.—Mawer and Johnson, Louth. [9316

1913 B.S.A. 3½h.p., 2-speed; £45; stored 3½ years privately owned.—17, St. John's Rd., Watford. [9157

B.S.A.—Two 1919 combinations now in stock.—Edwards, 7, Exhibition Rd., Earl's Court, S.W.7 [9516

B.S.A. 1919 Combination, hood, wind screen, lamps, new condition; £126.—Hewitt, New Rd., Hales-owen. [X6312

1919 B.S.A., all chain, brand new; best offers.—Reginald Ingham, Holly Bank, Arnside, Westmorland. [X5998

1919 B.S.A. 4¼h.p., 3-speed countershaft, kick start, delivery this week; £96.—Box L4,950, c/o *The Motor Cycle*. [9482

B.S.A., 4¼h.p., 1915. 3-speed countershaft, K.S. clutch; smart, running order; 58 gns.—21, Newton Av., Acton. [9501

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2919

1919 B.S.A., 4¼h.p., all chain, Empire sidecar, new condition; £120, or nearest.—Williams, Church fields, Bromsgrove. [X6188

B.S.A. 1919 (July), Model K, lamps, horn, speedometer, spares, tools; £100; London.—Box L4,921, c/o *The Motor Cycle*. [9031

1919 4¼h.p. B.S.A., Model H., delivered June, condition as new, accessories; £95.—Patchett, North 4, Park Hall Camp, Oswestry. [X6008

B.S.A. Combination, H, late 1916, done about 3,000 miles, fully equipped; £105; Hampstead.—Box L4,958, c/o *The Motor Cycle*. [9490

NEW 1919 B.S.A. C.B. Combination, all chain, Lucas horn, tools, etc.; lowest, £122.—G. Stevenson Temple Hill, Hough, Grantham. (D) [8806

B.S.A., 1915, 3-speed, 4¼h.p., all chain drive, and 1919 Coronet coach sidecar; £96.—Halifax Motor Exchange, Union St. South, Halifax. [9018

1916 4¼h.p. B.S.A., 3-speed countershaft, all chain drive, C.B. Combination, good running order £85.—H. Gallett, Dartmouth, Devon. [X6262

B.S.A., late 1913, C.B. sidecar, 2-speeds, kick start, chain drive, nearly new tyres, lamp, speedometer £70.—56, Wallwood Rd., Leytonstone. [9131

TWO 1919 B.S.A. Machines, solo or sidecar, just delivered, model K.; list price; no premium.—92 Gloucester Rd., S.W.7. Kensington 6312. [9430

1914 4h.p. B.S.A., 3-speed countershaft, in excellent condition, new Dunlop front tyre; £62/10.—Whitaker, 16, Ardilaun Rd., Highbury, N.5. [9951

B.S.A. Combination, 3½h.p., coachbuilt sidecar, recently overhauled, good condition, Bsoch; £85.—Ellice, Poundland, Shamley Green, Guildford. [8710

1916 B.S.A., 4¼h.p., chain-cum-belt, 3-speed countershaft, Empire coachbuilt sidecar, good condition £80.—Jones, Aylwin, Llanbeblig Rd., Carnarvon. [8770

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B.S.A., 1919, basket S.C., 100 miles; owner going abroad; £120, or nearest offer; after 6 p.m.—Merivale, 101, Esmond Rd., Bedford Park, London, W.4. [8097

B.S.A., 1915 (late), 3-speed, countershaft, clutch, kick start, chain drive, new condition; £75; part exchange Douglas.—12, Aveton Rd., East Finchley. [9429

B.S.A. Combination, 1913, 3½h.p., 2-speeds, just overhauled by makers, splendid condition, lamps, horn; nearest £60.—Box L4,949, c/o *The Motor Cycle*. [9481

B.S.A., 1919, all chain, Millford sidecar, wind screen, lamps, perfect condition, mileage 1,500; £120, no offers; appointment only.—24, Canning Rd., Croydon. [X6261

B.S.A., Model H, good condition, splendid running order, lamps, horn, tools, speedometer, new spare Palmer; offers.—33a, Emmanuel Rd., Balham, S.W.12. [9064

B.S.A. 1915 4h.p. Chain-cum-belt C.B. Combination, complete lighting set, K.S.; Saturday 3-5, Sunday 10/12; 90 gns., or offer.—1, Old Park Av., Balham, S.W. [9369

1915 4h.p. B.S.A., chain-cum-belt, 3-speed, clutch, kick starter, cane sidecar, lamps, horn, all good condition; £90.—75, Cudworth Rd., St. Willesborough, Ashford, Kent. [8689

1915 B.S.A. Combination, Model H, all-chain drive, 3-speed, kick start, clutch, B.S.A. sidecar; also 1916 Rudge Multi, I.O.M. model.—103, Cricklewood Broadway, N.W.2. [X5812

1916 4½h.p. B.S.A. Coachbuilt Combination, 3-speed countershaft, fully equipped, thorough order throughout; £90, lowest.—39, Hartfield Rd., Wimbledon, S.W. [9184

SMITH'S, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station), have for sale B.S.A. 4½h.p. 1917, 3-speed, countershaft chain-cum-belt, condition as new; 68 gns. [8041

B.S.A.—The Birmingham City Agents and B.S.A. Specialists, County Cycle and Motor Co., 307 and 308, Broad St. All replacements in stock.—Tel.: Comocyco, Birmingham. [8224

B.S.A., 1915, 4½h.p., 3-speed countershaft, clutch, kick starter, all chain drive, just been thoroughly overhauled, spares; £66. Leslie, 1, Clifton Av., Blackhorse Lane, Walthamstow. [8715

B.S.A. New Model H. and Millford S.C., only delivered last week, lamps, horn, quantity of spares; £115; owner taking delivery of car; Northamptonshire.—Box 631, c/o *The Motor Cycle*. [X6246

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1919 4½h.p. B.S.A. Motor Cycle, all chain drive, sidecar, with hood, wind screen, and apron, complete set tools and spares, including 2 tyres, perfect condition throughout; £125.—Robertson, Park Rd., Halifax. [X6209

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B.S.A. 4½h.p., 1916, chain-cum-belt, K.S., 3-speed, countershaft, specially made coachbuilt sidecar, guaranteed mechanically perfect, all accessories, spares, any trial or examination; 100 gns., no offers.—13, Gomer Ter., Bishop Auckland. (D) [9479

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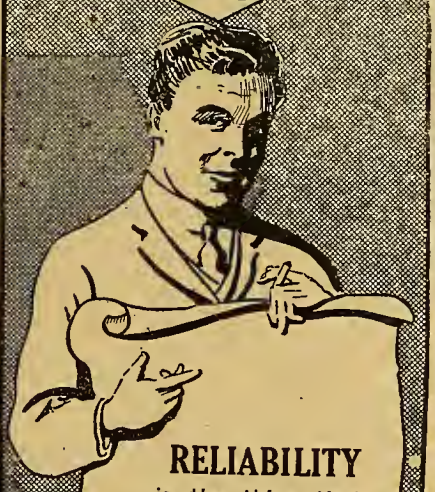

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CALTHORPE 2½h.p., 1915, 2-speed, accessories, splendid condition; £33.—36, David Lane, Shadwell, E.1. [9170

CALTHORPE, fitted new 2¾h.p. 2-stroke, done 50 miles; ride away; £30, bargain.—2, Thomas St., Gilfach, Bargoed. [X6133

2½h.p. Calthorpe-Jap, Enfield 2-speed gear, practically new; £50.—Lindfield, Post Office Rd., Crawley, Sussex. [9076

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CALTHORPE-J.A.P. 1919 2¾h.p., 2-speed, delivered July, perfect order; £55; can be seen by appointment.—Parry, 2, Halsey St., S.W.3. [X6315

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1919 (July) 2¾h.p. Calthorpe-Jap, Enfield gear, lamp set, Klaxon, wide handle-bars, long exhaust pipe, perfect condition; £69.—Dangerfield, Cotton House, Marlborough, Wilts. [X5972

1915 2¾h.p. Calthorpe-Jap, Enfield gears, good condition throughout, and immediately usable, only ridden occasionally, spare valves and spindle; £38 secures.—Laver, Inglenook, Birkby, Huddersfield. [9447

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1914 6h.p. Campion and coachbuilt sidecar, 2-speed countershaft.—Mawer and Johnson, Louth. [9318

CAMPION-J.A.P. Combination, 6h.p., fine condition; £75.—Burnett, Roche Abbey, Maltby, Rotherham. [X5979a

CAMPION, 6h.p. J.A.P., splendid sidecar attached, hood, screen, all in good condition; £80.—Hammond, Saltfleetby, Lincs. [9352

CAMPION-J.A.P. 6h.p. T.T. Sporting Combination; £65, offers; lightweight wanted.—Apply, Beechcroft, Woodlands Rd., Sparkhill, Birmingham. [X6001

1919 Campion Coachbuilt Combination, 6h.p. J.A.P. engine, Sturmey-Archer countershaft, Bosch, B. and B., condition as new, mileage under 1,000; £140.—Osborne, Sackville House, Littlefield Lane, Grimsby. [X6235

1914 4½h.p. Campion-Precision Combination, Mills-Fulford C.B. sidecar, luggage carrier, Sturmey-Archer 3-speed, belt, extended exhaust, 3 lamps, watch, mirror, Stewart speedometer, mechanical horn, spare cover and tube (26×2½), petrol tin, accessories, etc., new condition; £90, or nearest secures; owner going abroad.—W.N., 8, Alma St., Sherwood Rise, Nottingham. [9000

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CLYNO 1919 2-stroke Models in stock.—Chandler, Reyre, and Williams, Hitchin. 'Phone: 165. [8904

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MOTOR Cycle, Clyno combination, 6h.p., with sidecar, like new, good running order; £115, or nearest offer.—A. Gourkovitch, 59, Calabria Rd., Highbury, N. [8945

1915 Clyno, 2-stroke, hand clutch, 2 speeds, excellent condition, with speedometer, lamps; 40 gns., or exchange higher power, cash adjustment.—Backshall, 98, Malins Rd., Portsmouth. [X6276

CLYNO Combination, excellent condition, spare wheel, hood, screen, good tyres, kick starter, Lucas horn and lamps, car generator, petrol carrier, lot of spares, etc.; £145.—Savage, King St., Peterborough. [8845

CLYNO 6h.p. Combination, 3-speed countershaft, horn, mirror, lamps, speedometer, hood, wind screen, wheels interchangeable and spare, excellent condition; £120.—Nelson, 2, Station Av., Fence Houses. [8732

CLYNO Combination, 3-speed countershaft, clutch, K.S., detachable wheels, enclosed chain drive, appearance like new, genuine first-class outfit; 100 gns., bargain.—Holt, 85, High Rd., Willesden Green, N.W. [8701

CLYNO 6h.p. 2-speed Combination, perfect mechanically, new tyres; call, write; £70; ride away; or exchange 4h.p. countershaft solo; also Montgomery sidecar, spleadid condition, £7/10.—12, Victoria Rd., Fallings Park, Wolverhampton. [X6222

CLYNO, 6h.p., 1918, military model, 3 speeds, countershaft, enclosed chain drive, machine-gun chassis, 4 new tyres, interchangeable wheels, condition perfect, mechanically as new, ideal delivery outfit; bargain, £95.—Kelley, 85, Penarth Rd., Cardiff. [8819

CLYNO, 1918, Military Model, 6h.p., 3-speed clutch, kick start, 4 interchangeable wheels, all tyres practically new, complete with sidecar chassis; £130. Exchanges; any type body or tradesman's box carrier could be fitted.—R. D. Varty, Thundersley, Rayleigh, Essex. [9185

CLYNO Motor Cycle, ammunition carrier, special war model, 8h.p. J.A.P. engine, gear box, clutch, kick starter, 28×3 Dunlop heavy tyres, spring pillion seat at back, will carry approximately 4 cwt., or would make a splendid combination, practically new, all chain drive, enclosed, built to stand Overseas use; £145.—Bristow, 11, Richmond St., Brighton. [9391

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SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

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COVENTRY Eagle 2-speed 2-stroke, just overhauled, good condition.—66, The Avenue, Bruce Grove, Tottenham. [8875

COVENTRY EAGLE, 2¾h.p. Villiers engine, in good going order; £30, or near offer.—Slatter, 2, Lewesion Place, N.16. [8854

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DALM 2-stroke, 1915, perfect condition; £28/10.—51, Maplethorpe Rd., Thornton Heath. [9163

DALM 2½h.p. 2-stroke, smart appearance, splendid condition, all accessories; £32.—Rockland Cottage, Beckford, Gloucestershire. [X5907

3h.p. Dalm 2-stroke, fitted with Albion 2-speed gear box, Binks carburetter, E.I.C. mag., and aluminium footboards, complete with tools, horn, and Stewart speedometer, machine and tyres in excellent running order; £45.—G. Chambers, Preston Bissett, Buckingham. [8894

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DAYTON 2-stroke, like new, tyres perfect; £25.—47, South View Rd., Nightingale Lane, Hornsey. [8686

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DE DION, Bosch, B. and B., good tyres; £16; ride away.—105, Usher Rd., Bow, E. [9259

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DOUGLAS 2¾h.p., 2-speed, wants little repair; £28.—65, Rhodiswell Rd., Stepney, E. [9306

2¾h.p. Douglas, just overhauled; ride away; first £25.—Wytte, 1,002, Harrow Rd., Willesden. [8951

DOUGLAS 1916 2¾h.p., fine condition; £56.—Edwards, 7, Exhibition Rd., S. Kensington. [8541

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DOUGLAS, 1915, 2¾h.p., disc wheels, copper exhaust; £53.—W., 38, Thrale Rd., Streatham. [8746

1915 Douglas, 2-speed, in top-hole condition; £48.—Kennett, 7, Lower George St., Richmond, Surrey. [9001

DOUGLAS 1916 4h.p. Combination, horn, tools, spares, trial; 90 gns.—56, High St., Tooting. [9219

DOUGLAS, 1912, 2¾h.p., 2-speed, in good running order, with lamps; £38.—47, Hamilton Rd., Reading. [9147

DOUGLAS Motor Cycle, 1919, 2¾h.p., W.D. model, in perfect order; £68.—Hope, Chipping Norton, Oxon. [X6017

1919 2¾h.p. Douglas, brand new; £82; insurance and spares.—J., 207, London Rd., St. Leonard's-on-Sea. [9241

1919 Douglas, 2¾h.p., brand new, purchasde Oct. 10th, with horn, etc.; £78.—48, Broad St., Oxford. [X6107

DOUGLAS, 2¾h.p., just out of crate; £65; exchange higher power, cash either way.—40, Clonmore St., Southfields. [9246

DOUGLAS, 1916, W.D. model, 2-speed, very little used, good condition; £65.—Boswell, Ashbourne, Derbyshire. [X6087

DOUGLAS, 1911, good condition, Senspray, new tyres, ride away; £26.—Arnold, 85, Suffolk St., Poplar, E. [9297

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1916 Douglas, W.D., 2¾h.p., 2-speed, new June, 1919, perfect condition, lamps, horn; £73; would accept heavier machine in part payment.—Roberts, No. 1, Newtown, Newport, Salop. [8780

4h.p. C.B. Douglas Combination, 1916, 3-speed gear box, lamps, horn, etc., good tyres, enamel and plate as new; will accept £95.—E., 277, Camberwell Rd., S.E.5 (near Green). [9189

4h.p. Douglas, 1917 type, clutch model, 3-speed thoroughly overhauled and repainted, condition perfect; genuine bargain, price £87/10.—White, 121, Adelaide Rd., Chalk Farm, N.W. [X5818

SPORTING 2½h.p. T.T. Douglas and lightweight sidecar, perfect conditon, electric lighting and horn, speedometer, all accessories; best offer over £80.—C., 9, Hartington Place, Eastbourne. [X6096

4h.p. Douglas 1919 Combination, complete with storm apron; extended payments if desired.—Harrods' Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [8767

DOUGLAS 2¾h.p., 1915, W.D. Model, C.A.V. mag., acetylene lamps, good Hutchinson tyres, tools, little used, excellent condition, £70.—Full particulars, G. Fitzpatrick, Phœnix Brewery, Dover. [X6336

DOUGLAS 4h.p. Combination, 3 speeds, clutch, kick start, lamps, horn, lot spares, sidecar slate grey, outlined dark blue, smart machine, just, excellent condition; £105.—15, Dorset Rd., Wimbledon. [9367

1919 (July) Douglas 4h.p. Combination, fully equipped, electric lighting, spares, etc., engine fitted scraper rings, tip-top condition; £135; after 6 p.m.—Morgan, 129, Coningham Rd., Shepherd's Bush, W. [9017

DOUGLAS, 1915, 2¾h.p., 2-speed, Binks, C.A.V. mag., tools, spare chain, P. and H. lamps, Klaxon, Stewart speedometer, stored during war, run 3,000, excellent condition, fast; 57 gns.—Lawrie, Hodgson House, Eton. [X5918

1919 Douglas 4h.p. Semi-T.T. Combination, new end Aug., 1920-type, clutch, special sidecar, mileage 200, lamps, tools, room required; £135, or offere.—Lettere only to 53, Willows Rd., Cannon Hill, Birmingham. [X6255

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0966

F.O.C.H. have a 1919 4h.p. Douglas combination, lul'y equipped, almost new, and absolutely perfect.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9460

F.O.C.H. have a 1919 2¾h.p. post-war Douglas, hand Klaxon, perfect, very small mileage.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9463

2¾h.p. Douglas, 1919 model, only 3 months old, mechanical and external condition as new; owner buying car; price £85, or offer; interview by appointment only; London district.—Box L4,868, c/o *The Motor Cycle*. [8796

DOUGLAS 1918 4h.p. Combination, 3 lamp sets, new tyres, belt, chain, and sprocket, just overhauled, sidecar repainted and upholstered, spares; £120, or exchange Harley or Morgan.—Middleton, 330, Ivydale Rd., S.E.15. [8784

1916 Douglas, 2¾h.p., 2 speeds, F.E. machine, T.T. model, new Lucas horn, lamps, new footboards, knee grips, spares worth over £2, smart appearance, guaranteed perfect; £59/10.—12, Constantine Rd., Hampstead, N.W.3 [9388

4h.p. Douglas Combination, 1914, C.B. sidecar, new heavy Dunlop back and side, new spare inner, speedometer, luggage grid, and petrol carrier, apron, to sidecar, the whole thing in excellent condition; £86.—70, High St., Sidcup. [9172

1915 2¾h.p. Douglas, 2-speed, new Miller lighting set, new tyres, footboards, engine just overhauled and mechanically perfect, tank re-enamelled makers' colours; any trial: £58.—W., 18, Queen's Parade, Muswell Hill, N. [8750

DOUGLAS 4h.p. Combination, June, 1919, accumulator 3-lamp town lighting set, also powerful acetylene head lamp, spare cover, belt, and 2 tubes, Klaxon horn, in perfect order; £117.—Capt. Barltrop, United Services Club, Edinburgh. (D) [X5920

DOUGLAS 2¾h.p., W.D. post-war finish, March, 1919, long mechanical, Lucas head light, electric rear light, A.K. knee grips, special exhaust, wide bars, Pedley grips, tools, condition gorgeous; £76, cash.—Nisbet, Trinity, Cambridge. [9336

1919 2¾h.p. W.D. Douglas, new last month, makers' colours, mileage about 400, all accessories, including Miller head lamp, Klaxon, Stewart speedometer, also insurance policy, indistinguishable from new; £90 cash.—199, Fox Lane, Palmer's Green, N.13. [X6320

MOTOR CYCLES FOR SALE.

Douglas.

2¾h.p. Douglases, brand new, with either T.T. or touring handle-bars; £72, plus carriage; footboards 17/6 extra; very prompt deliveries, one or two from stock.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [9418

1919 (October) 2¾h.p. Douglas, 2-speed, Lucas lamps, horn, tools, ridden under hundred miles, unscratched; reason selling, require higher power; £78, or exchange for 3½h.p. 1919 T.T. Rover, with Philipson pulley.—Fann, Lindonla, Greevegate Rd., Hunstanton. [X6166

1919 W.D. Douglas, only ridden 200 miles, spare tube, belt, Klaxon, tail lamp, rubber handle grips, knee grips, a real last sporty solo 'bus; owner buying combination; perfect order guaranteed; £80, or nearest offer.—Apply, Keen, Liverpool Rd., Stoke, Staffs. [X6119

4h.p. 1919 Type Douglas Combinations, with improved type of clutch; very prompt deliveries, one or two from stock, at £123, plus cost of crate and carriage.—Pamphlets with specifications, Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [9419

DOUGLAS 1919 4h.p. Solos, two for sale, one brand new, the other not done 50 miles, each fitted with kick starter, necessary tools, pump, acetylene lamps, bulb horn and Klaxon horn; bought to take abroad; owner now decided to remain in England, and has no use for same; price 110 gns. and 105 gns. respectively. —Apply, Grime, 14, Spring Lane, Erdington, Birmingham. [X6216

DOUGLAS 4h.p. Combination, as new, kick start, 3-speed gear, purchased February, 1919, 3 lamps, horn, small dynamo, spare new Whittle belt, complete spare new tyre, with new butt-ended tube, Easting wind screen, new driving belt, in thorough going condition, trial with owner, cash wanted; price £125.—J. W. Blackwell, 143, Manchester Old Rd., Middleton, Lancs. [X6247

Edmund.

1919 Edmund, spring frame, 2¾h.p. J.A.P., Enfield gears, 2-speed, chain drive, complete with lamps, horn, and spares; £77, or nearest offer.—J. E. Parry, Stone Bridge, Eyton, near Wrexham. [X6075

2¾h.p. Edmunds, spring frame, J.A.P. engine and 2-speed gear, a really smart and comfortable machine; extended payments if desired.—Harrods Motor Showrooms, 116-118, Brompton Rd., opposite Main Building), London, S.W.1. [8768

Enfield.

£20.—Enfield 2¾h.p. twin, just overhauled, new parts.—Owner, Orchards, Oxshott. [9293

1919 6h.p. Enfield Combination, in crate; what offers?—Putterill Bros., Harpenden. [9226

ENFIELD, 2¾h.p. Minerva engine, mag.; ride away; £17.—Rousdon, St. John's, Woking. [X6298

ENFIELD 3h.p., 1916, mileage 1,300, lamps, horn; £65.—Cooper, Caius College, Cambridge. [X6245

ENFIELD Combination, 1914, 6h.p., condition perfect, screen; £110.—Skells, Yarwell, Peterborough. [8607

1919 2-stroke Enfield, new, never ridden; £60.—H. Martin, 10, West Chapel St., Mayfair, W. [9407

ENFIELD 1917 3h.p., excellent order, lamps, horn; £70.—Edwards, 7, Exhibition Rd., S. Kensington. [8540

ENFIELD, June, 1916, 3h.p., kick start, 800 miles, new condition, accessories; £63.—61, New Kent Rd., London. [9249

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2920

6h.p. 1916 Enfield Combination, Lucas dynamo lighting, in excellent condition; £125.—Crook, Salfords, Horley. [9194

ENFIELD 1918 2-stroke, 2-speed, really excellent condition; 54 gns.—Curtis, Brightside, Golder's Green Rd., N.W.4. [8770

1918 6h.p. Enfield Combination, D.A. lighting set, splendid condition; £135.—Freeman, 50, Brighton Rd., Redhill. [X5993

ENFIELD Combination, 6h.p., 1913, stored during war, splendid condition, all accessories; £80.—71, Northcote Rd., Battersea. [9136

ENFIELD 3h.p. Twin, 2-speed, kick start, Bosch mag., lamps, horn, good condition; £50.—Davis, Cross Sq., St. David's, Pembs. [8777

2¾h.p. Twin Enfield, recently overhauled, rebushed, and re-enamelled, good going order, good tyres; £27.—Wingroe, Sarum, Fleet, Hants. [X5936

1915 6h.p. Royal Enfield Combination, in splendid condition, looks like new; any reasonable trial; £130.—Ireland, Sankey, Warrington. [X6178

ENFIELD, 6h.p., 2-speed, C.B. sidecar, hood, screen, lamps, good condition; £105.—223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [9353

1916 Enfield Coachbuilt Combination, in very fine order; £120.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [8043

ENFIELD 1919 Combination, hood, screen, lamps, apron, Bosch mag., 700×80 tyres, excellent condition; £145.—125, High St., Woolwich. [9421

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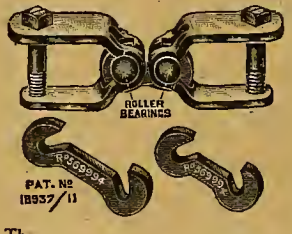

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Enfield.

ENFIELD 6-8h.p. Combination, 1917, recently overhauled at works, speedometer, lamps, new chains; call or write.—58, High St., Bromley, Kent. [8822

ENFIELD 1914 Coachbuilt Combination, Tan-Sad, little used, new condition and appearance; first £86.—4, Stockwell Park Crescent, Brixton. [9110

ENFIELD Combination, 1915-16, lamps, screen, and Tan-Sad, spare tyre and chain; £120, or nearest. —64, Clipston Rd., Alum Rock, Birmingham. [X5996

ENFIELD 1916 3h.p., 2-speed, kick start, complete overhaul by makers, costing £14; appearance perfect; £65.—31, Durham Rd., Sparkhill, Birmingham. [X5965

1917 Enfield 3h.p. Twin, 2-speed, kick start, speedometer, Lucas lamps, smart appearance; £58.—Payne, Rosebery, Elm Grove Rd., Cobham, Surrey. [X6130

ROYAL ENFIELD Late 1913 6h.p. Combination, will be ready for sale in about fortnight; £95.—Jennings, South Bank, Station Rd., Redhill, Surrey. [8814

ENFIELD 6h.p. Combination, 1916, just overhauled and enamelled, in splendid condition; £115.—40, Replingham Rd., Southfields, S.W.18. [9216

2¾h.p. Twin Enfield, 2-speed, overhauled, enamelled, rebushed, new sprockets; trial run; £40, or nearest.—Lovegrove, Highgate, Whitchurch, Salop. [8964

1917 Enfield 6h.p. Combination, Cameo screen, apron, Klaxon, lamps, spare chain, excellent condition, as new; £135.—10, Burleigh Way, Enfield Town. [X2469

6h.p. Enfield Combination, 1916 model, lamps, horn, screen, and luggage grid, very good condition throughout; £105.—The Swindon Motor Co., Wood St., Swindon. [8700

ENFIELD 6h.p. Combination, equipped with lamps, horn, tools, speedometer, absolutely perfect condition; any trial or examination.—Box 595, c/o *The Motor Cycle*. [X5824

ENFIELD 3h.p. Twin, 1916, 2-speed, clutch, only run 600 miles, stored during war, excellent condition; £65.—Write, Vaus, 15a, Uxbridge Rd., Kingston-on-Thames. [8947

ENFIELD 1915 6h.p. Combination, Lucas lighting set, hood, screen, speedometer, etc., splendid condition; £135; seen by appointment only.—E. R. Smith, The Manor, Honor Oak Rd., S.E.23. [8918

ENFIELD Combination, 1917-18, 6h.p., complete with 3 lamps, horn, mudshield, Bosch mag., 3in. tyres, speedometer, in good condition, mileage 3,500; £140, or offer.—4, High St., Leatherhead. [8740

£38.—1913 Enfield, 2¾h.p., 2-speed, dog clutch, chain drive, engine just overhauled, all accessories, needs repainting, excellent order; ride away.—Furze Corner, Dunsfold, Godalming, Surrey. [8927

ENFIELD 6h.p. Combination, 1915, not used two years, engine and gears thoroughly overhauled three weeks ago at the cost of £20, Tan-Sad, Klaxon, lamps, etc.; £100.—Hayward, High St., Alton, Hants. [8928

6h.p. Enfield Combination, engine thoroughly overhauled, rebushed, receipts shown, sidecar in good condition, wind screen, fast; £85; evenings after 8, or week-end.—81, Ashburton Av., Addiscombe, Croydon. [9114

1919 Enfield Combination, 6h.p., complete with lamps, Lucas and Klaxon horns, Orto wind screen, tyres almost new; seen by appointment; 150 gns., no offers.—Box 635, c/o *The Motor Cycle*. [X6165

FOR Sale, 1917 6h.p. Royal Enfield combination, complete with Lucas dynamo lighting set, electric horn, bulb horn, luggage grid, tools, etc., new tyres back and front, splendid condition; price £145, or near offer.—Apply, Allen, 30, Westgate, Wakefield. [X6212

6h.p. Enfield-Jap Coach Combination, 1914, nnused during war, perfect condition throughout, lamps, horn, speedometer, tools, and spares, 2 luggage grids, petrol tin carrier, Tan-Sad and backrest, ideal touring outfit, take 4 anywhere, only wants seeing and trying; must sell, £110.—135, Newland Av., Hull. [9392

IRISH Readers, Attention!—1919 Royal Enfield 2-stroke, 2½h.p., 2-speed gear (Enfield), all chain drive, 24×2 Palmer tyres, Thomson-Bennett mag., Amac carburetter, pan saddle, aluminium footboards, foot brake, full kit of tools, Miller generator and head light, and complete insurance policy; machine delivered 1st Oct., has been carefully driven since, is in excellent running order, and the finish is as perfect as when new; the owner is highly pleased with it, but is getting a sidecar machine; what offers over £65 for immediate possession? Payment accepted in Dunlop, Mexican Eagle, Shell, or Pyrofax shares, or cash.—W. G. Galway, Lisbredan, Donaghadee, Co. Down. [X6092

Excelsior.

EXCELSIOR 1918 2-stroke, excellent condition; £37/10.—Dixon Bros., 172, Brownhill Rd., Catford. [8058

EXCELSIOR 2¾h.p. 1917 2-stroke, 2-speed, hand clutch; £50.—Dr. Gandy, Peppard Common, Henley-on-Thames. [X6325

AMERICAN Excelsiors.—Place your orders now to save disappointment. 'Phone 943.—Horswill, 42, Bridge St., Chester. [2143

MOTOR CYCLES FOR SALE.

Excelsior.

ANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake Co., Official Dealers, Liverpool-Manchester. [7038

MERICAN Excelsior 7-9h.p., 3-speed, kick starter, 2-seat sidecar, electric light, Bosch, Binks, new tires, 2 wind screens, all spares; £125.—52, Huxley l., Edmonton. [9106

920 British Excelsior and Matchless, Ariel, Enfield, B.S.A., Harley combination; Allon, Mega, Wolf; early deliveries; book now.—Clifford Stories, Eastwood, Notts. [9346

BRITISH Excelsior, now in stock for immediate delivery, 2½h.p., 2-stroke, 2-speed, £58/16; with clutch and kick starter, £64/17/6.—The Premier Motor Co., Aston Rd., Birmingham. [9455

MERICAN Excelsior, new and latest model 7-9h.p., 3-speed, with Montgomery De Luxe sidecar; immediate delivery from stock; £160.—The Premier Motor Co., Aston Rd., Birmingham. [9454

919 American Excelsior, 8-10h.p., new middle September, 3-speed, clutch, kick starter, P.H. lighting set, Lucas horn, pillion seat, with footrest, tools, pump, whole machine perfect, and as new; £145.—Weir, Craigcrooke, Dunbar, Haddingtonshire. [X6167

UTO. Excelsior Motor Cycle 7-9h.p. Combination in perfect running order, coachbuilt sidecar, sports model, upholstered in red morocco, cupboards, horn lamps, equipment, colour of combination grey and red, 1915 complete; no agents.—A. J. Earl, 105, Broad St., Reading. Trial run by appointment. [8001

F.N.

F.N. 4-cyl., 2-speed, clutch, Bosch, broken crankshaft; first £15 purchases.—R. Hill, Lowen, Whitebarrow. [8684

F.N. 5h.p., 2-speed, engineer overhauled, very fast.—Hogben, 74, Whitstable Rd., Canterbury, Kent. [8849

F.N. 2¼h.p., 2 speeds, clutch, footboards, new Dunlops, lamps, tools, sweet running machine, splendid order; £32/10.—142, Hamlet Gardens, Ravenscourt Park, W. [X6217

Harley-Davidson.

HARLEY 1916 Combination, electric lights, perfect; £115.—51, Maplethorpe Rd., Thornton Heath. [9162

HARLEY-DAVIDSON 7-9h.p. C.B. Combination, 1915, splendid outfit; £100 secures, bargain.—Ashby House, York Av., Hunstanton. [X6198

HARLEY-DAVIDSON 1916 Combination, coachbuilt sidecar, recently overhauled, good condition; £30.—Olver, Tavistock Rd., Launceston. [9080

915 Harley-Davidson, double-seater sidecar, magneto ignition, electric lamps, horn, splendid condition; £135.—Woodcote House, Norlington Rd., Leyton. [8858

916 Harley-Davidson, Phœnix C.B. sidecar, electric model, new chains, good mechanical condition; £130; Seen Thursday.—S.B., 83, Sinclair Rd., W.14. [8753

916 Harley-Davidson, electric model 16J., electric lights, with Watsonian sidecar, dickey seat, Cameo green; £125.—211, Barton Rd., Stretford, Manchester. [9009

919 Harley-Davidson Combination (mag.): £180 perfect, all accessories, trial given; call any time.—V. A. H., 33, Montrose Av., Kilburn, London, N.W.6 [9196

HARLEY-DAVIDSON 10-12h.p. 1919 Combination, only done 300 miles, in excellent running order; £220 gns., or offer.—Capt. M., Pleasant Cottage, Light Water, Bagshot. [8958

HARLEY-DAVIDSON 1914 7-9h.p., just overhauled, roomy sidecar, 2-speed, Bosch mag.; sacrifice, owner leaving country, £75.—Barrett, 19, Rendezvous St., Folkestone. [9426

TWO Only.—Latest Harley-Davidsons, either with or without sidecar, Mills-Fulford, £154 each solo, £185 each with sidecar. 'Phone 943.—Horswill, 42, Cambridge St., Chester. [8769

HARLEY Racer, 1916, single speed, clutch, fitted with spring forks, carrier, large mudguards and tyres, first-class condition, 5,000 miles; £95, lowest.—Box 564, c/o *The Motor Cycle*. [X3959

HARLEY-DAVIDSON 1915 7-9h.p., Bosch, lamps, horn, speedometer, coachbuilt sidecar, all in splendid order; £115.—Axten, Glengariff, Surrey Rd., Guildford. 'Phone: City 186. [9065

HARLEY-DAVIDSON Combination, 1916, electric lamps, horn, pressed steel sidecar, speedometer, luggage grid, 70 m.p.g., perfect condition; any trial; £135.—128, King's Rd., Brighton. [9174

HARLEY-DAVIDSON 1916 Combination, perfect condition, nearly new tyres and tubes, spare tyre and tube, car Klaxon and electric lights fitted; £145.—Rodgers, 12, Laurel Gardens, Hanwell. [9111

BROOK Bros., Burnham-on-Sea, are sole agents for the new Harley-Davidson models, and specialise in service to the owner; book your order now for early delivery. Write for our new catalogue. [0044

HARLEY-DAVIDSON 1918 7-9h.p. Combination, disc wheels, hood, screen, new extra heavy Dunlop back wheel, small mileage, excellent condition.—Ward, c/o Edwards Bros.' Garage, Salisbury. [8938

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HARLEY-DAVIDSON Combination, 1916-17, mag., model, 3-speeds, bulbous sidecar, luggage grid, 3 lamps and low generator, new tyres; £115, bargain.—H. Wolverson, Horseley Fields, Wolverhampton. [X6250

HARLEY-DAVIDSON 1919 Combination, mag., 2 speedometers, luggage grid, petrol can carrier, Pillion seat, perfect throughout; £210.—Stretton and Smith, 23, Wodstock St. (off New Bond St.), W.1. Mayfair 3129. [8690

HARLEY Combination, 1916 (Nov.), bulbous sidecar, screen, with side extensions, hood, disc wheels, electrical model, new chains, mechanical condition and appearance as new; any trial; £170.—Johnson, Smith's Yard, Tooting Broadway, London. [8725

1916-17 Harley-Davidson 3-speed Combination, specially sprung bulbous torpedo sidecar to match, finish throughout unscratched, mechanically perfect, a super-combination in every respect; any trial; 118 gns.—Cotton, Hollies House, Ledbury. [8940

HARLEY-DAVIDSON Combination, electric light model, with special K. engine, very fast, overhaul just completed, large bulbous sidecar, with boot at back, all in excellent condition and appearance; £140, or near offer.—Bushey View, Hampton Wick. [9154

LATEST 1919 Harley-Davidson, 7-9h.p., electric model, and large Mills-Fulford coachbuilt sidecar, fully equipped with 3 electric lamps, horn, all tools, etc., bought new in July, and only used fine week-ends since, guaranteed faultless; £200.—Smith, 269, County Rd., Liverpool. [X6344

HARLEY-DAVIDSON 1918 7-9h.p., 3-speed, T.T. bars, accumulator lighting, enamel and mechanical condition perfect, practically indistinguishable from new; first reasonable offer accepted; any trial; many spares; must sell.—64, Field Rd., Forest Gate, E.7. 8.30 a.m. to 6 p.m. [9431

F.O.C.H. for Harley-Davidson Combinations.—Be one of the early birds and book your order now for these excellent mounts. We can deliver a few 1920 models this year. Our motto, "Strict rotation and no preminums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone Hampstead 3752. [8615

SPECIAL Harley-Davidson Combination, 1917, 3-speed clutch, kick start, special model for demonstration and trial riding, de luxe coachbuilt bulbous back sidecar with wind screen, electrically equipped, lamps, horn, speedometer, luggage grid; any trial given; £165; exchanges.—R. D. Varty, Thundersley, Rayleigh, Essex. [9186

Hazlewood.

HAZLEWOOD-J.A.P., 5-6h.p., 3-speed gear, clutch, kick starter, compleae with torpedo sidecar, lamps, etc.; £100.—Seymour and Baker, 215, High St., Lewisham, S.E. [9382

HAZLEWOOD Combination, 5h.p. J.A.P. engine, Bosch mag., B. and B. carburetter, 3 speeds, perfect condition, powerful and comfortable, complete in all details.—Full particulars from Col. Hyde Cates, c/o H. S. King and Co., 9, Pall Mall, S.W.1. Price £115. [9360

HAZLEWOOD-J.A.P. 5-6h.p. Twin 1917 Combination, 3-speed gear box, K.S., hood, luggage grid, Tan-Sad pillion, speedometer, lamps, etc.; first cheque for 100 gns.; also 1911 Triumph, complete, wants assembling; £25, or sell parts; Douglas parts in stock.—268, Portobello Rd., W.10. [8865

Henderson.

HENDERSON.—Place your order now for earliest delivery.—The Premier Motor Co., Aston Rd., Birmingham. [9456

PLACE Your Orders now for Hendersons.—Horswill, Castra Motor Cycle Garage, 42, Bridge St., Chester. 'Phone: 943. [2142

HENDERSON, 1915, 4-cyl., Millford sidecar, hood, lamps, splendid order; £125.—Sproston, Ltd., 198, Gt. Portland St., W.1. [8983

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co. Official Dealers, Liverpool-Manchester. [7036

HENDERSON 1916 Combination, G.L. sidecar (unused), dynamo lighting, aluminium disc wheels, tyres perfect, special carburetter, accumulator, carrier, etc., this machine has seen little service, and is in exceptional condition throughout, wonderful combination; £140.—Bicknell, Woolpack, Warwick. [X6176

Hobart.

1919 (August) Hobart, 2½h.p., speedometer, Klaxon, and lamps, unscratched; £55.—10, Oakfield Terrace, Cheltenham. [X6318

HOBART 1919 2-stroke, 2-speed, brand new, in stock; list price.—Wrekin Motor Co., Foundry Rd., Wellington, Salop. [X6257

H.S.M.

H.S.M. 1914 Sociable Sidecar Outfit, 8h.p. J.A.P.; £65.—Particulars, see Cycle Car column. [9103

Humber.

1913 2¾h.p. Twin Humber, good condition.—Mawer and Johnson, Louth. [9317

MOTOR CYCLES FOR SALE.

Humber.

HUMBER, 2h.p., splendid condition, £26; A.J.S. spare wheel, tyre, £4/10.—1, Cow Brow, Holme, Carnforth. [8736

1919 Humber, 3½h.p., new, with Middleton sidecar; £120.—Swift of Coventry, Ltd., 132-4, Long Acre, London, W.C.2. [8909

3½h.p. Humber, rebushed, C.A.V., Amac, Drnids, lamps, good tyres; bargain, £21; ride away.—151, Stepney Green, E.1. [8936

HUMBER Coachbuilt Combination, 3½h.p., 2-speed, 1913, nearly new tyres, splendid order; £54.—Cox, 2a, Merton Rd., Watford. [9401

HUMBER Lightweight, new, only ridden a few miles, guarantee given; 35 gns.; drive away.—Lee, 14, Half Moon Crescent, Barnsbury, N.1. [9506

MOTOR Cycle, Humber 2¾h.p. twin-cyl., Bosch, B. and B., 3-speed, clutch, very fast, good condition; £40.—117, Bedford Rd., Walthamstow. [8887

2¾h.p. Humber Twin, 3-speed, Bosch, Senspray, good condition and running order; £48; between 6-8 p.m.—Simmer, 14, Constantine Rd., Hampstead, N.W.3. [8847

3½h.p. Humber, B. and B., Simms, good tyres and inner tubes, ride away; £25, or near offer.—14, Elphinstone Rd., Winn's Av., Walthamstow, E.17. [9178

HUMBER Combination, 3½h.p., 2-speed, perfect order and appearance, 3 lamps, spares, and accessories: 55 gns.—Heninghem, 5, Belmont Terrace, Chislehurst. [9368

2¼h.p. Humber Lightweight, 3-speed, and clutch, in good condition, tyres, etc., as new; bargain, £31.—H. W. B. Coombs, Harlem, Langer Rd., Felixstowe. [8774

HUMBER, 3½h.p., C.B. sidecar, 2 speeds, handle start, Bosch, B. and B., perfect order, complete with lamps, tools, etc.; genuine bargain, £45.—Harris, 9, River St., Brighouse, Yorks. [8920

HUMBER, 3½h.p., 2-speed, free engine, handle start, Eisemann, B.B., T.T., spring forks, lamps, good tyres, good enamel, ride away anywhere; £40; stamp reply.—Crook, Ward St., Penistone. [X5977

HUMBER 4h.p., 2-speed, handle start, lamp, horn, B. and B., just been overhauled, suitable for sidecar; £50, or any reasonable offer; call any time after 5.30.—A. Rose, 16, Victoria Av., Hounslow, N. [9303

1912 Humber Combination, 3½h.p., 2-speed, handle start, cane sidecar, new piston, cylinder rebored, new carburetter, new belt, tyres good, lamps, etc., complete, in really excellent condition; £56.—Bryant, Butcher, Lingfield, Surrey. [8911

Indian.

£55.—Indian, 5-6h.p., clutch, free engine, best condition, very fast.—49, Robinson Rd., Tooting Terminus. [8977

£90.—1915 7-9h.p. Indian, Phœnix sidecar, 2-speed, clutch, K.S. model.—Faull, Ayre Cottage, St. Ives, Cornwall. [8891

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport, Mon. [0032

INDIAN, 7-9h.p., T.T. clutch model, stand broken, new Dunlop, very fast; £55.—7, Primrose Hill, Chelmsford. [8790

1915 Indian 7-9h.p. Combination, disc wheels, usual accessories; £100, or near.—73, High St., Weston-super-Mare. [X6240

1919 Powerplus Indian and Sidecar, full electrical equipment, just delivered; £180.—Wright's Garage, Saffron Walden. [X6372

5-6h.p. Indian, 1915, 3-speed, clutch, kick starter, specially fine condition, lamps, horn, etc.; £88.—9, Upper George St., W.1. [8742

7-9h.p. Indian Combination (86E969), very powerful, fine condition, will separate; any trial.—Pioneer, 290, High St., Stratford, E.15. [9213

INDIAN, 7-9h.p., 1913, Model E, overhauled and ready to ride away; £55/10.—Stevens Engineering Co., 184, Pentonville Rd., King's Cross. [8824

1915 5-6h.p. Indian, 3 speeds and kick starter, coachbuilt sidecar, fitted with wind screen, nice condition; 88 gns.—3, Parker Lane, Burnley. [X6204

1916 Powerplus Indian Combination, 3-speed, hand and foot clutch, kick starter, fully equipped; £110, or offer.—Rawkins, Fairlight, Windsor. [8788

INDIAN 7-9h.p., spring frame, clock, Amne, dynamo lighting, 75 m.p.g., mechanical horn, T.T. bars; £75, or offer.—Richards, High St., Ashtead, Surrey. [8696

INDIAN 7-9h.p. Combination, 1915, 3-speed, clutch, electric lighting, spares, etc., just rebushed; £95.—Seen Hove Engineering Works, Davigdor Rd., Hove. [9016

INDIAN, 7-9h.p., 1914, clutch model, fine condition, and Norton coachbuilt sidecar; £75; sell separate, or exchange lower power.—69, Edgbaston Rd., Smethwick. [X6076

1916 5-6h.p. Indian, 3-speed clutch, kick start, £78; also 2¾h.p. Veloce 2-speed free engine, just been overhauled.—54, Queen St., Camden Town, N.W. [9066

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1915 7-9h.p. T.T. Indian, red, discs, tools, lamp Klaxon, spares, long exhausts, silencer, tyres ne beautiful condition; £70.—103, Balham Park Rd S.W.12. [910

INDIAN 5h.p., 1915, 3 speeds, hand and foot contro tyres excellent, fully equipped, lamps, etc.; re bargain, £67/10.—17, Goldhawk Rd., Shepherd's Bus London. [901

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1915-16 Indian, 5-6h.p., excellent condition, clutc model, kick starter, T.T. handle-bars, very fast call and see it any time; £75.—The Red House, Becke ham, Kent. [926

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7-9h.p. Indian, 1915, green Canadian model, spring frame 2-speed, hand and foot clutch, splendid condition; £83.—Robertson-North, 55, Broad St. Peterborough. [912

SMITH'S have for sale Indian, 1914, 7-9h.p., 2-speed complete with lamp, etc., in good condition; 5 gns.—10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [804

BLUE Indian, 7-9h.p., 2-speed, K.S., never given a trouble, always gets there, lamps, spares, ride away; any trial; £55, or 2-stroke and cash.—Davies, 43 Broadway, Coventry. [X623

INDIAN, 1915, road racer model, clutch, very fast never been ridden since thoroughly overhauled owner sent on foreign service; £70.—Address, Woodhall, Crawley, Sussex. [X5914

INDIAN Combination, red, C.B. sidecar, sporting, 1916, 3-speed, kick start, hand and foot clutch, Lucas lamps, horn; 70 gns.; must sell.—Biss, Queen's Head, Waltham Abbey. [8929

INDIAN Coachbuilt Combination, 7-9h.p., late model, enamelled olive green, tyres unpunctured; must sell; trial; nearest £100.—58, Kirkmanshulme Lane, Longsight, Manchester. [X6287

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INDIAN 7-9h.p. Coachbuilt Combination, T.T., clutch model, sporting sidecar, all accessories, excellent condition; £85.—Mr. Jones, Elsemere Cottage, Priory Rd., Ascot, Berks. [X5911

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T.T. Powerplus Indian, 1916, 7-9h.p., 3 speeds, kick starter, hand and foot clutch, long exhausts, lamps and tools, engine just overhauled and rebushed, enamel unscratched; £110.—72, Lonsdale Rd., Oxford. [9272

INDIAN, 7-9h.p., late 1915, clutch, road racer, stored during war, lamps, horn, speedometer, tools, spare new Renolds chain, spare cover and inner tube, condition perfect; best offer over £70.—L. Mitchell, The Lindens, Farnham, Surrey. [8888

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9 19 James, 5-6h.p., 3-speed, kick, clutch, long exhaust, lamps, horn, etc., fast machine; £110.— all, 40, New Square, Cambridge. [X6254

9 19 James 4½h.p., 3-speed, countershaft, lamps, horn, etc., as new; £98.—K. Pellant, 160, gent's Park Rd., London, N.W.1. [9412

9 19 4¼h.p. James, perfect condition, with wicker sidecar, complete, lamps, horn, tools; £120.— J.T., 93, Woodfield St., Morriston, Glam. [X6139

AMES 3½h.p. Twin, 3-speed countershaft, clutch, lamps, horn, speedometer, stored 2½ years, in od condition.—Bell, Saffron Lodge, Saffron Walden. [9347

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3½h.p. Kerry, F.E., handle start, 2 speeds, good tyres, running order; £35.—14, Elphinstone Rd., Winn's Av., Walthamstow, E.17. [9179

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19 19 Lea-Francis Combination, done 500 miles; only £125.—H. Wright, Arlesey, Beds. [8994

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LEVIS Popular, 1916, excellent condition; £36.— 13, St. James's Rd., Kingston, Surrey. [9302

LEVIS, 2¾h.p., 1915, excellent condition, unused for 2 years; £36.—122a, Manor St., Clapham. [8751

LEVIS, 1916, very little used, always reliable, and in good condition; £38.—Dowling, Dunchurch, Rugby. [X6113

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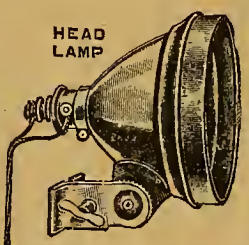
6h.p. Matchless-Jap, 1914, Bosch mag., h.b.c., latest Zenith carburetter, new belt, tubes, lamps, horn, a picked engine, flexible, fast, reliable, wonderful hill-climber, guarantee; first cheque £45 secures, bargain.—Allen, Engineer Officer R.A.F., Bavan, Sandgate, Kent. [9522

MATCHLESS.—The new Model H spring frame will shortly be ready; write and book for earliest delivery; Lucas dynamo lighting at option; decide now, and order the best combination; no premium, and 5% on deposit to date of delivery.—J. Tassell, 1a, Bloomfield Rd., Plumstead. [6798

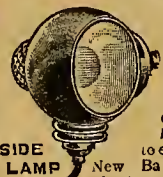


"VOLEX Dry Battery LIGHTING OUTFITS.

BRITISH MADE.

Volex Lighting Sets are the ideal, no-trouble outfits for the Motor Cycle and Sidecar. For over ten years they have been in use for this service, and of recent years, in consequence of their dependency, the demand is constantly increasing.

Dynamo Lighting Sets with Accumulators require careful attention and owing to complications have a tendency to go out of order. Accumulators, if not regularly charged, whether in use or not sulphate and become useless.



"VOLEX" DRY BATTERY LIGHTING SETS give no trouble whatever. The Battery, which is fitted in a metal container with switchboard mounted on top, lies conveniently in the bottom of the sidecar and with ordinary care will last, when in use, from six months to eighteen months without renewal. New Battery can be fitted in a few minutes at but little cost. The Battery case contains three separate Volex 4-volt Aero Dry Cells, with separate connecting boxes for the cables to Head, Side, and Rear Lamps. If one of the batteries becomes exhausted it can be replaced independently of the others. Unless specified, we always provide 4 volt Metal Filament Bulbs to each lamp, but 8 volt Bulb for Head Lamp will be provided where desired. **Complete outfit (as illustration), including Head Lamp, Ball Pattern Side and Tail Lamps, 3 Volex Aero Dry Batteries in metal container with switchboard, 2 Sets of Metal Filament Bulbs, and Waterproof Conducting Cords. Price £6/17/6**

Spare "Volex" Aero Batteries **15/- each**

CAUTION.—We would warn users that they may be offered substitutes for the "Volex" Dry Battery. No other battery will approach in reliability, durability, or capacity the British Made "Volex."

Sectional List, "VOLEX" DRY Batteries free on request.

UNITS of the above outfit.

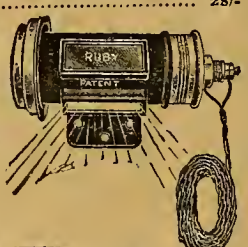
HEAD LAMP, with switch and cord..... **32/-**
SIDE LAMP, with lamp holder and cord..... **18/6**
TAIL LAMP, with lamp holder and cord..... **13/6**
BATTERIES IN CASES, complete with waterproof conducting cord, to work in conjunction with own lamps.

Description	Price.
3 Volex "Aero" Batteries in metal container, with switchboard mounted on top, as illustrated	70/-
Ditto with 2 Volex "Aero" Batteries and switchboard carrying 3 switches and connectors	49/-
Ditto with 1 Volex "Aero" Battery, and switch and connector	28/-

THE "GEM" ELECTRIC REAR LIGHT

British Made.

Strong construction, neat appearance, ebony black body, nickel plated relief fitted with ruby lens, white lens for illuminating number plate and six feet of conducting cord.



Price 7/6.

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Matchless.

F.O.C.H. for the new Model H Matchless Combinations.—Book your order now for the very early 1920 delivery. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), Heath St., Hampstead (near Hampstead Tube), 'Phone: Hampstead 3752. [

F.O.C.H. have a late 1918 Victory model Matchless coach combination, 3-speed, clutch, kick starter, spare wheel, lamps, horn, tools, etc., throughout.—F.O.C.H. (Fair Offer Car House), Heath St., Hampstead (near Hampstead Tube), 'Phone: Hampstead 3752. [

MATCHLESS. 1919 Victory Model Combination hood, screen, horn, spare interchangeable wheel, electric and gas lighting, suit of waterproof covers, number of useful spares, splendid turnout; bargain offer over £170.—Apply, after 6 p.m., Mr. Park, Meadowcourt Rd., Lee, E. [

MATCHLESS 8h.p. Victory Combination, November 1918, stored until spring (1919), spare interchangeable wheel, 5 oversize tyres, screen, luggage grid, pillion carrier, Binks carburetter, lamps, Klaxon, Tan-perfect condition and appearance; £170, or offer.—Norman Rd., Northfield, Birmingham. [X

1919 Victory Model Matchless 8h.p. Combination 3-speed countershaft gear and clutch, spare wheel, Klaxon, Lucas lamps, speedometer, aluminium footboards, etc., new May, 1919, has done only 1,500 miles, outfit in very good condition; £160.—Marshall, Barrow-on-Humber, Lincs. (D) [

Metro.

METRO-TYLER 1919 2-stroke Models in stock.—Chandler, Reyre, and Williams, Hitchin. 'Phone 165. [

1919 Metro-Tyler, 2-stroke, just delivered, discs; price.—92, Gloucester Rd., S.W.7. Kensington 6312. [

METRO-TYLER, single gear, discs, Senspray, horn, just delivered; £52.—H. E. Long, Dunbotley, Hants. [

METRO-TYLER, mileage 500, spares, speedometer, electric lighting; £50.—10, Muirkirk Rd., Catford, S.E.6. [

1919 Metro-Tyler T.T. single and 2-speeds in stock for immediate delivery, list price.—Warring's Station Yard, Wimbledon. [

1916 Metro-Tyler, 2h.p., 2-speed, 2-stroke, electric lamps, and tools, in good condition; £30.—Kensington Av., High St., Manor Park, E. [

METRO-TYLERS.—We are now in a position to offer immediate delivery of this sporty lightweight.—Edward and Gill, 118, Hampstead Rd., N.W.1. [

Minerva.

MINERVA 3h.p., less pulley, good condition; cheap £7.—193, Upper Tooting Rd., S.W. [

MINERVA 3½h.p., mag., Senspray, clutch, Palmer condition excellent, reliable; £27.—70, Norbiton Court Rd., S.W.16. [

Moto-Reve

MOTO-REVE Twin, 2¾h.p., tyres perfect; trial; £20.—Brown, Beechcroft, Devizes. [

MOTO-REVE 2¾h.p. Twin, mag., B.B., good hill excellent condition; £22.—Newsagent, 1, Cornell St., Bayswater, W.2. [

Motosacoche.

MOTOSACOCHE Lightweight, mag., etc., in going order; £15.—85, Church Rd., Willesden [

MOTOSOCOCHE, 3½h.p. twin M.A.G., De valves, 2-speed gear, 1919 model, new; £9 —Sproston, Ltd., 198, Gt. Portland St., W.1. [

2¼h.p. Motosacoche Unit, tank, mag., carburetter, rim, loose pulley, requires new piston and order; what offers?—Ivy Cottage, Balderton, Newar [X

New Hudson.

4h.p. 3-speed New Hudson motor cycle, as new; —H. Wright, Arlesley, Beds. [

1916 New Hudson, 2-stroke; £34.—Kennett, 7, George St., Richmond, Surrey. [

NEW HUDSON 3½h.p., 3-speed, clutch, perfect running order; offers.—Parker, 13, Palace G Berwick-on-Tweed. [X

1919 New Hudson, 2-stroke, 2-speed, just deliv no premium; list price.—92, Gloucester Rd., S. Kensington 6312. [

NEW HUDSON, 1919 model, 4h.p., 3-speed cou shaft, lamps, and horn; £80.—Royal Garage, Gillingham St., Victoria. [

2½h.p. New Hudson, 3-speed, good condition, tyres and belt, £40; cane sidecar, £6. Church St., Broseley, Salop. [X

NEW HUDSON 4h.p. Combination, 1919 (July) equipment and insurance; £135; Blackhea Box L4,920, c/o *The Motor Cycle.* (D) [

1914 New Hudson 3½h.p., 3-speed, clutch, mag., B.B., not been used for 3 years; 101a, Adelaide Rd., Shepherd's Bush, W.12. [

MOTOR CYCLES FOR SALE.

New Hudson.

NEW HUDSON Combination, 1919, 6h.p., perfect, ridden from manufacturers only; after 6, Saturday what offers?—Major, 100, Bedford Rd., Kempston, eds. [X6029

1h.p. New Hudson, new back tyre and belt, patent 4 oil drip, all accessories, in perfect condition; £35. Craven, 275, Manchester Rd., Heaton Chapel, Stock rt. [X6003

1919 New Hudson, 4h.p., 3-speed, kick start, handle-bar controlled clutch, only ridden 150 miles; 100, no offers.—Hankin, Chimhams, Farningham, ent. [8914

1h.p. New Hudson, 2-stroke, recently rebushed, 2 Bosch mag., B. and B. carburetter; £30; o ew any night after 8, or write.—Alfieri, 3, Woodend itton, Surrey. [8771

3h.p. New Hudson-Jap, Bosch, B. and B., clutch 4 3-speed, new Palmers, splendid condition; an ial; what offers? 'Phone Enfield 418.—Hunnings, 216 igh Rd., Ponder's End. [9474

1919 (August) 4h.p. New Hudson Combination, mileage about 400, lamps, wind screen, horn, id accessories; £120.—Turner, 10, R.F.C. Quarters, nchford Rd., South Farnborough. [9093

NEW HUDSON 1914 2-stroke, 2¼h.p., perfect running order, climb anything, new Dunlops, speedo-eter, acetylene lighting set, and accessories; £35, o earest. — C. Hastings, Rottingdean School, New righton. [8741

NEW HUDSON 1914 Big Six Combination, splendid condition, C.B. sidecar, Lucas lamps, B. and B., osch, Watford speedometer, horn, tyres almost new, ecently overhauled, stored 3 years; trial by appoint-ent; for quick sale, £100 lowest.—Jones, 5, Greylands. opthorne, Shrewsbury. [8733

New Imperial.

NEW IMPERIAL.—Caffyns, Ltd., Eastbourne, ar booking orders for delivery shortly. [0018

NEW IMPERIAL New 8h.p. Combination, largest Canoelet sidecar, fine outfit; £140.—Edwards, 7 xhibition Rd., S. Kensington. [8535

NEW IMPERIALS.—Call and inspect the latest models.—Sole London agents, Rey's, 173, Great ortland St. 'Phone: Mayfair 879. [9677

1915 New Imperial-Jap, 2¼h.p., 2-speed, Bosch, B B. accessories, good appearance and condition; £45 -Webster, South View, Govilon, Mon. [X6026

NEW IMPERIAL-J.A.P., 1915, 2¾h.p., 2-speed, en gine perfect; seen any time; £36.—E. Bradley Highfield, Coates, Barnoldswick, Yorks. [X6286

1916 New Imperial-Jap, 2½h.p., 2-speed, semi-T.T. bars, lamps, horn; £45; seen by appointment.—Hardwick, 92, The Chine, Grange Park, N.21. [8973

NEW IMPERIAL-J.A.P., 2¾h.p., believed 1916, 2 speed countershaft, horn, lamps, fine condition; £42.—Write, 37, Elm Park Rd., Finchley, N.3. [9239

NEW IMPERIAL-J.A.P. 2¾h.p., 2-speed gear box lamps, horn, tools, complete, new tyres, engine guaranteed perfect; 40 gns.—120, Sutherland Rd., West Croydon. [9320

NEW IMPERIAL, 1919, 2½h.p., 2-speed clutch and kick start, little used; £60.—Newnham Motor Co., 223, Hammersmith Rd., W. 'Phone: Hammersmith 80. [9358

1919 2¾h.p. New Imperial-Jap, 2-speed, clutch, kick starter, perfect running order, electric lighting, light sidecar; £60, or sell separate.—Parkes, 2, Valley Rd., Streatham. [9145

1916 New Imperial-Jap, 2¾h.p., 2-speed, new lamps, horn, usual spares, unridden during war; bargain, £52; seen by appointment.—Phillips, 15, Drybourgh Rd., Putney, S.W.15. [8974

NEW IMPERIAL 2¾h.p., 2-speed, August, 1919 Lucas lamp set, horn, mirror, spare belt, chain, tools, all new, mileage 200; at cost price, £69, no offers.—Imperial, Heath End, Ascot. [X5998

1916¾ New Imperial-Jap, 2½h.p., just been overhauled, rebushed, etc., spare belt, tools, excellent tyres, climb anywhere; £40; seen any time by appointment.—Smith Bros., 7, Market Sq., Chesham. [8944

NEW IMPERIAL-J.A.P. 8h.p. 1918 Combination, 3-speed countershaft, kick start, hand clutch, 28in. wheels, large Canoelet sidecar, runs like car, and as easily controlled; £135.—190, Broadway, West Hendon, N.W. [9284

1919 New Imperial 8h.p. J.A.P. Combination, Canoelet touring sidecar, Cameo wind screen, delivered late June, lamps, Klaxon horn, tools, spare tyre, al as new; £145; would consider good 2-seater and pay difference.—Blenheim House, 3, College St., Leicester. [8933

F.O.C.H. for New Imperials, sole agents for Hampstead and district.—Book your order now for the very earliest delivery of 1920 models; a few this year. —F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [8620

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1919 **INDIAN** Powerplus, electric model (as new)	£140	0
1919 **BRADBURY**, 6 h.p., twin (new)..	£122	10
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1919 **SPARKBROOK**, completely equipped (as new)	£55	0
1919 **O.K.**, 2¾ h.p., 2-speed (new)	£60	0
1919 **METRO-TYLER**, 2-stroke (new)..	£52	10
1919 **NEW COMET**, 2¾ h.p., 2-speed, 2-stroke (new)	£55	0
1919 **COVENTRY EAGLE**, 2-str. (new)	£50	8
1919 **NEW IMPERIAL**, 2¾ h.p. (new)..	£68	5
1919 **ZENITH**, 8 h.p., standard model	£100	0

COMBINATIONS

1919 **JAMES** 4¼ h.p. Big Single (new)	£126	
1919 **RUDGE** Multi (as new)	£130	
W.D. **NEW IMPERIAL**, 8 h.p., 3-sp. (new)	£140	
W.D. **ROVER-J.A.P.**, 6 h.p., 3-speed (new)	£135	
1916 **ENFIELD** 8 h.p. Combination	£130	
1915 **ENFIELD**, 6 h.p., completely equipped	£130	
1914 **ENFIELD** 6 h.p. Combination	£110	
1915 **HENDERSON** Combination, electric light, disc wheels	£130	
1914 **BRADBURY** 6 h.p. twin Combination	—	
1915 **HARLEY-DAVIDSON**, 7-9 h.p., elec.	£130	
1917 **ZENITH**, 8 h.p., c/s., electric light, screen, etc.	£125	
1916 **HAZLEWOOD-J.A.P.**, 6 h.p., c/s., 3-speed	£110	
1915 **INDIAN**, 5-6 h.p., 3-speed, new Milford Sidecar	£115	
1914 **MATCHLESS**, 7-9 h.p., M.A.G., dyn. lighting	£140	
1915 **ZENITH**, 6 h.p., c/s., sporting Sidecar, lamps, etc.	£115	
1915 **ZENITH**, 6 h.p., clutch, Canoelet Sc.	£110	

SOLO MACHINES

1915 **B.S.A.**, 4¼ h.p., 3-speed c/s.	£80	0
1918 **DOUGLAS**, 4 h.p., completely overhauled	£85	0
1914-15 **LEA-FRANCIS**, 4 h.p., twin, 2-sp	£75	0
1915 **ENFIELD**, 2¾ h.p., 2-stroke	£45	0
1913 **DOUGLAS**, 2¾ h.p.	£48	0
1914 Baby **LEVIS**	£37	0
1916-17 **JAMES**, 2¾ h.p., 2-speed, 2-stroke	£43	0
1914 **PREMIER**, 3½ h.p., 3-speed, lamps, horn	£50	0
1915 Baby **TRIUMPH**, 2-stroke	£50	0
1915 **CONNAUGHT**, 2-speed, 2-stroke ..	£45	0
1915 **CLYNO**, 2-stroke	£40	0
1916 **CALTHORPE**, 2-speed, 2-stroke, speedometer	£55	0
1914 **NEW HUDSON**, 4 h.p., 3-speed ...	£47	10

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All Second-hand Machines Overhauled by our own Staff of Experl Mechanics before Delivery.

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Telephone: Holborn 6430. **289-293, & 95-96,** Telegrams: "Admittedly, London."

HIGH HOLBORN.

MOTOR CYCLES FOR SALE.

Norton.

1916 Norton Combination, chains, Sturmey countershaft, hand clutch.—Dunn, Milton St., Peterborough. [8608

NORTON, 4h.p., old type; £32/10.—Major Wrah, c/o Stevens' Garage, 184, Pentonville Rd., King's Cross. [8826

NORTON 3½h.p. Roadster Model, condition almost indistinguishable from new.—Parker's, Bradshawgate, Bolton. [X6194

1919 (July) B.R.S. 3½h.p. Norton, very little used, absolutely as new; £110.—Baskcomb, Highfield, Welhome Rd., Grimsby. [X6024

NORTON 1916 Sporting Combination, all chain, 3-speed Sturmey countershaft, speedometer, and usual fittings; 100, no offers.—Box 614, c/o *The Motor Cycle*. [X5966

NORTONS.—We are now booking orders for the latest model Norton solo and sidecar outfits; £5 deposit; deliveries in strictest rotation.—Maudes', 100, Gt. Portland St., London, W.1. [4156

3½h.p. T.T. Norton, Philipson, B.S.A. carburetter, Klaxon, head and tail lamps, knee-grips, engine just overhauled, and in splendid condition, fast and reliable; £58.—26, Rosslyn Rd., New Barking, Essex. [8952

NORTON 4h.p. Big Combination, just thoroughly overhauled, new front and back tyres, 2 speeds and clutch, coachbuilt sidecar, very smart, Binks carburetter, lamps, all in excellent condition; first cheque £70 secures.—Popham, 32, New St., Pocklington. [X6330

NORTON 1917 Model 16, Sturmey-Archer countershaft 3-speed, clutch, kick starter, special ratios, Watford speedometer, C.A.V. mag., B. and B. carburetter, special piston and long exhaust, stored 18 months, run 3,000 miles, as new, used in no competitions nor with sidecar, fast machine; £100, or offer.—Gatty, Wath Rectory, Ripon. [X6226

1919 Brooklands 70 m.p.h. Certificated 3½h.p. Norton, 79×100mm., 490cc., competition machine, new July, 1919, h.b.c. Philipson pulley, B. and B. and Binks rat-trap racing carburetter, C.A.V. magneto, well equipped, Brooks B170 saddle, Terry's links, all tools, Dunlop tyres, acetylene head lamp, tail lamp and generator, Pedley and Dunlop belts; winner of two gold medals, hill-climbs, and silver medal, Scottish medium weight open championship; machine can be examined and tried Swansea Valley; £100, or less Binks carburetter £96.—Capt. A. Lindsay, Cwmllynfell, Swansea Valley. [X6131

N.S.U.

3h.p. N.S.U., mag., B.B., horn, good tyres, overhauled, repainted.—Phillips, 21, Bristol Gardens, Warwick Av., W. One knock. [9410

3½h.p. N.S.U. Wicker Combination, 2-speed and free, low tension mag., Binks 3-jet, 6 spare jets, gear and mag., overhauled, new rings fitted last March, in good going order, but frame cracked; trial £20.—52, Mountcastle St., Newbold Moor, Chesterfield. [X6126

N.U.T.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for N.U.T.-J.A.P. motor cycles; early delivery. [4019

N.U.T. Sporting Combination, 1915, J.A.P. 4-5h.p. twin, 3-speed, clutch, kick start, lamps, Klaxon; £75, or solo £65.—60, Commercial Rd., Bournemouth. [X5958

1912 N.U.T. 3½h.p. Twin, fixed model, Amac carburetter, in running order; price £35.—Swift of Coventry, Ltd., 132-4, Long Acre, London, W.C.2. [8910

N.U.T., 3½h.p. twin J.A.P. engine, all accessories, lamps, Klaxon, speedometer, 3-speed, and clutch, perfect running order; £80.—Dunham, 44, Chapel St., Luton. [8890

F.O.C.H. for the new N.U.T. machine, 3½h.p. twin, 3-speed, countershaft chain-cum-belt. Lucas dynamo lighting. Book your order now for the very earliest 1920 delivery. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [8617

O.K.

O.K. Junior, new, 2-speed, 2-stroke, Villiers; £60.—Robertson-North, 55, Broad St., Peterborough. [9130

O.K. 1919 2-speed 2-stroke Models in stock.—Chandler, Reyre, and Williams, Hitchin. 'Phone: 165. [8905

JONES' Garage, special agents for O.K. machines, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2922

O.K., 2½h.p., 2-speed, about 1916, just overhauled, new mag., pull anywhere, lamps, etc.; £42.—Harley, Brainsmead, Cuckfield. [8810

O.K. Junior, 2½h.p. J.A.P., 1919, new July, enamel unscratched, all black finish, 2-speed, perfect condition; £60.—Channer, 73, Fordwych Rd., Cricklewood. [9387

O.K. Junior 1915 4-stroke, 2-speed, free engine, lamps, horn, good running order; £38; seen evenings or Saturday and Sunday.—53, High St., Thornton Heath. [8816

MOTOR CYCLES FOR SALE.

O.K.

F.O.C.H. for O.K. Machines.—Book your order now for early 1920 deliveries of the new flat tmin 2¾h.p., also Models Mark IV. and V. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car Honse), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9468

Omega.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Omega-Jap motor cycles; early delivery. [4018

OMEGA 1919 2¾h.p., sporting model, discs, long exhaust, mileage 100, fast, complete with horn, knee-grips, tools; £65.—20, Mount Pleasant, Redditch. [X6244

OMEGA-J.A.P., 2¾h.p., 2-speed; several 1919 demonstration machines for sale from £49.—District agents: C. M. D. Garage, 5, Tavistock St., Leamington. [X4939

P. and M.

P. and M. and Sidecar, tyres and engine good, 2-speed, push start; £38.—85, Church Rd., Willesden. [8703

1919 P. and M., R.A.F. model, fully equipped; best offer.—Cyril Williams, Chapel Ash Depot, Wolverhampton. [X6236

P. and M., 1915, 3½h.p., and P. and M. coach sidecar; £89/10.—Halifax Motor Exchange, Union St. South, Halifax. [9021

P. and M. 3½h.p. Combination, 2-speed, Bosch mag., C.B. sidecar, lamps, horn, etc.; £65.—46, Leverton St., Kentish Town, N.W. [9008

P. and M. 1914 Combination, Millford sidecar, speedometer, lamps, and tools; £65, a real bargain.—W. Boffey, Swadlincote. [8917

P. and M., 1919, R.A.F. model, about 600 miles, fitted horn and lamps, tools; £80; seen by appointment.—Barnard, 44, Forest Lane, Stratford. [8935

P. and M. Coachbuilt Combination, 2-speed, lamps, accessories, smart turn-out; £49, or exchange clutch model Indian or cycle car.—49, Well St., Hackney. [9423

1919 (August) P. and M. Combination, black R.A.F. model, mileage 300, unscratched, and absolutely as new, £4/10 head lamp, Lucas side and tail lamps, fully equipped, beautiful outfit; £125.—29, Chapel St., Belgrave Sq., S.W. [9294

Pope.

POPE, 1914, 2¾h.p., T.T., clutch, new P.H. lamp set, Amac carburetter, new tyres, spring carrier seat, very fast, perfect order; £39.—Bramwell, 4, Market Sq., Stony Stratford, Bucks. [9395

Peugeot.

PEUGEOT, 1914, 2¾h.p.; 28 gns.; ride away.—99, Dartmouth Rd., Brondesbury, N.W.2. [8783

PEUGEOT 5-6h.p., Bosch, N.S.U., and coachbuilt sidecar, overhauled; £35.—Wells, 389, West Green Rd., N.15. [9156

6h.p. Twin Peugeot, a.i.v., complete with 45° Bosch mag., believed to be 1911, stored 4 years, just been overhauled and new rings fitted, mechanically sound, crank case lug been repaired, spare valve, etc., £18, or near offer; also front wheel, 26×2¼, 22/-; B. and B. carburetter, top feed, complete with controls, 45/-; London district.—Box L4,953, c/o *The Motor Cycle.* [9485

Precision.

PRECISION (Regal), 3½h.p., 3-speed; £55, or offer; Saturday 3-5, Sunday 10-12.—Mascot, Sudbrooke Rd., Balham, S.W. [9370

PRECISION 3½h.p., T.T., large tank, Palmer's, less valve guide and front mudguard; £20.—2, The Rise, Grove Park, S.E.12. [X6269

1914 4h.p. Precision and coachbuilt sidecar, 2 speeds, free engine, condition good, good hill-climber; £55.—24a, Edgington Rd., Streatham. [9319

PRECISION 2¾h.p., 2-stroke, 1916, good condition, light, flexible, economical, sound tyres, ride away; £27. Exchange higher power equal.—Sheldon, Tinsley St., Great Bridge. [X6251

PRECISION Combination, 4¼h.p., C.B., 3-speed, and pedal start, lamps, tyres nearly new, splendid running order and condition; £54.—Wainwright, 8, George St., Thurnscoe, Yorks. [X5797

Premier.

£28.—Premier 2½h.p. lightweight, Bosch, B. and B., guaranteed order.—29, King's Rd., Reading. [8893

PREMIER 3¾h.p. twin, 3-speed, lamps, accessories, splendid order; £45, or nearest offer.—E. Sommerton, Grimsbury, Banbury. [8867

3½h.p. Premier, Bosch, lamps, speedometer, C.B. sidecar, tyres perfect; £45.—F.K., 20, Bartholomew Rd., Kentish Town. [9012

PREMIER 3½h.p., clutch, hand controlled, good tyres, heavy spring forks; £36, first cheque.—Irwin, 109, Leavesden Rd., Watford. [9403

PREMIER, 3½h.p., Armstrong 3-speed, clutch, Bosch, B. and B., tyres first-class, lamp, horn, C.B. sidecar, new condition; £45.—89, Stretton Rd., E. Croydon. [X6117

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PREMIER 1914 4h.p., 3-speeds and clutch, thoroughly overhauled, including new gears and clutch plates; £45, or offers.—J.A.H., Claybrooke Vicarage, Lutterworth. [X6367

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Quadrant.

QUADRANT, 3½h.p., Bosch, B. and B., rebushed, re-enamelled, running order; £35, offers.—17, Lea Rd., Gainsborough, Lincs. [X5937

QUADRANT 3½h.p., new tyres, C.A.V., mag., speedometer, sidecar, accessories; £30.—Cooper, 9, Rochdale Rd., Plumstead. [8998

NEW 4½h.p. 1919 Quadrant Combination for immediate delivery from stock; £119.—Wanchope's, 9, Shoe Lane, Fleet St., London. [9444

Radco.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Radco motor cycles; delivery commenced. [4017

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2923

RADCO 1917 2-stroke, in first-class condition, only done 1,200 miles; £32.—Watson, 24, Broadfield Rd., Catford, S.E. [X6291

1919 Radco, 2¼h.p., 2-stroke, single speed, not done 20 miles, all accessories, perfect; £50.—Giles, 14, Milton Rd., Cambridge. [X6063

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Rex.

REX 5-6h.p. Twin, fine condition; £38; fast machine.—97, Albert Rd., Croydon. [8970

REX Combination, old, not done 1,000 miles; £16/10.—352, High Rd., Willesden. [9400

REX, 3½h.p., mag. ignition, running order; any trial; £15.—Sharman, Carr Vale, Chesterfield. [X5921

6h.p. Rex, 2 speeds, clutch, handle starting, Bosch, B. and B., £35; sidecar, £6.—14, Phœnix St., Euston, London. [9062

4h.p. Rex Motor Cycle, splendid order, 2-speed, clutch, drip feed, new tyres; £56, or near offer.—7, Kenton Rd., Harrow-on-the-Hill. [X6022

3½h.p. Rex and wicker sidecar, wants overhauling, been standing 4 years; £15, or exchange lightweight.—H. H. Gaffer, Cotton, Stowmarket. [X5956

REX 6h.p. De Luxe, late 1913 combination, 2-speed, F.E., all fitments, spares, fast, powerful, sound, T.T. bars; nearest £66.—Hawell, Gosforth, Cumberland. [X6038

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REX, 1913, 5-6h.p., 2-speed, H. start, clutch, lamps, etc., new tyres, tubes, and belt, splendid condition; £45.—F. Collins, Collingwood, The Causeway, Staines. [8902

6-8h.p. Rex C.B. Combination, under 7,000, tyres, accessories, excellent, fine appearance, spares, full insurance; must sell; first £65.—18, Northbrook Rd., Lee, S.E.13. [9274

LATE 1913 6h.p. Twin Rex, Bosch mag., 2-speed, Roc gear, handle starting, new Dunlop belt, just been overhauled; £45, or best offer.—Horswill, 42, Bridge St., Chester. [8897

REX Combination (1914), 6h.p. twin, Bosch mag., electric light throughout, perfect condition, hardly soiled, takes any hill, recently overhauled; nearest £100.—Barnes, D.S.O., 309, Cowley Rd., Oxford. [X5955

REX 6h.p. Combination, 1914, 2 speeds, free engine, excellent condition, just overhauled, hood, screen, lamp, speedometer, etc., not used during war, new heavy tyres; £95.—23, Schubert Rd., Putney, S.W. [9341

1913 6h.p. Twin Rex de Luxe, chain drive, 2 speeds, free engine, 3 lamps, horn, speedometer, tools, spare chain, tube, new Clincher Dreadnought on back wheel, the whole in good running order; £60.—1,014, Ashton Old Rd., Openshaw, Manchester. [X6279

REX, 1911, 4h.p. de luxe model, 2-speed and clutch, handle starter, with very smart and comfortable cane sidecar, engine just thoroughly overhauled and rebushed, the whole outfit re-enamelled as new, new tyres all round (2 Palmers, 1 Clincher de Luxe), complete with lamps and horn; examination and trial any time; £55.—11, Dalmeny Av., Norbury, S.W.16. [9314

Rex-Jap.

REX-J.A.P. 6h.p., 2-speed, free, Bosch, Bramble coach sidecar, Tan-Sad, 3 lamps, screen, perfect; £68.—17, Little Ealing Lane, South Ealing. [9405

OCTOBER 30TH, 1919.

THE MOTOR CYCLE
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A Motor Cycle Trophy for a Lightweight T.T.

WHEN, in 1914, we noted the weights of the machines which competed for the Junior T.T. of that year and found that they averaged upwards of 200 lb., we at once perceived that the genuine lightweight was being neglected in these races, for what had been a race of lightweights had no longer any title to be designated in such a way. Some of the machines, indeed, in the Senior event were little if any heavier than their smaller brothers in spite of their extra 150 c.c. That a 350 c.c. engine was able to propel a 200 lb. machine with its rider over the Isle of Man course at an average speed of 45½ m.p.h. certainly says much for its volumetric efficiency.

Realising, then, that more should be done for the real lightweight, and having its development much at heart, we decided to offer a trophy for a genuine lightweight T.T. race, to be held under the auspices of the Auto Cycle Union. This was accordingly done in 1914, but the outbreak of war put all matters of sport on one side, and at that time nothing was done. This year we renewed the offer, and, though the A.C.U. Competitions Committee were unable to see their way to accept a challenge trophy, on the ground that it would detract from the classic nature of the race, it was arranged that *The Motor Cycle* Trophy should take the form of a prize to be won outright "in the event of such a race being promoted by the Union." We are convinced that the trend of public opinion will force the hands of the A.C.U. to cater more for genuine lightweight motor cycles in 1920.

The details of the race have yet to be settled. A maximum capacity of 250 c.c. has been suggested (but it may be desirable to reduce this), and, as the object of the race will be to encourage low weight rather than small power, it seems to us that a weight limit should also be imposed—it might even be better to limit the weight rather than the engine size and allow makers to fit any engine they please within the agreed weight limit. It may be suggested that this would lead to machines being insufficiently strong for their purpose, but we do not think that manufacturers will imperil their reputations, to say nothing of the necks of their riders, by neglecting this very important point.

The A.C.U. Scooter Trial.

OUT of consideration for the present difficulties of manufacturers, the Auto Cycle Union has decided to postpone its proposed motor scooter trials for a month or two. The conditions governing the trial have not yet been completely settled, but it is announced that the trial will include tests for petrol consumption, slow running, and steering. An average speed of 10 m.p.h. will be required over a course of about fifty miles of normal main road. Further—and this is interesting, as *The Motor Cycle* has urged such a course—the scooters will be divided into classes by weight only, viz., under 60 lb., under 85 lb., and unlimited.

Such a trial would be child's play for some scooters and featherweight motor cycles, into which the scooter may conceivably develop. Even now there are genuine lightweight motor cycles which would come into the second class, and be capable of putting up a good performance under far more strenuous conditions.

It would appear that the A.C.U. trial is to be for scooters only, but, if weight is to be the limiting factor, it would surely be fair to include lightweight motor cycles, provided that they come within the stated limits. By so doing, direct comparison would be possible, and many valuable data gained.

A difficulty, of course, occurs in applying this suggestion to the unlimited class; but is a scooter of unlimited weight a desirable machine? The tendency for motor cycles is steadily to increase in weight, but a heavy scooter surely defeats the main objects for which these little two-wheelers are intended.

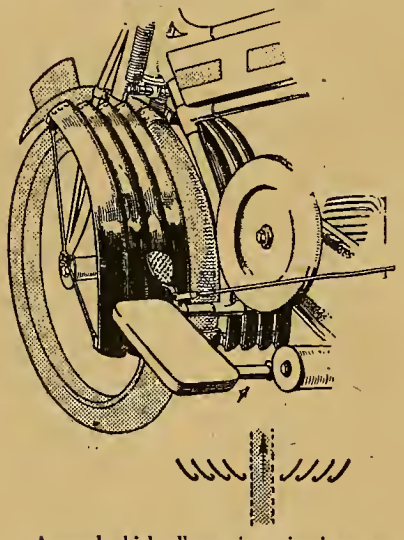
An Index to the advertisements in this issue will be found on the page facing the back cover.

IDEAS: Useful and Ingenious.

A Ventilated Mudshield.

MUDSHIELDS composed of a single sheet of material are apt to cause overheating of the engine by creating a vacuum behind them. To overcome this defect, I made a shield on the Venetian blind principle, and have protected the device illustrated.

The guard is fitted at right angles to the frame, and is made up of louvres, slightly curved, and formed with a gutter at the rear edge, which is adjusted at such an angle as to intercept mud, but allow a passage of air.—W. TALBOT.



A guard which allows air to impinge on the cylinders, but effectively protects the rider's legs from mud. A section is shown.

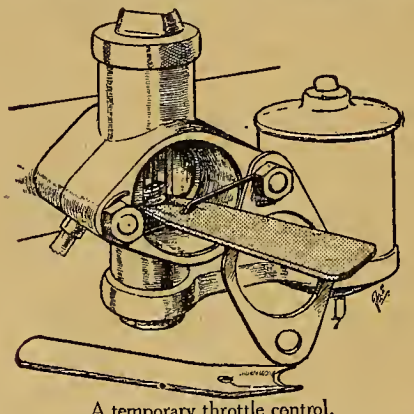
When a Throttle Wire Breaks.

THERE are several ways of getting home on these occasions. One often hears the tip to turn the air wire over to the throttle barrel; but this is not always possible, and, even so, the wire may be shorter, and the throttle barrel therefore opens so far that driving is next to impossible.

A recent failure of the control wire on a Douglas-Amac (exhaust jacketed type) was got over thus:

It was found that a thin metal strip wedged under the throttle barrel, through the main air inlet (gauze removed), gave just sufficient opening to run the engine quietly, approximately 15 m.p.h. on top gear. The end of the strip was filed out and bevelled to an edge. A small hole drilled and a wire passed through, bridging across the two securing nuts, formed a fulcrum for the lever and gave quite a good range of acceleration when needed, the throttle spring returning it to its nearly closed position.

This lever, very little trouble to make, can be carried in the kit, and ensures an easy "get you home" when means of wire



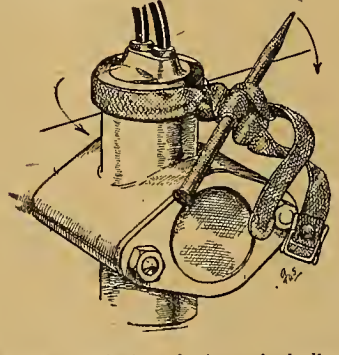
A temporary throttle control.

repairing are absent. It is preferable to plugging up the throttle to a fixed position and controlling by the exhaust lift lever.—J.A.S.

Makeshift Pliers.

OCCASIONS are many when a cap or nut which is usually loosened or tightened by pliers, needs removal and no pliers are at hand, or, as in the case in point, when the screwed cap over the throttle barrel of an Amac carburetter, which is normally only finger tight, had become immovable by the hand alone.

Take a carrier strap or stout cord, and with a centre punch, tommy bar, or other suitable rod, apply the strap *à la* tourniquet, around the cap, twisting it up until it grips sufficiently, when a sideway movement of the whole will start the cap.—J.A.S.

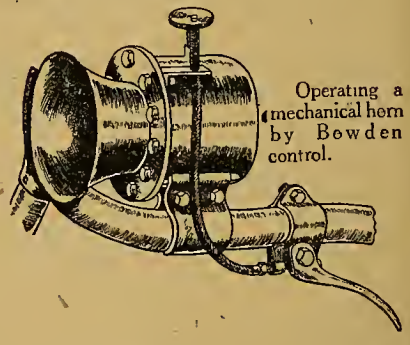


A strap as a substitute for large-sized pliers.

A Handle-bar Controlled Horn.

TO those riders who object to releasing the handle-bars when desirous of actuating the mechanical horn, the following arrangement will be of interest.

It will be seen that this attachment permits the operation of the horn without removing the hand from the grip. To carry out the conversion, a hole is drilled in the operating knob of the horn, and a small bracket fixed to one of the body screws to carry a Bowden stop. A nipple is soldered to one end of the Bowden cable, and a spring placed between the disc and the bracket. The wire is then passed through the holes in the knob and bracket, and connected in the usual way to a handle-bar lever, thus permitting the operation of the horn without releasing the bar or deflecting the steering.—F.H.B.



Operating a mechanical horn by Bowden control.

How to Make a Brown Paper Washer.

THE rider who removes his cylinder for cleaning purposes for the first time, and breaks the washer between the cylinder foot and the crank case, must often be puzzled to know how to make another one quickly and easily. This is no elaborate matter, as it does not entail working with compasses, squares, and a pair of scissors. It simply necessitates taking a piece of brown paper, approximately the size of the cylinder base, tapping it gently first of all round the edge with a light hammer. This tapping will cut the paper accurately and truly. The best type of hammer to use is a light riveting hammer. Having cut the paper to shape, it is then necessary to tap round the cylinder mouth, holding the paper quite still all the time, when a complete circle will be cut in a very short period. Lastly, turn to the holes through which the bolts protrude, and, if these are tapped with the round-nosed end of the hammer, the holes will be cut in the paper. It only remains now to soak the paper in boiled linseed oil and the washer is complete.

BY IXION

An Event.

IN the York M.C. climb up Sutton Bank a single-geared Baby Levis, of 198 c.c., surmounted the formidable hill at a speed which was little short of legal limit. The rider's name is unknown to me, and I am ignorant whether he is a trade crack, of the type that transports a specially readied machine to the venue by train, or whether he is the purest of amateurs, riding a stock machine bought through the ordinary channels, and tuning it without factory assistance. At any rate, the feat, in either case, is one which merits more attention than it has yet been given. I remember what trouble this same hill occasioned the late Ivan Hart-Davies a few years ago on a single-geared 500 c.c. four-stroke. I remember, too, that my own single-geared Levis of so recent a date as 1913 usually recognised its Waterloo after a few hundred yards of 1 in 9, taken with a rush. This feat is pleasant evidence of the increased efficiency of modern engines. If it was achieved by an amateur on a stock machine, it augurs well for the future of ultra-simple lightweights and scooters: given a weatherproof transmission and such an engine, the cheap runabout machine would satisfy a multitude of purposes. Moreover, such deeds of derring-do may silence the foolish people who talk as if tourist motor-cycles still conked out on long stiff gradients.

Objections to Overhead Valves.

THE advantages of overhead valves are mostly technical, and their disadvantages are mostly practical; this is surely sufficient explanation for the trade's reluctance to graft them upon our engines. The overhead valve gives a fractional increase in efficiency: other things being equal, the o.h.v. engine is either slightly more powerful or slightly more economical, as its designer prefers. These points are of comparatively small account in commerce, since few riders ever run their engines all out, or keep a close record of their petrol consumption. Add the cost to a firm of changing its patterns, and it is clear that no maker will change his valve design without strong inducements. On the other hand, overhead valves are by no means free from objections. They do not fracture and smash up the engine, as many Doubting Thomases fear. But they add to its overall height; it is already something of a squeeze to get the 500 c.c. engine into a popular type of frame, and o.h.v. can only be accommodated by fitting a shallow tank, scalloping out a clearance recess in one side of a deep tank, or using a high (and therefore heavy) frame. Again, there is a distinct, though probably unreasonable, prejudice against inaccessible valves; and o.h.v. may be regarded as inaccessible unless they are fitted in a detachable head. But makers cannot trust the average rider to restore a gastight joint at his cylinder head after decarbonisation: so most of them prefer side-by-side valves. On the other hand, I will venture a prophecy that we shall not see many side valve engines in the next T.T. In previous T.T. races the side valve has been common, because victory might reasonably be expected if an entrant possessed a good jockey, a fair share of luck, and a machine which would go the course without breaking down or losing tune. In the next race there will be so many entrants entitled to score on these grounds that most people will snatch every asset within reach; and I think the o.h.v. will not lightly be turned down by any aspirant. After that, of course, the knuts will all want "T.T." engines, and I suppose the trade will comply. What the knut wants to-day, John Citizen wants to-morrow: and so o.h.v. will threaten to swamp touring mounts in due course.

A Hotstuff Engine.

I AM at present trying out a non-standard engine designed for ultra efficiency, and it is an illustration of the case presented in my last paragraph. Its "cylinder" is actually composed of three separate portions bolted together, viz., a barrel, a head, and an exhaust valve chamber. I do not find it too easy to maintain full compression with two annular joints in the combustion chamber to be kept gastight, and no sane designer would put such an engine on the open market. Moreover, in the interests of light valves, overall engine length, etc., the valve springs are innocent of caps and cotters, the outer tip being bent in to form a diameter of the coil, and threaded through a hole in the valve stem. This system could never be used commercially with powerful racing springs. It is quite possible that this engine could hold its own in any company; it is much more than possible that any firm which marketed it would lose money.

The Cost of Acceleration.

I HAVE just bought a new tyre. This trite information is justified by the causation of the incident. I did not scrap the old back cover because it had burst or because it had worn down to the canvas. I scrapped it because I had sinned grievously and frequently in the matter of accelerating my engine violently. The destroyed tyre was fitted to the rear wheel of a machine adorned by an engine to which revs. were second nature; on a low gear it would do its 4,000 r.p.m. and all but double the legal limit. Consequently, when I struck a steep hill knuckle, I was very fond of changing down and slamming the throttle wide open. When I committed this crime on a steep, hard surface, I could always feel the back wheel struggling to get a grip: it always reminded me of my pet greyhound trying to get footgrip on a gravel path after a cat whilst revving freely. In my case

Occasional Comments.—

the tyre paid. The walls were sound. The tread of the tyre for the most part still showed plenty of rubber. But at brief intervals in the worn centre of the tread there were deep flint cuts, extending right into the casing or even through it. Such covers will become frequent spectacles in tyre repair shops as the modern revving flat twins get on to the market. Of course, if an owner can afford to eat up tyres like this, there is nothing more to be said: but I warn the impecunious that a jumpaway uphill with a willing engine is unco' bad for the rubber tread of the back tyre.

The Invaluable Haversack.

SINCE demobilisation, I have learnt that an ex-Army haversack is quite the most precious accessory which a motor cyclist can own, and I marvel greatly that Hunt, or one of those ever-clever people who invent fresh needs for us and live by supplying them, never sold us all haversacks in the long ago. As every veteran rider knows, the predominant sensation of motor cycling is that one is cluttered up with a variety of small articles and has nowhere to put them. You go down to the golf links, and the wife presses you to buy her a gas mantle as you pass Snooks's. You are nearing home after the A.C.U. Six Days, and, with a stab at the heart, you recall that you faithfully promised to bring home a Belgian hare or two white rats for sonny. You go to pay a filial call on your aged mother, and reflect that, as she lives in a country cottage, you really ought to take her a slab of salmon. Whilst you are mending a puncture, you see some lovely apples just over the hedge and there is nobody about. Moreover, though the agent managed to coax the spare tube into that patent case, you will be blest if you can induce the damaged tube to enter its restricted area. You have just packed up everything after unseizing your engine and you spot two spanners and a pair of pliers lying on the turf at the road edge. Your hooter sheds its clip, or your lamp fractures its bracket. It is getting dark, and the charge of carbide in the generator is undoubtedly stale, and you have four hours to go; so you buy a pound of carbide. Araminta begins to grow rather peevish on her bracket and asks you to carry her muff or her gloves or her sports coat. All these and many other imaginable circumstances spell "Misery" with a capital M if you are riding your machine under ordinary conditions: but if your trusty haversack is slung round your shoulders, you can put ninety and nine oddments into it, and forget their existence until you dismount. I admit the scent of my haversack is becoming a trifle fruity after three months of varied usage, but I shall shortly give it a dowse with post-war petrol, which is warranted to hot-stuff any other fragrance in quick time.

Lawks!

THIS vulgar ejaculation was wrung from my plebeian depths when I studied the gear ratios of the machines entered for the A.C.U. Six Days. Practically everybody is well down into double figures on the bottom gear, the main exceptions being the Zeniths (5 h.p. with gears ranging from 4 to 8) and the Scotts, which disdainfully consider a 9 to 1 ratio adequate for any self-respecting two-stroke. One 500 c.c. sidecar outfit—a trade outfit at that—actually descends to a 21 gear, and 6 h.p. machines with gears approaching 18 to 1 are not unknown. Secretary Loughborough has properly put the wind up the boys this time. It is interesting to reflect that, seven or eight years ago, all the Scottish climbs—which Wales may equal, but not surpass—were calmly tackled by the veteran trial riders with emergency gears rather higher than the intermediate gears now adopted, the man who had anything lower than 7½ being considered something of a coward and a duffer. I am not against fear-nothing emergency gears by any manner of means; let the bottom gear suffice for climbing lamp-posts, since duffers will, sooner or later, need all the help that a gear box can give them. The main technical interest of the tendency is that it proves what modern engines will stand.

A group of the new Peugeot quadrillettes outside the firm's Parisian showrooms. The Peugeot is an attractive runabout of entirely new design, and built throughout on car principles. Tandem seating is adopted. The engine, which is rated at 6.2 h.p., has four water-cooled cylinders of 50 × 85 mm. bore and stroke (668 c.c.)

The Lucas Magdyno.—

just as efficiently. The only part absolutely common to the two instruments is the customary driving chain or other transmission gear between engine and magneto driving wheel.

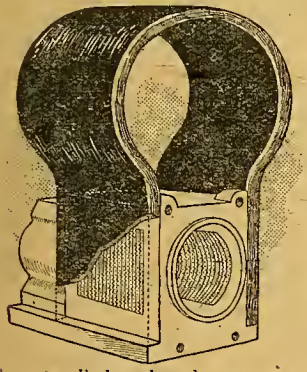
The Magneto.

The ignition part of the apparatus is a self-contained, weatherproof high-tension Thornton-Bennett magneto. Base-plate, armature tunnel, and contact breaker housing, form one piece, and contain laminated iron pole shoes (a striking innovation in magneto construction, originated in this country) around which it is cast, and the whole subsequently machined.

To avoid threads in aluminium, brass plugs are in-cast; in these the holding bolt holes are drilled and tapped, whereby the machine is held to its platform. Incidentally, the base-plate is of the same size as that of the average magneto, and will fit the usual platform provided.

A new type of contact breaker has been designed, which has entirely overcome the trouble of "the sticking rocker arm." The latter detail consists of a light pressing entirely filled with fibre, of which a large proportion projects and acts on the cam in the same way as the more usual small fibre heel on the rocker. Being properly balanced, only an extremely light spring is needed, and the effect of centrifugal force at high speed is negligible. A noteworthy feature is that the high-tension terminal carbon brush holders are at the same end as the contact breaker, and remote from the driving end of the instrument.

The magnet is a single piece of steel of a shape clearly indicated in the detail sketches, and by virtue of its large size is more efficient, and possesses the quality of remanence to a greater extent than

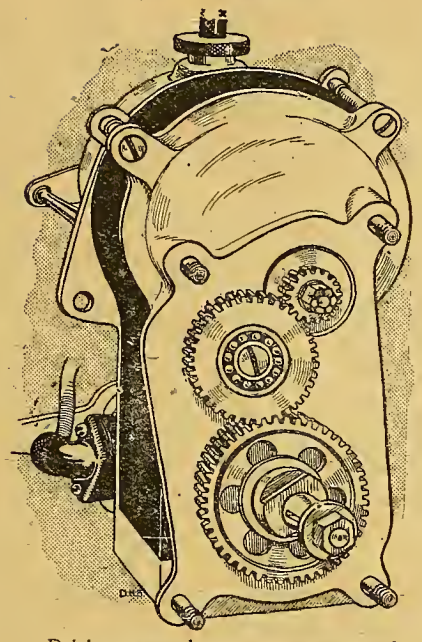


The peculiarly shaped magnet and the aluminium magneto base, in which the laminated pole shoes are in-cast.

smaller ones, so that the design of the magneto is actually improved by the mechanical consideration of housing the dynamo.

The Dynamo.

Current for lighting is supplied by a small replica of the larger Lucas machines, and this is housed above the magneto armature within the enlarged part of the magnet. The dynamo is cylindrical, having the armature eccentric to the casing, and its weight is but five pounds. The electrical output is from four to five



Driving gear between magneto and dynamo armature spindles. On machines where the former runs at engine speed an intermediate wheel is not used.

ampères at six volts pressure, and is maintained constant at high speed by the inter-brush method. The commutator and brush gear follow usual Lucas practice, and are particularly satisfactory, giving sparkless commutation at all speeds. Small spring-loaded triggers are provided to hold the brushes to their work, and no adjustments are necessary.

The drive from the magneto spindle to the dynamo armature is conveyed through a train of noiseless ball bearing gears enclosed in an aluminium case. Dynamo speed is one and threequarter times engine speed.

By slacking one finger screw and turning aside the strap over the commutator end cover, the dynamo may be instantly withdrawn.

Accumulators and Switch Box.

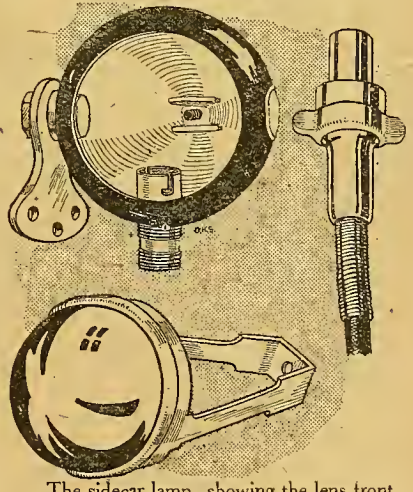
Two sets of batteries are provided, one for solo (two lamp) sets, and the other and larger for sidecar (three lamp) sets. Both are contained in neat metal cases adaptable to their particular purpose. The current is led by one combined cable to the switch box and electrical cut-out, thence to the lamps, and through a junction box to the batteries.

The switch box is designed to fit in a shell, which is intended to be soldered into the petrol tank. A small knob, capable of being turned in one direction only, operates the switch gear. There are four positions marked: lamps, off, charge, off. In daytime running, the switch is turned to "charge," when the current generated goes to the battery and is stored. Should the switch be inadvertently left in this position when the engine is not running, an electrical cut-out, contained in the switch box, breaks the circuit and so prevents the accumulators discharging through the dynamo. When the light is required, the switch is turned to "lamps," when all are illuminated.

For town work or when standing, the head lamp contains a two-filament bulb, which gives a small light when required by simply turning the bulb-holder at the back of the lamp.

Realising the disadvantage of a quantity of external wiring, the designers of the Magdyno set have evolved a scheme immediately noticeable in its elimination of non-essentials. While admitting the simplicity of the "earth return" system of wiring, certain defects were appreciated, and a neat compromise adopted. This is done by employing conductors on the concentric system, as follows: The wires to each fitting consist of the inner insulated member and an outer flexible metallic sheath, which provides a return path for the current. An enamelled casing material protects and enhances the appearance of the cables. All terminals are numbered, so that replacement is not a matter demanding electrical knowledge, and the termination of all the outer sheaths are soldered into bushes, thus providing good contact. In order to prevent chafing and cracking of the wires where they emerge from lamp-holders, they are encircled by a short length of springy wire coil, an unobtrusive detail, showing the attention bestowed upon minor points of design.

Designed to replace the ordinary magneto, the dimensions of the Magdyno are exceedingly compact, and, in most cases, it will instantly replace the existing ignition apparatus on standard machines, since the base plate, chain line, and height of driving spindle follow those of usual magneto practice. The weight of the dual machine is only 15 lb., so that the total addition of weight is negligible.



The sidecar lamp, showing the lens front detached. The latter is held by a triangular frame secured inside the lamp. At the right is a lamp adapter showing the protecting coil.

At the present moment the apparatus is not yet available to the general public, although it has been thoroughly tested under road conditions and gives an unbelievable beam. It will be largely produced for 1920 models, and there is a possibility that the makers, the Lucas Electrical Co., Ltd. (successors to Thomson-Bennett Magnetos, Ltd.), will make some definite announcement as to deliveries being made at the forthcoming Show. The above company is owned by Joseph Lucas, Ltd., Birmingham.

OVERSEAS SECTION

A Commentary based upon Practical Experience and a Study of Overseas Opinions.

The Overseas Aspect of the Scott Trial.

PROBABLY no test throughout the course of the present year has more nearly approximated in its road problems to the conditions found in undeveloped countries than the trial recently organised by the Scott Motor Cycle Co.

We say this with full knowledge of the severity of both the English and Scottish Six Days Trials, and may quote the opinion of at least two riders who competed in all three that the course was more severe than anything in either of the big events, and that no man or machine could survive six successive days of similar severity.

The roads selected, and over which the greater part of the course lay, consisted chiefly of those mountain and moorland tracks which are familiar to all explorers of that part of West Yorkshire known as "the Dales." In bygone times, before the days of steam power, the turbulent mountain torrents of this region supplied the energy for the machinery of many a weaver, paper maker, and lead miner. Tortuous roads led over wild and barren moors to the little hives of industry where the workers' homes nestled around mill or mine in some sequestered dale. Times have changed, and the tide of progress has carried the flow of industry to the towns of the West Riding, leaving the old works high and dry.

To-day they are forgotten, and the tourist who loves unbroken solitudes, miles from rail-head and cities, ever and anon descends into nameless valleys, and finds these relics of a past industrialism, mostly silent and crumbling to dust, except here and there, where the old tradition and old processes survive in the hands of aged artificers, who fight a losing fight against the competition of modern methods and commercialism.

WHERE CHAIN TRANSMISSION SCORES.

One of the several watersplashes encountered in the Scott Trial. Many of the roads through the district wherein the selected route was chosen were never developed to the extent of bridge building, but occasionally the bottom of the streams would be firmly paved with boulders. Such definite obstacles, however, were overcome by the majority of the competitors.

A TEST OF FRAMES, FORKS, AND RIMS.

The Scar in Upper Nidderdale, one of the most desolate roads in Yorkshire. This *debris*-strewn track is only used by moorland sheep farmers, who follow a calling as lonely in degree as the life of any frontiersman on the outposts of civilisation. Triumph and Scott riders are seen negotiating this awkward stretch.

Pioneer Conditions existing in Britain.

THE old roads and bridle paths, at one time busy with the laborious transport of the district, are now silent and grass-grown, rivulets cross them, mountain rains have widened drainage gulleys, and washed away the soil from stony *débris*, leaving a surface of loose and shifting shingle, while outcrops of solid rock occur where the tracks breast the higher slopes.

The conditions, therefore, are those of a hilly district lately opened up by pioneers: in this case opened but to be deserted. The elementary paths are in process of reversion to the wild moorland whereon they were traced, and are now distinguished from it only by the stone walls between which they run.

For the motor cycle destined to be used in pioneer districts, this tract of country presents an admirable testing ground, and its popularity amongst the riders associated with the two designs of machines produced in Yorkshire no doubt largely accounts for the many points in which they depart from conventional practice.

❁ ❁ ❁

Where the Solo Mount Scores.

IN the Scott Trial almost all types of modern motor cycles were represented, from high-powered twins to lightweights, and to observe the manner in which they performed was illuminating in the extreme. A noticeable feature was that no one seemed disposed to enter a sidecar machine, even the 6 h.p. and 8 h.p. entrants preferring to face the test solo; indeed, probably nothing but a handy single-track machine could negotiate such a course in safety. A large part of the route consisted of grass road chiefly characterised by the three deep ruts clearly shown in one of the illustrations. Once in these, it becomes impossible to get out without stopping, and it was noticed that the footboard and footrest clearance on most machines was none too great. The advantage of the Triumph adjustable footrest hangers was here apparent, since most of the riders of this make had them rather high; and one or two canny riders of Scotts had removed the quickly detachable footboards of their mounts, and merely used the sprung cross-bar as a rest. In tight corners, such as were continually present on roads of the nature described, the hand clutch was found to be almost indispensable, and those whose mounts were fitted with tank lever controls to their two-speed expanding clutch transmission often found that they dare not release a hand from the steering to ease the grip of their gears. The foot control of the similar type of drive on the Scotts proved its worth under these circumstances, since, in conjunction with an engine equipped with a decompressor at all times available, and noted for smoothly accelerating from zero speed on a bad patch, the need for delicate clutch manipulation is practically eliminated. Of the water-splashes encountered, it may be said that, given careful and slow driving, the chain drive mounts were certain to cross without trouble, but the chain-cum-belt models invariably suffered belt slip. Magnetos appear to have reached a tolerable state of weather-proofness; and, while those fitted forward of the engines escaped trouble, the high and protected position adopted on the P. and M., Scott, and James made assurance doubly sure. Often trouble at watersplashes was due to baffling of the exhaust gas through the silencer outlet being under water, so that, in machines designed for this kind of work, it would be well to upturn the exhaust pipe at least above the level of the rear hub. Some of the riders,

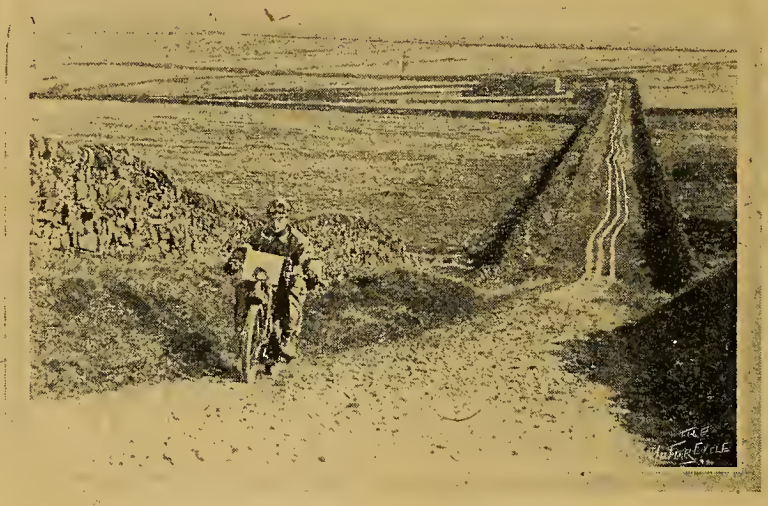
Overseas Section.—

being forewarned, temporarily arranged their exhaust systems to meet this eventuality.

Medium Weights Best.

The machines of from 500 c.c. to 600 c.c. undoubtedly proved the most successful, being not too heavy to be easily handled when surface and gradient reduced progress to a tussle between rider to keep going and machine to lie down.

The lightweights found their power and range of gear inadequate for the worst of the conditions, while the heavy twins chiefly suffered from their length of wheelbase proving awkward on abrupt bends, and from excess of weight above the centre of the machine. Large engines, too, despite their better torque, when revving idly on the low gear necessitated by the driving problems of abominable surface, have not the same steadying effect on the machine as the 4 h.p. type of engine pulling under moderate load, and it is indeed under the latter condition that the petrol engine works most satisfactorily.



A typical road on a moorland plateau. It is cut into three deep ruts by the heavy carts and sledges used by the hill-side shepherds.

The Best Specification Deduced.

To combine the good points of the machines which came through successfully would apparently result in a specification well adapted to perform under abnormal conditions of surface and gradient.

An engine of 4 h.p. to 5 h.p. for solo work seems most desirable, and should be of a type adapted to slow tugging, smooth acceleration, and not prone to be unruly when running light. A single-cylinder four-stroke or water-cooled two-stroke adequately fulfils these requirements. Frame design should be compact and strong, and a well-sprung seat and footrests are perhaps more desirable than complete springing. Ground clearance should be tolerably great, but is not so important in the line of the wheel track as outside it, *i.e.*, the footboards or rests should be high, or preferably capable of adjustment when required. Large tyres, strong rims and spokes, and substantial accessory fittings are a *sine quâ non*. The exhaust pipe should be well extended and upturned if riding is to be done in a torrent-intersected region. Riding position should be such as to give full power over the machine rather than extreme comfort; the saddle should be well within the wheelbase, the bars wide, forward, and fairly low. Gear changing and clutch control should not necessitate change of position nor release of the handlebars. The gears should be at least three in number unless the engine is extraordinarily flexible and capable of low-speed pulling, and should be changed by foot operation. The clutch, if separate from the gear, should be operated from the handle-bar. Carburation not unduly sensitive and a handle-bar controlled half-compression device are inestimable boons, whilst other practical points are large oil and fuel capacity, and the fitting of toolbags in sight of the rider instead of behind him.

OVERSEAS CORRESPONDENCE.

British and American Motor Cycles.

Mr. R. Berrill, Minbu, Upper Burma, emphasising the importance of spare parts, says:

"As an old reader of your paper, I have followed with interest the correspondence on the subject of the relative attractions of British and American motor cycles.

"Whatever argument may be advanced in favour of British machines, the difficulty of obtaining spares for them detracts considerably from their merit. This difficulty during 1918, and previously, may be explained on the score of the war being then in progress. There should not be much difficulty now. In regard to American machines, spares for them have been at all times easily procurable, and in consequence they are recommended. This question of spares is of greater importance than quality in the colonies, and British firms should pay vastly more attention to the subject than they have done in the past."

Backing up the British Manufacturer.

Mr E. Van Meerbeek, Brussels, writes: "As a motor cyclist of some experience, I have enthusiastically followed the movement for the last five years. The German invasion had made me cross the Channel and find new residence in London during the whole period of the war. Now back in Brussels, I realise to its full measure the value of your 'Colonial' column in which so many readers try to 'buck up' the English manufacturer. Certainly he has *not* studied the export trade and makes his machines to suit English roads—probably the best in Europe. Here we have that much detested *pavé*, and one might say, as for the Ford, that it is necessary to be followed by another vehicle to pick up all the nuts and bolts that have been shaken off. Here, too, the American has not been sleeping; his cars are rapidly becoming known. The invasion of Harleys, Hendersons, and Clevelands is developing quickly. All these firms *have full stock of spare parts* in their showrooms. Ford has on show his four-seater car, his lorry, *and his Fordson tractor!* Not one English firm has a single showroom in the town (so none in Belgium). Here and there one sees a B.S.A. on view in some garage window—that is all. Before the war, the N.S.U. and Wanderer were popular, as they had spring frames and automatic carburetters; so had the Indian. There is a good market for English machines here, as they are appreciated because of their popularity among the Belgian D.R.'s, who used nothing but B.S.A., Rudge, and James machines."

SUGGESTIONS FOR FUTURE SIX DAYS TRIALS.

Some Criticisms and Suggestions by a Practical Competition Rider.

ARE the results of the A.C.U. Six Days Trials really useful? As "a man in the street" I look for instructive and helpful information as a deciding factor in the purchase of a machine. What do I find? Very little of real instructive interest! I want to know the best machine fitted with the most efficient gears, engine, mudguards, and brakes, the ease of control, low petrol consumption, and also a most important accessory, the most efficient lamp.

I appeal to the A.C.U. Competitions Committee to give us a real six days test of the present-day motor cycle and its components and accessories, not a conglomeration of marks awarded for reading stop watches, while riding uphill, solo riding over roads of doubtful security, which no sane man would tackle at over legal limit, and a single brake test, which conveys no reliable information. All this is grossly unfair to manufacturer, machine, and rider alike.

For the sake of illustration, we will take the so-called "Consistency Driving Test." I am told this was to be a means of proving "the maintenance of tune" of the engine, from the beginning to the end of the week. Can anybody tell me who was responsible for this brain wave? I should like to put him on a machine, give him a split second stop-watch, and tell him to ride up a hill, two miles long, wet or fine, and "clock in" at the top—position unknown!—within seconds, on pain of losing his head.

Manufacturers and private owners are asked to enter their machines and pay high fees to accomplish a trick, like the "C.D.T.," to prove the reliability of their machines. Was there anything ever so farcical?

The Information Wanted.

Take another illustration of awarding marks. I am, I believe, right in thinking that the silence of machines was taken on the same hill and at the same time as the rider was engaged in the "C.D.T." All credit must be given to our friend Dr. A. M. Low for his fascinating little instrument the audiometer, but could he not have chosen a place when machines were being driven under normal conditions, and, furthermore, without the knowledge of some of the competitors as to his rendezvous? This is another instance of lost marks which is apt to mislead "the man in the street," and so we go on under the present conditions of carrying out a six days reliability trial for motor cycles.

Can we not devise for the next Six Days Trial better conditions, fairer methods, and a more instructive test? Let us have a six days test of machines, with their components and accessories divided into separate tests, and sectionised as follows:

1. Accessibility and kick-starter test.
2. Petrol and oil consumption.
3. Mudguarding.
4. Brakes.
5. Lamps.
6. Sidecars and their fittings.
7. Silence.
8. General comfort and ease of control.
9. Tyres and their non-skidding devices.
10. Reliability with nominated gears.

How to Obtain It.

Under the above sections it should be easy for the A.C.U. to organise tests, far less costly to themselves and others, and give valuable information to all concerned, and form a real guide to the potential buyer.

With tests sectionised as described, officials, observers, timekeepers, etc., would be reduced, no elaborate arrowing of the course each day, as many of the tests could be carried out in a limited area, as I will endeavour to show.

1. Could be done in a hall or garage, competitors being expected to dismantle and replace certain parts in a given time. Afterwards machine to be started with kick-starter.

2. To be incorporated with No. 10, and needs no words of mine as to procedure necessary.

3. A prepared surface to test efficiency of mudguards. Competitors to ride on this surface at varying speeds.

4. A technical test, and a test in the reliability section to prove road efficiency.

5. Tested in a dark room, each lamp to render signs legible at certain distances, and to burn continuously for six hours, and then a further reading test.

6. Ease of fitting and detachability, and passenger comfort and luggage capacity.

7. To be taken at stipulated engine and road speeds.

8. At judges' discretion.

9. A prepared greasy surface to test all non-skid devices and non-skid pattern tyres.

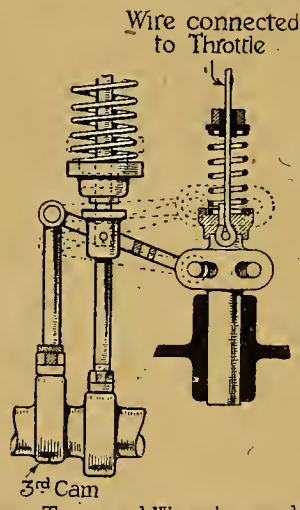
10. This test would be practically the only road test during the six days, and would comprise petrol and oil consumption on a circular course of twenty-five or fifty miles, to the distance of 150 to 200 miles, with good hills included, gear ratios nominated by A.C.U., a slow and a fast climb. Should a competitor fail, another attempt allowed; failure on second attempt to disqualify for reliability test. Punctures not to count against a competitor.

I would further suggest that certificates be awarded to all, showing the results of the tests, with a possible award for the reliability section, petrol and oil consumption, and the slow and fast hill climb in each class. In my opinion, a six days test, carried out on similar lines as described above, would be of real use to the buyer, and, in addition, the manufacturer would at all times have definite proof under the seal of the A.C.U. of the merits of the chief talking and selling points of his machine. THE MAN IN THE STREET.

RECENT PATENTS.

REVIEWED BY B. H. DAVIES.

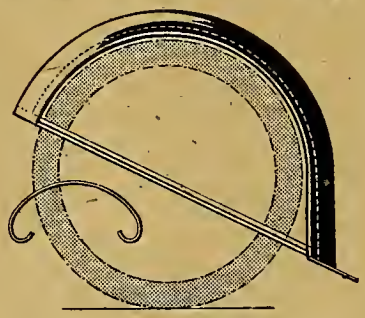
IF we succeed in fighting off the invasion of American cars and cycles, we shall be up against fresh onslaughts from Japan, to judge by the number of patents now being filed from that country. Messrs. Tamura and Watanabe are up to date, in that they are out to perfect air-cooling. Their gadget consists of a third cam, designed to lift the exhaust valve during the compression stroke when the machine is coasting. This cam operates a tappet, which actuates the exhaust valve tappet by means of a link-rod; and the third tappet is brought into contact with its cam whenever the throttle is shut by means of the wire shown on the right of the sketch. The patentees suggest that the following cycle occurs when descending a hill with the throttle shut:



Messrs. Tamura and Watanabe, cam design. No. 119,859. 5/3/17.

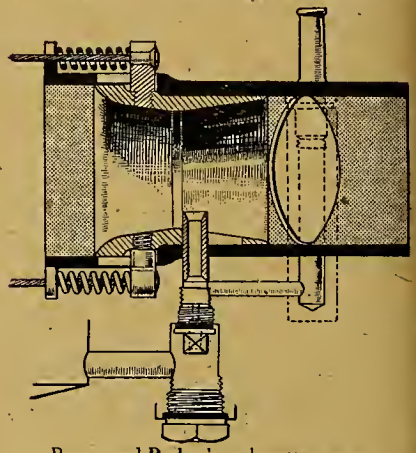
SUCTION STROKE.—Inlet-valve opened, as usual. Pure air inhaled. COMPRESSION STROKE.—Exhaust valve opened by the third cam. FIRING STROKE.—Inlet valve opened automatically by vacuum. Pure air inhaled. EXHAUST STROKE.—Exhaust valve opened as usual. Thus, they hold that a double scavenge of pure air will be obtained, and this air is not heated by any compressions, but is used solely to conduct away heat from the interior of the engine. I question whether the 60 lb. racing spring on my own inlet valve would open on the "firing" stroke; I rather think this stroke would suck up a lot of oil past the piston rings. But perhaps they have not got as far as 60 lb. springs in Japan.

Lt. Job is certainly a man of ideas. As the drawings indicate, he propounds what a florist would term an incurved mudguard. The wheel flings mud and water into the channels inside the guard, and the conduits shown along the sloped diameter in the larger sketch conduct the drainage from the front half of the guard to join the remainder of the filth at the rear end, where it is all harmlessly tipped on to the road. The channels can easily be cleansed by a hooked scraper, and very little water should be deflected outwards from the edges of the guard and blown back on to the rider. I should like to see this guard under test: it looks quite promising.



C. B. Job's improved mudguarding. No. 128,428. 8/17/18.

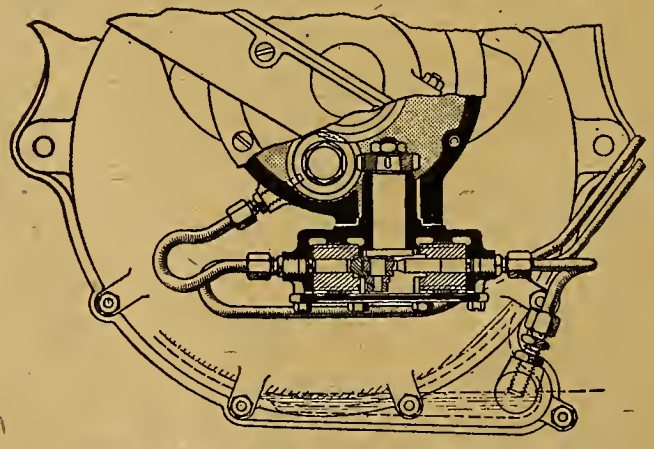
Messrs. Brown and Barlow have protected yet another carburetter, with which they hope to get such a range that it will win fuel consumption tests and also smash the flying mile record on Brooklands. It is of the straight-through type, and its main feature is a sliding choke tube. As shown in the drawing, the choke tube is slidably mounted and controlled by a pair of wires, a slot in the lower side clearing the jet tube. The jet tube contains at its base a submerged petrol delivery orifice, and is supplied with an adjustable release through the pipe shown on the right, which relieves the excessive suction on



Brown and Barlow's carburetter patent. No. 128,666. 30/8/17.

the submerged jet at high engine speeds. The choke tube may uncover an extra air port during its slide.

The Motosacoche people have given home manufacturers a lead, which, in conjunction with other lubricating innovations of recent date, may inspire our designers to abandon the hand pump and the "boa constrictor" system of giving the engine one meal of oil every five miles or so. A double-piston pump is driven by worm gearing off the crankshaft. Each piston works in a barrel drilled across a diameter of a cylindrical piece of metal which is free to oscillate. As each cylindrical member oscillates, the port in the heads of the barrel is alternately registered with the intake and delivery pipes. The left-hand unit of the pump draws oil from the tank, and delivers it under pressure to all bearings. The right-hand unit sucks at a pipe, of which the lower end dips into a catchpit at the bottom of the crank case, whilst the right-hand delivery returns surplus oil to the tank. The system is not a true "dry sump," since the scavenge pump

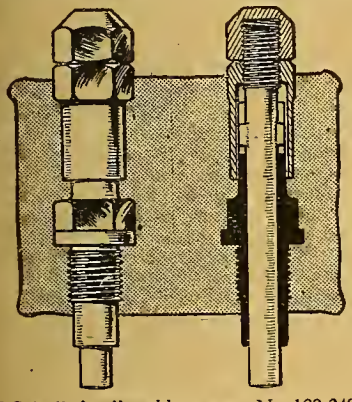


Motosacoche mechanical lubricating system. No. 127,224. 28/3/19.

Recent Patents.—

(right-hand) never drains the catchpit, but merely sets a maximum level to the oil. The cylinder is the only part lubricated by splash, and the depth of the sump increases towards the rear of the engine, so that the flywheels dip more deeply when the machine climbs. Every detail has been well thought out. A safety valve is provided in the main delivery pipe from the pressure side, and an easily detachable filter is fitted on the lead from the sump to the scavenge unit. Readers formerly connected with the R.A.F. will recall that the Le Rhône pump utilises the oscillating cylinder principle. This is a very pretty oiling system; no criticism is possible except on the score of expense, and there are few items for which motor cyclists will more gladly pay an extra sovereign than a thoroughly efficient and automatic lubrication system; moreover, such a system will pay for itself in one season by the reduced oil bills which it secures.

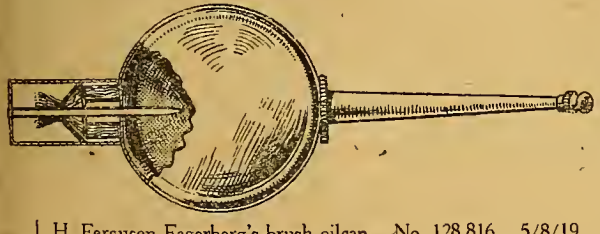
An excellent adjustable tappet is protected by the B.S.A. people. Lugs on the tappet engage slots inside the guide, and prevent rotation. The tappet head



B.S.A. Co.'s adjustable tappet. No. 128,249. 3/7/17.

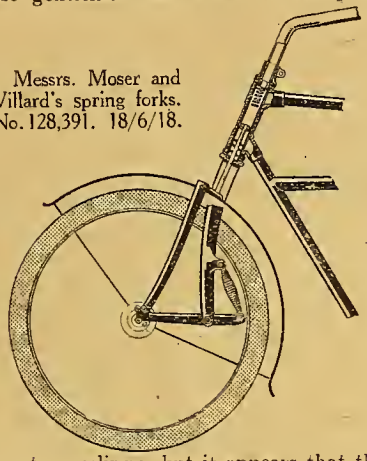
is adjusted by screwing it up or down the tappet, and the lower side of the locking nut is extended downwards in the form of a sleeve, which prevents grit from entering the guide.

Mr. Ferguson-Fagerberg has protected a brush oilcan. The cap at the left has a flexible end, by means of which pressure is applied to the contents; it also forms a separate compartment in which graphite powder can be placed. Underneath this cap is a brush, fed with oil from the main body of the can. You may either squirt oil from the standard nozzle on the right, or remove the cap on the left and brush chains over with graphited oil, as you require.



J. H. Ferguson-Fagerberg's brush oilcan. No. 128,816. 5/8/19.

When I saw the phrase "elastic fork" at the head of a specification by MM. Moser and Villard, of Grenoble, I thought these gentlemen had added a new peril



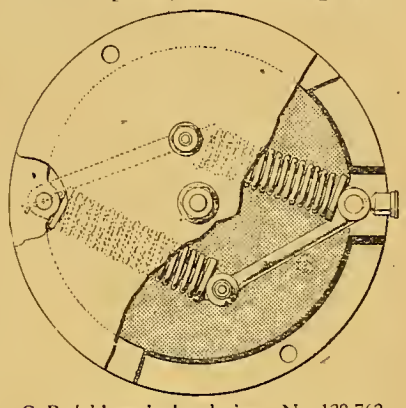
Messrs. Moser and Villard's spring forks. No. 128,391. 18/6/18.

to motor cycling; but it appears that the term is merely the *Entente Cordiale* for "spring fork," as the sketch indicates. The fork is very simple. The main shocks are taken through a horizontal lever by the coiled springs shown on the right. Excessive stressing of these springs in either direction is prevented by a piston connected to the auxiliary fork. This piston slides between two coiled springs inside the piston head, and is suitably shaped to prevent its jamming.

M. H. Pequignet, of Montreuil, proposes a valve system, which will puzzle novices. He employs a double piston valve to control both the inlet and exhaust port. This valve slides in a cylindrical casing machined in the cylinder head, and is internally cooled by oil. A coiled spring placed above the upper piston serves to keep the heel of a universally-jointed push-rod in contact with the cam, and to push the valve downwards as required. The cam is duplex, and runs at engine speed. As shown in the drawing, there are two grooves in the working face of the peculiarly shaped cam, and these grooves run side by side for practically an entire circle, except where the heel of the push-rod crosses over from one groove to the other, by what a railwayman might describe as some "X points." When the push-rod heel is in the groove of small diameter, the valve is at its lowest point of travel, and opens the inlet port. Rising to its mid-position, it closes both ports for the compression and firing strokes; finally, it rises on the maximum diameter of the cam path to uncover the exhaust port.

H. Pequignet, valve system. No. 128,870. 26/12/18.

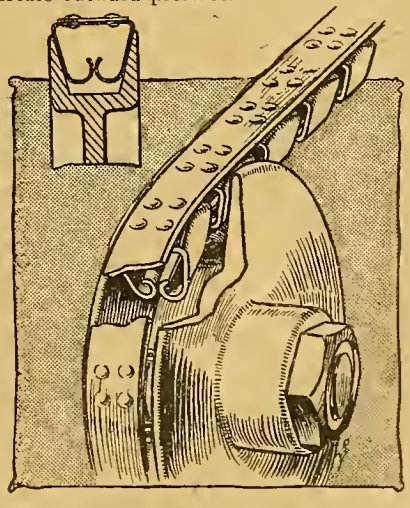
Lt. Job has devised a spring frame which deserves a little study. His system is concentrated at the axles, and the rigid forks terminate in steel rings, in lieu of the usual slots. These rings are enclosed between steel discs mounted on the wheel spindle, the disc being free to



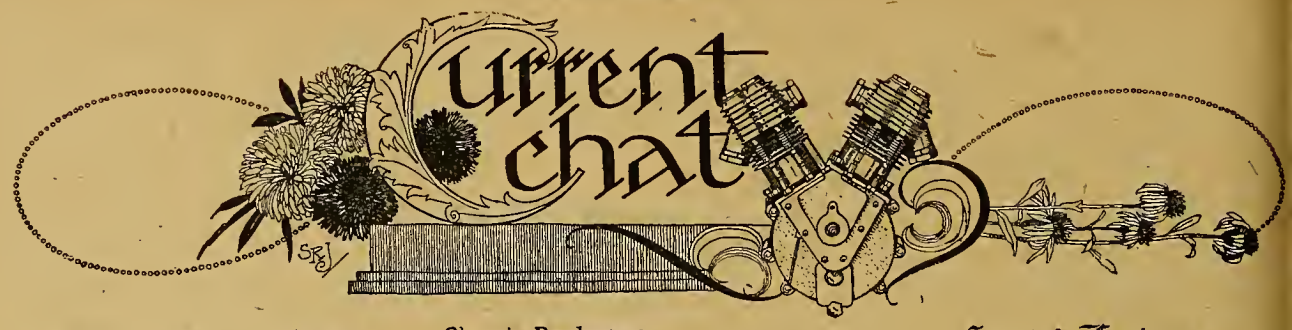
C. B. Job's springing device. No. 128,762. 8/7/18.

slide upon the rings. Each ring is connected to its pair of enclosing discs by the double spring toggle joint shown in the sketch. The path of the wheel axle will be approximately an arc about the centre of the countershaft from which the drive is taken, so that the tension of the driving chain will not vary when the wheel bounces.

Mr. W. R. Keen is an engineer and I am not; nevertheless, I am audacious enough to suspect that his proposed transmission might prove noisy. He has the acumen to perceive that a belt drive is very nice when it neither stretches nor slips. So he has worked out the equivalent of a non-stretching, non-slipping belt, constructed entirely of metal. For the top run of his V belt he utilises a series of linked metal plates, comparable to a chain. Beneath these are secured V-shaped downward extensions, which are made of spring steel, so curved as to take an abutment against each other and create outward pressure.



W. R. Keen, patent belt. No. 128,775. 26/7/18.



Times to Light Lamps.

GREENWICH TIME.

Oct. 30th	...	...	5.7 p.m.
Nov. 1st	...	...	5.3 ,,
,, 3rd	...	...	4.59 ,,
,, 5th	...	...	4.55 ,,

Police Traps.

Riders are advised to exercise caution in passing through Croydon. Police traps are in operation where the ten-mile an hour limit exists

A police trap is also in operation on the Marlborough and St. Paul's Road, Bradford, and motor cyclists are warned not to exceed the prescribed speed limit in that district. Caution should be exercised, too, in Swansea and other parts of South Wales.

New Morgan Works.

The new works of the Morgan Motor Co. were opened on Thursday, October 16th, by a social evening and dance given by Mr. H. F. S. Morgan to his employees and some of their friends. The new works cover 38,400 sq. ft., and the total space now covered by the Morgan factory is over 50,000 sq. ft. Mr. Morgan is considering further extensions. For some years now, the Morgan has been popular in France, and arrangements are being made to produce the car in Paris for the French market only, under the direction of Messrs. Darmont and Badelogue, the French concessionnaires of the Morgan.

French Flying Kilometre Trials.

The Competitions Committee of the Automobile Club of France held flying kilometre speed trials on the road at Achères on the 16th inst. There were classes for motor bicycles of 250 c.c., 350 c.c., and 500 c.c., also a class for motor cycles and sidecars of 1,000 c.c. Péan, on a Peugeot, in the 500 c.c. class, made the fastest time in his outward journey, viz., 30s., which equals a speed of about 74½ m.p.h. As in our own flying kilometre trials on the road, competitors had to ride the distance of one kilometre in both directions, the average time of the two journeys being the recorded time. The results were:

250 c.c.—Alcyon I., outward 51⅕s., homeward 68⅘s., average 60s.; speed=37½ m.p.h.

350 c.c.—Alcyon III., outward 33⅗s., homeward 37⅕s., average 35⅘s.; speed=63½ m.p.h. Alcyon II., outward 34⅖s., homeward 37⅖s., average 36s.; speed=62 m.p.h.

500 c.c.—Peugeot (Péan), outward 30s., homeward 34s., average 32s.; speed=70 m.p.h.

Sidecars 1,000 c.c.—Harley-Davidson, outward 46⅘s., homeward 48⅘s., average 47⅗s.; speed=47¼ m.p.h.

Col. Holden's electrical timing device was used, and members of the A.C.F. Competitions Committee acted as officials.

Olympia Rendezvous.

At a recent meeting held by a few of the members of the late Third Army Headquarters D.R. Section, it was decided to visit the motor car show, Olympia, on the evening of Wednesday, November 12th, when it is hoped that other D.R.'s who were connected with or ran to them whilst in France will make an effort to be present for the purpose of meeting old comrades.

Spanish Road Race.

A road race, which carries with it the title of championship of Spain, took place on the 12th inst., over a distance of 404 kilometres = 250 miles. The winner rode an Indian, and completed the distance in 5h. 58m. 50s., which is equal to an average speed of nearly 42 m.p.h.

The second man, also on an Indian, averaged 38½ m.p.h.; and the third man, on a Motosacoche, 34¼ m.p.h.

In addition to the motor bicycle championship event there was also a sidecar championship over a distance of 264 kilometres = 164 miles.

Indian riders were first, second, and third in this event. The fourth man to finish rode a Motosacoche. The winner's time equals an average speed of 40½ m.p.h., which is remarkably good in comparison with the solo speed even when the shorter course is taken into consideration.

Special Features.

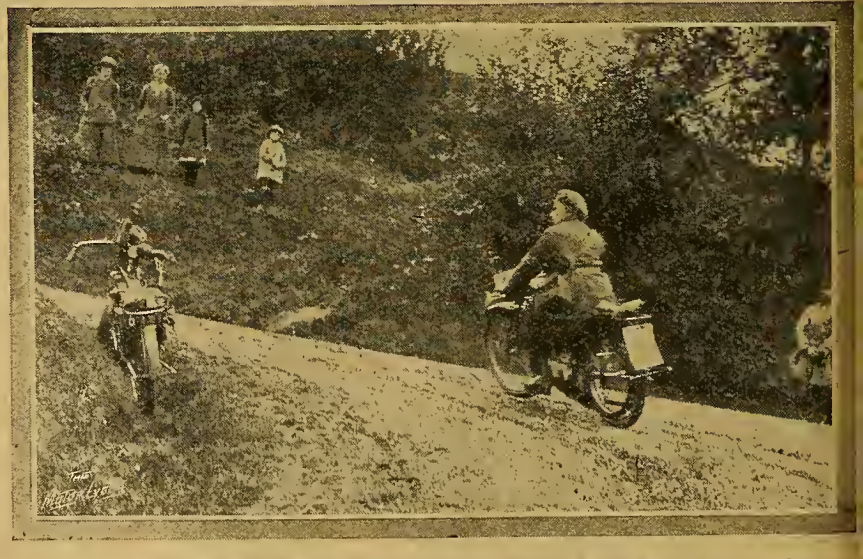
A NEW THREE-WHEELED RUNABOUT.
OVERSEAS NOTES.
THE RELIANCE CUP TRIAL.

Spare Parts for Motorists.

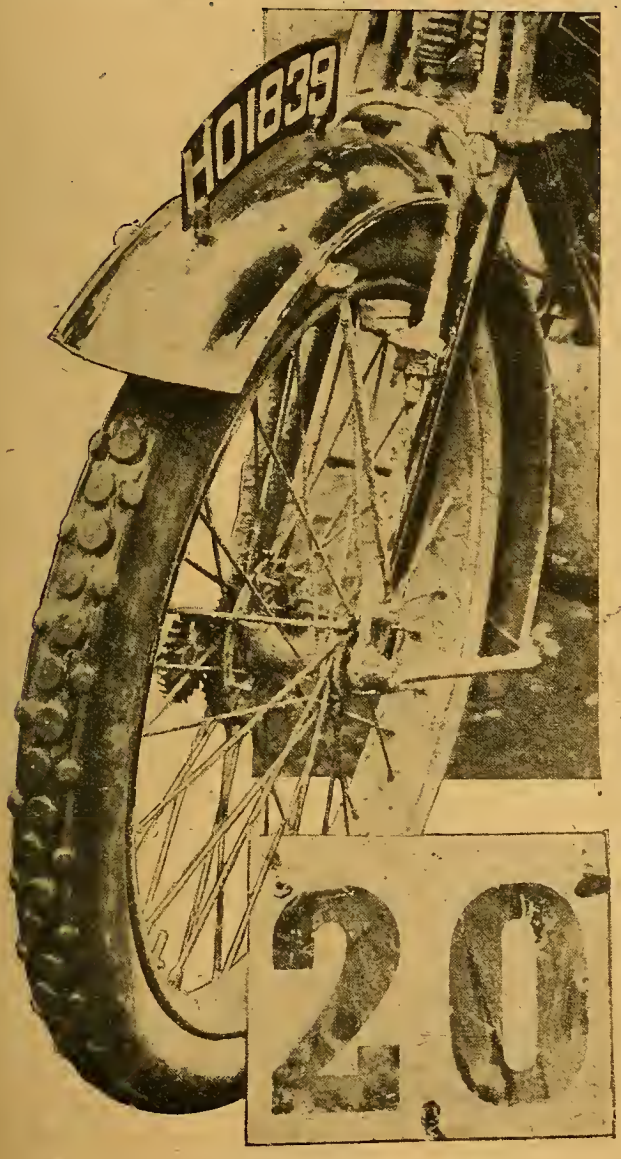
Motorists are experiencing considerable difficulties in obtaining spare parts, for the lack of which their vehicles are unusable. Some manufacturers have practically no stocks of spare parts, while others are still able to supply. The finding of a spare part by a motorist is a task calling for the expenditure of much time and patience.

Motorists requiring spare parts are strongly advised, if they are members of the Automobile Association, to communicate with the nearest of the twenty A.A. branch offices distributed over the country. During the past few weeks, as shown by letters in our correspondence columns, several members have been assisted by the Birmingham A.A. office, which has in some cases received requests for spare parts, and sent them to members on the same day. Where the required parts are not available, members are advised of the most economical method for getting them specially made.

Members residing in the Metropolitan area should communicate their requirements to the A.A and M.U. Engineering Department, Fanum House, Whitcomb Street, London, W.C.2.



B. Kershaw making a good ascent of Farlow Bank on a J.A.P.-engined 2¾ h.p. Verus. He was one of the two survivors in the recent "captain's run" of the South Birmingham M.C.C.



LOOK AT THIS PHOTOGRAPH!

THE A.C.U. TRIALS.

WHEN Dunlop rubber studded motor cycle covers are issued from the Company's works there appears in the centre of each individual stud a tiny "pip" of rubber: this is called a mould mark.

Look at this photograph. The tyre has just been through the whole of the Six Days' Trials, under the most severe conditions, and the machine to which it is fitted has secured for its owner a Silver Medal.

And the mould marks are as plainly visible as when the tyre left the works!

Taken in conjunction with the Trial results, which showed 63·63 per cent. of Gold Medallists on Dunlops, is anything more required to prove that the wearing quality of Dunlop rubber studded motor cycle covers is *superlative?*

Dunlop

DUNLOP

RUBBER CO., LTD.,

Founders of the Pneumatic Tyre Industry,
Para Mills, Aston Cross, BIRMINGHAM.

LONDON: 146, Clerkenwell Road, E.C.1.
Telephone - - 5375 & 5376 Holborn.

TRADE MARK.

C

The CLYNO 1,800 Mile Trial

July 24th. Owing to a somewhat late start from Carrbridge, occasioned by our meeting one or two Scottish Trial riders, who had retired from the contest, we did not arrive at Lairg until 4 o'clock in the afternoon. After having had tea and engaged rooms for the night, we decided to tackle the journey to Durness and back in the evening.

We left Lairg Hotel at 5.30 and arrived at Aultnaharra without incident. But from here a positive nightmare awaited us. At Benhope we tried to cross the end of the Loch and to get on the old mountain road which leads to Erribol. The water, however, was too deep, and we were compelled to go round Loch Hope and Loch Erribol. The ascent of Erribol was accomplished by all of us easily, two of the machines running on second gear.

We then rode to Durness and Rhiconich in the twilight.

Never shall we forget the journey back from Rhiconich, via Laxford Bridge. The roads were appalling and the corners most dangerous. This was the only portion of the whole trial over which we did not average 20 miles an hour.

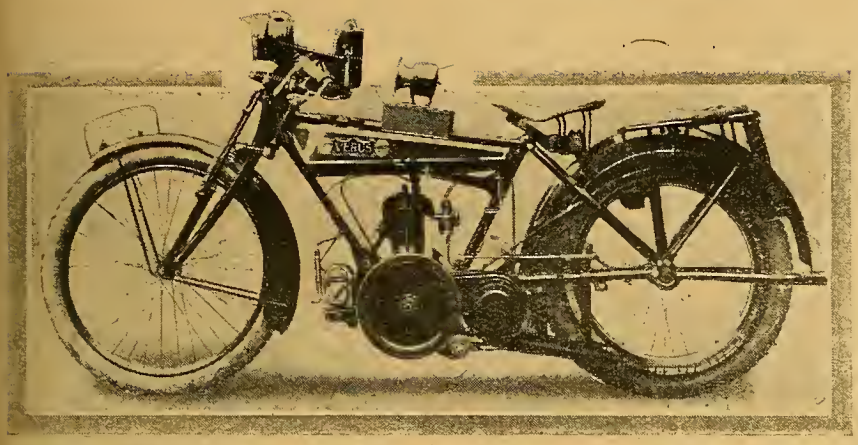
But all's well that ends well. We arrived back at Lairg at 2 a.m., all three machines having run splendidly and having done no less than 288 miles in the day.

We will talk about our Fifth Stage in the issue of Nov. 6th.

CLYNO ENGINEERING CO., LTD.,
PELHAM STREET, WOLVERHAMPTON.

546A

In answering this advertisement it is desirable to mention "The Motor Cycle."



The Blackburne-engined Verus—a new model which promises to be very popular next year. Note the metal tool box on the top tube. We hope to deal more fully with this make in the next issue.

A T.T. Winner Wanted.

A firm of high repute is requiring good riders for the next T.T. Race. Amongst demobilised despatch riders there are, no doubt, many qualified riders who are capable of putting up a good showing in this strenuous race. If any motor cyclist, however, with army experience or not, has the necessary credentials which might qualify him as a likely candidate, and will send full details of his experience to the Editor, his letter will be forwarded to the firm in question.

A Sound Opinion.

In adjudging a tricycle propelled by an Anto-wheel to be a motor car, the Lord Chief Justice said he was bound by definitions in the Statntes to regard a tricycle propelled by an Auto-wheel as a motor car, "though," he added, "if I had to decide for myself I should think it would be perfectly absnrd to call such a machine a motor car. In deciding that it is a motor car I cannot help myself. If I could, I would. This decision may raise other difficulties which have been pointed out to us by the respondent. He will have to carry side lights, and a number plate in front, and a number of things which are properly applicable to a motor car, but which by no effort of imagination can be considered appropriate to a carriage of this description."

Liege Race Meeting.

A race meeting organised by the Liège Motor Club took place on the 12th inst. Points were allotted for speed and regularity. The results of the various classes were:

250 c.c.—1, Pirlot (Clevcland); 2, Muller (Velocette); 3, de Weiz (Cleveland).

350 c.c.—1, Praillot (Baby Trinmph); 2, Feyens (Clyno two-stroke).

500 c.c.—1, Speedwell (Rudge); 2, Dehaybe (Sarolea); 3, Verlinden (Sarolea).

750 c.c.—1, Antoine (Triumph); 2, Vanderhugen (Triumph); 3, Lejeune (Triumph)

1,000 c.c.—1, Preudhomme (Harley-Davidson); 2, Vandewiele (Indian); 3, X— (Indian).

Sidecars 500 c.c.—Havart (Sarolea).

Sidecars 750 c.c.—Dandois (James).

Sidecars 1,000 c.c.—1, Springuel (Harley-Davidson); 2, Werder (Harley-Davidson); 3, Ummels (Excelsior).

Sidecars over 1,000 c.c.—Heinnerts (Reading-Standard).

Removing Indian Cylinders.

On page 467 of last week's issue of *The Motor Cycle* we mentioned, in reply to a reader's qnery, that the cylinders of a 1915 7-9 h.p. Indian motor cycle could not be removed without taking the engine from the frame. Several readers advise us that this is not the case, and that they have regularly removed theirs for the purpose of decarbonising and similar purposes.

We are, of course, bound to stand corrected, and our reply to the reader who sought our advice should have been put in this form: "The cylinders *can* be removed without dismantling the engine from the frame, but we do not recommend the practice to the average amateur."

It will be remembered that the Indian cylinders are held by long studs screwed into the crank case and passing out to the top of the detachable heads, which are secured by nuts. To remove the cylinder barrels it is necessary to unscrew one of these studs, and as these have no provision in the shape of hexagons or flats for spanner grip, and as they screw directly into the crank case, this practice is not desirable if carried ont nnskilfully. For well-known reasons, it is considered bad engineering practice frequently to remove steel studs which are screwed into aluminium, unless a special form of thread is used as in the Indian. Moreover, in the case described, the temptation for the amateur without proper workshop equipment or methods is to make barbarous use of some such tool as a plumber's pipe grip, often with disastrous results to the threads of the studs.

Temptation.

A novel attempt to obtain early delivery of a new model was recently resorted to by a customer of the Colmore Depôt. He insisted on paying a premium by enclosing a cheque for £10 for the Dunstan Home for Blinded Soldiers. Mr. Paskell, of the Colmore Depôt, could not, of course, resist so subtle a temptation to aid so worthy a cause, and it certainly offers one solution of the difficulty in taking premiums.

The Scooter Trial Postponed.

Owing to the present abnormal difficulties which are being experienced by the manufacturers of motor scooters, and in order that they shall not be unduly harassed, the Auto-Cycle Union has decided to postpone the proposed motor scooter trial for a month or two. There will be three classes of scooters qualified by weight only, viz., under 60 lb. (original tentative A.C.U. definition), under 85 lb., and unlimited. Further particulars concerning the trial will be published shortly.

THE MOTOR CYCLE

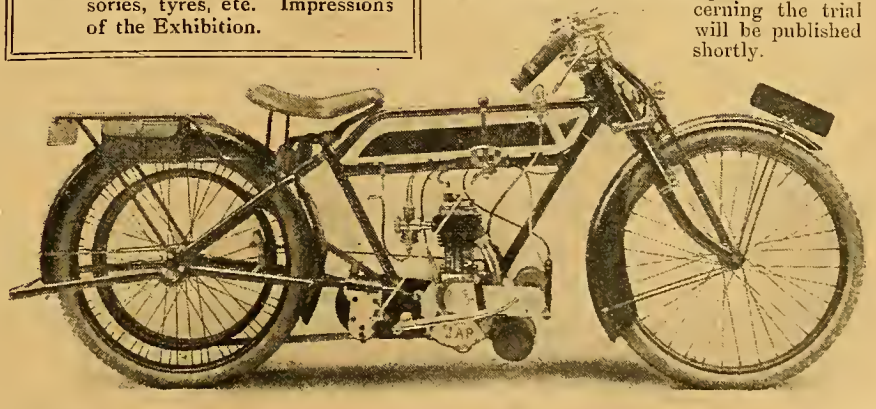
SPECIAL OLYMPIA SHOW NUMBERS.

Nov. 13th.—The feature of this issue will be a comprehensive survey of passenger machines.

Nov. 20th.—This issue will contain a forecast of the Exhibition, particulars of new models, also plan of the Show and list of exhibitors. This number will be on sale at the Show.

Nov. 27th.—Full Show report. This number will also be on sale at the Show.

Dec. 4th.—Review of sidecars, accessories, tyres, etc. Impressions of the Exhibition.



The new 2¾ h.p. Dot-Jap fitted with an Albion two-speed gear and clutch. Chain and belt drive is adopted on this model, the machine being finished in all red. A full description of the new Dot model will be given next week.

THE 1920 AMAC CARBURETTERS.

Simplicity of Construction and Control. One or Two Levers.

AMAC carburetters have been very popular in the past, and deservedly so. This fact, combined with the good reports we have heard of the new single-lever patterns should make a description of the new models more than usually interesting. The principle upon which the carburetters work is the same in each case, though the constructional details vary to some extent. We propose first to describe a model which is likely

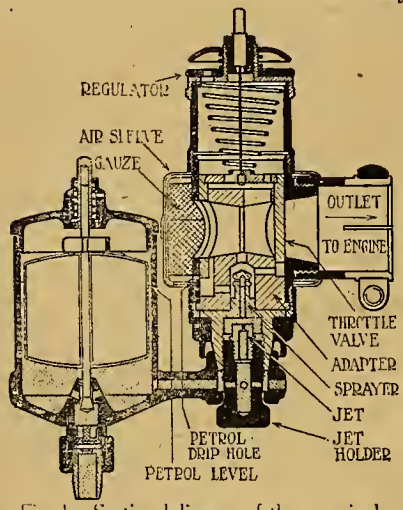


Fig. 1.—Sectional diagram of the new single lever Amac Y carburetter.

to become very popular amongst most cyclists, viz., a single-lever carburetter suitable for horizontal inlet pipes.

The Y Model.

Let us follow the course of the petrol in its passage from the tank to the engine. The float chamber is that already familiar to Amac users, having bottom feed and an inverted needle. From the float chamber the fuel passes through the jet, which in the Amac is distinct from the sprayer, and simply controls the amount of fuel fed to the engine. Above the jet is placed the sprayer, from which the fuel issues in a finely atomised condition through small horizontal holes near the top. Previous to this, it has been in a liquid state, but it now encounters a rapidly moving stream of air, which, traversing through the small passages which surround the sprayer, vaporises the fuel and carries it to the engine.

The throttle has a V-shaped slot, which first uncovers this passage, and provides a small amount of rich mixture, so useful for starting and smooth slow running. The main air orifice is now practically open, but air has access to the engine only through the small passages mentioned. The length of the V slot gives a certain amount of control before the main body of the carburetter begins to open. When this happens the main air is partly cut off by the throttle barrel, which rises across it. This causes the suction on the main vapour hole situated just above the sprayer, and draws up petrol vapour where air had previously been descending into the small passage, and we have a moderately rich mixture for ordinary running. Beyond this point air and throttle open together until at full opening the air is drawn through a venturi tube clear of all obstruction and carburetted on its way both through the main and small vapour passages.

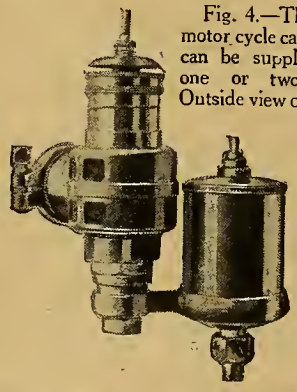


Fig. 4.—The Amac motor cycle carburetter can be supplied with one or two levers. Outside view of fig. 1.

The object of the regulator at the top of the carburetter is to assist in the choice of the most suitable jet, and to give an adjustment for temperature, a single hole being suitable for cold weather and three or more holes when the weather is hot. The positions are numbered 0 to 5. If numbers 2, 3, or 4 give good results the jet can be taken to be correct. Theoretically No. 3 is preferable. If fewer holes are required for good running the jet is too small, and, similarly, more holes suggest too large a jet. Different adapters can be fitted. A larger adapter is suitable for racing purposes, but for normal running it should be as small as is consistent with good results, a suitable jet being fitted. The same carburetter can also be supplied with two levers, the extra air valve then forming an adjustable choke, but the single lever is recommended. These carburetters are known as the Y models.

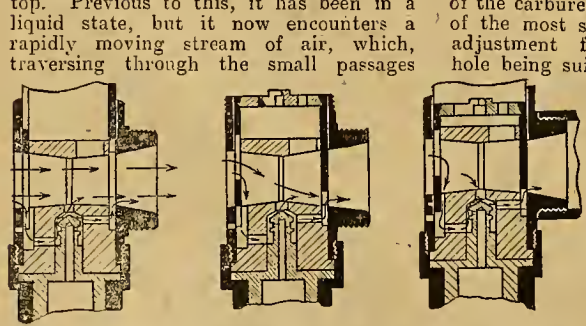


Fig. 2.—Sectional diagrams showing the flow of air and mixture at varying throttle openings. On left, full throttle and uninterrupted passage through venturi tube; in centre, moderate throttle opening, air partly cut off; on right, throttle just open for starting and slow running, air passing through small passages around the sprayers.

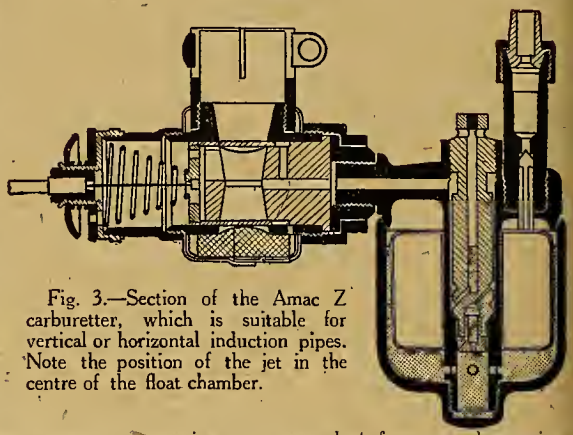


Fig. 3.—Section of the Amac Z carburetter, which is suitable for vertical or horizontal induction pipes. Note the position of the jet in the centre of the float chamber.

The Z Model.

A second pattern is also manufactured, again with one or two levers, and known as the Z model. These are suitable for both horizontal and vertical inlet pipes. In these, the jet holder is situated in the centre of the float chamber, into which petrol passes through a top feed, the flow being controlled by an annular float. The jet holder has a passage down its centre, communicating with the atmosphere, and down this air is drawn by the suction of the engine into an annular groove, when it meets and atomises the petrol passing through the jet. The mixture then passes to the engine through passages similar to, but rather longer than, those contained in the Y models. From this point the action of both models is identical. A distinct advantage of this model is that the jet holder can be removed for the purpose of changing a jet without disturbing the carburetter in any way or spilling a drop of petrol.

The Amac control giving a straight pull on the wires has, naturally, been retained, and this prevents breakage of the wires. The lever can be placed on either side of the handle-bars, and is made to open either way, as the rider may desire.

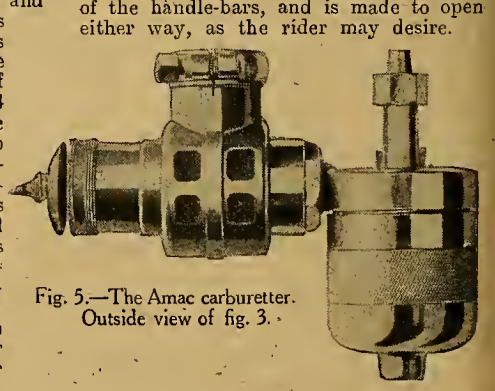


Fig. 5.—The Amac carburetter. Outside view of fig. 3.

AN AUTUMN TRIAL IN WALES.

Liverpool Motor Club's Successful One Day Trial.

A TRIAL in Wales, under the most favourable climatic conditions, is generally a strenuous affair, but a trial in the late autumn, including mountain tracks and through watersplashes, which after heavy rain become deep and swift torrents, is an event to test the durability of the modern motor cycle and the sporting spirit of the most hardened competition rider. Such a trial was successfully run off last Saturday, by the Liverpool M.C., a body enjoying a high reputation as organisers of sporting events.

The 115 Mile Course.

Starting from Birkenhead, the course led to Northop, near which place an acceleration test was held on a slight grade, the competitors being brought to a stop and restarted. They were timed over a stretch of 120 yards by Mr. T. Silver, who is an A.C.U. timekeeper.

The finish of the acceleration test was the commencement of the brake test, competitors being required to pull up in a given distance, in which the performances were consistently good. We rather suspect that this test was included merely to ensure that all the competing machines had brakes adequate for the severe descents they were called upon to traverse later in the day. If such were the case, the idea was good, as without powerful brakes, some of the hills would have been dangerous.

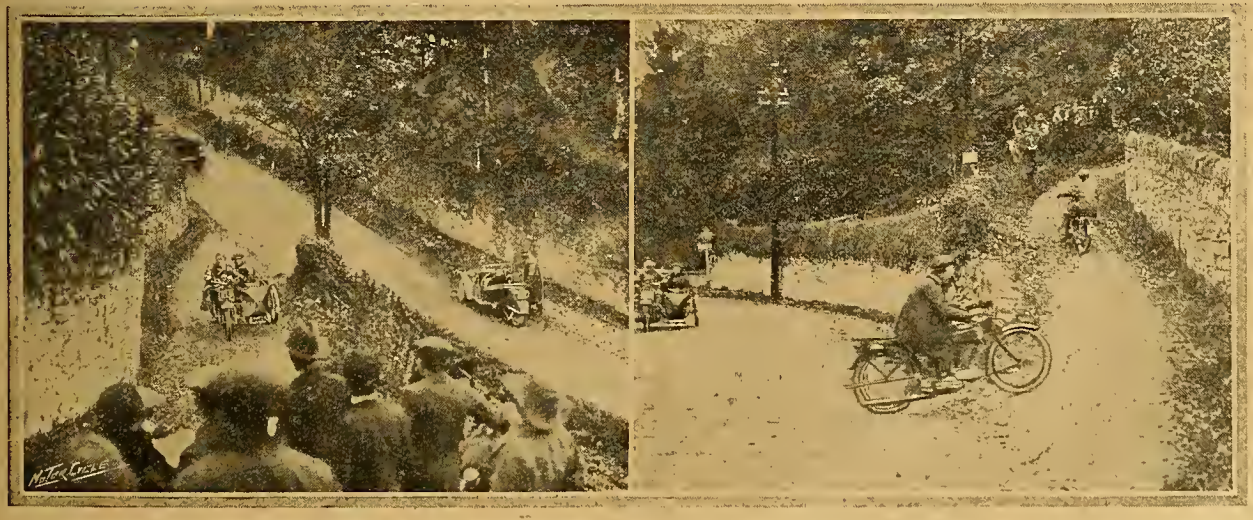
The next ten miles were through narrow lanes ending in a climb into Holywell, out of which town the competitors were taken up Pen-y-Ball, which was in a very rough condition and accounted for quite a number of failures. Then came grass tracks, greasy hills, and deep streams to ford, a trying stretch through Ysciefiog, Nannerch, Cilcain, to the lunch stop at Ruthin.

H. Poole (4 A.J.S.) and N. Svanso (8 Morgan) on Pen-y-Ball.

The fords proved to be deeper than the officials anticipated, for the heavy rains the day before had turned rippling brooks into roaring torrents that came well over the wheel centres. It was an unexpected feature of the trial, and generally the machines performed most creditably. Several competitors stopped in midstream, two machines got entangled, and at least one other fell over and was completely submerged. There were two of these fords, and although most of the competitors got a thorough wetting, on the whole the adventures seemed to be keenly enjoyed. The feature, however, did not discover many weaknesses in magneto design, although the riders of the Brough machines, with their magnetos placed high in the frame, were envied by many who suffered anxiety on this account. One could not expect the chain-cum-belt transmissions to be immune from slip under such conditions.

Probably the descents caused more real anxiety than the ascents, for the slippery state of some of the hills made braking a trying task. Both solo and sidecar machines slithered down crabwise, and on one of the descents Greaves (Morgan), in trying to hold his machine behind two slowly-descending solo riders, skidded right round until he was facing up the hill.

At Ruthin there were many experiences to relate over lunch while the officials examined the seals on the petrol fillers and replenished the tanks, for each man's fuel was measured out to him, a petrol con-



Sun Trevor—the *piece de resistance* of the trial. (Left) Looking down the lower portion of the hill at the hairpin. F. W. Giles (6 A.J.S.) essays the climb. (Right) E. Williams (4 A.J.S.) followed by T. Weaver (2¾ Verus).

J. H. Place (8 Dot sc.) breaks a chain on Sun Trevor. Note the width and the surface of the hill.

sumption test being included in the trial, the results of which should be most interesting when they have been worked out by the committee. This was included to encourage economy in fuel, and it is a pity that it is not made a regular feature of all trials. As an example of what can be done with a sidecar machine, even under the trying conditions of a trial, we may cite V. E. Horsman's 4 h.p. Norton machine, which covered the course on a consumption of 83½ m.p.g.

Sun Trevor Hill.

From Ruthin the course lay over twenty miles of lanes to Llangollen, a mile beyond which town was the *pièce de résistance* of the trial. This was a narrow twisting hill from the Wrexham road to the Horse Shoe Pass, known locally as World's End, but figuring on certain maps as Sun Trevor. The gradient was severe, and there was a sharp right-hand hairpin bend at the steepest part, while the surface was several inches deep in mud. In the latter respect we were reminded of Grindon Hill in the 1914 Six Days Trial, while the scene at the bottom was reminiscent of that at the foot of Litton Slack, for an unarranged control was in operation, and the competitors sent up—mostly pushed up, by the way—one at a time. It was merely a question of road grip—power, at no time, was lacking, and it seemed absurd to include such a hill in a trial. However, in fairness to the organisers, it should be stated that the hill was in an unusually bad state owing to Friday's rain.

Following this hill came ten miles of mountain tracks through farmyards and round several sharp hairpins to Llandegla, whence the competitors had easier going through Hope and Queensferry back to Birkenhead.

The finish was in the dark, and, without doubt, many of the riders made very fast times, as several succeeded in making up the time lost at the foot of Sun Trevor. Kuhn (Levis) was one of these, but it is questionable whether it was necessary, as the officials are bound to take into account the impromptu control, where few riders were caused to lose less than half an hour at official instigation.

Altogether it was a good trial, well arranged and carried through in the sporting spirit which characterises the Liverpool Club, and severe as it was, there were surprisingly few retirements.

The Acceleration Test.

The following are the times of competitors in the 120 yards acceleration test from a standing start. Those marked with an asterisk lost three marks for failing to attain the minimum speed allowed, *i.e.*, 18 m.p.h. solo machines, 12 m.p.h. sidecars.

	Time.
S. W. Phillpott (5 Brough sc.)	11⅕s.
V. E. Horsman (4 Norton sc.)	11⅗s.
J. D. McLean (7-9 Harley-Davidson sc.)	17⅖s.
W. H. Kelly (7 Indian sc.)	12⅖s.
W. Edwards (4¼ B.S.A. sc.)	18s.
E. A. Eastwood (4 Douglas sc.)	14⅘s.
J. W. Wills (10 Henderson)	10⅖s.
J. M. Parry Jones (5-6 Rover sc.)	14⅘s.
W. Heath (6 A.J.S. sc.)	15s.
J. H. Place (8 Dot sc.)	13⅗s.
F. W. Giles (6 A.J.S. sc.)	13⅗s.
J. V. Williams (6 A.J.S. sc.)	18⅗s.
Stanley Parker (8 Enfield sc.)	13⅗s.
G. S. Boston (8 Sunbeam sc.)	15s.
C. Collins (6 A.J.S. sc.)	17⅘s.
H. B. Denley (10 Morgan)	15s.
R. Arnold (6 A.J.S. sc.)	17⅘s.
E. A. Colliver (7 Indian sc.)	13⅘s.
W. R. Haggas (8 New Imperial sc.)	16s.
O. Wade (6 A.J.S. sc.)	15s.
H. Reed (8 Dot sc.)	15s.
N. Svanso (8 Morgan)	11⅘s.
Noel H. Brown (7-9 Indian sc.)	12⅘s.
H. Marston (6 A.J.S. sc.)	16⅗s.
R. A. Shacklady (4¼ B.S.A. sc.)	21s.
C. R. West (6 A.J.S. sc.)	17s.
H. Greaves (10 Morgan)	16⅗s.
R. H. W. Brown (6 A.J.S. sc.)	18s.
W. Cottle (4¼ A.J.S.)	*20s.
L. Reynolds (5 Brough)	11⅘s.
W. Ratcliffe (3½ Brough)	10⅖s.
E. Williams (4 A.J.S.)	*12⅘s.
T. Weaver (2¾ Verus)	*15s.
A. Moses (2¾ A.J.S.)	*16s.
R. E. Pugh (2½ Levis)	*14⅘s.
H. T. Williams (3½ Lea-Francis)	*17⅘s.
H. Poole (4 A.J.S.)	*12⅘s.
S. Parker (10 Henderson)	11⅘s.
E. L. Boston (3½ Sunbeam)	11s.
R. Roberts (4¼ B.S.A.)	*13s.
B. Kershaw (2¾ Verus)	*13⅗s.
R. R. Coes (7-9 Indian)	11s.
Geo. Wray (3½ Triumph)	*16s.
H. E. Holden (2½ Metro-Tyler)	*20s.
A. W. Brittain (3½ Sunbeam)	11s.
L. T. Gilson (4-5 Zenith)	12⅘s.
T. Highfield (5 Brough)	*13s.
M. Davies (3½ Sunbeam)	*14⅘s.
W. B. Gibb (2¾ Douglas)	*12⅘s.
R. R. Bromley (4 Triumph)	12s.
B. W. Edmondson (3½ J.A.P.)	*15⅘s.
J. A. Fox (4¼ B.S.A.)	*16s.
R. Charlesworth (5 Zenith)	12⅘s.
H. Taylor (2½ British Excelsior)	*15s.
T. B. G. Vale (4 Norton)	*12⅘s.
J. H. Green (7-9 Excelsior)	12s.
H. Pattinson (4 Triumph)	12⅘s.
G. E. Kuhn (2½ Levis)	12s.
G. Brough (5 Brough)	11⅘s.
R. Storey (7-9 Excelsior)	11⅘s.
F. Marshall (3½ Sunbeam)	10⅕s.
J. A. Newman (3½ Sunbeam)	*12⅘s.
P. V. Morris (3½ Sunbeam)	*13s.
F. W. Ratcliffe (5 Brough)	*15⅘s.
E. Ladefoged (3½ Sunbeam)	12s.
N. C. Sclater (10 Henderson)	*13⅘s.
—. Eadington (3½ Sunbeam)	*13s.

Observations on Pen-y-Ball.

The following riders made fast ascents: Noel Brown (7-9 Indian), W. B. Gibb (2¾ Douglas), R. Storey (7 Excelsior), J. A. Fox (4¼ B.S.A.), J. H. Green (7 Excelsior), Geo. Brough (5 Brough), R. Charlesworth (5 Zenith), and H. Pattinson (4 Triumph). Of those who climbed steadily we noticed G. Kuhn (Levis), P. V. Morris (3½ Sunbeam), F. W. Ratcliffe (5 Brough), R. R. Bromley (4 Triumph), T. B. G. Vale (4 Norton), H. Poole (4 A.J.S.), E. L. Booton (3½ Sunbeam), T. Highfield (5 Brough), R. R. Coes (7 Indian), L. T. Gibson (4-5 Zenith), M. Davies (3½ Sunbeam), N. C. Sclater (10 Henderson), and —. Eadington (3½ Sunbeam). The sidecars on the whole did well, the few exceptions including R. A. Shacklady (4¼ B.S.A. sc.), who apparently was handicapped by the loss of his arm, J. D. McClean (7-9 Harley-Davidson sc.), J. E. Duffey (6 Humber sc.), and C. R. West (6 A.J.S. sc.), who turned over on the top bend.

Performances on Sun Trevor.

One of the first sidecars to climb Sun Trevor was V. E. Horsman's 4 h.p. Norton, and he made a clean ascent. He

F. W. Irving (4 Triumph) and Geo. Brough (5 Brough) on Pen-y-Ball.

An Autumn Trial in Wales.—

proved to be one of the few exceptions, however, and to mention all passenger machines would be a repetition of words: "Stopped—wheel slip." Several made good restarts after being assisted over the patch of loose earth and mud which brought so many to a standstill with smoking tyres. Among these we noticed W. Edwards (4¼ B.S.A. sc.). F. W. Giles (6 A.J.S. sc.) and H. B. Denley (10 Morgan) both did well, as did the following solo riders: W. Ratcliffe (3½ Brough), B. Kershaw (2¾ Verus), Geo. Wray (3½ Triumph), H Pattinson (4 Triumph), Geo. Brough (5 Brough), T. W. Ratcliffe (5 Brough), J. W. Wills (10 Henderson), S. Parker (10 Henderson), J A. Newman (3½ Sunbeam), and E. Ladefoged (3½ Sunbeam). The steadiest ascents were made by E. J. Boston and F. Marshall (3½ Sunbeam), while the fast and clean climbs by G. Kuhn (2½ Levis), R. Storey (7 Excelsior), and J. H. Green (7 Excelsior) were bordering upon the sensational.

Final Examination.

We discussed the question of cleanliness with F. A. P. Zacharias, the judge, who examined each machine for condition, and he told us that on the whole the machines showed little trace of the hard day's gruelling, and noticed specially the absence of oil about the majority of engines. The Brough machines particularly were mentioned by him, and on examining the crank cases of these flat twin engines we found no trace of oil at any point.

The American Excelsior and Henderson machines were brand new, and had only been taken out of their crates the day before, and on this account the riders had perhaps been over liberal with oil.

Of the eighty entrants, seventy-one started, of which number sixty-one finished. C. R. West (6 A.J.S. sc.) and R. A. Shacklady (4¼ B.S.A. sc.) turned over, L. Reynolds (5 Brough) fell after collision with a dog, and one or two found the course too severe for their machines.

The official results had not been worked out at the time of going to press, but probably they will be announced in next week's issue of *The Motor Cycle*.

CLUB NEWS.

Future Events.

Oct. 31.—Meeting of Birmingham Club Officials to discuss Question of Amalgamation, Chamber of Commerce, Birmingham.
NOV. 1.—SOUTH BIRMINGHAM M.C.C. OPEN TRIAL FOR PALMER CUP.
Nov. 2.—Reading and District M.C. and L.C.C. Run to Crookham Common.
Nov. 1.—Edinburgh and District M.C. Trial for Amateurs for Palmer Trophy.
Nov. 8.—Birmingham M.C.C. Closing Run.
Nov. 8.—South Birmingham M.C.C. Trial for Sangster Cup.
Nov. 9.—Reading and District M.C. and L.C.C. Run to Wallingford.
Nov. 13.—N.M.C.F.U., Leeds. Annual General Meeting.
Nov. 21.—N.M.C.F.U., Leeds. Whist Drive and Dance.
Nov. 29.—N.M.C.F.U., Coventry. Run to Olympia Show.

Redditch and District M.C.C.

The closing competition of the Redditch and District M.C.C. took the form of a fast hill climb, and attracted a considerable amount of interest, the competition in the Expert classes being particularly keen.

Three classes were run off with the following results (A.C.U. formula):

EXPERT SOLO CLASS.

1.	F. Bicknell (2¼ Enfield)	36.2
2.	S. Bright (2¼ Enfield)	37
3.	H. Hanks (2¾ Enfield)	39.4

EXPERT SIDECAR CLASS.

1	F. W. Viles (4¼ B.S.A.)	35
2.	D. Guise (8 Enfield)	60.4
3.	H. Spencer (8 Enfield)	80.5

GENERAL SIDECAR CLASS.

1.	H. Garner (4¼ B.S.A.)	51.5
2.	J. Sheppard (6 Enfield)	68
3.	H. Herbert (4¼ B.S.A.)	78.2

The prize for fastest time was taken by D. Guise (8 Enfield solo), 35⅕s. The fastest ascent in the sidecar class was made by F. W. Viles (4¼ B.S.A.), whose time was 44s. The formula used accounts for the disparity of results. Small engines easily win.

On Friday evening last the Redditch Club held the annual dinner at the Unicorn Hotel, Redditch. The club, like so many other similar institutions, had to suspend its activities during the war, but it has had a remarkably spirited and successful revival, its strength increased by its period of quiescence, and now shows the promise of doing a lot of useful work. It is one of the most strongly established clubs in the Midlands, the members and officials evincing a keenness of interest in affairs which makes for further progress. The competitions promoted during the season have been well arranged and conducted. At the dinner there were several present who are prominently connected with the sport and the trade, and the whole proceedings were of a most enjoyable character.

Loughborough M.C.C.

As the outcome of a meeting held at the Bull's Head Hotel, Loughborough, last week, a local motor cycle club, affiliated to the A.C.U., was formed.

A temporary committee was elected as follows: President, Mr. R. S. Clifford, jun.; hon. secretary, Mr. K. S. Topping (8 h.p. Sunbeam); committee, Messrs. N. Dowland (8 h.p. Royal Enfield), Ashcroft (3½ h.p. Rudge), Caldwell (4 h.p. Campion), Chambers (4¼ h.p. B.S.A.), Pash (6 Rex), and Amey (3½ Brough twin).

It was decided to fix an annual inclusive subscription of 12s. 6d. For the first run of the season, it was intended to join the members of the Ilkeston club in their outing to Crick. The Ilkeston club, however, wired to the effect that it had cancelled its run, and the Loughborough members accordingly made the excursion on their own. The weather was ideal, and a very enjoyable day was spent. The features of the afternoon were the climbing powers of Dowland's 8 h.p. Enfield combination and "a certain liveliness" about Byles's 4 h.p. Hazlewood-Jap twin. A slipping clutch, which was soon rectified, was the only trouble experienced.

Essex M.C.

The committee have pleasure in announcing that they have arranged with Mr. Douglas Leechman, barrister-at-law, and the well-known authority on motors, to lecture at the Royal Automobile Club (Associates' Room) upon the 1919 Olympia Motor Cycle Show. The provisional date will be Thursday, December 4th, but definite notice will be issued later.

All motor cyclists, whether members of the club or not, will be heartily welcomed, and as so many novelties will doubtless be shown, a very interesting evening will be spent.

In pre-war years the Essex Club always organised a similar meeting, when motor cyclists had the opportunity of hearing various points discussed by many of the best known riders in the trade.

Novices will doubtless get many hints, which will help them to decide what machine to buy for 1920.

Edinburgh and District M.C.

It will be remembered that this club was to hold a trial on October 4th for the trophy presented by the Palmer Tyre, Ltd., and that the event had to be postponed on account of the railway strike. It has now been decided to hold the competition, which, by the way, is confined to genuine amateurs, on Saturday next, November 1st. The start is from Liberton car terminus, and the route is pretty much the same as that of the Sporting Half-day Trial, held in June, but, in addition, Lammerlaw Hill is to be included, and in the opinion of some who have tried it, this hill is just about as bad as some of the Six Days ones. The surface is terrible, consisting of ruts, boulders, heather, and grass, and the gradient is about 1 in 7. The hill is two miles long, and those who are lucky enough to get up, non-stop, hold a good chance of winning the twenty guinea prize. The Trials secretary is Mr. J. Watt Anderson, 6, Castle Terrace, Edinburgh. Entries close to-day, October 30th.

Bath and West of England M.C.

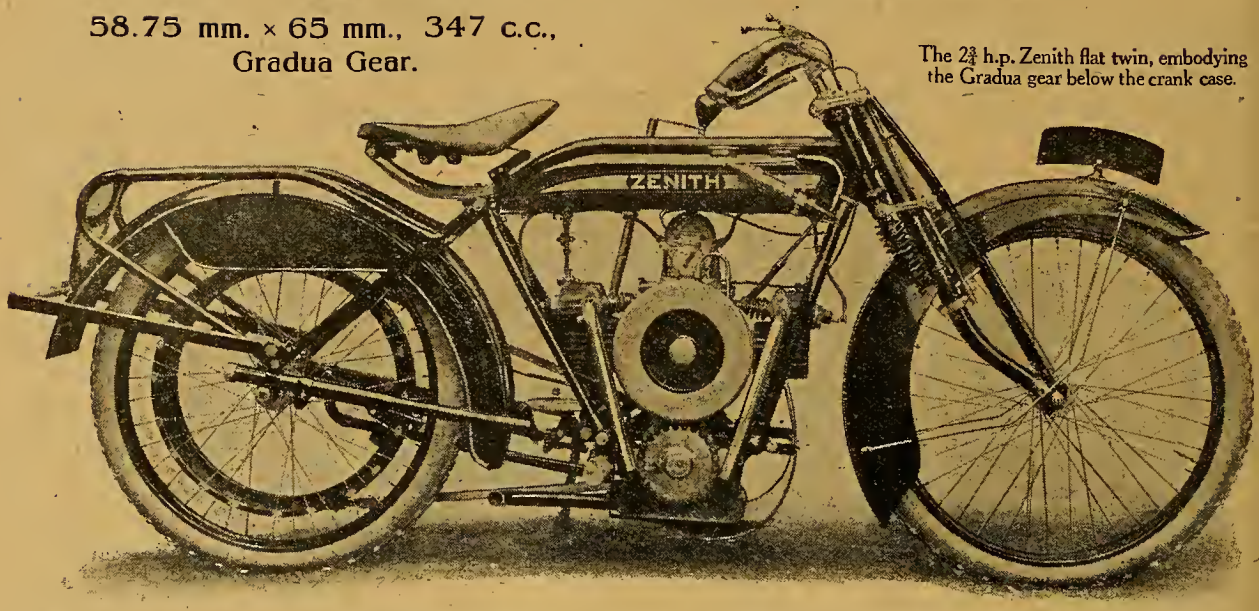
The competition by members of the Bath and West of England Motor Cycle Club for the Latimer Cup attracted twenty-two competitors, of whom the following is a list:

C. B. Newman (8 Zenith sc.)
A. Worsfold (2¾ Douglas)
W. W. Moore (4 Douglas sc.)
F. G. Ball (2¾ Douglas)
W. F. Baxter (4 Douglas sc.)
E. G. Fery (3½ Douglas)
F. Burchill (4 Douglas sc.)
E. Colmer (3½ Norton)
V. Smith (4 Norton sc.)
H. Walker (3½ Norton)
P. Whale (7-9 Harley-Davidson sc.)
C. Anstice (4 Douglas)
A. W. Horstmann (3½ Sunbeam sc.)
F. J. Jennings (2¾ Douglas)
H. G. Clarke (4 Douglas sc.)
R. J. Bennett (2¾ Douglas)
P. Bonnet (4 Douglas sc.)
L. C. Bird (2¾ Douglas)
P. F. Horstmann (2¾ Douglas)
E. C. Matthews (4 Blackburne)
A. S. Moon (3½ B.S.A.)
F. Tuplin (3½ Triumph)

The route taken covered an approximate distance of forty miles over some of the roughest country and hills in the district. The results have yet to be announced by the committee. It will be noticed that out of the twenty-two machines in the competition, thirteen were from the Douglas firm, three were Nortons, and one each Zenith, Harley-Davidson, Sunbeam, Blackburne, Triumph, and B.S.A.

A 2¾ h.p. FLAT TWIN ZENITH.

58.75 mm. × 65 mm., 347 c.c., Gradua Gear.



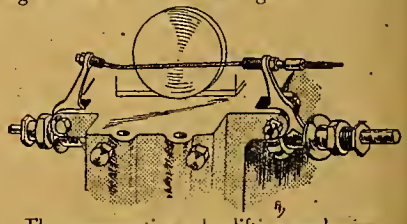
The 2¾ h.p. Zenith flat twin, embodying the Gradua gear below the crank case.

WE have known for a long time that Zenith Motors, Ltd., had a 2¾ h.p. flat twin on the stocks, and as early as May this year we had a short run on this attractive little solo mount, which behaved admirably. A study of its general arrangement reveals the fact that its designer, Mr. F. W. Barnes, has evolved an ideal motor bicycle of medium weight for the motor cyclist—young, middle-aged, or old—who needs a machine which is lively, comfortable, and flexible. As regards simplicity and efficacy, the Gradua gear is unassailable, and it is not surprising that it is adopted in this entirely new model. The manner in which the main Zenith features are retained, while the machine is adapted to accommodate the new horizontal opposed twin-cylinder engine, is extremely neat and ingenious. The new engine is remarkably well finished and of distinctly pleasing appearance, and follows standard practice throughout.

A Neat Power Unit.

The cylinders are clean castings, having the valves at an inclination so as to improve the design of the combustion space and to allow free circulation of air round the valve ports and between them and the cylinder. The tappets are of large dimensions, and have large heads which come in direct contact with the cams, which are solid with the camshaft, and are designed so as to give a rapid lift and closure of the valves and yet to allow the latter to work silently. Both the crank and camshafts run on Skefko self-aligning ball bearings. The engine is as well-finished internally as externally; all important parts, such as crankshaft journals, are hardened and ground, and the connecting rods, which are provided with split big ends, are machined all over. Lubrication is by splash, an ordinary hand pump being used. The oil pipe is connected to a union on the crank case, and the lubricant, after entering this, is directed into two channels, one leading into the crank case and the other into the front cylinder, a hole being drilled in the base of the latter which registers with the channel referred to above. This system secures an equal supply of oil to both cylinders.

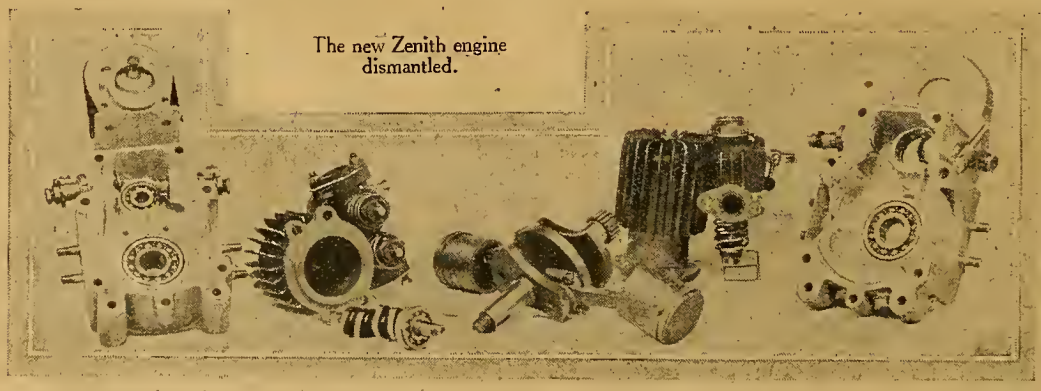
The frame of the new model is well worthy of comment, as the usual down tube and saddle tube are in duplicate so as to leave room for the cylinder heads. The engine is bolted to a cradle which rests on a short tubular frame member; beneath it is an aluminium casting holding the Skefko ball bearings in which the chain-driven countershaft runs, while below this is the rectangular silencer, out of which leads a short exit pipe.



The compensating valve-lifting mechanism on the Zenith flat twin

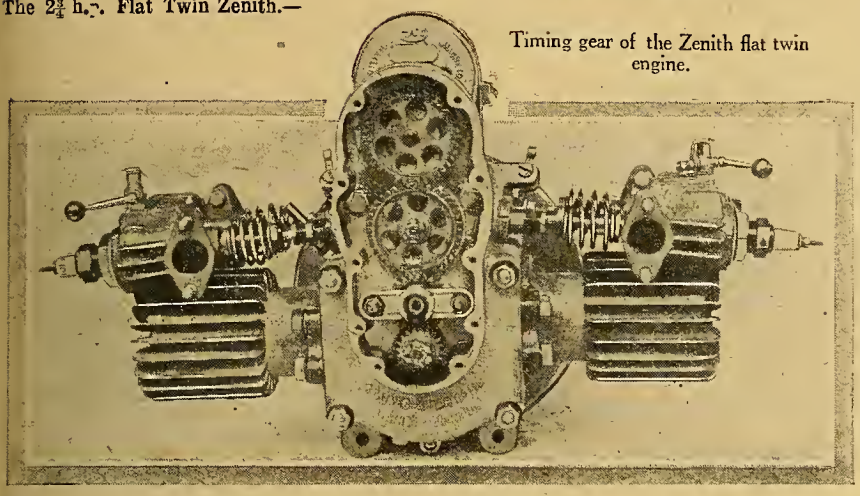
Novel Brake Operation.

In the general design of the machine it is easy to see that ample provision has been made for accessibility, and the cylinders may be removed without dismounting the engine from the frame. Considerable ingenuity has been displayed in the design of the new belt rim brake, and it is clear that it was no easy matter to actuate a rod controlled brake, which the latest pattern now is (a Bowden wire was used in the earlier Zenith models), on a wheel which is capable of a certain amount of longitudinal movement. This feat, however, has



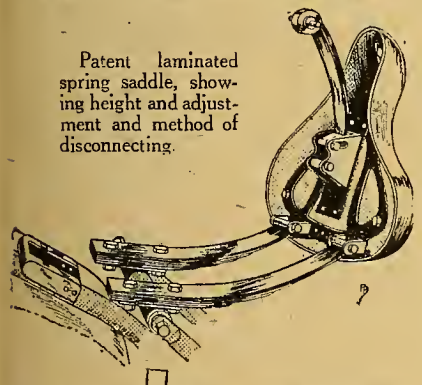
The new Zenith engine dismantled.

The 2¾ h.p. Flat Twin Zenith.—



Timing gear of the Zenith flat twin engine.

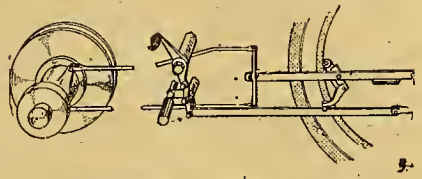
been successfully accomplished. The brake shoe is mounted on a flat rod, the rear end of which is anchored to the back wheel spindle, while the forward end is attached to the expanding pulley mechanism. The brake shoe lever has a slotted end which slides on a flat rod anchored to the rear of the chain stays and actuated by a pedal and toggle mounted on the near side footrest. It is an excellent piece of design, and allows the brake to be worked positively, no matter what the position the rear wheel occupies. We have previously referred to the Zenith patent saddle, which is so effective that it gives equal comfort to that afforded by a spring frame. This, we may remind



Patent laminated spring saddle, showing height and adjustment and method of disconnecting.

our readers, consists in suspending the saddle on laminated quarter-elliptical springs, while the saddle peak is mounted on a similar pattern spring, the forward end of which is provided with a roller working in a specially designed recess attached to the top tube. The forward end of the saddle may be lifted out of its recess and the whole saddle may be tipped backwards, so that in wet weather the actual seat may be kept dry in the event of the driver having to leave the machine standing in the rain. Means of adjustment are also provided to the forward spring so that the tilt of the saddle may be altered to suit the rider's requirements.

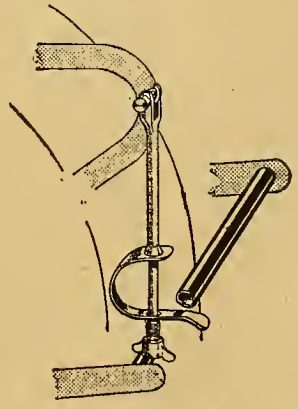
The rear of the frame is of particularly neat design; a spacious and substantial carrier is fitted, and the leverage of the stand is so arranged that the machine may be jacked up with one hand. Instead of being clipped on to the rear of the back mudguard, the stand is secured by a special clip attached to the end of the luggage carrier. Points of convenience have been carefully thought out.



A diagram (not to scale) of the rear brake adjustment.

An efficient shield protects the gear-operating mechanism, while a front guard keeps wet and mud from the transmission. Altogether the new Zenith strikes us as being an exceedingly practical mount, which should be very popular during the coming season amongst those who require a light and fast mount of the sporting variety.

The 4-5 h.p. and 8 h.p. twin-cylinder Zenith-Jap models embody several of the novel features we have just mentioned, but otherwise do not depart to any great extent from standard practice, embodying as they do the well-known J.A.P. engines and the well-tried Gradua infinitely variable gear.



The rear stand clip on the flat twin Zenith.

OLYMPIA NUMBERS OF "THE MOTOR CYCLE."

The issues of *The Motor Cycle* for November 13th, 20th, and 27th, and December 4th will be of more than ordinary interest, as they will deal chiefly with next year's models, both of machines and accessories. The issue for November 13th will be a comprehensive survey of up-to-date passenger machines, with descriptions and numerous illustrations of all the most important sidecar outfits and three-wheeled runabouts. A forecast of the Show will be the chief feature of the issue for the 20th, and on the 27th *The Motor Cycle* will contain a complete and critical description of the motor cycle exhibits. The issue for December 4th will deal fully with accessories and sidecars, and the four issues mentioned will cover the whole field in which motor cyclists are interested.

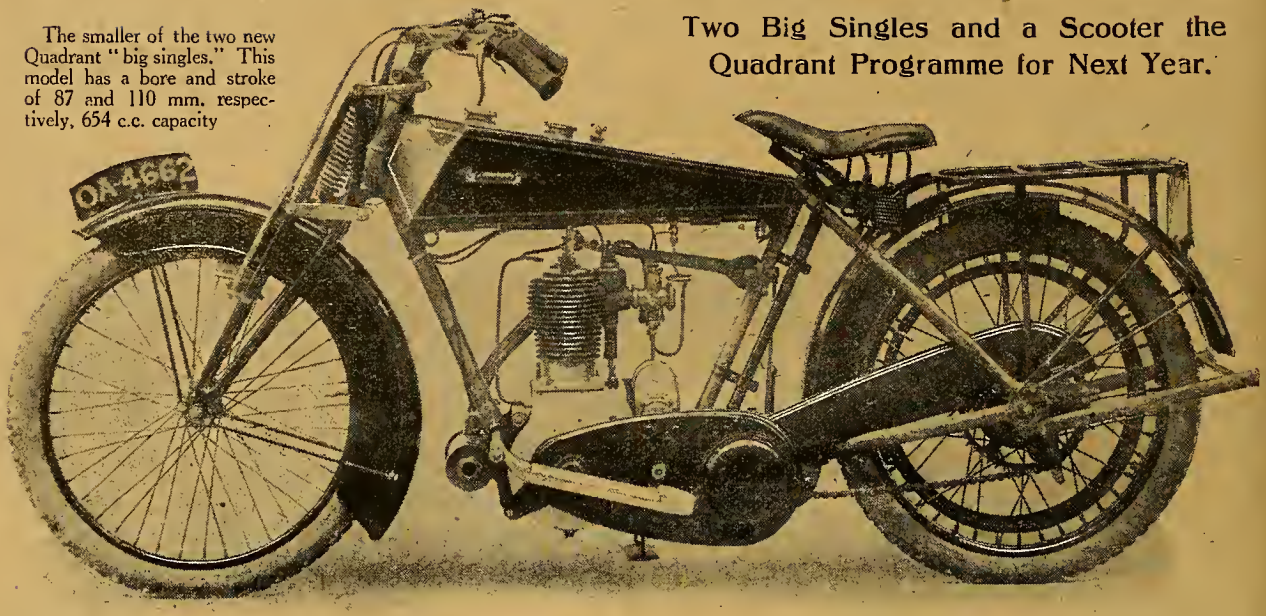
AVERAGE PRICES.

Second-hand motor cycles are offered a little more numerously than during the past two or three weeks. The prices are well maintained, and the averages worked out from the advertisements which appeared in last week's issue may be truly regarded as fairly indicating the current market values of second-hand mounts of the makes and dates mentioned. There is no doubt that, of all the journals connected with the pastime, *The Motor Cycle* is best able to reflect the state of the market by virtue of its overwhelming number of readers' small advertisements; for example, last week upwards of 900 motor cycles were offered for sale by readers, apart from those listed by the large dealers in their displayed announcements. A tendency to offer machines at more reasonable figures is noticed, the only flagrant cases of "over list-price" occurring with certain American machines, the owners of which, taking advantage of restricted imports, are "making hay while the sun shines."

A.J.S., 1914, 6 h.p., sidecar	£109
„ 1918 and later	£163
Ariel, 1919, 3½ h.p., sidecar	£112
„ 1919, 6-7 h.p., sidecar	£126
Allon, 1917, 2-stroke, 2-speed	£47
Bradbury, 4 h.p., single-speed, solo	£76
B.S.A., 4½ h.p., 3-speed, sidecar	£127
Calthorpe-Jap, 2¾ h.p., 2-speed	£36
Clyno, 2-stroke, 2-speed	£42
„ 5-6 h.p., 3-speed, sidecar	£122
Douglas, 2¾ h.p., W.D.	£71
„ 4 h.p., 3-speed, sidecar	£128
Enfield, 2½ h.p., 2-stroke	£57
„ 1916, 3 h.p., twin, 2-speed	£65
„ 6 h.p., sidecar	£130
Harley-Davidson, 3-speed, sidecar	£171
Humber, 3½ h.p. 2-speed, sidecar	£56
Indian, 1914, 7-9 h.p., 2-speed, sidecar	£79
Levis, 2½ h.p., single-speed	£36
„ 2½ h.p., 2-speed	£46
Matchless, M A G, sidecar	£165
New Hudson, 2½ h.p., 2-stroke	£32
„ 1919, 3½ h.p., sidecar	£127
New Imperial, 1916, 2¾ h.p., 2-speed	£46
Norton, 1919, 3½ h.p., T.T.	£105
P. & M., 1919, 3½ h.p., solo	£80
„ 1919, 3½ h.p., sidecar	£125
Rover, 1918-19, 3½ h.p., T.T.	£85
„ 1919, 3½ h.p., 3-sp. countershaft, sidecar	£125
Rudge-Multi, 1918, 3½ h.p.	£78
„ 5-6 h.p., sidecar	£110
Scott, 1919, solo	£125
„ 1919, sidecar	£170
Sunbeam, 1915-18, 3½ h.p., solo	£118
„ 3½ h.p., sidecar	£130
Triumph, 3½ h.p., single-speed	£43
„ 3½ h.p., 3-speed hub	£68
„ 4 h.p., 3-speed countershaft, solo	£82
„ 4 h.p. 3-speed countershaft, sidecar	£115
„ 2¾ h.p., 2-stroke	£50

THE 1920 QUADRANTS.

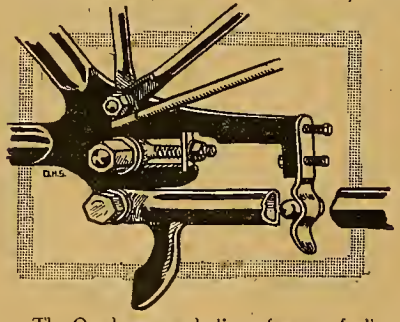
Two Big Singles and a Scooter the Quadrant Programme for Next Year.



The smaller of the two new Quadrant "big singles." This model has a bore and stroke of 87 and 110 mm. respectively, 654 c.c. capacity

THE Quadrant motor cycle requires no introduction to our older readers, who may recall that Quadrant machines were among the pioneer designs. To those who have recently joined the ranks of motor cyclists, or are as yet only potential buyers, the name may not be so well known. With greatly increased production facilities, and with machinery laid down for the manufacture of war material, the Quadrant Co. re-enter the motor cycle industry in a much larger way than before.

Big singles are the chief propositions for next season, for Mr. T. Silver, who



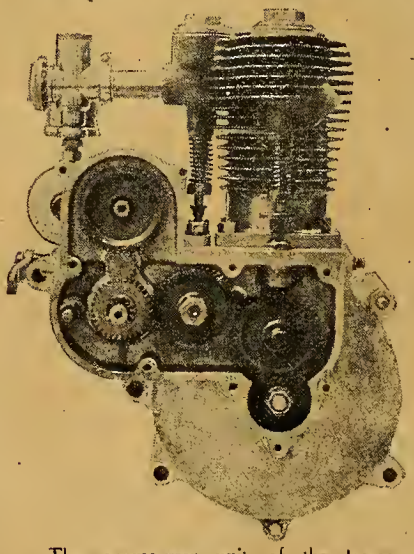
The Quadrant stand clip, a feature of all 1920 models, including the scooter.

has been associated with Quadrants since 1903, firmly believes in the simple and sturdy mount, both for solo and sidecar use.

The first of these models is on more or less conventional lines, having a single-cylinder engine with a bore and stroke of 87 mm. and 110 mm. respectively, the capacity being 654 c.c. It is what may be described as a "hefty" single, but the machine is nicely proportioned, the weight well distributed, and it has a low saddle position, and thus should be easy to handle as a solo machine. For sidecar use the engine will be found quite up to the work as regards power.

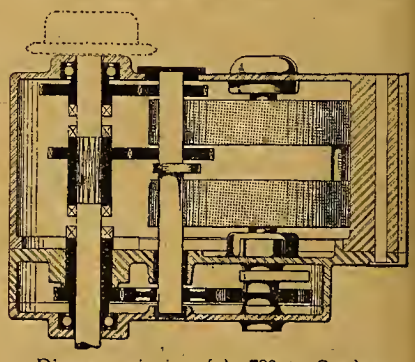
As in the pre-war models, the disposition of the valves of the Quadrant engine departs from conventional practice. Only the exhaust valve pocket is on the side of the cylinder, where it is in the path of an unobstructed draught of air. The valve is operated by a cam driven by a wheel, which forms one of the magneto drive train. An intermediate gear wheel drives a camshaft, which extends across the rear of the crank case. From this the inlet valve, located at the rear of the cylinder, is operated. In most other respects the engine follows accepted practice.

The transmission of this new model is by chains, a Sturmey-Archer gear box being used as the gear unit, and the



The engine-gear unit of the larger Quadrant model, which has a bore and stroke of 95 and 110 mm. = 780 c.c., the largest single now made.

frame is of the straight tube type with diagonal top tube. This latter, however, is not seen when the machine is complete, as the tank is of the saddle type, fitting over the top tube and carried on platforms on the horizontal member. This tank construction makes what to all intents and purposes is a pair of tanks with a common head. This is to say that, excepting when the tank is quite full, the fuel is carried in two separate



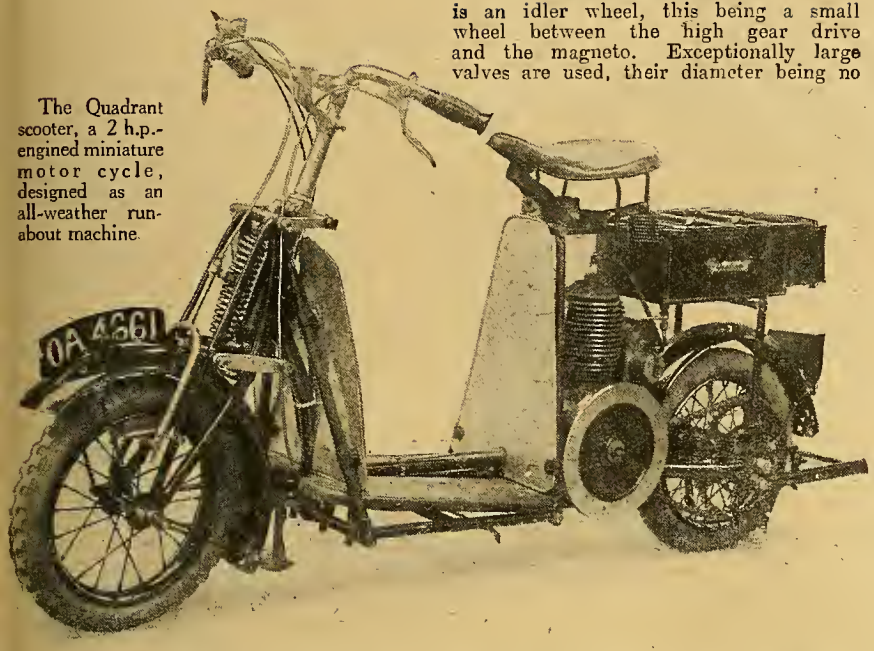
Diagrammatic view of the 780 c.c. Quadrant gear box, which forms a single unit with the engine. Note how the lay shaft is utilised as the camshaft.

compartments—the 2¼ gallons being drawn off by means of a two-way tap.

The stand spring of the Quadrant is novel. Instead of utilising the rear end of the mudguard to carry the spring clip, an extension on one of the fork ends carries a sprung clip which engages a short bar on the stand.

The Larger Model.

A larger engine of 780 c.c. capacity, is used in the second model, which has a bore and stroke of 95 and 110 mm. respectively, and this is built integral with a three-speed gear of the sliding tooth type. The engine portion of the



The Quadrant scooter, a 2 h.p.-engined miniature motor cycle, designed as an all-weather run-about machine.

unit is similar to the smaller model, but the camshaft is enlarged and made to serve as the layshaft of the gear box, and a wheel in the magneto drive train also serves as the primary transmission.

The unit is particularly sturdy in construction, and simplicity is the keynote of its design. Only one gear wheel in the train, from engine-shaft to magneto, is an idler wheel, this being a small wheel between the high gear drive and the magneto. Exceptionally large valves are used, their diameter being no less than 2in., and between the exhaust valve pocket and the cylinder wall there is a clear air passage. The induction pipe is slightly conical, and the exhaust pipe is 1¾in. diameter. The illustrations of this engine gear unit render a lengthy description unnecessary. It will be fitted in a frame similar to that employed in the 654 c.c. model, but in this machine the clutch will be in the rear hub. It has not yet been decided whether the transmission will be by chain or belt, as the unit construction permits the use of a long belt over a large driving pulley, which should remove the objection to the final belt drive of conventional countershaft models.

The third and last Quadrant proposition is a scooter. It has a saddle and a one-gallon tank, and is just as much a miniature motor cycle as it is a scooter.

We understand that a subsidiary company has been formed to market this little machine, and it should take a place in the front rank of such vehicles.

The design is well thought out, embodying a Quadrant spring fork and an open frame, upon which is carried a well-sprung platform. The 2 h.p. two-stroke engine is located below the saddle, and drives directly to the rear wheel by a chain. Over the wheel the frame is built up to form a carrier, in which is carried a tool-bag and a tank holding a gallon of fuel. Two brakes are fitted—a pair of conventional shoe brakes on the front wheel and a block brake acting on the flywheel of the engine.

In addition to front and rear mudguards over the wheels, wide shields are fitted fore and aft of the platform. The wheels are shod with 16 × 2½in. tyres, and the rear stand follows the principle of those fitted on the "big single" models.

It occurred to us that with 22in. or 24in. wheels a machine of this design would meet a very certain potential demand for a miniature motor cycle with a greater range of action than is expected of a scooter.

An Attractive Solo Mount.

A Specially Designed Scott, fitted with Dynamo Lighting, Special Tank and Oversize Tyres.

AN unusually smart mount was ridden in the recent Scott Sporting Trial by R. W. Stanfield.

The model on which he competed is not one available to the general public, having been largely designed to conform to the tastes of its owner. That these tastes show a nice fastidiousness is at once apparent from an examination of the accompanying photograph.

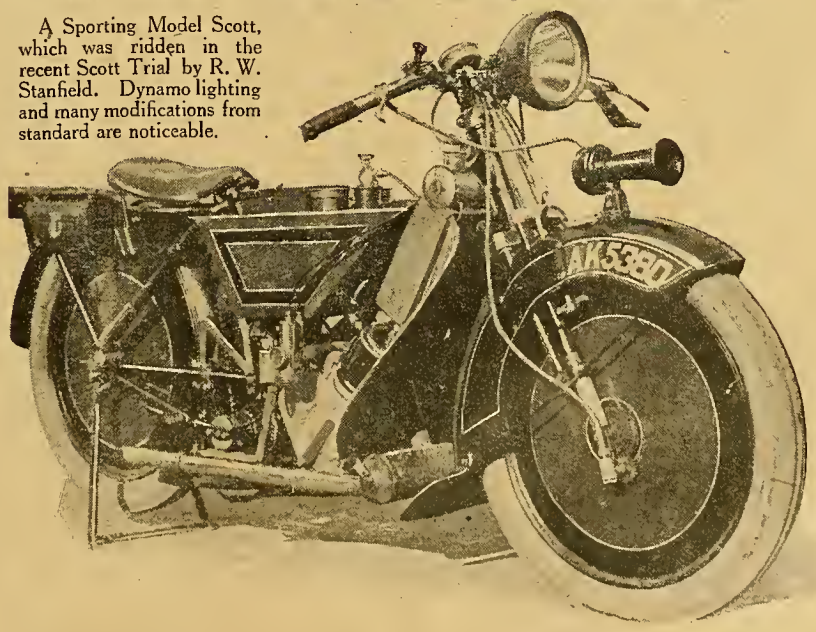
A standard Scott forms the base of the layout, and the chief deviations from the normal specification take the form of alterations to the petrol and oil carrying systems, the adoption of dynamo lighting, and the fitting of T.T. bars of very racy shape, and disc wheels.

The usual petrol tank encircling the saddle tube is discarded, and the whole of the open frame filled with a large, flat-topped and extremely wide tank. This contains an oil compartment, so doing away with the necessity for embodying the filler cap in the seat pillar as is done on the standard models.

By means of this arrangement it is possible to use a Brooks saddle, which "sits" very much lower on to the frame than is normally possible. Switch box, hand-pump, and twin drip feed lubricators are mounted on the tank top, which presents quite an imposing appearance.

Electric lighting is carried out by means of a Lucas dynamo set. This is driven from the magneto chain; the magneto being placed much higher than usual, and the dynamo sprocket arranged to act like a jockey wheel on the chain. An electric horn, fitted on the front guard extension adds finish to the general appearance. A plated exhaust pipe, wide T.T. bars almost level with the head, and wheel discs, are all conducive to the general raciness.

The owner informs us that, despite the weight, which is much greater than that of a standard model, a speed of 55 m.p.h. is possible. The usual Scott purple and black finish is used.



A Sporting Model Scott, which was ridden in the recent Scott Trial by R. W. Stanfield. Dynamo lighting and many modifications from standard are noticeable.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

BUTT-ENDED TUBES.

Sir,—With reference to "Ixion's" remarks *re* butt-ended tubes, that sooner or later the butts chafed into a leak, I was much troubled with this, but found on applying soft soap to the butts that no appreciable chafing was apparent after considerable usage. E. STEVENS.

THE WAR MOTORS ASSOCIATION.

Sir,—I can thoroughly endorse the letters of "A Satisfied D.R." and "Another D.R.," with regard to the War Motors Association.

My original application in July had been confused with another of the same name, who, strange to say, had served in the same battalion in France, resulting in one or two similar errors there.

A call at their office, however, resulted in a practically new Douglas in three days, for about £25 less than one could have been bought in the market.

This machine is an extremely good one, and several men, who have bought 1919 Douglases in the ordinary way, have said they would prefer mine.

I found both the staff at the office and the officials sent to distribute the machines at the depôt remarkably considerate, and willing to take any amount of trouble to get one exactly what one wanted. C. E. PEPPER, M.B.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—Referring to correspondence which has recently appeared in your columns concerning the advantages to be obtained by joining a motoring organisation, please let me quote my experiences. For the past two months I have been writing to firms all over the country to obtain an accessory made by a very well-known house to fit to my new motor cycle. I have also called on agents in each town I have visited, and the reply in all cases has been "Out of stock, and no hope of obtaining for an indefinite period." A week ago, I wrote to the Birmingham office of the A.A. and M.U. asking them to help me. Result, by return of post, and post free, the article I required reached me from them before they had received my cheque for it. I think this speaks for itself, and illustrates a type of benefit accorded to members of which many are not aware.

On a recent journey of ninety miles, I passed eight A.A. road patrols, and on the return journey six; but I only saw one R.A.C. patrol on the double journey. A W 5728.

HARD LUCK IN THE A.C.U. TRIALS.

Sir,—As a competitor in the A.C.U. Six Days Trials, I read with great interest the different kinds of "hard luck," etc., of various makes of machines and drivers. Here is another case: it may interest you.

I am an amateur, having only driven in one trial before, and that was the Liverpool M.C. open trial on Whit-Monday, 1919. I did the course without losing a mark, but was disqualified for not carrying a passenger. I drove a 1918 6 h.p. A.J.S. military model, fitted with a Bustone sidecar. Day after day I arrived back at Llandrindod Wells with a clean sheet until Friday, when about twenty-five miles from Swansea, on the return journey, I took a corner a little too fast, and finished with a buckled sidecar wheel, as the tyre came off and rolled 120 yards down the hill. For a little time I thought I was beaten, but I took the wheel off and straightened it as best I could by putting it in a gate close by, fitted it up again, and started off to make up the time I had lost, exactly one hour. Forty miles away I had a puncture in the back wheel, which delayed me again, and when I arrived at the foot of the "consistent driving test" hill it was pouring with rain, and not a soul in sight. I completed the course, and arrived 31m. late. I lost 21 marks for being late, 20 for not being in the consistent driving again, and 19 for such as condition, etc., and just scraped through with a bronze medal. My machine finished actually better than at the start. My number was 69—last but three. I think that was the reason no one mentioned the incident. The tail end of the competitors was very rarely seen by anyone of importance. C. COLLINS.

MOTOR CYCLE TRANSMISSION.

Sir,—With reference to the article "Overseas Section" in the issue dated September 25th of *The Motor Cycle*, I would like to discuss a few of the statements.

First, then, the writer says that there are three distinct types of transmission, which he then proceeds to enumerate, but leaves out *all belt* drive, which certainly should have a place, as two important makers use it, and sporting and T.T. machines have this type of drive. He then enumerates the disadvantages and advantages of the various types of transmission, including the unit system from the engine-shaft to the countershaft, combined with the belt from the countershaft to the road wheel, which he describes as a favourable type of drive; in fact, he speaks of the cleanness, etc., of the belt drive and its obviating the use of a shock absorber; but again he does not mention *all belt* drive. Surely this drive would include the advantages he speaks of, only more so! I will endeavour to show by tabulating its advantages, incorporated with any type of gradual gear, or without it where unnecessary, *i.e.*, in flat countries where a clutch only would be needed.

Advantages of all belt drive:

(a) No shock absorber necessary. Therefore, one has less complication and better cushioning, less strain, and jerk.

(b) No high speed chain or unit system of pinions or gear box, causing friction and absorbing power.

(c) No chain cases and oil baths. Less damage by grit and dust.

(d) Easy to carry spare belt, and easy to fit.

Surely, therefore, all belt drive is as suitable Overseas as any other.

I do not know whether this long-winded epistle is of any interest, but I should like to see the all chain champions give their opinions. I have no interest in all belt machines beyond being the prospective owner of one in India.

In the event of the Editor not being already in a state of collapse, I would like to continue with a discussion of shaft drive, with which the writer finishes his article.

After summing up by stating that the unit system, plus final belt drive, is the best, he goes on to say, "Shaft drive is, of course, the ideal."

I cannot myself for the moment recall any makers who employ shaft drive, although I believe there are one or two. If this drive is ideal, why is it not in more general use? In my opinion, it is not ideal for motor cycles, although it is undoubtedly ideal for touring cars.

Consider its application. It would require a shaft on either side of the back wheel to make it at all symmetrical, which would cause much friction and make it very clumsy.

Brighton. ALL BELT.

SPARE PARTS.

Sir,—*Re* "quick service." Do you not think your readers will find the following refreshing?

Friday.—Velocette frame broken. Money wire order to Messrs. Veloce, Ltd., Birmingham, for new one.

Saturday.—Arrival, by train, of frame (114 miles).

Sunday.—On the road again.

The above is not an odd case with these people, for they have not once "let me down." I have found they can, and do, "move some." Usual disclaimer.

C. E. H. CALVERT.

Sir,—Requiring a new part for my A.J.S., I sent a wire to Messrs. A. J. Stevens, and, although I have no account with them, I received the part next day.

I might add that they do not appear to be in a hurry for their money as, up to the time of writing, I have not received the bill. Usual disclaimer. J. A. CLARE.

Sir,—Having seen in your paper the experience writers have had when requiring spare parts for their machines, I should be pleased if you would publish my experience.

I am riding a 4 h.p. New Hudson combination, and required a new valve, spring, washer, and cotter. I wrote to an agent and got nothing from him for three weeks, but procured direct from the New Hudson people by return of post.

Also, I had carburetter troubles which I took up direct with the makers of it, and got a very curt letter in reply to my questions and an intimation that they would send me a booklet. I heard no more, however, and after three weeks I wrote direct to the New Hudson and had a new carburetter, controls, etc., sent me per return parcel post.

Then I had slight clutch troubles which I thought it advisable to ask the New Hudson people to put right. One of their representatives was at my house the following day and put this right for me.

I think it is only right that when a firm like the above gives such prompt attention, on three separate occasions, the public should be notified, because if all riders had the same experience as I had we should hear considerably less about American competition and American practice.

I may state that I have no interest or connection with the New Hudson Co., but am just a private rider.

Wellington, Salop. E.3623.

Sir,—I noticed recently a letter from one of your correspondents expressing satisfaction at the very prompt delivery of spare parts he ordered from the Enfield Cycle Co., and I wish to add a word of appreciation of the good service given me by this firm during the war. Out here, in the West Indies, it is pretty hard to get anything like spare parts for any kind of machine, but I must say that the Enfield people were as prompt with filling two or three orders for spares for my 3 h.p. model as one could have wished.

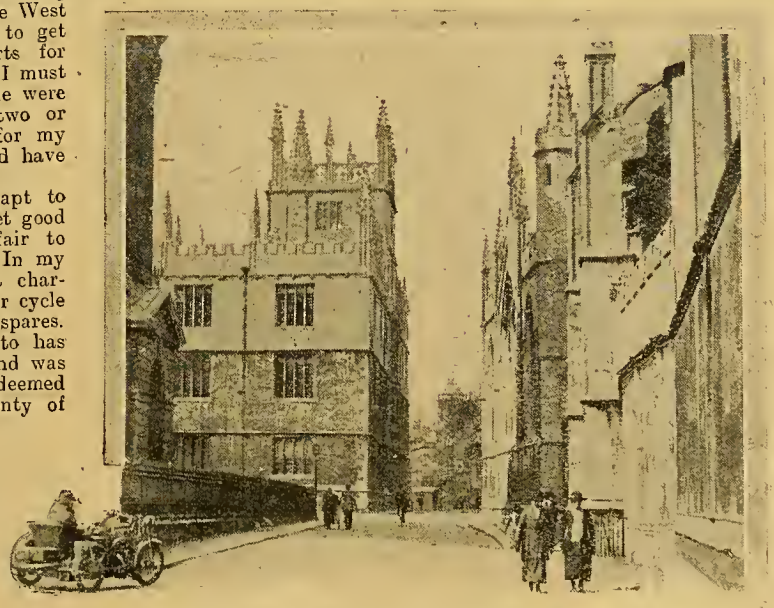
Most of us are very apt to whine when we do not get good service, so it is only fair to speak up when we do. In my opinion, one of the best characteristics of a good motor cycle firm is readiness to supply spares.

The machine referred to has seen very hard service, and was so constantly used that I deemed it advisable to keep plenty of spares on hand, but I may mention that very few have been used, the machine having proved most reliable.

My only relation with the Enfield Cycle Co. is that of a satisfied user.

W. P. EMTAGE.

Barbadoes.



A Matchless outfit in All Souls' Lane, Oxford, the college of that name being on the right. In the middle distance is the famous Bodleian Library.

Sir,—As a reader of *The Motor Cycle*, I quite agree with "Satisfied" that the names of firms who treat their customers well ought to be published. I ride a 4 h.p. Bradbury, and had the misfortune to break my cylinder and piston. Thinking I was in for a long wait, I wrote the Bradbury people to see if they could help me, and you can imagine how pleased I was when they delivered a new cylinder and piston three days after my definite order. I have no connection with this firm only a satisfied rider of one of its machines.

Ilkeston. GRATEFUL.

GEAR CHANGING WITH THE FOOT.

Sir,—I would like to endorse "Sgt. L.A.M.B.'s" letter *re* gear changing with the foot. There is no wobble, and the bicycle can be driven without taking one's hands off the handle-bars, except, of course, to work the oil pump. This applies more particularly to the Triumph 4 h.p., and all bicycles fitted with the Sturmey-Archer countershaft gear and hand clutch. To use the gear in this manner, the gear lever must be adjusted until the ball of the lever, when the gear is in low, is just over the rider's toe. The ball and about two inches of the lever must now be bent to form a right angle with the rest of the lever. If so adjusted it is very easy to work. As "Sgt. L.A.M.B." says, it wants getting used to, but when that is over one appreciates the difference at once. This method of gear changing was very popular among the D.R.'s in France (with whom I believe it originated), when one wanted to hang on with as many hands as possible on the rotten roads.

One word about the Triumph in general. It is a marvellous bicycle, and stood up to the work in France rippingly. I rode my bicycle for two weeks on one occasion, and averaged eight hours riding per day, and gave no attention to it whatever. I did not have any mishap, and it was going as well as ever at the end of it, despite the fact that the engine was unrecognisable with caked mud. A truly wonderful bicycle, I think. Usual disclaimer.

O. F. CAUNTER, Lt., R.E., Sigs.

PATENTS.

Sir,—With reference to the "Review of Recent Patents," in your issue of October 9th, and under the heading "To Eliminate Valve Springs," Mr. B. H. Davies makes a statement that is somewhat misleading.

Mr. Davies refers to the Beardmore engine as "a power unit with pull and push tappets which both open and close the valves positively." This makes it appear that the valve operation of the Beardmore is similar to that described in the patent under review. As a matter of fact, in the Beardmore, as also in the Le Rhône and R.A.F.3a, the pull and push rods are used only for *opening* the valves, one rod for two valves, which are *closed* in the usual manner, *i.e.*, by spiral springs, assisted, in the case of the Le Rhône, by centrifugal action.

In Capt. Burt's patent one pull and push rod is used for each valve, which carries with it the great advantage that a valve overlap can be used, which is impossible in the Beardmore engine.

I fail to see that there is any "side-stepping of previous applications" in this patent, as the object in view seems quite different from that of any existing "pull and push" system.

P. BANHAM.

BUTSER HILL.

Sir,—Referring to B. S. Nortsunbeam's letter on Butser Hill, I think the explanation is fairly simple. I have had exactly his experience.

There is a long deep road cutting through Butser, running about S.S.W., and the prevailing wind blows through this with tremendous force, and its energy is felt a considerable distance down the hill from the mouth of the cutting.

If your correspondent will ride from Castleton towards the entrance of the Winnats Pass in the High Peak when a S.W. breeze is blowing he will experience the same result.

L. R. INCLEDON.

Sir,—I was interested to see a letter in your columns from "B.S. Nortsunbeam" *re* Butser Hill. I am very familiar with this hill, and, as I ascend it frequently, I usually consider it the most reliable test for the running of my machine. This is certainly quite a stiff hill, but if your correspondent's *nom de plume* indicates the makes of machines he has been riding, I am rather surprised that his speed should have been so low (20-25 m.p.h.).

My present 3½ h.p. single, and two twins before it, have all romped up this hill at really high speed, provided I have not lost speed on the bend at the foot—but I well remember the painful struggles of a 1911 3½ h.p. I had some years back.

The hill mentioned about a mile or so after Butser is not so steep—and I usually reckon that I can ascend it 10 m.p.h. faster than Butser. To sum up, I consider that Butser is steeper than it looks (probably because it is in a cutting), and the next hill is not so steep as it looks!

Southsea. O. T. SNORTON.

A COMMENT.

Sir,—Usually I enjoy "Ixion's" comments, but in your issue of October 9th I feel as if I cannot let him go without a comment myself. Anyone would think it was only English machines that shed nuts, etc. My experience is that the American machines do the same, and I have been connected with motors since the days of tube ignition, and ridden almost every known make of motor cycle. He says what *we* want is a manufacturer who will sell machines from which nothing can conceivably come off. But we have these manufacturers, and have had for some years. What rider of a Triumph or Sunbeam, for instance, has ever lost a nut from his mount, provided he looked over the machine when taking delivery? What I mean to convey is that, provided a nut is tightened correctly to begin with, using an ordinary washer, it will never get loose, unless undone with a spanner. I have ridden in several countries, and that has always been my experience. To use split pins on almost every nut on a motor, where gadgets have to be taken asunder very frequently, would only add a long list for Hades. Now a word about kick-starters. What is wrong with the Sturmey, A.J.S., Sunbeam, etc.? The trouble is that people do not drop the valve at the right moment. HENRY EVANS.

JET SIZES.

Sir,—In reply to "C.T.'s" letter in last week's issue of *The Motor Cycle* I trust the following will be of use to him. I have a 4 h.p. military model Sunbeam, which I ran for some time fitted with No. 32 jet (Amac carburetter), and only averaged abont 60 m.p.g. with sidecar attached. This gave ample power for hills, but was unsatisfactory as far as consumption was concerned.

I fitted a W.S.R. jet adapter. Since then matters have improved greatly, and I can now average 84 m.p.g. solo and 75 m.p.g. with sidecar, which I think very good for Surrey.

I find the jet unscrewed half a turn for sidecar work and one-third for solo gives best results; but should imagine no hard and fast rules could be laid down for adjustment, not even on machines of the same make.

I should also be grateful if any possessors of the Sunbeam chain-cum-belt model could give me their experiences of this machine, as I have never seen the machine mentioned in other than sales advertisements. I find it as reliable and handy as any machine I have ever owned, but find great difficulty in starting either hot or cold with the starter. I can walk it off in low gear, which seems to point to the carburetter, magneto, etc., being all in order; but start with the starter I cannot, and am of the opinion that it is geared too low, as I find it impossible to swing the engine over the compression after dropping the exhaust. B.J.

Guildford.

THE MOTOR CAR ACTS, 1896-1903.

Sir,—I think it is high time combined efforts were made, alike by petition to local M.P.'s and by motor journals and press generally, and by all motorists, against the above Acts, which are silly and obsolete. As things stand at present, motor cyclists in particular are subjected to police interference and fines which savour of Prussianism. The fine limits of law contained in these obsolete Acts are used to conjure up summonses and charges, and heavy fines are imposed on the slightest pretext. It seems, by a casual glance at the papers, and the number of motor cyclist cases daily coming before magistrates, that the police have so little to do that they must use the Motor Car Acts to get a case or two to justify their existence. In this locality (South Wales) motor cyclists are watched in all ways, and on the slightest pretext are summoned and heavily fined.

Concerted action is the only remedy, as by the way things are carried out now under the obsolete Acts motor cycling is being made a curse, a source of revenue to the police, and expense to devotees, no matter whether careful riders or otherwise; no one escapes for more than a month or so (in this locality, at least).

I should be glad to have the views of your readers and suggestions on this matter, through the medium of your paper, and any scheme for the repeal of these Acts would have my hearty support in practical form.

H. REG. JONES.

MOTOR CYCLING IN ASSAM.

Sir,—Knowing Assam well, and having motor cycled over most of the roads in the Province, I give the following information for the benefit of Mr. Burd (*vide* your issue of October 16th). His queries are dealt with *seriatim*.

(1 and 2.) There is only one really good road in the whole Province, viz., the road between Gauhati and Shillong, the headquarters of the Local Government and the summer hill resort of the Province. There is a daily mail and passenger motor service over this road, and its condition is usually excellent. The distance between the places named is about sixty miles, and there is a rise of about 6,000 feet in this distance. Apart from this one the Province is almost destitute of good roads. Such roads as there are are mostly unmetalled, and very bad indeed after the rains. For this reason a well-tried machine is essential, and I should certainly prefer the single to the twin, simply because the manufacturers, through their war experience, have been able to produce a machine which will stand up on the worst roads. A large number of Triumphs are sold in India, and, consequently, spare parts are readily obtainable. This might not be the case with a new make of motor cycle. The combined drive of the Triumph is perfectly satisfactory, and I personally prefer this drive to the "all chain." The roads are so very dusty that, however well the chain is protected, dust gets in and causes rapid wear of chain and sprockets, and it is often difficult to get a new chain of correct size. The short chain from engine to countershaft is more easily protected.

(3.) All the leading insurance concerns have agents in India, and it would be better to insure locally.

(4.) The machine must be re-registered in India.

W. D. MACGREGOR.

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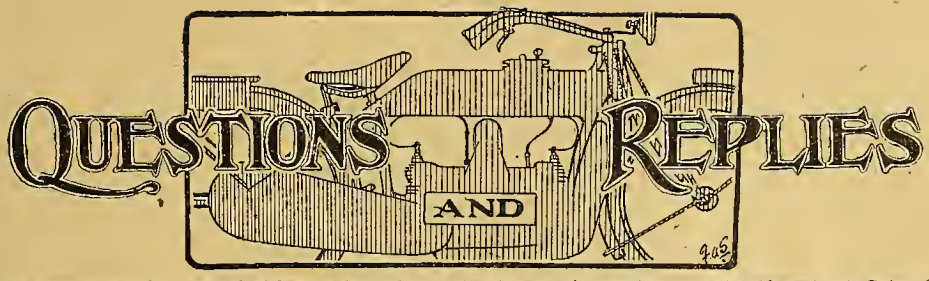

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Ex-soldiers and W.D. Sales.

A friend of mine who has recently been demobilised is desirous of buying a strong motor cycle and sidecar combination, and he wishes to know whether the surplus army machines are sold at a reduced price to ex-army men.—E.L.D.

There are no special facilities in the matter of reductions of price to ex-army men in the Government sales of motor cycles.

Blacking Cylinders.

I should be greatly obliged if you could give me the address of any firm who manufactures or sells a composition of any sort for applying to the radiating fins of motor cycle cylinders. My 1919 machine is spotless, except for some rust which has collected on the radiating fins, and I find ordinary blacklead useless.—R.N.B.

It is very difficult to find any preparation which will remain on the cylinder of a motor cycle engine, in order to prevent rust. Most of the accessory dealers will supply you with a cylinder black or radiator enamel, which you can use for the purpose, but the combined effect of weather and the heat of the engine necessitates frequent applications.

No Spark.

I have just purchased and fitted a brand new magneto. After following the instructions given in "Hints and Tips for Motor Cyclists" as regards timing, I find on pulling the back wheel round that there is not the slightest current with a finger on the plug terminals, and yet with the chain removed and turning the sprocket by hand there is a fat spark between the plug points. I should be obliged if you could tell me the cause of this failure to get a spark and the remedy for it.—J.M.

The reason you do not feel a shock from the high-tension wire when revolving the magneto by turning the back wheel is probably due to there being a defective earth return between yourself and the machine. This would be accounted for by the fact that you were only holding the tyre and not any metallic parts of the wheel. The best plan is to take out one of the sparking plugs and lay it on top of the cylinder in such a way that the terminal and wire are clear of all other parts. On pulling the back wheel smartly you should be able to see a spark passing across the plug points.

Touring in France.

May I enquire as to certain particulars with regard to motoring in France? (1.) What is the price of petrol (or motor spirit), and in what size tin is it usually sold? (2.) What oil corresponds to Vacuum "B.B." oil, or can Vacuum be obtained easily? (3.) What is the price of oil?—W.B.S.

With regard to motoring in France, we would strongly advise you to become a member of the Auto Cycle Union, 83, Pall Mall, London, S.W.1., and to get in touch with the Continental Touring Department. (1.) The price of motor spirit in France varies considerably with the district. It is usually from 5 fr. 50 c. to 9 fr. per bidon of five litres (a litre equals one and threequarter pints). (2 and 3.) The oil most in demand for motor cycles is known as Huile D. It is obtainable anywhere, and at prices corresponding with oil in England.

Gear Ratios.

(1.) My machine is a 1915 5 h.p Indian. The gears originally fitted were 4 to 1, 6 to 1, and 10 to 1. As this machine was often fitted to a sidecar, I found the top gear too high, so took off the engine sprocket (eighteen teeth) and fitted one of fourteen teeth, which brings the top gear about 5.25 to 1. Do you not consider this too low? (2.) Would not a sixteen-tooth engine sprocket be better? (3.) What top gear would you recommend for a 1913-1914 4¼ h.p. James, occasionally used solo, but nearly always with sidecar?—S.G.

(1.) A 5¼ to 1 gear is rather low for a 5 h.p. machine. (2.) A sixteen-tooth sprocket will no doubt be an improvement. (3.) 4⅞ or 5 to 1.

Mr. S. A. Rowlandson, late captain R.A.S.C., who is now in Canada as manager of an association of British motor cycle goods manufacturers which has been formed to foster Overseas trade.

Weakness of Retarded Spark.

When retarding a magneto, at what rate, or how much, does the spark decrease in efficiency? Supposing a magneto fully advanced to represent a hundred per cent., what percentage of that spark occurs when the magneto is fully retarded?—H.F.

We cannot state definitely the percentage decrease in efficiency of the magneto when retarded, as it varies considerably with the speed at which the engine is running. In practice there is certainly a weakness of the spark, so much so as to render starting either extremely difficult or even impossible.

The V Twin Magneto.

Will you kindly explain the following questions, dealing with a Splitdorf magneto, fitted to a 7-9 h.p. Indian? (1.) Why is one pole piece larger than the other? (2.) Is it owing to the fact that, as the cams in the breaker box are not set equidistant, the points would start opening either before or after the position of maximum intensity had been reached? (3.) What is the theory of so setting the cranks as to necessitate the use of this type of magneto?—E.A.

(1 and 2.) Your first query is correctly answered by your second. (3.) The V-type engine is largely used as being the most convenient method of accommodating two cylinders in a motor cycle frame, and both pistons are connected to the same crank.

Fitting a Gear.

My machine is a twin Rex, which I have lately rebuilt. It is fitted with a two-speed N.S.U. gear, which has given out, and I want a gear with either handle or kick start. A gear box would not do, as there is no place to fit it without shifting the magneto, which is at the back of the cylinders, and there is very little ground clearance. Perhaps you can suggest something which would be more suitable.—A.D.

As it appears impossible to fit a countershaft gear to your machine, we would suggest that you endeavour to obtain a second-hand Sturmey-Archer three-speed hub wheel. This could be fitted with slight alterations to the rear forks. The N.S.U. gear is usually quite reliable, and if yours is not seriously damaged, we should advise you to have it repaired. Bradbury and Co., Wellington Works, Oldham, will supply spares for these gears.

Moto-Reve Queries.

I am having great difficulty with my 2½ h.p. twin Moto-Reve. I cannot get it timed correctly, as the spark always appears too much advanced on one cylinder. The timing wheels are eccentric. The carburetter is very difficult to adjust, and I am thinking of altering it to take standard jets. What do you advise?—R.E.

The only thing you can do in timing your Moto-Reve is to see that the spark occurs about $\frac{3}{16}$in. from the top of the compression stroke on both cylinders. The eccentric timing wheels were peculiar to these engines. The carburetter first fitted as standard, was far from satisfactory, and we should recommend you to obtain a new one of English manufacture, rather than experiment with, and make alterations to, the old one.

Responsibility for Borrowed Machine.

I recently hired a motor cycle for a small sum for the purpose of going a short journey. On the previous day the owner of the machine had done a long run, and the fact that I myself taught him to ride a motor cycle only six days before shows that he was far from an experienced rider. On going to the garage I did not trouble to look at the machine very much. It ran very well indeed, and on returning it to the garage I notified the manager that I had done so. I heard nothing until a later date, when the owner informed me that the cylinder and crank case were cracked. I cannot say whether the machine has been out since I returned it. Do you think the owner of the machine can claim damages from me?—W.E.H.

Under the circumstances, the owner of the machine cannot hold you responsible for the defect which has subsequently developed.

Two-stroke Queries.

(1.) What is the angle of the 1910 twin Royal Enfield cylinders? (2.) What is the best gear to fit to a 2½ h.p. two-stroke New Ryder lady's model? (3.) Would a Douglas gear do, and would it be hard to fit, as there seems to be plenty of room in the bottom bracket? (4.) How would you time a two-stroke for speed, and will it interfere with its pulling power? (5.) Which is the best size of jet to use for a Villiers engine, as I have a 28in., and as soon as it reaches a good speed it starts spitting, and then pulls up? (6.) Would a Villiers engine pull a light sidecar with driver 10½ st. and passenger 9 st. if fitted with a two or three-speed gear and clutch?—U 1463.

(1.) The cylinders of the 1910 Royal Enfield are set at 60°. (2 and 3.) A Douglas gear box would probably do for your machine, also the Albion or Burman gear boxes are very good. (4.) Time the spark to occur 3 mm. before the piston reaches the top dead centre, with ignition control fully retarded. (5.) The 28 jet should be quite large enough on a Villiers engine. When the symptoms which you describe occur, try closing the air lever. (6.) The engine is capable of pulling a sidecar and passenger if suitably geared.

Cornering at Speed.

Does a motor cyclist usually lean over to the left when going round a corner to his right, as I have found that leaning over on the opposite side keeps the machine steadier and makes the corner easier to get round? Will you please tell me if this is so with expert racers?—D.M.B.

In taking a corner at speed it is quite usual for the rider to lean in the opposite direction. This enables one to corner much faster than when leaning with the machine.

Top Gear Ratio.

I should be obliged if you would tell me the number of teeth required on the engine sprocket to get the ratio of 5 to 1. I have a 6 h.p. Jap engine running with a Sturmey-Archer gear box to an 18in. belt rim. The clutch sprocket has thirty teeth, belt pulley 8in., on S.A. gear.—A.E.R.

With the belt pulleys and countershaft sprocket you have it will be impossible to obtain a 5 to 1 gear ratio exactly. With a fourteen-tooth engine sprocket and the others as stated, the top gear would be 4.8 to 1; with a thirteen-tooth engine sprocket the top gear would be 5.17 to 1. Probably the latter will suit you.

Coil Ignition.

I have a 3½ h.p. motor cycle engine which I want to use for stationary purposes. I also have an eight volt, 100 ampère accumulator for ignition. I should like to know if it is absolutely necessary to use a coil in order to produce a spark at the plug; also, if necessary, would the coil act as a contact breaker, or should I want a separate commutator?—F.D.

It would be much more satisfactory to use a magneto, as coil ignition is not nearly so reliable. Should you decide to persevere with this idea, however, it will be necessary for you to obtain a coil. The coil will not act as a contact breaker, and a commutator is not used at all.

A Matter for Deduction.

I have a Bosch magneto fixed to a twin-cylinder 50° Precision engine on a Ranger cycle car. The car is most difficult to start, though, if pushed a yard or two, it both runs and pulls well. Could you inform me if the magneto is a suitable one? I have searched for the degree number, but cannot find it. Is it possible that it might be for 180°? Would the car run at all with one of that degree? Would you advise me to get a new magneto, or have this one thoroughly overhauled by a competent firm?—H.G.M.

If the engine will run on both cylinders at all, it is obvious that the magneto is of the correct angle to suit it. The old type magnetos were not usually marked with the angle. We should advise you to have the magneto overhauled; also attend to the carburetter, eliminating air leaks between it and the engine, as this may have something to do with the difficult starting.

Converting a Cycle.

With reference to an article which appeared in one of the recent issues of *The Motor Cycle* about an Auto-wheel which was fitted into a bicycle, forming both a power unit and a rear wheel, I should be obliged if you would let me have particulars and instructions as to how the Auto-wheel was fitted and fixed in the frame, so that I could fit one into my bicycle?—H.M.

We are unable to give you any further particulars regarding the fitting of an Auto-wheel into a cycle frame. These arrangements are usually the result of experiments by enthusiastic amateurs, but as the construction does not appear to be particularly complicated, we think that a little experimental work on your part would quickly indicate the best method of using this device.

EXPERIENCES WANTED.

"A.S." (Wimbledon).—5 h.p. Brough, horizontally-opposed twin, as regards speed, consumption, ease of starting, hill-climbing, and general reliability, with sidecar.

RECOMMENDED ROUTES.

WORCESTER TO PURLEY.—R.A.D.

Worcester, Pershore, Evesham, Broadway, Moreton, Chipping Norton, Woodstock, Oxford, Wallingford, Reading, Wokingham, Staines, Kingston, Sutton, Purley.

LONDON TO FLAMBOROUGH.—E.H.J.

London, Ware, Royston, Eaton Socon, Buckden, Stilton, Peterborough, Market Deeping, Bourn, Sleaford, Lincoln, Brigg, New Holland (ferry), Hull, Beverley, Great Driffield, Flamborough.

BIRMINGHAM TO BARMOUTH.—T.W.G.

Birmingham, Chester Road, Brownhills, along Watling Street to Shrewsbury, Oswestry, Corwen, Bala, Llanelltyd, Barmouth.

BOURNEMOUTH TO CARDIFF, AND THENCE TO LONDON.—T.B.R.

Bournemouth, Christchurch, Fordingbridge, Salisbury, Heytesbury, Warminster, Bath, Nailsworth, Gloucester, Lydney, Chepstow, Newport, Cardiff. Return *via* Newport, Usk, Monmouth, Cinderford, Westbury, Gloucester, Cheltenham, Northleach, Witney, Oxford, West Wycombe, High Wycombe, Beaconsfield, Uxbridge, Ealing, London.

WELLINGBOROUGH TO BLACKPOOL.—W.R.

Direct route, passing through very busy districts: Wellingborough, Kettering, Oakham, Melton Mowbray, Nottingham, Ripley, Matlock, Bakewell, Buxton, Stockport, Manchester, Bolton, Preston, Blackpool. This route is rather difficult on the Matlock-Manchester section, and, if time is no object, would suggest going *via* the Great North Road. Wellingborough, Kettering, Stamford, Grantham, Newark, Retford, Doncaster, Tadcaster, Harewood, Otley, Skipton, Settle, Ingleton, Lancaster, Garstang, Blackpool. This route avoids all large towns, has good surface, but one or two stiff hills.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns First 12 words or less 2/-, and 2d. for every ditional word. Each paragraph is charged parately. Name and address must be counted. ies discounts, conditions, and special terms regular trade advertisers will be quoted on plication.

Postal Orders and Cheques sent in payment for vertisements should be made payable LLIFFE & SONS Ltd., and crossed & Co. easury Notes, being untraceable if lost in nsit, should not be sent as remittances.

All advertisements in this section should be ompanied with remittance, and be addressed the offices of "The Motor Cycle," Hertford eet, Coventry. To ensure insertion letters uld be posted in time to reach the offices of he Motor Cycle," Coventry, or London (20, dor St., E.C.4), by the first post on Friday rning previous to the day of issue.

All letters relating to advertisements should ote the number which is printed at the end of ch advertisement, and the date of the issue which it appeared.

The proprietors are not responsible for clerical printers' errors, although every care is taken avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be ressed to numbers at "The Motor Cycle" Office. en this is desired, the sum of 6d. to defray the cost of stration and to cover postage on replies must be added the advertisement charge, which must include the ds Box 000, c/o "The Motor Cycle." Only the number appear in the advertisement. All replies should be ressed No. 000, c/o "Motor Cycle," 20, Tudor Street, .4. *Replies to Box Number advertisements containing ittances should be sent by registered post, but in all such s it is advisable to make use of the Deposit System.*

the case of motor cycles offered for sale under a box aber, as it is unusual for these to be sold without first g inspected by the intending purchaser, advertisers will litate business by embodying in their advertisements e mention of the district in which the car offered be seen and tried.

DEPOSIT SYSTEM.

ersons who hesitate to send money to unknown persons deal in perfect safety by availing themselves of our osit System. If the money be deposited with "The or Cycle," both parties are advised of this receipt. he time allowed for a decision after receipt of the is is three days, and if a sale is effected we remit the unt to the seller, but, if not, we return the amount he depositor, and each party to the transaction pays iage one way. For all transactions up to £10, a osit fee of 1/- is charged; on transactions over £10 under £50, the fee is 2/6; over £50 and under £75, 5/-; £75 and under £100, 7/6; and on all transactions £100, ¼ %. All deposit matters are dealt with at Tudor Street, London, E.C.4, and cheques and money ers should be made payable to Iliffe & Sons Limited. he letter "D" at the end of an advertisement is an cation that the advertiser is willing to avail himself of Deposit System. Other advertisers may be equally rous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no wer to their enquiries are requested to regard the ice as an indication that the goods advertised have ady been disposed of. Advertisers often receive so y enquiries that it is quite impossible to reply to one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0016

ONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, rth Finchley. [2930

IVERPOOL and District Agents for A.B.C. Place orders now to secure early delivery.—Victor Horsn, Ltd., 9, Parr St., Liverpool. [0003

A.B.C., 1915, 3½h.p., spring frame, 4 speeds, clutch and kick starter, lamps, horn, tools, etc., little ed. 105 gns.—Slingo, 11, Hythe Bridge St., Oxford. [X6473

WAUCHOPE'S

9, Shoe Lane. Fleet Street. London. EC4.

For square deals and Values....

City Agents for all the leading makes of Motor Cycles. Also for cycle cars and light cars. A varied selection of new and second-hand machines for sale for immediate delivery. Inspection cordially invited. Our usual guarantee of mechanical fitness accompanies second-hand machines. If you want anything in motor cycles or combinations, you can usually get it from

WAUCHOPE'S

and be certain to get every satisfaction.

The latest 1919

6 h.p. J.A.P. Twin Cylinder Engines

From Stock. Trade Supplied. Terms on application; these include extras. 50 Engines for immediate delivery, £37 10s. each.

Second-hand Engines taken in part payment. GOOD PRICE ALLOWED.

Makers' Guarantee

Wauchope's, 9, Shoe Lane, London

'Phone: Holborn 5777

IMPORTANT NOTICE.

Owing to the Olympia Show, the issue of "The Motor Cycle" for November 13th will be closed earlier than usual. All copy and instructions for Miscellaneous Advertisements must therefore be in our hands not later than first post on Thursday, November 6th.

MOTOR CYCLES FOR SALE.

A.B.C.

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [X9724

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [X6969

Abingdon.

ABINGDON King Dick, 1916, 4h.p., 2-speed, and clutch, top-hole; £47.—63, Arlingford Rd., Brixton, S.W.2. [9743

ABINGDON Motor Cycle, 3½h.p., spring forks, mag., fitted stand and carrier; £25.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X6690

ABINGDON King Dick, 1914, 4h.p., T.T. model, stored 4½ years, same tyres and belt, plating and enamel perfect (red), too fast for present owner; £60; a hargain.—Kemp, Coal Merchant, Bagshot. [X6965

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [9574

A.J.S. 2¾h.p., 2-speed, hand clutch; £45; good.—Croxton, Market St., Uttoxeter. [X6654

A.J.S. 1914 6h.p. Combination, good engine; 100 gns.—15, City Walls, Chester. [X6917

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

6h.p. 1914 A.J.S. and Sidecar, including accessories; £110.—Wanchope's, 9, Shoe Lane, London. [9945

A.J.S. 2¾h.p., 1914, gear box, accessories, excellent condition, must sell; £48.—22, Campbell Rd., Hanwell. [9983

A.J.S. 2¾h.p., 1915-16, 3 speeds, clutch, all fittings, excellent condition; £70.—Stone, Hazeldene, Shawfield Park, Bromley. [X6496

2¾h.p. A.J.S., 3-speed model, very fast and reliable machine; £65.—B. H. Pottier, 25, Brearley St., Birmingham. [X6475

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [1089

A.J.S. 4h.p. 1916 Combination, newly overhauled: any trial; spare tubes, chains, accessories; £95.—Pape, Plumber, Workington. [9826

1919 A.J.S. Combination, brand new, just received from works; offers.—J. Smith and Co., 16, Hampstead Rd. London, N.W. [1301

A.J.S. 2¾h.p., 1914, 3-speed countershaft, hand clutch, lamp set, and horn, in good running order; £46.—H.K-M., Ower, Romsey, Hants. [1045

A.J.S. 1914 Combination, hood and screen, Klaxon, 3 lamps, 2 generators, 3-speed; any trial here; £96.—Pugh, East Barnet Rd., New Barnet. [1297

A.J.S. Combination, 6h.p., 1917, Cooper sidecar, wind screen, hood, etc.; £135; or exchange car or lorry.—8, Noel Rd., Edghaston, Birmingham. [X6484

1916 A.J.S. 6h.p. and Sidecar, spare wheel, electric side and rear light, wind screen, all spares, etc.; £140, or nearest.—53, Walsall Rd., Bridgtown, Cannock. [9697

A.J.S. 6h.p. Combination (1916), complete with Lucas electric lighting, wind screen, hood, spare wheel, Tan-Sad seat; £135 for quick sale.—50, Marston Rd., Stafford. [X6919

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth Sole agents. Now booking for earliest deliveries. [0007

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S. 2¾h.p., 3-speed, clutch, kick start, excellent running; or exchange for 5 or 6h.p., with sidecar, chassis.—W. W. Beeston, Beaconsfield, Bucks. [9603

A.J.S. 1916 Combination wind screen, Lucas lamps and horn, electric sidecar lamp, just been overhauled, excellent condition; 130 gns.—67, Lea Rd., Wolverhampton. [X6947

A.J.S., 1915 16, 4h.p., and Canoelet sidecar, spare chains, valve, wind screen, speedometer, tools, etc., in excellent condition; £120.—1, Desmond Av., Beverley High Rd., Hull. [X6924

1917 A.J.S. 6h.p. Combination, spare wheel, screen, apron, 3 lamps, and horn, at present undergoing overhaul, ready in 2 weeks; £135.—Box L5,057, c/o *The Motor Cycle*. [9841

1918 6h.p. Military A.J.S. and Watsonian sidecar, apron, Klaxon, etc., not done 1,500 miles; £145, or near offer; buying car; Bordesley, Birmingham.—Box L5,094, c/o *The Motor Cycle*. [1257

A.J.S. 1919 6h.p. Combination, standard specification, unscratched, small mileage, 7 weeks old, Lucas lamps, mechanical horn; view 2-4; offer.—Griffiths, Sandbach Rd., Alsager, Cheshire. [X6476

1915 A.J.S., 6h.p., fitted with Swan sidecar, 4-point attachment, complete with hood, screen, side curtains, luggage grid, electric lighting by accumulator fitted in metal case; £110.—Fina, 13, Britannia Rd., Norwich. [9614

1916 Model 6h.p. A.J.S. Combination, mechanically perfect, excellent condition, interchangeable wheels all round, complete with spare wheel and tyre, screen, storm apron, and tools; £140.—2, Avenue Rd., Wolverhampton. [X6801

LATE 1917 A.J.S. Combination, delivered 1918, Lucas dynamo lighting, screen, hood with envelope, storm apron, spare wheel, oversizze tyres, beautiful appearance and condition, not done 1,000; £180.—Box L5,089, c/o *The Motor Cycle*. [1247

A.J.S. 6h.p. 1913 Combination, 3-speed, C.B., P. and H. lamp, Spartan horn, Lycett pillar saddle, engine and gears in perfect condition, tyres good for 5-6,000 miles, magneto requires slight adjustment, stored 3 years; 85 gns.; owner requires 6h.p. Enfield combination; consider exchange.—Box L5,096, c/o *The Motor Cycle*. [1286

1919 A.J.S. Combination, new, wind screen, storm apron, and spare wheel, nearly £20 worth of extras as follows—hood, patent spring seat-pillar, Lucas horn, best Lucas lamps all round, £3/15 All-in insurance policy for one year, numbered ready for road, luxurious outfit for the sum of £195; have purchased Lagonda coupe car, now due; will sell car or combination, but not both.—Willcox, 93, Broad Lane, Tottenham. [9858

Akkens.

AKKENS, direct from factory to rider, 2¾h.p. 2-stroke, 70×70, variable pulley, E.I.C., Amac, Dunlop; full specification on application; 39 gns.; delivery 2-3 weeks.—Thomas and Gilbert, Union St., Smethwick. [9737

Alldays.

ALLON. — Caffyns, Ltd., Eastbourne, for delivery shortly. [0017

ONLY Wants Seeing.—Allon, 1916, complete, been stored; nearest £40.—Bird, 32, Clovelly Rd. Hornsey, N. [1163

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2931

1919 Alldays Allon, mileage 250, Lucas lamps Klaxon, as new; £72.—10, Princes Parade, Church End, Finchley, N.3. [9935a

ALLON, late 1915, 2-speed, stored 2 years, accessories, many improvements; £45.—Johnstone, Toynbee Hall, Commercial St., E.1. [X6797

ALLON 1915 2-stroke, 2-speed countershaft, guaranteed perfect running order, fully equipped; £38/10.—19, London Rd., Stranraer. [X6361

ALLDAY 2¾h.p. Matchless, 2-speed, free engine, lamp and horn, new tyres, tubes and belt, nice machine; must sell; £35.—475, Green Lanes, Harringay. [9531

ALLON, 1917, 2¾h.p., 2-speed, clutch, special saddle, extra heavy Dunlop tyres, lamps, horn, etc., only run 1,200 miles; offer.—Barlow, Hazeldene, Altham, Accrington. [1141

F.O.C.H. have a 1919 Alldays Allon actually in stock, and brand new.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube) 'Phone: Hampstead 3752. [9464

ALLDAYS Allon, 2-stroke, 2¼h.p., condition as new, perfect order throughout; £55; can be seen after midday Saturdays.—Apply, Pettitt, 1, Windsor Cottages, Windsor Rd., South Farnborough, Hants. [X6887

ALLDAYS Allon 2¾h.p., 1916, 2-speed, fitted with 1919 Allon engine, E.I.C. mag., new Amac, lamps, mechanical horn, speedometer, tools, complete, drip feed, in splendid condition; £50.—33, Gateley Rd., Brixton, S.W.9. [1295

F.O.C.H. for the new Allon de Luxe, 2-speed, kick starter.—Book your order now for early 1920 deliveries, starting January. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). Phone: Hampstead 3752. [9469

ALL IN STOCK

For Immediate Delivery.

NEW MODELS.

1919.

BLACKBURNE, 4 h.p., ... **£110 5 0**
CLYNO, 2¼ h.p., 2-stroke, 2-speed **£63 0 0**
ENFIELD, 2¼ h.p., 2-stroke, 2-speed **£57 15 0**
PORTLAND, 2¼ h.p., 2-stroke, 3-speed **£63 0 0**
OMEGA, 2½ h.p. **J.A.P.,** 2-speed **£74 18 6**
HARLEY-DAVIDSON, 7-9 h.p. magneto **£153 16 3**

1919

SPECIAL BARGAINS.

NEW IMPERIAL, 8 h.p. J.A.P. twin engine, 3-speed, clutch, all-chain drive, coachbuilt Sidecar, W.D., all-weather models. Makers' price, £144 18s.
Our price **£135**
ROVER, 6 h.p. J.A.P. twin engine, 3-speed, clutch, chain drive, coachbuilt Sidecar, W.D., all-weather models. Makers' price, £188.
Our price **£125**

SECOND-HAND SOLO MACHINES.

SUNBEAM, W.D., 2¼ h.p., 3-speed **£84**
DOUGLAS, W.D., 2¾ h.p., 2-speed **£70**
RUDGE-MULTI, 1914, 3½ h.p., speedometer **£65**
DOUGLAS, W.D., 2¾ h.p., 2-speed, lamps **£75**
JAMES, 1915, 2¾ h.p., 2-stroke **£50**
CONNAUGHT, 2¾ h.p., single-speed **£35**
RUBY, W.D., 8 h.p. J.A.P., 3-speed **£115**
ALLDAYS ALLON, 1918, 2¾ h.p., 2-speed **£55**
ZENITH, 1913, 90 bore J.A.P., all access. —
IVY, 1916, 2¾ h.p., 2-stroke, lamps, etc. .. —
CALTHORPE, 1919 3 h.p. Precision **£75**

SIDECAR COMBINATIONS.

ARIEL, 1916, 3½ h.p., 3-speed **£115**
INDIAN, 1916, 7-9 h.p. Powerplus **£150**
SUNBEAM, 1918, 3½ h.p., sporting Sidecar **£175**
JAMES, 3½ h.p., 3-speed, all-chain **£95**
HARLEY-DAVIDSON, 1916, 7-9 h.p., magneto, re-enamelled **£150**
ENFIELD, 1914, 6 h.p., all accessories .. **£130**
B.S.A., 1914, 4 h.p., 3-speed **£130**
SUNBEAM, 1914, 3½ h.p., 3-speed **£110**
ARIEL, 1919, 3½ h.p., 3-speed **£130**

Maudes' Motor Mart
100, Great Portland St, London W. 1.
100, Paris St, Exeter.

Telegrams:
"Abdicate, Wedo, London."
Telephone: Museum 557.

Telegrams:
"Combustion, Exeter."
Telephone: Exeter 933

MAUDES MOTOR MART
THE SEAL OF SATISFACTION

MOTOR CYCLES FOR SALE.

Ariel.

JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [2929

1919 3½h.p. Ariel Combination, done 1,800 miles just decarbonised, all accessories; £115.—7 Howard Rd., Walthamstow. [9879

ARIEL 2½h.p., re-stove enamelled, fitted with new accumulator and Dunlop, inner tube; £18.—T. A. Smith, Syringa, Oxstalls Rd., Gloucester. [X6979

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare part stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4026

ARIEL, new and in stock, 3½h.p., 3-speed, countershaft, £95; also 1916 3½h.p. C.B. combination, full accessories, £82.—Ross, 86, High Rd., Lee, S.E. [9706

1914 3½h.p. Ariel, T.T., decompressor, lamps, and accessories, splendid condition; £40; lightweight part payment.—Velvick, 4, School Terrace, Hawkhurst Kent. [X6979

1919 (August) 3½-4h.p. Ariel Combination, just run in, tyres and everything as new, 3 lamps horn, and tools; any trial; £117; after 5.—20, Craven Park, Harlesden, N.W. [1003

ARIEL 1919 (April) 6h.p. Combination, 3-speed countershaft, Millford sidecar, speedometer lamps, Klaxon, tools, spares, Tan Sad, overalls, insurance; nearest to £135.—Oglesby, 12, Leaside Av. Muswell Hill, N.10. [1233

F.O.C.H. have a 1919 6-7h.p. twin Ariel coach combination, fully equipped, small mileage, perfect throughout.—F.O.C.H. (Fair Offer Car House) 5, Heath St., Hampstead (near Hampstead Tube) 'Phone: Hampstead 3752. [9459

1919 Ariel 6-7h.p., 3-speed, K.S., handsome new sidecar fitted with screen, complete with lamp horn, and all accessories, delivered August, as new price £140, or near offer. This outfit is a bargain, and cost over £150.—Ormerod, Wroxham, Norfolk. [X6377

Auto-Wheels.

AUTO-WHEEL, guaranteed, any trial; £12.—Hurst Newbury St., Wantage. [1092

AUTO-WHEEL, good condition, new tyre; £10, or offer.—Martin, Lindholme, Lewes. [X6846

WALL Auto-Wheel, perfect condition; £11/10, or offer.—36, Wemyss Rd., Blackheath. [X6802

AUTO-WHEEL, with strong Lea-Francis bicycle, for sale, just overhauled at makers; £25.—A.E.H., The Brake, Torquay. [X6641

WALL Auto-wheel, absolutely perfect condition, as new, complete with fittings, ridden 100 miles only; £15, or offer.—67, Oxford Ter., W.2. [9981

B.S.A. Auto-Wheel, seen running, £14; also gent's 3-speed cycle, fitted with oil bath, etc., recently cost £20, what offers?—10, Richmond Place, Plumstead, S.E. [9929

WALL Auto-Wheel, perfect, £11; also piano, black ebonised, inlaid panel, iron frame, check action, new condition; exchange with cash for late combination.—C. Upperton, Pittleworth. [8432

AUTO-WHEEL, all complete, mag., carburetter, little beauty, ready fit any machine; £16/16, worth 20 gns.—Wandsworth Motor Exchange, Ebaer St., Wandsworth. 'Phone Battersea 327. [1031

FOR Sale, Wall auto-wheel de luxe, spare outer tyre, perfect running order (trial allowed), attached specially strong roadster bicycle, new tyre and tubes; auto-wheel, £15; bicycle, £9/9; both together, £23/6 (present price new wheel £23).—The Vicar, Drax, Selby. [9802

Bat.

8h.p. Bat-Jap Combination, perfect, any trial; best offer over £65.—Hurst, Newbury St., Wantage. [1090

BAT-J.A.P., 10h.p., 2-seater C.B. sidecar, Sturmey-Archer 3-speed, kick start, electric light, new spare tyre; £138, or best offer.—65, Yewfield Rd., Willesden. [9728

BAT 8h.p. Luxurious Combination, 3-speed, kick starter, clutch, J.A.P. engine, fully equipped, condition as new throughout; trial or examination.—Parker's, Bradshawgate, Bolton. [X6768

8h.p. Bat-Jap 2-speed P. and M. Countershaft Combination, just overhauled makers (hill shown), spring frame, studded tyres; nearest £70, or exchange less power and cash; any trial.—Parkinson, 30, Market St., Shawforth, Rochdale. [X6884

Blackburne.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [4016

1919 4h.p. Blackburne, brand new; £110.—J. Smith and Co., 16, Hampstead Rd., London, N.W. [1303

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2932

BLACKBURNE 1920 Models, 4h.p. solo, 3-speed, in stock for immediate delivery; £110/5. Other models arriving. Order now from the city agents.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0492

MOTOR CYCLES FOR SALE.

Blackburne.

LACKBURNE, 1920, 4h.p.—We can supply from stock; no premium; £110/5.—J.O.J., 124, Holdenst Rd., Bournemouth. [9754

19 Blackburne, 4h.p., 3-speed, just delivered, unridden and unscratched, owner purchased car lst awaiting delivery; for immediate sale; what rs?—Letters only to 15, Portland Crescent, Plymouth ve, C.-on-M., Manchester. [X6938

Black Prince.

E are the sole London distributing agents for the new Black Prince horizontal twin 2-stroke. -agents are now being given. Please call at Stand 42 at the Olympia Show.—Full particulars upon lication to Jones' Garage, Woodside Parade, N. chley, N.12, or The Broadway, Muswell Hill, N.10. [9682

Bradbury.

.p. Bradbury Motor Cycle; £40.—Apply, Cricketers' Inn, Addington, Surrey. [X6858

RADBURY Agents, Bright and Hayles, 78, Church St., Camberwell, London. [9899

.p. Bradbury, good puller, ready ride away; 28 gns.—George, 103, Abbotts Rd., Southall. [9988

RADBURY 1915 4h.p. Combination, 3-speed, clutch model; £68.—25, Venue St., Poplar, E. [1065

RADBURY, 4h.p., in tip-top condition, take any hill; £40.—Jackson, George Hotel, Chesham, cks. [9768

13 Bradbury 4h.p. fast, powerful, reliable, water-tight mag., Villiers hub; £35.—46, apel St., Marylebone. [9556

RADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9575

RADBURY 4h.p. and Sidecar, 3-speed Armstrong, Bosch, Amac, new rear and sidecar tyres; £50.—ite, Murray, 12, South Island Place, Brixton, S.W.9. [9884

RADBURY Motor Cycle, 4h.p., 3-speed clutch model, tools, horn, new tube and belt, ride away; 5, or near offer.—39, Castlebar Rd., Ealing, W.5. [1130

RADBURY 4h.p. and Sidecar, 3-speed countershaft gear, h.b. controlled clutch, in good order; trial arranged; £75.—Russell, 29, East St., Barking. ex. [9767

RADBURY, 1913, 4h.p., Philipson, B. and B., tyres very good, new belt, lamps, tools, Klaxon, re inner and carrier; £35.—197, Hampstead Way, der's Green, N.W. [9605

RADBURY Combination, 4¼h.p., countershaft 2-speed, clutch, free engine, kick start that works t time, absolutely sound throughout, just toured ronshire; price 65 gns.; guaranteed.—Apply, Conioner, 44, London Rd. (next Croydon Hospital). [1021

Brough.

OUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., cial Dealers, Liverpool and Manchester. [7039

ROUGH, 1914, 3½h.p., 2-speed, speedometer, Klaxon, very fast machine; no reasonable offer ised.—Whitehead, 77, Marylebone Lane, Oxford W. [1146

Brown.

1h.p. Brown, good running order; £23.—3, Foxley 2 Rd., Kennington. [8085

ROWN, 3h.p., accumulator ignition, B. and B., variable jet, Dunlop belt, horn, in running order; .—Cawley, Copthorne, near Crawley. [1103

ROWN 3½h.p. Combination, Druid forks, Bosch, B. and B., Osborne 4 speeds and free-engine ey, good condition; £39.—38, Hopedale Rd., Charlton , S.E.7. [X6803

B.S.A.

50.—B.S.A., 4h.p., perfect.—Write, Box L5,031, c/o *The Motor Cycle.* [9676

.S.A. 1920 Models; strict rotation.—Taylor's Garage, Wednesbury. [X6849

.S.A.—Prospects of early delivery. Secure your order now.—Parker's, Bradshawgate, Bolton. [X6771

.S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9576

19 B.S.A., 4¼h.p., brand new, just delivered; £105.—Furlong, 123, Powis St., Woolwich. [9866

.S.A.—Two 1919 combinations now in stock.—Edwards, 7, Exhibition Rd., Earl's Court, S.W.7. [9516

ONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, th Finchley. [2919

.S.A. 4¼h.p., 2-speed, good condition, accessories; any trial; £50.—55, Chislehurst Place, Little Horton, Bradford. [X6980

.S.A. 1912 3½h.p., Bosch, excellent condition, ride away; £45.—Hadrill, 24, Westmount Rd., ham, S.E.9. [1293

ATE 1914 B.S.A. Coachbuilt Combination, 2-speed, lamps, horn, speedometer, perfect; £62.—194, er St., Enfield. [9882

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B.S.A., 3½h.p., 2-speed, 1913 model, new 1914, perfect running order, fully equipped; £40.—19, London Rd., Stanraer. [X6862

1919 4¼h.p. B.S.A. Model K., Swan torpedo sidecar, P. and H. head lamp, very smart outfit; £120.—Anstey Cottage, Alton, Hants. [1054

LATE 1919 B.S.A., lamps, Klaxon, and tools, perfect; any inspection; 100 gns., or near offer.—C. Graham, Whitley, Coventry. [X6846

SOUND B.S.A., superb engine, 3-speed countershaft, kick start, any trial near London; £60.—Box L5,059, c/o *The Motor Cycle.* [9843

B.S.A., 1915, 3 speed, 4¼h.p., all chain drive, and 1919 Colonet coach sidecar; £96.—Halifax Motor Exchange, Union St. South, Halifax. [9777

1915 B.S.A., 3-speed, 4¼h.p., all-chain drive, Millford coach sidecar, lamps, etc., excellent condition; £98/10.—Madge, Rochford, Essex. [X6651

B.S.A., 2-speed clutch, coachbuilt combination, guaranteed perfect order, genuine bargain; £65.—Fred Booth, Brackley, Northants. [1187

1914 3½h.p. B.S.A. C. Combination, countershaft, all spares; trial given; perfect throughout; £85, no offers.—Kilborn, Rothwell, Northants. [X6450

1913 B.S.A., clutch model, T.T. handle-bars, just overhauled, lamps, horn, new rear tyre and belt; £55.—Mayow, Aldborough, Norwich. [9951

1914 B.S.A. 4¼h.p. Combination, sidecar as new, 3-speed countershaft, guaranteed mechanically perfect; £85.—Lee, 28, Westgate, Grantham. [1193

B.S.A. 4¼h.p. 1916 Canoelet Combination, 3-speed countershaft, chain-cum-belt, lamp, speedometer, etc.; £90.—Eyre, 12, Chaffinch Rd., Beckenham. [X6913

B.S.A. 4¼h.p. Coach Combination, 3-speed, chain drive, Cameo screen, lamps, mechanical horn, new tyres; £110.—Newson, Westleton, Saxmundham. [9650

B.S.A. 1919 4¼h.p. 3-speed and B.S.A. sidecar, used for a few miles during recent strike; £145.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0491

B.S.A., 1915, all chain, 3-speed, clutch, Lucas lamps, Cowey's speedometer, horn, tools, perfect running order; £70.—Sharpe, 138, Sherrard Rd., Forest Gate, E. [9793

1919 B.S.A. Combination, 4¼h.p., 3 speeds, chain-cum-belt, engine No. 29973, perfect condition, luggage carrier, horn, spares.—Postmaster, Preston Rd. Post Office, Brighton. [X6723

B.S.A.—The Birmingham City Agents and B.S.A. Specialists, County Cycle and Motor Co., 307 and 308, Broad St. All replacements in stock.—Tel.: Comocyco, Birmingham. [8224

1917 B.S.A. 4¼h.p. Combination, condition as new, complete with hood, Lucas lamps, horn, etc.; trial any time; £110, no offers.—Richardson, 380, Kingsland Rd., E.8. [9788

LATE 1915 B.S.A., 4¼h.p., Model H, all chain, thoroughly overhauled and guaranteed perfect and as new; £85.—Jones' Garage, Woodside Parade, N. Finchley, N.12. [9687

1915 B.S.A., 4¼h.p., Model K, 3-speed, kick start, just been thoroughly overhauled, in new condition, guaranteed perfect; £78/10.—Jones' Garage, Woodside Parade, N. Finchley, N.12. [9696

4¼h.p. B.S.A., 1916 model, fitted with handsome coachbuilt sidecar, speedometer, lamps, 3-speed countershaft gear, kick starter and clutch; 100 gns., guaranteed.—Wauchope's, 9, Shoe Lane, Fleet St., London. [9944

1917 B.S.A. 4¼h.p. Coachbuilt Combination, 3-speed, counter-shaft, kick start, all accessories, spare tyre, insurance policy, trial by appointment, excellent condition; £105.—Isard, Camano, Tonbridge. [1177

F.O.C.H. for B.S.A.'s.—Book your order now for the very earliest 1920—delivery, all models. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3762. [8618

B.S.A., 1914, all chain, kick start, variable jet carburetter, powerful 4¼h.p. engine, countershaft, 3-speeds, fine running order, Mills-Fulford sidecar, lamps, generator, horn, tools, trial any time; 96 gns.—Cartwright, Berwyn, Brook Lane, Chester. [X6700

1916-17 4¼h.p. B.S.A., 3-speed countershaft, Model K., Bosch mag., laid up since July, 1917, owner on military service, with B.S.A. coachbuilt sidecar, delivered last month, all as new, with lamps and tools; owner going abroad; £130.—Courtenay Shaw, Holly Lodge, Branksome Park, Bournemouth. [1059

B.S.A., 1919, 4¼h.p., 3-speed, clutch, kick starter, complete with Cooper sidecar de luxe, horn, and usual accessories, also with complete Lucas dynamo lighting set (3 lamps), all in splendid condition and perfect running order; price £150, including dynamo set.—Frank Whitworth, 139, New St., Birmingham. [X6330

Calcott.

CALCOTT 1914 2¾h.p., Hutchinsons, Bosch, B. and B., recently overhauled, excellent condition; £35, or near.—Viewed 77a, Ackerman Rd., Brixton. [9602

MOTOR CYCLES FOR SALE.

Calthorpe.

CALTHORPE 2-speed 2-stroke, new condition; £35.—57, Kenbury St., Camberwell, S.E. [1056

CALTHORPE 2-stroke, 2-speed, in excellent condition; £43.—74, Handcroft Rd., Croydon. [1186

CALTHORPE-J.A.P., 1919, week old, Klaxon, Lucas, tools; reasonable offer.—Morgan, 3, Glenloch Rd., N.W.3. [9875

CALTHORPE-J.A.P., 1916, Enfield 2-speed, clutch, lamps, horn; £42; offers.—49, Well St., Hackney, E. [1192

CALTHORPE-J.A.P., 1919, 2¾h.p., 2-speed, as new; bargain, £48.—Hasford, 43, Park Rd., Chelmsford. [X6704

1915 Calthorpe, 2¾h.p., 2-speed, good order and running condition, lamps; £42.—Write, Shield, 10, Richmond Rd., Ealing. [9691

CALTHORPE 2¾h.p., single speed, new Dunlop rear, lamps, horn, spare belt, tube, etc.; £40.—A. W. Blenkin, Patrington, Hull. [9568

CALTHORPE-PRECISION, 2-stroke, just arrived, the new 1919, 3½h.p., 2-speed model; list price.—Clarke Bros., Queen St., Louth. [1036

CALTHORPE-J.A.P. 2¾h.p., new this year, 2-speed, clutch, with Watsonian featherweight sidecar, equipped; £56.—70, Minet, Av., Harlesden. [9985

2¾h.p. Calthorpe-Jap, 2 speeds, free engine, speedometer, lamps, and all accessories, perfect running order; £45.—White, 30, Rusholme Rd., Putney. [1100

1919 2¾h.p. Calthorpe-Jap, Enfield 2-speed gear, first-class order, heavy 2¼ tyre to back wheel, horn; £50.—Fowler, Linley, Chesswood Rd., Wortbing. [9965

CALTHORPE.—Delivery from stock special lady's model, 2¾h.p., Enfield 2-speed gear, just delivered from makers; £63.—P. J. Evans, 87-91, John Bright St., Birmingham. [9569

F.O.C.H. have a 1916 Calthorpe-Jap 4-5h.p. twin coach combination, Enfield gear and cush drive, fully equipped, new tyres, perfect.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9465

Campion

3½h.p. Campion-Jap, engine just overhauled, Grado gear, B. and B., variable jet, and in perfect condition.—Apply, H. Pentelow, 10, Market Hill, Rothwell, near Kettering. [1038

1917 6h.p. Campion-Jap. Combination, electric lighting, S.A. 3-speed, kick starter, chain drive, Bonniksen speedometer, 2 horns, mirror, watch, Cameo wind screen, 2 new tyres, good condition; £120.—Smith, 30, Newton St., Newark. [X6469

CAMPION-J.A.P. 8h.p., 1915, C.B. sidecar, wind screen and hood, 3-speed countershaft, kick start, clutch, 2 sets lamps, tools, spare tube, tyres good, perfect order, stored 2 years; first cheque £100 secures.—Wright, 361, Aylestone Rd., Leicester. [9819

Centaur.

CENTAUR 2¾h.p. V-twin, 3-speed gear, new back tyre, lamps, horn, etc.; £35.—J. Davis, engineer, Woodditton, Cambs. [X6715

CENTAUR 1913 3½h.p., 2-speed, handle start, splendid running order, very reliable; £38/10.—19, Stockwell Park Crescent, S.W.9. 'Phone Brixton 2336. [X6494

Chater-Lea.

CHATER-LEA 3½h.p., mag., B.B., ride away; £28.—193, Upper Tooting Rd., S.W.17. [9927

SOUTH Lancashire Only.—Chater-Lea enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7040

CHATER-LEA 8h.p. Combination, 3-speed gear, fine turnout; any trial; £95.—W. W. Young, Hoo, Rochester. [9668

8h.p. Chater-Lea Coachbuilt Combination, new gears, good tyres; nearest offer to £70.—Iredale, 24, Bar Lane, Stockbridge, Keighley. [X6901

1914 2¾h.p. Chater-Lea, Bosch, B. and B., in splendid condition; £28, or near offer; owner buying new machine.—17, Station Rd., Christchurch. [X6930

Chater-Lea-De Dion.

3h.p. Chater-Lea-De Dion, low built, Lycetts saddle, B. and B., in good condition throughout; £15, or near offer.—E.L., The Stables, Lymes Holme, Stanmore. [9928

Chater-Lea-Jap

1914 4h.p. Jap-Chater 2-speed; bargain, £38.—1, Bellingham Terrace, Catford. [1156

CHATER-J.A.P. 1915 4h.p. Combination, 2 speeds, F.E., lamps, horn, etc., just overhauled, ride away; £65.—10, Thrale Rd., Streatham. [9725

CHATER-J.A.P., 6h.p., 1916 engine, watertight Bosch, Amac, Grado gear, strong cancelet sidecar, good running order; 50 gns.—728, Barking Rd., Plaistow, E.13. [9806

8h.p. Chater-Lea-Jap Combination, 3-speed, clutch, handle start, luxurious special sprung coachbuilt sidecar, Easting wind screen, lamps, complete; 100 gns.—Johnston, Victoria Villas, Cleator Moor. [9604

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THE New 2¾h.p. Clipat 2-strokes, built for economy reliability, simplicity, direct from factory; £46/1 carriage paid; delivery 21 days.—C.P. Engineering Works, 62, Wells Rd., Bristol. [X69

Clyno.

1919 Clyno 2-stroke, new October; £64.—W. S., Morgan Rd., Reading. [68

CLYNO 1916 6h.p. Combination, spare wheel; £9—Ross, 86, High Rd., Lee, S.E. [97

BRAND New Clyno 2-stroke; what offers?—R., 3 Heroncourt Rd., Bournemouth. [X67

6h.p. Clyno, practically new, countershaft 3-spee K.S.; £75.—9, Church Rd., Willesden, N.W. [10

CLYNO 6h.p. Coachbuilt Combination, 2-speed, kic start; £65.—57, Kenbury St., Camberwell, S.E [105

CROW Bros., High St., Guildford, West Surre agents for the new Clyno.—Order now for earl delivery. [408

CLYNO Combination, 6h.p. twin, 2-speed, K.S., r cently overhauled.—Hadham Road Garage, Bishop Stortford. [975

BROOK Bros. are now booking orders for the ne 1920 Clyno motor cycles; write for particular to-day; early deliveries.

BROOK Bros., Burnham-on-Sea, can give deliver from stock of the new Clyno lightweight; writ for particulars. [959

6h.p. 1916 3-speed Clyno, just been overhauled an renovated; £85, or best offer.—Capt. Langley 10, Elm Grove Rd., Salisbury. [109

CLYNO, 1920 models, 2½h.p. 2-stroke, 2-speed, fro stock; 60 gns. (At Olympia Nov. 7th, Stand 272 —Tom Norton, Ltd., Llandrindod Wells. [982

6h.p. Clyno Combination, coachbuilt, 3-speed, clutch kick start, spare wheel, detachable wheels, tools £75.—198, Goldhawk Rd., Shepherd's Bush, W.12. [964

CLYNO 1913 5-6h.p. Coachbuilt Combination, 3 speed, spare wheel, lamps, horn, etc., good runnin order; £90.—Hearfield, Burnt Yates, Harrogate. [X676

CLYNO Combination, 1914, 5-6h.p., Bosch, 3-speed detachable electric lights, screen, spares, goo turnout; 100 gns.—Hyde, 81, Vigo Rd., Andover. [119

5-6h.p. Clyno Combination, 2-speed countershaft, kic starter, new Dunlop tyres throughout, lamps, horn and tools, good running order; £58.—209, Broadway W. Hendon. [105

CLYNO 1915 5-6h.p. Combination, 3-speed counter shaft, etc., 3 interchangeable wheels, lamps, tools wind screen, etc.; £75, or nearest offer; after 6.3 p.m.—13, Stuart Rd., Horn Lane, Acton. [110

8h.p. Clyno, new W.D. model, with specially stron ammunition carrier, 28in. heavy Dunlops, wi pull half ton; £118, or £123 with extra large coac body.—76, Western Rd., Southall, W. [110

CLYNO-J.A.P. 8h.p., new, W.D. finish, Dunlo heavy 28×3, Sandham patent 2-seater sidec with collapsible front seat, sprung pillion seat specially strongly designed for Government work £155.—Bomford, King's Muir, Sutton. [100

Coulson.

GIVEN Away, without premium, 1919 Coulson brand new, owner bought car; 85 gns.—Fludyer Hotel, Felixstowe. [995

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co. Official Dealers, Liverpool-Manchester. [704

Connaught.

1919 Connaught, 2½ 3h.p., lamps, etc., complete mileage 420; £55, no offers.—23, Manchester Rd., Burnley. [X676

Coventry Eagle.

2½h.p. Coventry Eagle, excellent condition; rid away; £39.—Royston, Maulden, Beds. [113

De Dion.

DE DION, 2½h.p., Amac, mag., new tyre, runnin order; £17.—Hudson, 1, Brook Rd., Redhill Surrey. 'Bus service, 59b. [X686

2¾h.p. De Dion, genuine, very fast, Chater-Le fittings, spare valves, plugs, etc., good condi tion; £25.—Orchard, Woodwells, Hemel Hempstead. [971

Dene.

DENE-J.A.P., late 1917, 8h.p. J.A.P. engine, Bosch mag, Amac carburetter, Sturmey-Archer 3-speed countershaft gear, Montgomery De Luxe sidecar, speed ometer, mechanical horn, all accessories and spares tyres almost new, smart turnout, little used; accep £150.—3, Beresford Sq., Woolwich, S.E. [958

Diamond.

2½h.p. Diamond-Villiers, Sept., 1919, perfect condi tion, horn, tools, etc.; 50 gns.—Apply, 85, King Rd., Chelsea. [977

MOTOR CYCLES FOR SALE.

Diamond.

1916 Diamond-Jap, 2¾h.p., Enfield 2-speed gear, perfect order, guaranteed; £55.—Jones' Garage, Woodside Parade, N. Finchley, N.12. [9688

DIAMOND-VILLIERS 2¾h.p., new last month, complete, lamps, accessories, etc.; £45; after 6, or appointment.—60, Lessar Av., Clapham Common. [9772

1919 (Aug.) 2¾h.p. Diamond-Jap, in exceptionally good condition, 2-speed Enfield gear, T.T. bars, long exhaust, new toolkit, horn, Dunlops perfect; £60; seen any time.—54, Talgarth Mansions, Barons Court, W. [9888

Douglas.

DOUGLAS, 1915, 2¾h.p., guaranteed; £80.—Ross, 86, High Rd., Lee, S.E. [9702

£29.—Douglas, 2¾h.p., ride away.—16, St. Mary Abbott's Terrace, Kensington. [1139

DOUGLAS, W.D., new July, all on; £72.—Braine, 30, Fillbrook Rd., Leytonstone, E.11. [9671

2¾h.p. W.D. Douglas, uncrated June; £67.—New-ton, Bincleaves, Westerham. [9736

NEW Douglas 4h.p. and Douglas sidecar, all accessories.—Bertello, Tailor, Wisbech. [1132

1917 4h.p. Douglas, nice order, very fast; £75.—1, Bellingham Terrace, Catford. [1154

DOUGLAS, 2¾h.p., lamps, good condition; £38.—127, Percy Rd., Shepherd's Bush, W. [9539

1915 2¾h.p. Douglas, 2-speed, incomplete; bargain, £30.—1, Bellingham Terrace, Catford. [1155

T.T. 2¾h.p. Douglas, completely overhauled (£16), fast, tools, etc.; £65.—1, Bradmore Rd., Oxford. [9586

DOUGLAS.—Now delivering new 1919 model 4h.p combination; £123.—Moffat, Yeovil. 'Phone: 50 [1103

DOUGLAS 2¾h.p., 2-speed, 1915 model; trial; £54.—Apply basement, 73, Ashmore Rd., Paddington. [1048

2¾h.p. W.D. Douglas, not run 1,000 miles; £75; Midlands.—Box L5,081, c/o *The Motor Cycle*. [1239

DOUGLAS, 1916, 2 speeds, lamps, etc., perfect; £57/10.—51, Maplethorpe Rd., Thornton Heath. [9960

1915 Douglas 2¾h.p., 2-speed, new saddle, T.T. bars; £50.—63, Solon Rd., Brixton, S.W. [9903

DOUGLAS, 1916, 2¾h.p., 2-speed, splendid condition, very fast; £65.—8, Station Parade, Balham. [9970

1916 4h.p. Douglas Combination, just overhauled, repainted: £95.—1, Bellingham Terrace, Catford. [1152

1914 Douglas, 2¾h.p., T.T. model, perfect running order, spares; £50.—Whittaker, New St., Lancaster. [1099

1915 Douglas 2¾h.p., black and gold, long exhaust, fast, splendid order; £53/10.—49, Robinson Rd., Tooting. [9818

DOUGLAS, 1914, stored, worth £70; offers, or part exchange combination.—Miss E. Holland, Eastry, Kent. [X6759

2¾h.p. Douglas, 1913, fine condition, speedometer, many spares; £48.—98, Gellatly Rd., New Cross, S.E. [X6839

DOUGLAS 1918 4h.p., 3-speed, coach combination, equipped, faultless; £95.—5, Victoria Av., Surbiton. [9906

1916 Douglas 2¾h.p., 2-speed; £60; gradual payments accepted.—Write P., 2, Aberdeen Lane, Highbury. [1127

DOUGLAS 2¾h.p., 1916, 2-speed, buffer spring forks, like new; £55.—Hutton, Red Lion Hill, East Finchley, N. [X6983

1919 4h.p. Douglas Combination, splendid order; £125.—Edwards, 7, Exhibition Rd., South Kensington. [1267

DOUGLAS 2¾h.p., 1915, copper exhaust, lamps, etc., splendid condition; £50.—20, Montagu Rd., Hendon, N.W. [9916

1919 Douglas 4h.p. Combination, as new, all lamps, horn, wind screen, etc.; £145.—Cooke, 21, Gray's Inn Rd., W.C. [1237

DOUGLAS Solo and Combination; regular monthly deliveries from November.—Lloyd and Son, 29, Station St., Lewes. [9583

DOUGLAS, 1915, 2¾h.p., 2-speed, very good condition; £50.—Salmond, 22, Redfield Lane, Earl's Court Rd., S.W. [9642

DOUGLAS, 2¾h.p., 2-speed; £48, or near offer; mornings and evenings.—Reed, 4, Hay's Mews, Berkley Sq., W.1. [9719

1919 W.D. Douglas, 2¾h.p., excellent condition, spares, etc.; £65.—Brockhouse, Lawnside, Hill Top, West Bromwich. [X6959

1919 Douglas 4h.p. and Sidecar, only run 300 miles, like new, condition ready to drive away.—Brooks., Burnham-on-Sea. [8786

DOUGLAS 2¾h.p., 2-speed, bought new August, lamps, Klaxon, etc., only ridden about 500 miles, as new.—Sleep, 149, High St., Notting Hill Gate, W. [X6603

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Douglas.

1918 Douglas, 4h.p., 3-speed, clutch, K.S., and chassis; £88; ready to ride.—262, Blackhorse Lane, Walthamstow. [9748

1919 Douglas 4h.p. Combination, excellent condition, lamps, horn, rainproof apron; £150.—Ward, 99, Wardour St., W.1. [9827

2¾h.p. 1919 Douglas, lamps, Klaxon, long exhaust and spares; £74, or near offer.—Wartnaby, Clipston, Market Harborough. [X6678

DOUGLAS, 1915, 2¾h.p., 2-speed, Dunlops, tools, etc., perfect condition; £48.—18, Marlborough Rd., Old Kent Rd. S.E. [9812

DOUGLAS 1914 2¾h.p., 2-speed, engine just overhauled, electric light; £50.—Webb, 12, Shaftesbury Rd., London, N.19. [1007

1919 4h.p. Douglas Combination, new; immediate delivery; £140.—J. Smith and Co., 16, Hampstead Rd., London, N.W. [1302

DOUGLAS 4h.p. 3-speed Combination, smart and powerful; 95 gns.—Halifax Motor Exchange, Union St. South, Halifax. [9778

DOUGLAS Combination (1917), 4h.p., lamps, horn, speedometer, screen; absolutely it; £100.—Bunting, Masons Av., Wenldstone. [1026

1919 Douglas, 2 lighting sets, spares, complete, topping machine; best offer, for quick sale.—Wyreholme, Osborne Rd., Doncaster. [X7011

1919 Douglas Combination, as new, under 500, fully equipped; seen by appointment; £135.—42, Albemare Gardens, New Malden. [9742

DOUGLAS, 1914, 2¾h.p., Bosch, new belt, good condition, horn, lamps; £45.—Miller, 108, Beech Hall Rd., Higham's Park, E.4. [9707

DOUGLAS 4h.p. Combination, 3-speed, kick start, handsome new coachbuilt sidecar; £90.—Hutton, Red Lion Hill, East Finchley, N. [X6982

DOUGLAS, 2¾h.p., Bosch, Amac, lamp, horn, tools, overhauled, new crankshaft, etc.; bargain, £42.—236, Caledonian Rd., King's Cross. [9967

DOUGLAS 1919 2¾h.p., disc wheels, lamps, horn, etc., run 200 miles; 71 gns.—Longman Bros., 17, Bond St., Ealing. Chiswick 1578. [1205

4h.p. Douglas, 3-speed, kick start, new carburetter, belt, and magneto, splendid order; £65.—Jennings, Cricketers, Orpington, Kent. [1159

DOUGLAS, T.T., 1915, 3-speed and change, very special.—Pearson and Sopwith, Ltd., 60, Mortimer St., Gt. Portland St., London, W. [9347

2¾h.p. Douglas, 1913, 2-speed, excellent condition, engine perfect, ride away; £48.—Moor, 2, Woodland Hill, Upper Norwood, S.E. [9548

DOUGLAS 2¾h.p., sporting model, T.T. bars, Philipson pulley, with hand operation, a really fast machine.—Parker's Bradshawgate, Bolton. [X6769

DOUGLAS 2¾h.p., 1915, enamelling and plating as new; £55.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1269

1920 Douglases.—By one who knows; delay is dangerous.—Order yours now from the Douglas Specialist, Gibb, Gloucester. 'Phone: 852. [6340

DOUGLAS 4h.p. Combination, bulbous back, 3 speeds, lovely turnout, mechanical horn; £118, bargain.—C/o 365, King St., Hammersmith. [9874

1919 (August 29th) T.T. Douglas, W.D., 2-speed, perfect condition, mileage 100, and insurance policy; what offers?—15, Fleet St., Coventry. [X6730

1919 4h.p. Douglas Combination, F.R.S. lighting, Easting wind screen, excellent condition; £135.—Ouest, Elmleigh, Norfolk Rd., Wolverhampton. [X6791

DOUGLAS 1913 2¾h.p., just overhauled, new rings, bushes, sprocket wheels, 1919 Amac carburetter, all O.K.; best offer accepted.—43, Undine St., Tooting. [9563

1919 Douglas Combination, 4h.p. (August), electric equipment, Klaxon, mirror; any trial; best offer over £123.—Write, Coryn, Sawmills, Eastleigh, Hants. [9759

W.D. Douglas, 2¾h.p., 2-speed, brand new, just uncrated, fully equipped, Lucas lamps, horn, etc.; bargain, £80.—Cutler, 134, Lincoln Rd., Peterborough. [X6892

DOUGLAS 1914 2¾h.p., 2-speed, clutch and kick start, complete with lamp, horn, etc., excellent condition; 55 gns.—20, Cloncurry St., Fulham, S.W. [9909

DOUGLAS, W.D., 1916, uncrated October, under 300 miles, perfect condition, guaranteed, new lamps, Klaxon, etc.; £75.—Hawkins, 14, First Av., Acton, W.3. [X6893

2¾h.p. Clutch Model Douglas, as new throughout, touring bars, footboards, P. and H. lamps, Klaxon, all tools; £67/10.—H. Atkinson, Durlston, Sidcup. [X6951

DOUGLAS 2¾h.p., Bosch, splendid condition and appearance, fast, 80 m.p.g.; £38; owner buying combination.—Green, 1, Macclesfield Rd., South Norwood. [1085

DOUGLAS 1913 2¾h.p., 2-speed, T.T., long exhaust, new tyres and lamps, engine just overhauled, excellent condition; £50.—Watson, Whitehall, Hampton Court. [1005

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS 1916 4h.p. Combination, overhauled and in fine order; 85 gns.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1268

1919 Douglas 4h.p. Combination, absolutely new, very little used, accessories; £135; evenings or Saturday afternoon.—Steel, 44, West Side, Clapham Common, S.W. [1296

2¾h.p. T.T. Douglas (July, 1919), makers' colours, 500 miles, with lamps, horn, etc.; £70; without, £67.—Frank Goepel, 8, Thurleigh Rd., Wandsworth Common. [9692

1918 Douglas Combination, 4h.p., special body, lamps, mechanical horn, hardly soiled, beautiful outfit; £115; after 6 o'clock.—Parker, 25, Clifton Av., Wembley Hill. [9956

1919 Douglas 2¾h.p., 2-speed, W.D. model, practically new, complete tools, mechanical horn, P. and H. lamps; price £76.—Goddard, Hazel Wood, Kingston Rd., Leatherhead. [X6490

DOUGLAS 2¾h.p., Bosch, Amac, Miller lighting set, new Lucas horn, spares, stored 3 years, mechanically perfect, enamel and plating new; 56 gns.—65, Station Rd., Brixton. [9567

DOUGLAS, 4h.p., 3 speeds, 1916, perfect condition, new coachbuilt sidecar, excellent tyres, and well equipped; £120.—Apply, letter only, Dr. Vincent Denne, 17, Harley St., W.1. [X6777

1919 4h.p. Douglas Combination, new July, 3-speeds, F.E., clutch, K.S., fitted with Lucas lamps, horn, speedometer, any trial; £125.—5, Rectory Lane, Jericho, Bury. [X6481

DOUGLAS, just been delivered in crate, W.D. model; 88 gns.; easy terms, quarter down, 12 monthly payments.—Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station). [1032

1919 Douglas Combination, 4h.p., all on, complete with Easting apron and screen, splendid condition; £120 nett; weekdays after 5, Saturday all day.—80, Mercers Rd., Tufnell Park, N.19. [9950

DOUGLAS 2¾h.p., 2-speed, Bosch mag., new tyres, condition perfect; £42; will exchange for 2-stroke not earlier than 1916; call after 1 o'clock Saturday.—Warren, 103, Townsend Rd., Southall. [X6599

1919 4h.p. Douglas Combination Outfit, complete with lamps, horn, pump, tools, 2 spare covers, etc., mileage under 1,500; price £140.—Warren, Lyndhurst, Callis Court Rd., Broadstairs. [9542

DOUGLAS 2¾h.p., 2-speed, uncrated in June, absolutely perfect, mileage about 800, well equipped, mudshields, knee-grips, long exhaust, heavy Dunlops; £65.—60, Wallingford Av., North Kensington. [9776

1915-16 Douglas, 2¾h.p., 2-speed, touring model, completely equipped, lamps, spares, good tyres, engine overhauled and new bearings this year; £55, or near offer.—Bradbrooke, Bletchley, Bucks. [X6883

2¾h.p. Douglases, brand new, with either T.T. or touring handle-bars; very prompt deliveries, one or two from stock.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [1216

F.O.C.H. have a 1919 4h.p. Douglas combination, fully equipped, almost new, and absolutely perfect.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9466

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0966

F.O.C.H. have a 1919 2¾h.p. post-war Douglas, hand Klaxon, perfect, very small mileage.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9463

4h.p. Douglas 1919 Type Combinations, with improved type of clutch; very prompt deliveries, one or two from stock.—Pamphlets with specification, Robinson's Garage, Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. Cambridge. [1217

1915 2¾h.p. Douglas, thoroughly overhauled, new mudguards, tank and carrier, semi T.T. long exhausts, spare belt, tyres new, not done 500 miles since overhaul, very fast; best offer over £55.—Barrington, Prospect House, Calne. [9612

DOUGLAS 1919 4h.p. and Sidecar, T.T. bars, spare belt, chain, sidecar specially coachpainted, tank to match, the whole outfit in perfect condition; a bargain for £120.—Appointment by letter to Newbold, 23, Melrose Rd., West Hill, Wandsworth, S.W. [9908

1919 4h.p. Douglas, with Swan sporting sidecar, luggage grid, speedometer, Klaxon, knee grips, black discs, 3 lamps, new Dunlop heavy back tyre, handsome outfit, fast; £145; Saturdays after 2.—Edmonds, 5, Osterley Av., Osterley Park, Middlesex. [9809

DOUGLAS Late 1916 4h.p. Combination, 3 speeds, clutch, C.B. sidecar, with wind screen, perfect condition; £85, or near offer.—Apply after 7 p.m., or 'Phone North 372.—91, Woodland Rise, Muswell Hill, N.10. [1114

VIVIAN HARDIE and Lane, Ltd., Douglas specialists.—4h.p. combination, £135; 2¾h.p. solo, £80; we stock everything you require for your Douglas.—Vivian Hardie and Lane, Ltd., 24, Woodstock St. (off Oxford St), Bond St., London, W.1. 'Phone: Mayfair 6559. [0045

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Edmund.

EDMUND, spring frame, canoelet sidecar, 4h. M.A.G., Enfield gear, good tyres, accessorie £75, offers.—Mattock Motor Co., Mattock La Ealing, W.5. [97

Enfield.

ENFIELD, 1916, 3h.p., very fast; £45.—Ross, 8 High Rd., Lee, S.E. [97

ENFIELD 3h.p., 1916, 2-speed, K.S., splendid con tion; £63.—Croxton, Market St., Uttoxeter. [X66

ENFIELD 1917 3h.p., excellent order, lamps, hor £70.—Edwards, 7, Exhibition Rd., S. Kensi [85

ENFIELD Combination, 6h.p., excellent con 1917; £110.—470, Romford Rd., Forest Gate, E. [96

ENFIELDS.—All models guaranteed early delivery. Enquire sole agents, Parker's, Bradshawga Bolton. [X67

1916 3h.p. Enfield-Jap, 2-speed, K.S., Bosch, foo boards, lamps; £58.—70, King's Rd., Camde Town. [99

ENFIELD 6h.p. Combination, splendid order; £8 or near.—78, Bayswater Rd., Handsworth, B mingham. [X64

ENFIELD, June, 1916, 3h.p., kick start, 800 mile new condition, accessories; £63.—61, New Ke Rd., London. [99

ENFIELD 1914 6h.p. Combination, hood, wind scree lamps, carefully used; £98.—15, Cambridge R Horsham, Sussex. [X66

JONES' Garage, special agents for Enfields, Bros way, Muswell Hill, N.10, and Woodside Parad North Finchley. [29

2¾h.p. Enfield, 2-speed, just overhauled, lamps, hor tools; ride away; no dealers; 50 gns.—A. Burch Ketton, Stamford. [99

3h.p. Royal Enfield Twin, 1915 model, lightweigh 2-speed, kick start model; £47/10.—Wauchope 9, Sboe Lane, London. [99

ROYAL ENFIELD, 1917, dynamo lighting, fine co dition, unscratched; £130; Saturday 2 o'clock. 20, Elm Gardens, Hammersmith. [97

1919 6h.p. Enfield Combination, Lucas dynam lighting, brand new; offers.—J. Smith and Co 16, Hampstead Rd., London, N.W. [13

ENFIELD Combination, 1917, hood, screen, spee ometer, electric lighting, perfect condition; tr trial; £125.—35, Clerkenwell Close, E.C. [97

1915 3h.p. Royal Enfield, Bosch mag., just tho oughly overhauled, good lamps and horn; £55. G. Hone, Church St., Tewkesbury, Glos. [X68

1915 Enfield Combination, in very fine conditio screen, horn, lamps, not used during war, tri run.—Bulgarelli, Manchester Rd., Swindon. [X67

ENFIELD 6h.p. 1915-16 Combination, new coac built body, 2-speed, with lamps, 2 new tyres, ove hauled; £100.—Arnold, 133, Sloane St., S.W.1. [X66

ENFIELD 1917 3h.p. Twin, under 3,000 miles, speed, kick start; £60; owner bought combinatio —Elizabethan House, Boreham Wood, Herts. [X66

ENFIELD, 2-speed, 2-stroke, purchased May, 191 mileage under 600, as new, tools, special saddl £55.—Walter Thomas, 48, Boutport St., Barnstapl [98

ENFIELD Combination, 1917, 6h.p. J.A.P., speed meter, Lucas lighting set, Klaxon, hood, scree apron, perfect as new; £140.—Brambles, Springfie Essex. [98

ENFIELD 6h.p. Combination, equipped with lamp horn, tools, speedometer, absolutely perfect co dition; any trial or examination.—Box 595, c/o *The Motor Cycle*. [X58

ENFIELD 1914 6h.p. Coachbuilt Combination, speed, etc., 3 lamps, horn, luggage grid, ar spares; £95, exchanges.—R. D. Varty, Thundersle Rayleigh, Essex. [11

ROYAL ENFIELD 3h.p. Twin, lamps, horn, almo new, Dunlop heavies, excellent running orde £48.—Ash Dene, Charteris Rd., Woodford (one minu from station). [97

1915 Enfield 6h.p. Combination, coachbuilt sidec Easting wind screen, 2 new tyres, one spare, lamps, spare chain, in perfect condition; £125.—Ho Gailey, Penkridge. [X69

6h.p. Royal Enfield Combination, coachbuilt, electr lamps, wind screen, spare tyre, chains, tools, et in excellent order, any trial.—Holly Bank, Sandhur Rd., Tunbridge Wells. [99

1916 Enfield Combination, in splendid conditio new tyres, 3 lamps, wind screen, speedomet accessories; £130, no offers.—Wheatley, 37½, S Peter's Lane, Leicester. [X69

1915 6h.p. Enfield Coachbuilt Combination, lamp horn, speedometer, mechanical horn, spares, ov hauled, £20 worth new 1919 parts fitted, perfect; £13 —194, Baker St., Enfield. [98

ENFIELD 2¼h.p. 2-stroke, 2-speed, new May, 191 about 1,000 miles, Palmers, horn and tool £65; new condition.—Charles Lyall, 15, Parkfie Rd., Didsbury, Manchester. [X69

MOTOR CYCLES FOR SALE.

Enfield.

)16 Enfield 8h.p. Combination, excellent condition, not done 4,000, wind screen, pillion seat, ror, spare tyre, tube, etc.; £140.—9, Codrington l, Honor Oak Park, S.E.23. [9919

NFIELD Late Model 8h.p. Combination, Lucas dynamo lighting, spares, accessories, splendid con- on; first £130 secures.—Chinery, 1, Hammersmith . W.14. 'Phone Western 4140. [9597

)17 Enfield 6h.p. Combination, condition as new, complete with hood, Lucas lamps, horn, Stewart edometer, etc.; trial any time; £150, no offers.— hardson, 380, Kingsland Rd., E.8. [9787

NFIELD 6h.p. Combination, just delivered, only done 20 miles, Lucas electric lighting set, hood, een, etc., beautiful turnout, illness cause of sell- ; £170.—29, Lower Forster St., Walsall, Staffs. [X6477

)14 Enfield Combination, 6h.p. J.A.P., screen, hood, spares, new tyres, speedometer, lighting Bosch, luggage grid, Klaxon, hooter, splendid con- on; £125. After 6.—Gray, 2, Selsdon Rd., Wan- d. [9915

)18 (November) 6h.p. Enfield Combination, date guaranteed, hood, screen, 3 lamps, Klaxon, several ual fitments, perfect mechanical condition; lowest 9; seen and tried any time.—5, Green Walk, Ching- l, E.4. [1043

ATE 1916 6h.p. Enfield Combination, very little used, magnificent tune and fully equipped (acety-), excellent tyres, faultless machanically and ex- ally; price £130 net.—Bygott, Birkby, Hudders- d. [1124

)19 6h.p. Royal Enfield Combination, Lucas horn, 3 Lucas lamps with separate generators, little d, original tyres, only slightly worn, any trial, in- ed; £148; seen any time Thursday.—Greyshott, sthill Av., Grays, Essex. [1182

)19 Royal Enfield, 2¾h.p., 2-speed, free engine, unscratched, only delivered this month, P. and lamps and 2 generators (unused), also complete of tools, ride away; 69 gns.; owner bought car.— rrop, Taiycoleg, Aber, N. Wales. [9800

.p. Royal Enfield Combination for sale, having bought lorry, overhauled this month by the makers, chains, gears, etc., re-enamelled, now as new, lamp plete, spare tyre and 2 tubes; £125.—Slater, Grocer, riton, Alresford Station, Hants. [9766

NFIELD 6h.p. Combination, excellent condition, 1915, £10 worth tools, spares, outer cover, inner e, electric and acetylene front and rear, electric car lamps; £125, or nearest offer; trial by ap- intment.—Postmaster, 318, Trinity Rd., Wands- th, S.W. [9918

Excelsior.

9h.p. Excelsior and Swan Sidecar, powerful and good; £80—Smith, 75, St. Clement's, Oxford. [X6870

)15 2¾h.p. 2-stroke Excelsior, 2-speed, clutch, lamps, etc.; £40.—371, High St., Lewisham. [X6934

MERICAN Excelsiors.—Place your orders now to save disappointment. 'Phone 943.—Horswill, 42, ige St., Chester. [2143

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XCELSIOR, 4h.p., Bosch, B. and B., excellent con- dition, all complete, lamps, horn, tool bags, etc.; .—31, Hadyn Park Rd., Shepherd's Bush. [1138

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RITISH Excelsior, 1919, 2¾h.p. J.A.P., 2-speed, mileage 500, absolutely as new, fully insured, s; £58.—14, Lancaster Rd., Leicester. [X6899

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FAFNIR 3h.p., Bosch, in splendid going order; £25. —Job, 186, Putney Bridge Rd., Putney. [1020

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F.N. (late model), 5-6h.p., 4-cyl., enclosed Bosch, multi disc clutch; 55 gns.—Below.

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2½h.p. F.N., overhauled, new mag. and carburetter, ride away, or carriage paid; £18.—Rowe, Alexton, Uppingham, Rutland. [9805

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F.N. Lightweight, 2¾h.p., Bosch, B. and B., spring fork, 2-speed, clutch, new tyres, perfect; bargain, £30.—Bostock, Byron St., Ilkeston. [X6915

5-6h.p. F.N., 1913, 2-speed H.B.C. clutch, Bosch, Senspray, £38; Bosch aero mag., £4/10.—J. Norrie, New Deer, Aberdeenshire. [9792

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F.N., 1914, 4-cyl., 5-6h.p., in very good condition, has not been used since overhauled; price £60.— Read, 5, York Place Mansion, Baker St., W.1. [9555

5-6h.p. F.N., clutch model, B.B., variable, Bosch, Brooks, drop frame, horn, toolbags, fine appearance; or exchange 3½h.p.; London.—Box L5,093, c/o *The Motor Cycle.* (1) [1256

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HARLEY, 1915-16, mag., top-hole condition; £92; or exchange Humberette or Swift, and pay cash difference.—Englemere, Staines Rd., Laleham, Staines. [1067

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1915 Harley-Davidson Combination, 3-speed, K.S., clutch, etc., good lamps, enamel poor, engine splendid, sale imperative.—Offers over £100 to 8, Malcolm St., Cambridge. [9541

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HENDERSON.—Delivery shortly; no preminm; advertiser purchased car.—19, Primrose Hill, Northampton. [X6880

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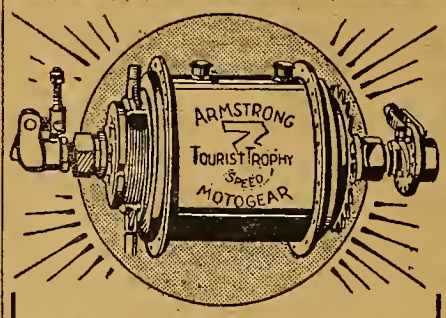
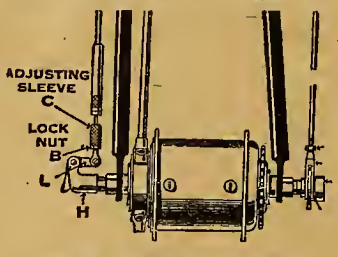


ADJUSTMENT HINTS.

HOW TO ADJUST THE ARMSTRONG GEAR.

1. Take out screw A, pull control lever over to the adjusting position (see illustration), and insert the screw in the hole marked E, this will retain the operating lever in a neutral position.
2. Unscrew the lock-nut B and turn the knurled adjusting sleeve C until you find the free or neutral position, by revolving the back wheel by hand; meanwhile the clutch should be in the driving position.
3. When the free position is found, replace the screw A in the lever D, and re-fasten the lock nut B securely.
4. IT IS IMPORTANT that operating mechanism H is screwed on the spindle the correct distance so that the PUSH ROD LEVER L rests upon the spindle thread within 1/32 part of an inch; this is to ensure correct transmission to the push rod inside the main spindle.



When sending repairs:-

1. It is advisable to send a complete wheel.
2. It is essential that outside fittings such as axle nuts, gear or clutch operative parts, washers, etc., are NOT sent.
3. A letter advising as to date despatch, station sent from, and mark and number of hub should be posted, and, MOST IMPORTANT, two labels bearing sender's name and address on reverse of both should be tied to the wheel.
4. Kindly note we do not supply interior parts.

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2¾h.p. Twin Humber, 3-speed, clutch, lamps; £. —Barnett, Mackenzie Rd., Beckenham. [97

1913 3½h.p. Humber and coachbuilt sidecar, in t hole condition; £55, or offer.—221, Nantwi Rd., Crewe. [11

1914 4½h.p. Humber Water-cooled Combinatn coachbuilt, excellent condition; £80.—Re neath, Ascot. [X67

1919 3½h.p. Twin Humber Combination, Binks, a all accessories; bargain, £110.—Preston, 51, V toria Crescent, Eccles. [X66

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1919 3½h.p. Twin Humber, handle-bar clutch, speed, semi-T.T. bars, discs, watch, horn, speed meter, electric lighting, mileage 1,300, perfect, own going abroad; £100.—Ward, 51, Cairas Rd., Sheffie [X67

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INDIAN 7-9h.p., warranted good; £55, for qui sale.—Stevens, 184, Pentonville Rd., King's Cro N.W. [12

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INDIAN, 2-speed, clutch, 7-9h.p., in good conditio no reasonable offer refused.—Whitebead, 7 Marylebone Lane, Oxford St., W. [11

INDIAN 1915 7-9h.p. Combination, in first-class co dition; seen any time; best over £105.—Fro Cotefield, Leighton Buzzard, Beds. [95

INDIAN 1916 7-9h.p. Powerplus with Millford Sid car, first-class order, sidecar very little use £110.—B. H. Pottier, 25, Brearley St., Birminghan [X64

INDIAN 7-9h.p., 1914, 2 speeds, clutch, spring fram and coachbuilt sidecar, 2 new Dunlops; bargai £76; after 6 p.m.—85, Ermine Rd., Lewisham, S.E [99

T.T. Indian, 1915, 7-9h.p., clutch model, stored 2 years, excellent condition, enamel and platin beautiful; £77, or very near offer.—7, Portland St Southport. [96

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INDIAN 1916 Twin Combination, 3-speed, clutch kick start, accessories, excellent condition; £8 or near offer.—Chinery, 1, Hammersmith Rd., W.14 'Phone Western 4140. [959

1915 5-6h.p. Indian, 3-speed clutch, engine re bushed, new rings, new Dunlop heavy back front tyre good, lamps, tools; £70.—Bryant, 10 London Rd., Peterboro'. [X696

7-9h.p. Indian, T.T., clutch model, in perfect condition tyres as new, lamps, horn, etc.; will sell, or ex change for lower powered machine.—C. Foulston, 21 Wellaston Rd., Cleethorpes. [X697

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INDIAN 1913 Combination, 7-9h.p., spring frame speeds, clutch, good condition; nearest £75; ex change lower power or solo.—Turner, 85, Lyall Mew West, Lyall St., Eaton Sq., S.W. [985

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AMES 1914 3½h.p. Twin, 3 speeds, clutch, Bosch mag., tyres good, electric lamps, horn; £55 ier must part.—Kwiksale, 35, Long Acre, W.C.2. [983

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J.E.S., fine condition, double forks, Dunlops, accessories, spares; £25.—O'Brien, Lake House, Collington, Bexhill. [9552

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2¾h.p. Leader-Jap, as new, splendid going order, guaranteed sound and perfect, new tyres, any trial; bargain, £30.—45, Bow Common Lane, E.3. [9660

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LEA-FRANCIS 1914 3½h.p. Twin, 2-speed countershaft, enclosed chains, lamps, 2 generators, Klaxon horn, tools, mud shields, mechanical condition equal new, little used; £70.—Ward, 53, Wadbrough Rd., Sheffield. [X6976

Levis.

LEVIS, 2¼h.p., 1917, very good condition, will pull two; £35.—140, Oakwood Court, W.14. [9534

1918 Levis (Baby), fine order, well equipped, lamps, speedometer, Klaxon; bargain, £45.—39, South Parade, Oxford. [1047

LEVIS Popular 2¼h.p. T.T., Lucas lamp, tools, splendid condition; £35.—Fair Oak, Blindley Heath, S Godstone, Surrey. [X6594

LEVIS 1917 2½h.p., 2-speed Enfield gear, lamps, Gloriaphone, perfect condition.—Apply, Coish, 21, Station Rd., Reading. [1119

LEVIS 2-stroke, single and 2-speed models.—Early deliveries from the appointed agents, Lloyd and Son, 29, Station St., Lewes. [9582

1915 2-3h.p. Levis, Albion 2-speed, heavy Dunlops, lamps, horn, excellent condition; £45.—C.T., 36, St. Peter's Rd., Croydon. [9804

LEVIS Popular, the finest 2-stroke in the world; book now for early delivery and super-service.— The Walsall Garage, Walsall. Tel.: 444. [9578

LEVIS, 2¼h.p., believed 1916, Bosch mag., control, tyres as new, extra belt, splendid condition; bargain, £40; ride away.—Spenser, 58, Springbank Rd., Hither Green. [9808

LEVIS 2¼h.p., 1916, new cylinder and rings fitted, long exhaust, Dunlop tyres and belt, practically new, lamps, horn, reliable machine; £36.—10, Princes Parade, Church End, Finchley, N.3. [9935

LEVIS 2¼h.p., Bosch mag. with cut-off, Senspray carburetter, engine perfect running order, tyres Hutchinson rubber studded, Melksham ribbed 24×2, Dunlop belt, brakes bearings all in excellent state, machine is lively, easy to control, runs perfectly, new early in war, ridden by present owner in holidays only; 42 gns.; to be seen 28, Park Crescent Mews West, near Regent's Park Tube Station. Tel.: 4940 Padd. Ready to ride away, with horn, pump, tools, and registered number plates. [9850

Lincoln-Elk.

LINCOLN-ELK, 3½h.p. Bosch mag., splendid condition; £20.—14, Tottenhall Rd., Palmer's Green. [9717

LINCOLN-ELK, 1912 3h.p., just overhauled, tyres good, headlamps and generator, horn; £25.— Harvey, 153, Chatsworth Rd., Clapton, N.E. [X6712

L.M.C.

L.M.C. 3½h.p., out of order, but complete; £18.— Croxton, Market St., Uttoxeter. [X6658

MOTOR CYCLES FOR SALE.

L.M.C.

4½h.p. 1919 L.M.C., just delivered, Sturmey-Archer 3-speed gear box, only done few miles; £90.—Raye, 68, Church Rd., Hove. [X6595

1919 L.M.C. 4¼h.p. Combination, 3-speed, electric lighting, mechanical horn, perfect condition, only done 1,200 miles; £115.—Brown, 153, Cromwell Rd., Peterborough. [9550

L.M.C. Combination, August, 1919, 6-8h.p., tyres 650×65, latest 3-speed Sturmey-Archer countershaft gear, hand-controlled clutch, coachbuilt sidecar, black finish, underslung, locker under seat and rear apron, lamps and spares, smart turnout; £160.—Golconda, Uppercourt Rd., Epsom. [1126

Martin.

MARTIN-J.A.P., 2¾h.p., good condition, just overhauled, tyres as new; £30.—Aubrey, 2, St. Mary's Terrace, Huntingdon. [X6685

Matchless.

CROW Bros., High St., Guildford, West Surrey agents for the new Matchless.—Order now for early delivery. [4085

JONES' Garage, special agents for Matchless, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2921

6-8h.p. Matchless, 1912, fixed gear, lamps, and accessories, fine condition: £38.—Sothern Lodge, Sydenham Hill Rd., S.E. [1101

1913 Matchless 5-6h.p. Coachbuilt Combination, 2 speeds excellent order; £110.—Colonel Dunsterville, Taplow, Bute Rd., Wallington. [1012

1918 Matchless Combination, 3 lamp sets, speedometer, spare wheel, under 1,000 miles; £160.—J. Smith and Co., 16, Hampstead Rd., London, N.W. [1304

MATCHLESS 8h.p. Combination, M.A.G., 2-speed, hood, screen, lamps, tools, etc., good condition, £115.—Can be seen Southern Motor Garage, Bromley Rd., Catford.—Wells, 44, Bromley Rd., Catford. [X6881

OVERHEAD Valve 8h.p. Matchless-Jap, single gear, clutchless, perfect, very fast, new tyres and tubes, lamps, and tools, etc.—Photo and full specification on application to Peters, Merston Manor, near Newport, Isle of Wight. (£85.) [9803

MATCHLESS.—The new Model H spring frame will shortly be ready; write and book for earliest delivery; Lucas dynamo lighting at option; decide now, and order the best combination; no premium, and 5% on deposit to date of delivery.—J. Tassell, 1a, Bloomfield Rd., Plumstead. [6798

F.O.C.H. have a late 1918 Victory model 8h.p. Matchless coach combination, 3-speed, clutch, kick starter, spare wheel, lamps, horn, tools, perfect throughout.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9466

F.O.C.H. for the new Model H Matchless Combinations.—Book your order now for the very earliest 1920 delivery. Our motto, "Strict rotation and no preminms."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [8616

MATCHLESS 7-9h.p. M.A.G. Combination, 8B Matchless sidecar, 3-speed countershaft, silent chain drive, Binks 3-jet, speedometer, electric lighting, hood, screen, side curtains, mechanical horn, 2 luggage carriers, 2 lockers, petrol carrier, splendid condition; £125; after 6 p.m.—156, Browning Rd., East Ham. [9794

Metro.

METRO-TYLER, 1919, unused; £52/18.—Dunn, 326, Euston Rd., N.W. [1221

1919 Metro-Tylers in Stock, single-speed models; £53/10.—Jones' Garage, Woodside Parade, N. Finchley, N.12. [9683

Minerva.

MINERVA, 2h.p., ride away; £12.—15, Ashvale Rd., Tooting. [9733

3½h.p. Minerva Motor Cycle, a.i.v., good Bosch mag., wants slight repairs; bargain, £20.—D. Gibbs, Chapel St., Burnham, Bucks. [1188

3h.p. Minerva, engine good, 2 wheels for same, 26×2, new tyres, leather belt, 2 B. and B. carburetters, one variable jet, h.b. controls; best offer.—See Parkinson, Bat-Jap. [X6885

3½h.p. Minerva, Bosch, B. and B., Brooks, spring forks, brass tank, good tyres, genuine machine; £25; after 7 evenings.—Routledge, 84, Kirkwood Rd., Peckham, London. [9560

Monarch.

1918 Monarch-Precision, 3¾h.p., lamps, horn, condition as new; £50.—Williamson, Holly Grove, Pulverbatch, Salop. [X6767

Moto-Reve

2¼h.p. Moto-Reve, good tyres, and in good running condition; £16.—76, Western Rd., Southall, W. [1107

Motosacoche.

MOTOSACOCHE Lightweight, new Amac, Druids, Bosch; seen by appointment.—Hutton, Eastcote, Leatherhead. [1121

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MOTOSACOCHE Lightweight, mag., Druids, Whittle wants slight adjustments; £10.—1, Hampton Rd. S.S., Blackpool. [961

MOTOSACOCHE 2h.p., good condition, perfect order ride away; £15.—Lovatt and Morse, County Ga ge, Earle St., Crewe. [101

2¼h.p. Twin Motosacoche, Bosch, Amac, Druids footrests, good running order; £15, snip.—Ball 4. Winchendon Rd., Teddington. [X688

MOTOSACOCHE Lightweight, mag., Druids, Amac drip feed, variable pulley, all in good order, rid away; £17.—1, Hampton Rd., S.S., Blackpool. [961

New Comet.

NEW Comet 2½h.p. 2-stroke, 2-speed countershaft perfect, new September, 1919 only ridden 6 miles owner buying combination.—Ivydene, Wingrave nr. Aylesbury. (D) [992

New Hudson.

2¾h.p. New Hudson-Jap, 3-speed, like new; £35.—50, Balls Pond Rd., Islington. [995

NEW HUDSON.—Immediate delivery from stock 1919 6h.p. combination.—Parker's, Bradshaw gate, Bolton. [X677

NEW HUDSON 1915 2¼h.p., 2-stroke, 2-speed, a accessories, splendid condition; £40.—Bell Moto Works, Brent St., Hendon. [109

1919 (September) New Hudson and Watsonian Side car, 3½h.p., perfect, all on; £125.—35, Staffor Rd., Wallington. 'Phone: Croydon 1643. [954

1914 New Hudson 3½h.p., 3-speed, clutch, Bosc mag., B.B., not been used for 3 years; £55.- 101a, Adelaide Rd., Shepherd's Bush, W.12. [885

1919 New Hudson with Luxurious Sidecar, 4h.p 3-speed, kick starter, hand clutch, indistinguish able from new.—Parker's, Bradshawgate, Bolton. [X677

4h.p. New Hudson Coachbuilt Combination, 191 (late), 3-speed and clutch, handle starting, chain cum-belt; £65.—Halstead, 24, Field St., Bicester. [981

NEW HUDSON, 1913-14 Colonial Model, with lat cane sidecar, Armstrong 3-speed and clutch, Bini carburetter and Bosch, aluminium footboards, stor 3 years; £68.—66, Hornsey Rise, N.19. [977

4h.p. New Hudson Coachbuilt Combination, 191 good condition, 3-speed, clutch, kick start, lamps, 2 generators, all tools, spare belt, plug, an valve; £75, no offers.—Robins, 2, Farnshy St., Swi don. [X699

1913 New Hudson 3½h.p. Combination, B. and B variable, 3 speeds, clutch, Bosch w.p., 3 lamp tyres and tubes new condition, excepting sidecar cove spare new Bates butt-ender, quantity tools; £56; d tailed list.—57, Suffolk Av., Southampton. [104

1919 (July) 4¼h.p. New Hudson and luxurious sid car, specially finished, expensively equipped, lamps, horn, speedometer, insured to July, 1920, m chanical condition guaranteed, carefully ridden, powe ful any trial; £135; owner bought car.—1, Floren Mansions, Rostrevor Rd., Fulham, S.W.6. [X679

New Imperial.

NEW IMPERIAL.—Caffyns, Ltd., Easthourne, a booking orders for delivery shortly. [00

1920 New Imperial Solo, 6h.p. J.A.P., 3-speed clutch, new.—Bulgarelli, Manchester Rd., Swi don. [X67

1916 New Imperial-Jap, 3h.p., splendid condition lowest £47; after 12 Saturday.—16, Fairlig Av., Harlesden. [95

NEW IMPERIAL New 8h.p. Combination, large Cancelet sidecar, fine outfit; £140.—Edwards, Exhibition Rd., S. Kensington. [85

1919 8h.p. New Imperial-Jap, 3-speed, clutch, a kick starter, delivered this month; £115/10 Cole, Dogpole, Shrewsbury. [X67

NEW IMPERIAL-J.A.P., 2 speeds, just overhaul and enamelled, splendid running order; £38 103a, High St., Wandsworth. [12

NEW IMPERIAL-J.A.P. 2¾h.p., 1919 model, new, 2-speed, kick start, clutch; £70.—Geor Smith, 268, Lavender Hill, S.W.11. [12

NEW IMPERIALS.—Call and inspect the lat models.—Sole London agents, Rey's, 173, Gr Portland St. 'Phone: Mayfair 879. [96

NEW IMPERIAL-J.A.P., 2¾h.p., 1916, 2-spe countershaft, lamps, spare belt, splendid con tion; £43.—151, Globe Rd., Bethnal Green. [10

BROOK Bros., Burnham-on-Sea, have a 1916 N Imperial-Jap to offer, complete with 2-speed g box, footboards, lamps, horn, etc.; £43 nett. [96

NEW IMPERIAL-J.A.P., 2½h.p., 2-speed, perf condition; £38, or exchange 1913 Triumph clutch model.—Arnott, Pickering, Yorkshire. [X6

1919 New Imperial, 8h.p., and sidecar, new con tion, little ridden; bargain, £135; any trial Harrison, Enville, Barker's Lane, Ashton-on-Mersey. [X6

NEW IMPERIAL-J.A.P., 2¾h.p., countershaft, speed, free, excellent condition, engine overhauled, trial; £38.—156, Whitley Rd., Whit Bay. [X6

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New Imperial.

19 New Imperial-Jap 2¾h.p., 2-speed, clutch, kick, all accessories, perfect condition, as new; 5; seen by appointment.—G., 34, Bridgman Rd., ldington. [1185

EW IMPERIAL-J.A.P., 2¾h.p., 1916, 2-speed, E.I.C., Amac, good tyres, plating as new, per- t condition; £50.—Sinclair, Woodneuk, Lower discombe Rd., Croydon. [1179

EW IMPERIAL-J.A.P., 1916, 2½h.p., 2-speed, free engine, excellent condition, Miller's lamp, rn, etc., not done 300 miles; £50 lowest; no lers.—V. Jackson, Bowes Rd., Walton-on-Thames. [9723

EW IMPERIAL, 2¾h.p. J.A.P., 1916, 2-speed countershaft gear, all lamps, tools, and Klaxon, rfect condition throughout, and unusually power- ; £46.—11, Grove End House, St. John's Wood, W. [9958

9 19½ New Imperial 8h.p. Combination, fitted with Mills-Fulford sidecar, all lamps, horn, and many ires, as new, very fast outfit; £135; will ride 200 les to buyer.—A. H. Knight, 89, Dames Rd., Forest te, London. Tel.: Stratford 80. [9536

.O.C.H. for New Imperials, sole agents for Hamp- stead and district.—Book your order now for the y earliest delivery of 1920 models; a few this year. .O.C.H. (Fair Offer Car House), 5, Heath St., mpstead (near Hampstead Tube). 'Phone: Hamp- ad 3752. [8620

New Ryder.

9 15 New Ryder, 2½h.p., 2-stroke, strongly built, Villiers engine, C.A.V. mag., Senspray, stored 2 irs, splendidly equipped, perfect running condition: 9.—Hilditch, St. John's Rd., Knutsford. [X6923

Norton.

ORTON T.T. Model, just received, brand new; £80. —Parker and Son, St. Ive's, Hunts. 'Phone 15. [9789

ORTON 3½h.p. Roadster Model, condition almost indistinguishable from new.—Parker's, Bradshaw- te, Bolton. [X6770

9 16 T.T. Norton, Sturmey-Archer countershaft gear, good mudshield, with Millford coachbuilt idecar, lamps, etc., and spares, fast.—Seen, Maris's, arendon Garage, Oxford. [X6952

ORTON 1915 3½h.p. T.T., new, Senspray, tyres, saddle, tool bags fitted, top-hole engine, oppor- nity sportsman, lamps, accessories; £76.—2, Cranes rk, Surbiton. [9910

ORTONS.—We are now booking orders for the latest model Norton solo and sidecar outfits; £5 posit; deliveries in strictest rotation.—Maudes', 100 . Portland St., London, W.1. [4156

ORTON 1916 Big Four, all-chain, 3-speed, C.B. sidecar, Klaxon, Cowey mirror, knee-grips, discs, lamps, tools, spares, re-enamelled and plated, trial; 10.—Gordon Copeland, Wanesfield, Brentwood. [9991

ORTON 4h.p., 3-speed, 6 weeks old, Miller lamps, Lucas horn, knee-grips, mirror, Tan-Sad, mileage 0 miles, too fast for owner, absolutely perfect; would e 100 miles to purchaser; £115, or nearest offer; ll take new Baby Triumph part exchange; private ner.—Brooks, 116, Kingsley Park Terrace, Northamp- n. [X6894

9 19 Norton Big Four Combination, 3-speed counter- shaft, all chain drive, kick start, 3 lamps, horn, mp, tools, 2 gear sprockets, knee grips, Millford achbuilt sidecar, Eastlag wind screen, condition as w; any trial by appointment; what offers?—Address, ndwood, Portland Crescent, Plymouth Grove, Man- ester. [X6939

N.S.U.

9 13 N.S.U. Combination, 6h.p. twin, coachbuilt sidecar, 2-speed, accessories; trial; £45.—2, nthurst Rd., Charlton Rd., Blackheath, S.E. [1294

.S.U., 3½h.p., 2-speed; F.E., Bosch, Senspray car- buretter, Watford speedometer, mileage 1,400, nps, condition as new; what offers?—A. Townsend, orncote, Cricklade. [X6841

N.U.T.

TANLEY RUSSELL, Newport, sole Isle of Wight agent for N.U.T.-J.A.P. motor cycles; early de- ery [4019

.U.T., 1916, 3½h.p., o.h.v., J.A.P. engine, 3-speed, h.c. clutch, Sturmey-Archer countershaft gear, rfect condition, very fast; £85.—Head, Moody Ter- ce, Congleton. [X6778

.U.T. 1915 8h.p. Combination, 3 speeds, counter- shaft, clutch, K.S., Mark II. Druids, lamps, speed- ieter, Tan-Sad, just overhauled; £110.—41, Elm L, New Malden. [9832

.U.T.—Sole agents for Staffordshire. For particu- lars of prices and deliveries, watch future an- uncements.—The Walsall Garage, Wolverhampton ., Walsall. Tel.: 444. [9579

.U.T. 3½h.p. T.T., J.A.P. racing engine, m.o.v., Amac carburetter, variable jet, extra air valve r high speed, long plated exhaust pipe, adjustable lley, head and tail lamps, generator, horn, speedo- eter, 2 brakes, new spare belt, tools, 1915-16 model, ry little used, very smart sporty appearance, and ex- ptionally fast; accept £90; photo, or seen by ap- intment, Manchester district.—Apply, Box L5,016, *The Motor Cycle* [9600

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19 19 O.K. 2-speed 2-strokes Actually in Stock; £60.—Jones' Garage, Woodside Parade, N. Finchley, N.12. [9684

O.K., 1915, 4-stroke, 2-speed, chain, tyres and belt very good, runs splendidly; £35.—59, Burford St., Hoddesdon, Herts. [9670

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O.K. Juniors must be booked now if you really want to get there and back every time.—Young's, The Parade, Kilburn, N.W.6. [0967

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Omega.

OMEGA, 2-speed, 2-stroke, nice order; £45.—Kimber, 103, Elm Grove, Brighton. [1250

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Omega-Jap motor cycles; early delivery. [4018

OMEGA-J.A.P. Model de Luxe and 2-speed Models; 68 gns. and 58 gns. respectively.—Stocked by Lloyd and Son, 29, Station St., Lewes. [9584

P. and M.

P. and M., 1917, 3½h.p., 2-speed, £67; also 1916 3½h.p., £60.—Ross, 86, High Rd., Lea, S.E. [9705

P. and M. Combination, 1914, excellent condition, lamps and speedometer; £70.—P. Dodgson, Gargrave, via Leeds. [X6752

P. and M., 1915, 3½h.p., and P. and M. coach sidecar; £89/10.—Halifax Motor Exchange, Union St. South, Halifax [9780

P. and M. 3½h.p., 2-speed, F.E., 1911; £20, for quick buyer; going order.—46, Winchester Rd., St. Margarets, Twickenham. [1079

19 19 P. and M., 3½h.p., 2-speed, kick start, Lucas lamps, tyres equal new; £75 cash.—Hallam, Rosedale, Dove Holes, Stockport. [X6902

19 19 P. and M., sporting Canoelet sidecar, Lucas lighting, perfect condition; £130.—Guest, Elmleigh, Norfolk Rd., Wolverhampton. [X6790

19 19 P. and M., with all accessories and brand new spare tyre, perfect throughout; first £90 secures.—K.B., Beech Lawn, Beechfield Rd., Huddersfield. [1126

P. and M. Combination, R.A.F. model, delivered 1916, excellent condition, lamps, tools, and accessories, running well; £85, offers.—Marriott's Motor Car Depot, St. John St., Hereford. [9621

P. and M. Combination, 1912-13, 2-speed, chain drive, enclosed Bosch, internally and externally as new, cane sidecar, lamps, horn, tools, 30 m.p.g.; £65.—42, Southsea Av., Watford. [1232

P. and M., 1913, just overhauled, new running parts, re-enamelled, excellent order, spare cover and tubes, 3 lamps, sidecar frame and wheel; 65 gns., no reduction.—Alfred Rowntree, Cotesdae, Middleham, Yorks. [1181

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2¾h.p. Peugeot, wants new pulley, otherwise in good 24 order; bargain, £17/10.—28, Hamiltoa Rd., Wimbledon. [9937

PEUGEOT 5-6h.p. Twin; £47, or near offer; splendid condition.—W.H., 104, Leigham Court Rd., Streatham. [1115

PEUGEOT 5-6h.p. Twin, 2-speed, clutch, mag.; £20, or exchange lightweight, any condition.—27, London Rd., St. Alban's. [9922

PEUGEOT 7h.p. C.B. Combination, clutch, Bosch, B. and B., good tyres, running order; £55.—Turner, Wormhill Hall, Buxton. [X6832

MOTOR CYCLES FOR SALE.

Pope.

POPE, 2¾h.p., 1914, clutch, lamps, new tyres and belt, triple stem forks; £35.—Bramwell, 4, Market Sq., Stony Stratford, Bucks. [1144

Precision.

1915 4½h.p. Precision, magnificent mechanical order; £42.—42, Lavington Rd., Ealing, W. [9554

1913 Precision, 4h.p., T.T., sporty, Bosch enclosed mag., needs slight attention; £38.—46, Chapel St., Marylebone. [9557

PRECISION 2¾h.p., 3-speed, Bosch, B.B., take 2 anywhere; £28.—Cashmore, 48, Bryant St., Winson Green, Birmingham. [X6906

PRECISION 3¾h.p., 2 speeds, free engine, painted red, just overhauled, splendid order; £40.—103a, High St., Wandsworth. [1200

Premier.

3½h.p. Premier Combination, 2-speed; exchange 2-stroke, cash adjustment.—Mayo, Leonard Stanley, Glos. [9720

7-9h.p. Premier Combination, 3-speed countershaft, Millford sidecar, lamps, horn, spares; £94.—6, Steele Rd., Leytonstone. [9535

PREMIER, 1914, 2½h.p., excellent condition, Bosch, B. and B., lamps, tools, etc.; £35.—J. Davis, engineer, Woodditton, Cambs. [X6714

PREMIER 2¾h.p. Twin, 2-speed, in good running order, new tyres and tubes; nearest offer £42.—A. Parsons, Rose Cottage, Blackwood, Mon. [X5459

3½h.p. Premier, adjustable pulley, Bosch mag., Lucas horn, and head light, in thorough going order, very powerful; £35.—T. Lawley, Gillingham, Dorset. [X6907

PREMIER Motor Cycle, 2¾h.p., Bosch, B. and B., tyres like new, guaranteed sound order; price 30 gns.—Confectioner, 44, London Rd. (next Croydon Hospital). [1022

PREMIER 2½h.p., 1914, Grado gear, Bosch, lamps, not run 1,000 miles; nearest £38; apply after 5.—Simpson, Lion Brewery, Belvedere Rd., Waterloo. [1009

SUPERIOR Outfit, Premier 3-speed, free engine, Millford Family sidecar, wind screen, every detail perfect, complete lamps, horn, tools, pillion seat, spares; £110; inspection invited.—Kirton, Beaconsfield Villa, Ellistown, Leicester. [X6928

PREMIER 4h.p. Combination, 2-speed, B. and B., Bosch, free engine, kick start, tyres nearly new, P. and H. generator and lamp, in splendid running order; £59, no offers; bargain.—S. R. H., 52, Cromwell Rd., Hounslow, W. [9699

Quadrant.

QUADRANT 3½h.p., coil, running order; ride away; lamp and horn; £20, or offers.—Holloway, Norton-sub-Hamdon, Somerset. [9814

4½h.p. Quadrant Combination, 1914, 3-speed countershaft gear model, kick start and plate clutch, in the pink of good condition; £97/10.—Wauchope's, 9, Shoe Lane, London. [9949

QUADRANT 1916 4½h.p., 3-speed, B.S.A. countershaft gear, canoelet sporting sidecar, an exceptional bargain; £75.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0480

Radco.

RADCO 2-stroke, 1915, excellent condition; £29.—Lawn Villa, Holly Walk, Enfield. [1013

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Radco motor cycles; delivery commenced. [4017

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2923

RADCO.—Immediate delivery of 2¼h.p. standard model, £42/11; 2-speed model, £50/16.—The Premier Motor Co., Aston Rd., Birmingham. [9457

RADCO De Luxe, 1917-18, 2-speed, countershaft, kick start, handle-bar clutch, mileage 1,000; quick sale, £38, sacrifice.—20, Treen Av., Hogger's Corner, Barnes. [9561

Reading-Standard.

READING Standard 1917 8h.p. C.B. Combination, full accessories, trial given; £115.—Ross, 86, High Rd., Lee, S.E. [9706

Rex.

REX 3½h.p., Bosch mag., B. and B., excellent order; ride away; £20, or offer.—Dore, Churchgate, Cheshunt, Herts. [X6891

REX Twin, mag., handle start, slight overhaul required; £20; exchange.—629, Seven Sisters Rd., Tottenham. [1292

REX 5-6h.p. Combination, 1912-13, 2 speeds, handle start, splendid condition; £37; exchange.—6, Stirling Rd., Tottenham, N. [1078

REX Combination, 6h.p., late 1913, 2 speeds, handle start, good condition, splendid climber; £63.—Montague, Foxcote Cottage, Peasedown, Bath. [X6500

1914 Rex 8h.p. Combination, wind screen, Lucas lamps, horn, excellent condition; £85, or offers; will ride 100 miles to purchaser.—80, Dorset St., Leicester. [X6905

"Westwood" REAR LIGHTS.

Patented and Registered Designs.

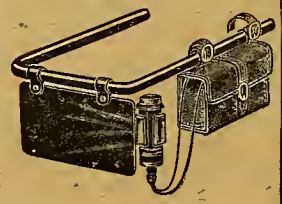
"SURPRISE" TAIL LAMP.

A Lamp of high-class finish with 1⅛in. Ruby Bull's-eye lens. Made of brass throughout, and heavily nickel-plated, and fitted with neat switch and special spring bulb holder, which effectually prevents the bulb from working loose or breaking through jar. Complete outfit including Lamp Bulb Battery and Leather Case

14/3

"ROYAL RUBY" ELECTRIC TAIL LAMP.

A reliable efficient electric rear lighting set at a popular price. Lamp is fitted with red rear lens and White Opal Side Lens. Outfit complete with Bulb and Battery and Leather Case



12/6

Patent "Torpedo" ACETYLENE LAMPS.

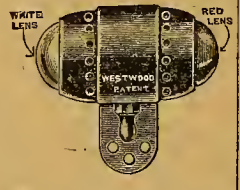
Made from solid brass, turned and threaded at joints. Every part of solid construction. These Lamps may be taken to pieces for cleaning, and will remain alight in the strongest gale. Best quality 1⅛in. diameter Ruby Glass Lenses are fitted and can be easily replaced if broken. These lamps will last as long as the machines they are used on, and are absolutely rustless.

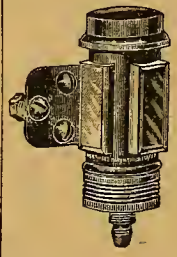
Tail Lamp,

Price, **6/6** each.

SIDECAR LAMP,

Price, **7/6** each.





"Royal Ruby" Acetylene Tail Lamp.

A strong well-made and serviceable lamp, with ruby rear and white Opal Side Lens, complete with pins for attachment to Number Plate.

Price, **4/-** each.

Westwood Rearlights are stocked by all reputable agents.

WESTWOOD RIM AND PATENTS, LIMITED,

Bordesley, Birmingham.

MOTOR CYCLES FOR SALE.

Rex.

LATE 1913 6h.p. Twin Rex, Bosch mag., 2-speed Roc gear, handle starting, new Dunlop belt, just been overhauled; £45, or best offer.—Horswill, 42 Bridge St., Chester. [8897

REX 1913 6h.p. Coach Combination, 2-speed, perfect, and like new; above has been very little used; any trial; £57/10.—Burrows, 97, Sheffield Rd., Barnsley. 'Phone 160. [X6787

REX, 1913, 6h.p., hot stuff overhead valve twin engine, clutch, handle start, lamps, accessories too fast for owner; £45.—Coleman, Lyndhurst, Sheldon Rd., Chippenham. [X5480

3½h.p. Rex, single, new tyres, tubes, belt, and M.L. mag., Senspray carburetter, fast mount, fine running order; price £30, or near offer.—E. Hotchkiss, 40, Loring Rd., Isleworth. [9649

REX 5-6h.p. Twin, B. and B., Bosch, 2-speed, handle start, new tyres, horn, lamps, speedometer, £40; also coachbuilt sidecar, £14; after 6 or week-ends.—6, Coverton Rd., Tooting, S.W. [9920

REX 5-6h.p. Twin, 1913, 2-speed, handle starter, chain drive, lamps, horn, tools, with coachbuilt sidecar, folding chassis, on and off in 5 seconds, not used since 1915, perfect; £50.—Windsor, Court Rd., Malvern. [X6643

5-6h.p. Rex Coachbuilt Combination, 1913, just been overhauled and fitted complete with new bearings Bosch mag., B. and B. carburetter, lamps, horn, tools, spare belt and tyres; seen Saturday afternoon or Sunday morning; trial run up to 50 miles; £75.—Arundel Alveton, Leek, Staffs. [X6653

Rex-Jap

REX-J.A.P. 6-8b.p. Coachbuilt Combination, 2 speed, handle start, Bosch mag., B. and B. carburetter, lamp and generator, speedometer, any trial and examination; £75.—15, Half Acre Rd., Hanwell. (D) [9975

Roc.

ROC 5-6h.p. Twin, 2-speed, minns exhaust and silencer; cheap.—Gurrey, Sumac, Pinner. [9996

Rover.

ROVER 3½h.p., T.T., Philipson pulley, very fast; £50.—Budd, 210, Rugby Rd., Leamington. [X6970

ROVER 3½h.p. 1914 Combination, 3-speed, clutch, pedal start, lamps; £63.—52, St. Leonard's Av., Stafford. [X6876

1919 W.D. 5-6h.p. Rover Combination, brand new; £150; Warwickshire.—Box L5,082, c/o *The Motor Cycle*. [1240

JONES' Garage, special agents for Rovers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [2924

ROVER, 3½h.p., free engine, clutch model, stored since 1915, overhauled; £40.—Hill, 39, Clifton Rd., Peckham, S.E. [9729

ROVER, 1914, 3 speeds, clutch, kick start, good tyres, enamel and plated parts; £60.—Bunting, Mason's Av., Wealdstone. [8595

ROVER, 1912, clutch model, 3½h.p., stored 4 years, lamps, horn, etc., practically new; £35.—Tilley, 180, Willow St., Leicester. [9654

2¾h.p. W.D. Model, new April last, excellent condition, Klaxon, lamps, spares; appointment.—F., 8, Chepstow Mansions, W.2. [X6968

ROVER 3½h.p. Combination, N.S.U. 2-speed gear, all accessories, excellent condition; £55.—Chipsham, 11, Leigh Rd., Hale, Cheshire. [X6642

1914 3½h.p. Rover, 3-speed, clutch, all in good order, stored during the war; a bargain, £50.—1, Barchard St., Wandsworth, London. [9914

ROVER, 8h.p., 3-speed and reverse, fine appearance and excellent running order, any trial here.—Thomas, Arch House, Stepaside, Pembrokeshire. [X6840

ROVER Single and Twin Models; a limited number available for next season.—Particulars of delivery dates and prices from Lloyd and Son, 29, Station St., Lewes. [9581

ROVER, lately overhauled, new platinum points and tappets, excellent running order; £32.—Apply after 7 p.m., Russell, Lyndhurst, 34, Barrowgate Rd., Chiswick. [X6662

ROVER C.B. Combination, late 1914, 3 speeds, clutch, perfect running order re-enamelled, Lucas lamps, horn, excellent tyres; 78 gns.—48, Derwentwater Rd., Acton, W.3. [9998

ROVER, 3½h.p., 3-speed, clutch, Bosch, 1915, just been thoroughly overhauled, rebushed, sidecar, ready to ride away; £55, or near offer; bargain; must sell.—M., 67, Lennox Rd., Finsbury Park. [X6929

ROVER 3½h.p. 1914 Combination, in exceptionally fine condition, lots of spares, lamps, clock, speedometer, done under 5,000 miles; £80.—Prim, 7, Codrington Mews, Blenheim Crescent, London, W. [9631

ROVER Combination, 1914, 3½h.p., 3 speeds, electric lighting, speedometer, mirror, horn, tools, spares, fitted new Xtra H Dunlops and tubes, new C.B. undershung S.C., stored 4½ years, under 3,000 miles; no offers; 80 gns.—G. Steel, Penshurst, Wynndale Rd., South Woodford. Seen at W. J. Wells' Central Garage, Salway Hill, Woodford. 'Phone: Woodford 14. [9766

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Road Warning Signs.

THE overlapping of activities of the various motoring associations has often been discussed in our Correspondence columns, readers chiefly pointing out the Gilbertian situation arising from the clashing of the road service organisation and the patrol systems of the leading bodies.

For our part, we consider that the position is not nearly so urgently in need of strong criticism in this respect as is the redundant sprinkling of our roads with all manner and variety of danger warnings. This question is one which affects a wider circle than that comprised by the motoring associations, since, not only they, but innumerable town and rural district councils, as well as private individuals, have taken upon themselves the erection of warning notices of varying degrees of utility and legibility. Had these all been posted at truly dangerous places, and had their variety been enlivened by the somewhat gruesome fancy which impels our American cousins to exhibit a skull and cross-bones device at the beginning of some particularly lurid stretch, we need not have much cause for complaint, either as to the meaning conveyed or against the monotonous method of conveying it; but with us the same red triangle is used indiscriminately to indicate the proximity of a veritable death-trap bend or the existence of somebody's dog-kennels some half-mile back from the highway.

Government Control.

Perhaps the Minister of Transport, under whose eye the questions of road traffic problems must come, will endeavour to unify a system of road signs which will expedite the safe passage of fast vehicles on our roads, for it must be remembered that the communication between town and town and village and village was planned in a day when the requirements of speed were undreamed of, and that now a complex system of warnings has arisen either as the result of local effort or (chiefly) by virtue of the motorists themselves through their organisations.

This state of affairs leads to considerable abuse, the needless installation of warning signs giving no proportionate idea of the danger indicated and much unnecessary overlapping. Thus a particular bend, insufficiently severe to be in the least dangerous, is adorned with a warning triangle at the instance of local influence entirely anti-motoring in its attitude; the same warning is also exhibited at the crossing of two great highways where frequent accidents have occurred. The motorist, having needlessly decelerated at the first, is a little inclined to chance the second, and perhaps an accident, or a narrow escape, results. A system such as is in vogue in many parts of the Continent, and some of the American States, which indicates the nature of the danger by easily discernible signs representing in bold and elementary patterns the reason for an exercise of caution, gives the motorist at once a definite idea of the amount of risk he runs when he ignores its warnings.

A More Comprehensive System.

One such system consists of signs which are obvious in their intent. A village school is suggested by a simplified pictorial representation; a level crossing by two parallel lines intersected by another at right angles; cross roads and gentle or acute bends by hieroglyphical devices which readily suggest themselves. This method undoubtedly arrests the eye and mind of the driver both more quickly and more convincingly than any combination of words could do.

A central authority controlling the erection of all road warning signs would prevent such things as the posting of red triangles adjacent to the roadside by private property owners whose carriage drives open on to the highway. A notice such as "Concealed drive" is far more effective; but the onus of avoiding accident must remain with the thoughtless driver who enters a main road from a side road or a private drive.

An index to the advertisements in this issue will be found on the page facing the back cover.

OCCASIONAL COMMENTS

BY "IXION"

No Deeper than a Plain Nut.

IN a recent comment I assumed that a locknut necessarily occupied more room than an ordinary nut, and that it was often impossible to fit a patent nut-lock to a stud, bolt, or spindle with a short thread. Vislok, Ltd., assure me that their patent locking device is supplied in exactly the same depth as the ordinary nuts. In other words, if a rider is afflicted by a nut which works loose, he can substitute a Vislok without the least difficulty.

Mr. Bower and the A.C.U. Trials.

MR. BOWER, of Zenith Motors, Ltd., is surprised at my implying that makers should fit modified engines and gear boxes for big trials. Is his tongue in his cheek? He knows as well as I do that an absolutely standard trade entry is a rare bird in such events, though the degree of the departures from standard varies in each case. More probably he is surprised that a journalist should accept the inevitable. Anyhow, I will clear up the principles I have in mind. I would fight tooth and nail to expose and pillory any manufacturer who to my certain knowledge was entering a *good* machine for competitions, and selling a *bad* machine to the public through the advertisement which the trials gave him, and all honest traders would applaud. Yet it by no means follows that a firm's stock machine should be the dead spit of its competition machine. No sane private owner desires a Brooklands machine for road work. In the old days, when an A.C.U. Trial was a straightaway tour over routes carefully selected to dodge all really severe hills, it was desirable that a firm's stock and competition machines should be identical. To-day no such parallel exists. The trials go where no normal person would dream of touring for pleasure. The straightaway ride is interrupted by a series of tests possessing the subtlety of a Faraday House test with little of its accuracy. Riders have to perform stunts of a very arbitrary character on a certain hill. They have to run the gauntlet of Dr. Low's audiometer. They have to submit to the scrutiny of judges, whose personal fads are largely an unknown quantity. None of these canons apply in ordinary riding. A manufacturer is surely justified in faking a machine to earn high marks in the C.D.T., against the audiometer, and under the finishing condition scrutiny. But he is under no compulsion, technical or moral, to fake all his commercial machines in exactly the same fashion. Should his experience of the A.C.U. stunts convince him that the private owner wants what the A.C.U. demands, he will alter his standard specification accordingly. This year the trade (and amateur spectators) wrote down the C.D.T. as a farce; regarded the audiometer with amused benevolence, until they realised its consequences; and were frankly baffled by the mysteries of the concluding "examination."

Hypothetical Examples.

SINCE Mr. Bower's dig at me suggests that I stand on thin ice, from the standpoint of commercial morality, I will elaborate my thesis. It has been suggested in several influential quarters that the C.D.T. shall be repeated in next year's trials with sundry modifications. The notion is that the stunt would be sound if every rider were credited in proportion to the contrast between the slowness of his crawl up the first part of the hill and the speed to which he could accelerate up the second part. This would eliminate the split second nonsense, and, in the opinion of some authorities (who ought to know better), would constitute a very good test as well as a fair knockout for the special prizes. If I had to construct a machine for any such silly business, I should equip it with good cooling, a phenomenally low bottom gear, and a pair of tiny side wheels for steadying the crawl, such as Hayes used to sell on Kerry machines. As an extra precaution I would put a trick rider in the saddle: the kind of man who can balance a push bicycle stationary for half an hour; this in case the judges took a cold chisel and cut my side wheels off. On this outfit my jigger would do the slow climb at about one hundred yards per hour. For the acceleration business up the fast stretch, I would fit every practicable gadget. Preliminary tests might suggest a variable compression valve cap, a variable carburetter jet, and perhaps an infinitely variable gear. If the A.C.U. say to me in effect, "We are awarding prizes for the vastest flexibility in a timed hill-climb," I would come near winning their silly prize. But I should not be such a juggins as to sell the public a machine with side wheels, a 25 to 1 bottom gear, and a number of other freak gadgets for which they have no earthly use. All the public want in the way of flexibility on hills has long since been provided by standard engines, gear boxes, and clutches. In other words, a maker's stock machine should be as good as his competition models; but it need not necessarily be identical with them: in fact, it should *not* be identical with them when competitions include freakish stunts.

Minus the C.D.T.

SEVERAL manufacturers have written to me suggesting that the marks earned in the A.C.U. Six Days should be republished minus the results of the consistent driving test. I have little doubt that the A.C.U. would gladly wash that portion of the event out if it were in its power to do so, for it served no useful purpose other than that of keeping down the number of gold medals. But I would remind malcontents that the prospectus of the trial partakes of the nature of a legal contract, and that the A.C.U. would find itself in rather an awkward position if it attempted to go back on its word. It

Occasional Comments.—

is a great pity, for, if riders had been set to take Panne Hill as slowly as possible on the first day, and as fast as possible on the last day, we should have had some fun. On the whole, I am against any stunt which tempts machines to fail on hills up which they can romp when driven in normal fashion, for we have learnt how hill failures can be misrepresented. Brooklands is probably the only venue where maintenance of tune can be adequately tested.

Automatic Carburetters.

SO far as English machines are concerned, the claims of the automatic carburetter have always been handicapped by manufacturers' preference for a semi-automatic or sensitive type. There is hardly a British machine in existence fitted with an automatic type as standard. The handful of riders who fit Claudels, Everests, and other "conversion" sets is too small to wield any great influence. The average man rides a two-lever type, grumbles about it, and is prevented by his natural inertia from experimenting with the rival simplicities. In the near future this position will be modified. The Americans mostly fit carburetters, which, if not absolutely automatic, come nearer that ideal than our own "semis." Uneasy suspicions that the fondness which many Britishers show for American stuff may be partly due to easy carburation are inspiring a few British makers to adopt the one-lever vaporiser. The A.B.C. machine is to have an automatic as standard, so also is the flat twin Humber. Messrs. H. M. Hobson, Ltd., have improved their vertical type of motor cycle automatic, and are flanking it by a very pretty little horizontal pattern with a neat Bowden control. The Zenith people are sitting up and taking interest: their first motor cycle automatic will be at Olympia.

I have tried many of the above carburetters and a number of others aiming at similar ideals. I am bound to admit that in several cases it was difficult (and in some impossible) to secure as low a petrol consumption as a two-lever instrument affords. But I have never once reverted from the one-lever to the two-lever on any engine. A decrease of, say, 10 m.p.g.—and more need not be dreaded, even in extreme cases—is not too high a price to pay for the absolute certainty of terrific acceleration on demand. Motor cycling holds few more pleasurable sensations than that of a willing engine leaping forward at a touch of the throttle. But one has to know and handle a two-lever uncommonly well to get maximum acceleration on every conceivable occasion without a suspicion of dwell or hang, to be corrected by a final petulant twitch at one of the levers. There would not have been many stoppages in the C.D.T. in September if all the entrants had been driving on automatics.

A Semi-automatic.

OF the two machines now in my stable, one is equipped with the latest vertical Claudel-Hobson, known as the M.I.A., and the other with the semi-automatic, variable jet B. and B., both engines being rated at the same horse-power. The great merit of the B. and B. is that in delivery tune it gave—and has given ever since—110 m.p.g. Since 60% of the extra air is controlled by the throttle valve, the air lever requires the minimum of attention. Nevertheless, a novice would occasionally muddle his mixture on it. I plead guilty to stopping for this elementary reason once a week or so, usually at a blind corner, or in traffic, or perchance on a rough, curly hill. The M.I.A., on the other hand, never gives you a mixture stop, and never loses you a tenth of a second when some other fellow tries to "jump" you on the road and you want to be after him quickly. Yet it is by no means so economical as the B. and B.

I do not suggest that any manufacturer should limit himself to either type. For some years to come the two patterns will probably be distinguished by the features outlined above, viz., automatics for ease of control, two levers for low consumption. These are matters of personal taste. One rider would vote for simple control, another for fuel economy. Why do not the trade give us an option?

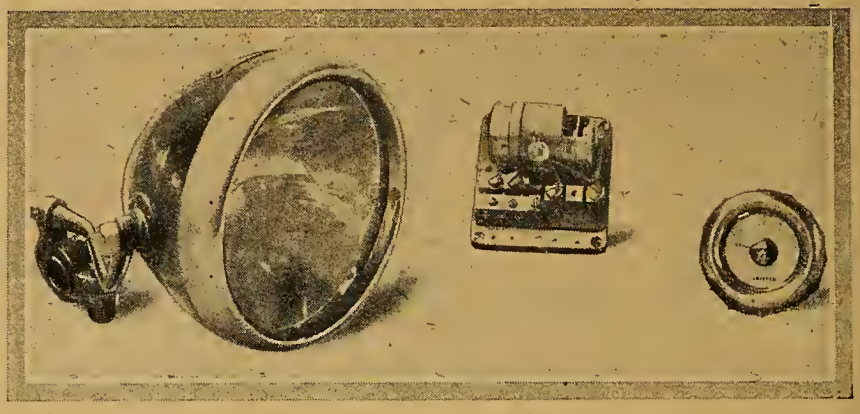
A SCENE DURING THE WHIPPET ROAD TEST LAST WEEK. The journey from London to Brighton, a distance of 53 miles, was successfully accomplished, though it may be assumed that such a demonstration is not the limit of the capabilities of this little mount.

Powell and Hanmer Lighting Set for 1920.

Mechanical Control of the Dynamo Speed, Cables contained in Single Leads, and a Neat Watch Pattern Switchboard.

DYNAMO electric lighting sets for motor cycles are not so numerous as to preclude a hearty welcome to a new comer. In this case, the name of the makers is a guarantee of soundness, and, moreover, the simple construction of the various electrical components used in the Powell and Hanmer set will recommend itself to the motor cyclist. Characterised by careful and solid workmanship—well-made articles are often solid without necessarily being heavy—the new set consists of dynamo, battery, cut-out, switchboard, head, side, and tail lamps. The output is six ampères at six volts at 1,440 r.p.m.

As regards electric lighting for motors, the chief difficulty facing the designer is to reconcile the irregular drive from the engine with the need of a constant output from the dynamo. Two main methods of overcoming this disability are now in use. One is to provide means whereby the electrical output may be controlled and limited, the other is to employ a mechanical device that shall make certain that the dynamo itself never may be driven above a predetermined speed. This last is the principle adopted by Messrs. Powell and Hanmer, Ltd.



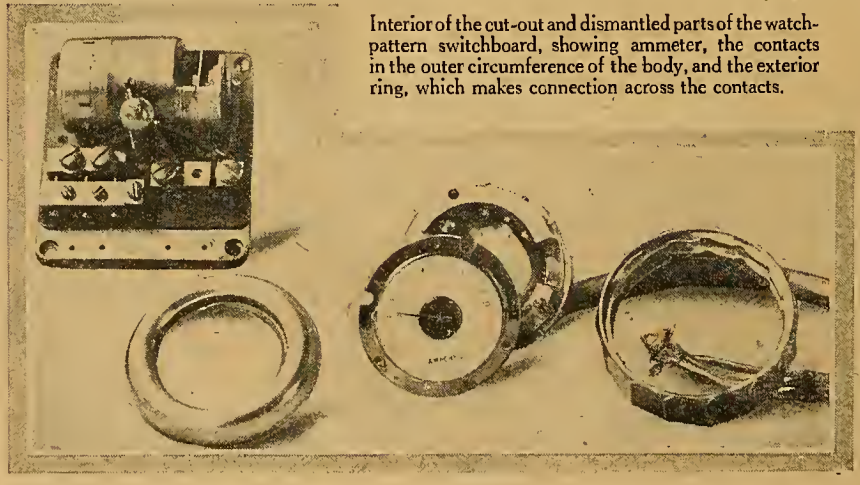
Head lamp, cut-out, and switchboard of the Powell and Hanmer lighting set.

A Governor Clutch Drive.

In broad outline, the limiting device is obtained by interposing between the dynamo pulley and the armature-shaft a spring loaded single plate clutch in such a way that drive passes through the clutch and the clutch spring. If the torque applied to the pulley exceeds the strength of the clutch spring the latter is compressed, and, by means of a cam action, the clutch itself is momentarily disengaged. As soon as the spring is relieved of its load by the freedom of the clutch the latter is at once forced to re-engage. Actually, a floating action takes place, effecting a constant slip, according to the excess of rotational speed given to the pulley.

The design of the clutch itself can be discerned from the accompanying illustrations. Mounted on the armature-shaft is a ball bearing, the outer race of which is contained in the boss of a belt pulley. Free on the extremity of the armature-shaft is a sleeve, which carries at one end a Ferodo-faced plate forming the driven member of the clutch, the Ferodo facing being arranged to grip against the side of the belt pulley. In the sleeve is cut a helical groove, which is engaged by a radially placed pin fixed into the shaft. This device is arranged so that rotation of the sleeve relative to the armature-shaft in either direction causes the former to slide inwards or outwards along the shaft owing to the presence of the pin within the helical groove. This rotation of the shaft in the one direction will cause the clutch plate to be withdrawn; or, in the reverse direction, will cause engagement.

Rigidly attached to the end of the shaft is an annular cover plate, containing a snail or clock type of spring. The outer extremity of this latter is fastened to the inner periphery of the case, and the inner end is attached to the clutch sleeve. As the armature-shaft of the dynamo will offer an increased resistance to turning as its speed is raised, to limit the output of the dynamo it is only necessary to make the clutch slip when the resistance reaches a predetermined limit. If driven below the limit the pulley wheel carries the clutch plate round with it, and through the sleeve the drive is transmitted to the spring, and from the spring to the shaft. If the drive exceeds that required, the load on the armature-shaft, becoming greater, causes the spring to be compressed or wound up. Winding up the spring, however, has the effect of rotating the sleeve relative to the shaft, with the result that the sleeve is moved along the shaft and withdraws the clutch momentarily from engagement.

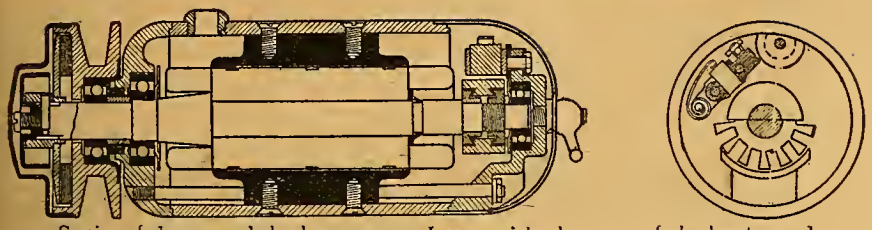


Interior of the cut-out and dismantled parts of the watch-pattern switchboard, showing ammeter, the contacts in the outer circumference of the body, and the exterior ring, which makes connection across the contacts.

A Thoroughly Tested Device.

In actual practice the governor clutch device is a great deal more sensitive than might be imagined. Tests have been witnessed in which one of these dynamos was driven from an electric motor, controlled through resistance coils. The speed of the motor could be varied from 500 or 600 to about 2,000 r.p.m. very quickly, but whether the controller handle was moved slowly or fast only the slightest tremor of the ammeter needle connected up in the accumulator charging circuit with the dynamo could be detected, and this only at or about the critical speed at which the clutch commences to slip. Indeed, when the dynamo was directly coupled to lamps representing the lighting set, with the accumulator out of circuit, sudden variation of the speed of the driving motor produced only the faintest flicker in the glow of the filaments.

It will be conceded that the above constitutes a very severe test. As the actual load transmitted through the clutch is not of a great order, and as the clutch itself is of very reasonable dimensions with regard to that load, the wear on the Ferodo facing is stated to be small, nor does the clutch itself appear to run particularly hot when slipping, due, in all probability, to the sensitiveness of the device. For the foregoing reasons, the rider can afford to forget the existence of the dynamo regulator.



Section of dynamo and clutch governor. Inset on right shows one of the brushes and its spring.

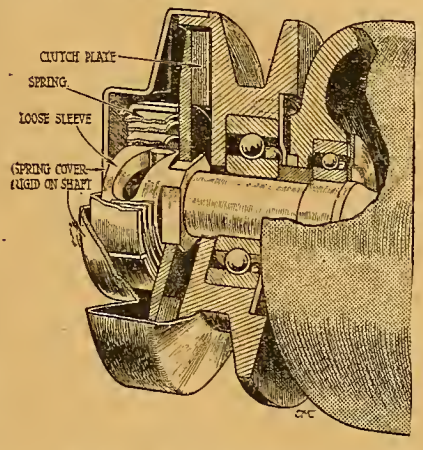
Dynamo Design.

In construction, the dynamo consists of a cylindrical steel yoke piece machined all over, and having attached to its interior two pole pieces, the inner extremities of which form the armature tunnel. Aluminium end pieces carry the self-aligning ball bearings in which the armature-shaft runs, and these end plates are held down on to their registers by means of two bolts extending from end to end of the body. To prevent foreign matter getting into the bearings, the latter are covered with metal backed felt washers, and lubricant to the bearings is supplied through oil cups. The machine is shunt wound, following standard electrical practice, and the core of the armature consists of laminations pressed on to the armature-shaft and kept in position by a key and ring.

The commutator is remarkable for its large proportions, and the segments are dovetailed into position by a coned shoulder and a coned locking ring. In manufacture the commutator segments are assembled within a stout steel ring, and then are bored and the dovetail cone faces cut. The assembly is put in position on the shaft, locked home, and afterwards the outer steel ring is pressed off and the circumference of the commutator skimmed up in position on the shaft. Soft morganite brushes of large dimensions are used, and each is held up to its work by the tangential projection of a coiled clock spring. The brushes are extremely easy to remove, and, owing to their size and the governing action of the driving clutch, sparking and wear are practically negligible. Approximately, this dynamo weighs about 9 lb.

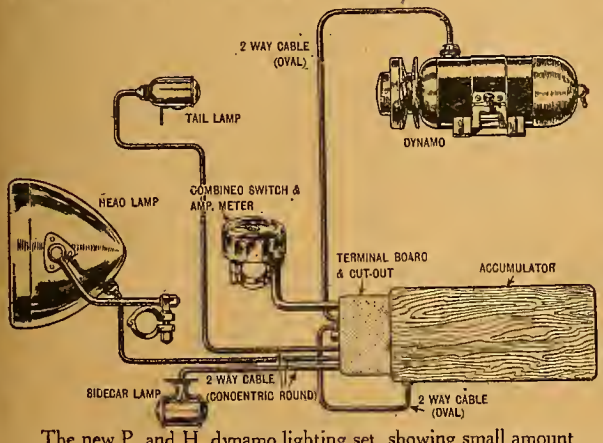
The Cut-out.

Since the function of the dynamo is to charge the accumulators and nothing else, means have to be taken to ensure that current cannot pass from the dynamo to the accumulator until it is powerful enough to overcome any tendency of the accumulator current to reverse, and to endeavour to run the dynamo as a motor. Hence the dynamo must not attempt to charge the accumulators until it is producing a definite amount of electrical energy. To achieve this purpose, a "cut-out" is employed. As will be seen from the illustration, the type used in the Powell and Hanmer set consists of an Ironclad series and shunt-wound electro magnet, and when the latter is excited to the necessary degree its core attracts a spring-loaded armature. This armature carries a platinum point, which makes contact with a second fixed point and completes the charging circuit. The tension of the flat spring carrying the armature normally holds the platinum points apart, and determines the strength to which the magnetic field of the cut-out must be built up by the dynamo before the cut-out cuts in and allows charging to take place.



Section of the driving pulley showing friction plate.

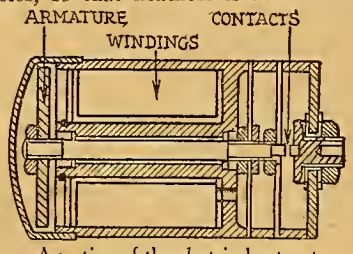
It has been stated that the cut-out is both shunt and series wound. The shunt winding is energised from the dynamo, and the series winding from the accumulator and dynamo. Thus if the dynamo slows down sufficiently to allow reversal of current to take place from the accumulator, the series winding in the cut-out reverses its magnetic field, and acts against the shunt winding, with the result that the effective pull of the cut-out against its armature is reduced, and the spring of the armature causes the latter to leave the core and thereby break off the connection between dynamo and accumulator circuit.



The new P. and H. dynamo lighting set, showing small amount of external wiring.

Switchboard.

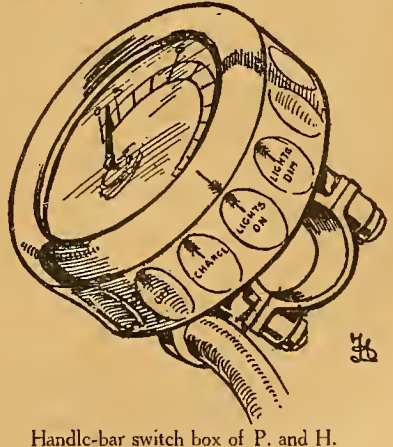
A feature about this lighting set which is certain to find favour with motor cyclists is the extremely compact form of the instrument board. It consists merely of a fitting very little larger than an old-fashioned heavy watch, which fitting can be clamped on to the handle-bars in any suitable position, or on the top tube or elsewhere. Only one lead runs from it containing all the necessary cables, so that neatness is assured. The centre of the instrument houses an ammeter, but the outer circumference of the casing can be rotated and forms in effect the switch, giving the various positions of charging, head light, side light, tail light, and dimmer. An idea of the internal construction can be gathered from the illustrations.



A section of the electrical cut-out.

Lamps.

Considerable attention has been paid to the construction of the lamps, which can be obtained in nickel, black, or nickel and black finish. The head lamp is shown in an annexed illustration. To prevent any trouble with the lamp front and glass, a special form of attachment is used, consisting of a semi-hinge at the top and a vertical taper plug bolt at the bottom, the latter being made fast with a milled nut. In the event of the nut shaking loose through vibration, the front of the lamp cannot swing open. The bayonet socket of the bulb is attached to the body in a manner which allows of proper focussing of the light beam, the socket being locked into place by means of a screwed ring.



Handle-bar switch box of P. and H. lamp set.

THE 1920 BRADBURY PROGRAMME.

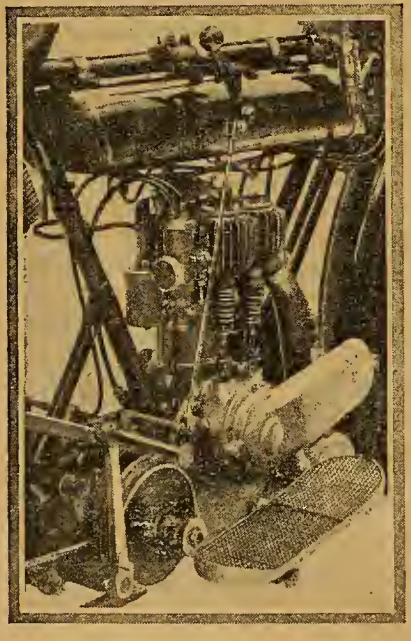
Three Types: 2¾ h.p. and 4 h.p. Singles and 6 h.p. Two-cylinder Models.

ONE of the oldest firms in the motor cycle industry, the famous Lancashire firm of Bradbury and Co., Ltd., of Oldham, has deservedly held an enviable reputation for the staunchness of its productions, both as regards engine power and frame design.

The main lines of previous models will be followed in the 1920 output of the firm, but one type, new to the general public (it was briefly described in *The Motor Cycle* of March 2nd, 1916), is now being brought forward.

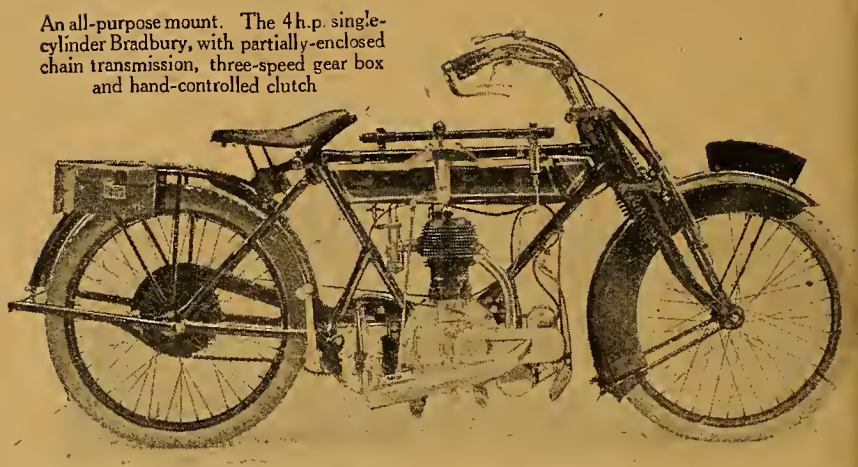
The 2¾ h.p. Lightweight.

This is of a type which will fill a gap in the market, since it is a homogeneous design, carried out entirely as the production of the firm who market it. Many motor cyclists do not care to have a machine built around a proprietary engine, preferring one in which the unit is exclusive to the particular make favoured, and, so far, they have not been able to indulge their fancy in this direction so far as small single-cylinder four-strokes are concerned.



Engine unit of the new 2¾ h.p. Bradbury lightweight. Note the duplex frame tubes, detachable cylinder head, and clutch in the countershaft pulley. A picture of the complete machine appeared in last week's issue.

An all-purpose mount. The 4 h.p. single-cylinder Bradbury, with partially-enclosed chain transmission, three-speed gear box and hand-controlled clutch



The bore and stroke are 74.5 × 80 mm. respectively, the cylinder having a capacity of 349 c.c., the crank case being incorporated in the frame in the same way as that of the old-established 4 h.p. model. A detachable head is fitted, and this is held by long bolts and a bridging piece similar to those employed on the 6 h.p. engine. It will be seen, therefore, that the best points of previous Bradbury practice and experience are incorporated.

Adjustable tappets are used, and large diameter taper springs return the valves to the seatings. The timing gear is simple, and only has one half-time wheel, while a neat external exhaust valve lifter acts upon a large disc on the tappet stem. Carburation is effected by a top-feed B. and B., and a C.A.V. magneto, chain-driven, is carried before the engine above the cast aluminium silencer.

Frame Design.

The frame is exceedingly neat, being somewhat of a departure from standard practice. Its most noticeable feature is the duplex front tube. Following the design of the 4 h.p. frame this model dispenses with the usual tube under the tank, and has a straight top member free from bends, from which the tank is suspended by clips. This construction is not unduly high, and the Brooks saddle sits quite low at the rear angle of the frame. Commendable features are the employment of long tapered lugs and the short strengthening strut above the gear box bracket.

Transmission.

The power is transmitted to the road wheel through a two-speed box, chain-cum-belt drive being employed. A handle-bar controlled clutch is fitted in the large diameter belt-pulley on the gear box, while the gears are changed by a small lever working on a bracket attached to the top tube.

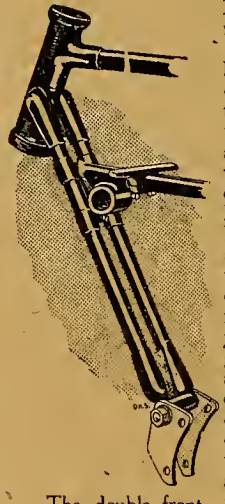
A smart tank, with rounded sides, is fitted, and this is equipped with a Best and Lloyd semi-automatic oil pump with sight-feed regulator.

The 4 h.p. Single.

This well-tried machine, equally suitable for solo or sidecar work, is justly popular. In the past the powerful "square" engine (89 × 89 mm. bore and stroke = 554 c.c) has earned a world-wide reputation for its slogging powers under adverse conditions. It now reappears with various detail improvements, all-chain drive, and three-speed countershaft gear. Constructional details remain the same as in the pre-war models, with the exception of the fact that Druid Mark II. forks are fitted, and that the frame embodies a short stay from the gear bracket to the saddle tube.

All-chain Drive.

A B. and B. carburetter is fitted, and Thomson-Bennett magneto. Lubrication is by Best and Lloyd semi-automatic drip feed.



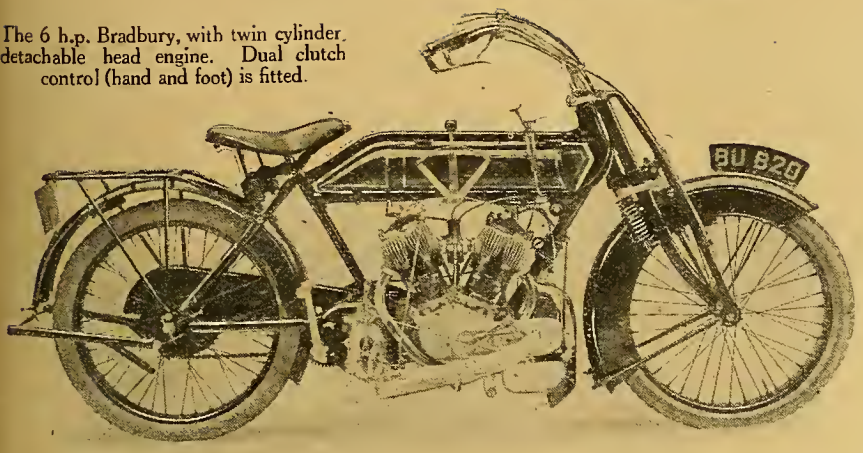
The double front down tube fitted to the 2¾ h.p. and 6 h.p. models.

Transmission is by chains throughout, the Bradbury three-speed gear with kick starter and clutch being used. A Bowden control from the left handle-grip releases the clutch, and it is noteworthy that the operating mechanism and cable adjustment on the gear box are easily accessible. The chains are partially enclosed, having a complete cover between the engine and gears, but only a guard over the top of the final drive, and an internal expanding brake operates in the rear wheel sprocket. A large shield before the magneto, long aluminium footboards, and a Brooks saddle respectively ensure the cleanliness and comfort of the rider.

The 6 h.p. Passenger Model.

As a powerful mount, suitable for sidecar work in any district, the 6 h.p. V twin Bradbury has acquitted itself well. Little change has been found necessary in the general design of the machine, although a new type of frame is used embodying duplex front tubes such as are fitted to the 2¾ h.p. model.

Engine details remain the same, the bore and stroke being 74.5 × 86 mm. = 749.75 c.c. The neat cylinders, with de-



The 6 h.p. Bradbury, with twin cylinder detachable head engine. Dual clutch control (hand and foot) is fitted.

tachable heads, are held by long bolts and bridges as heretofore.

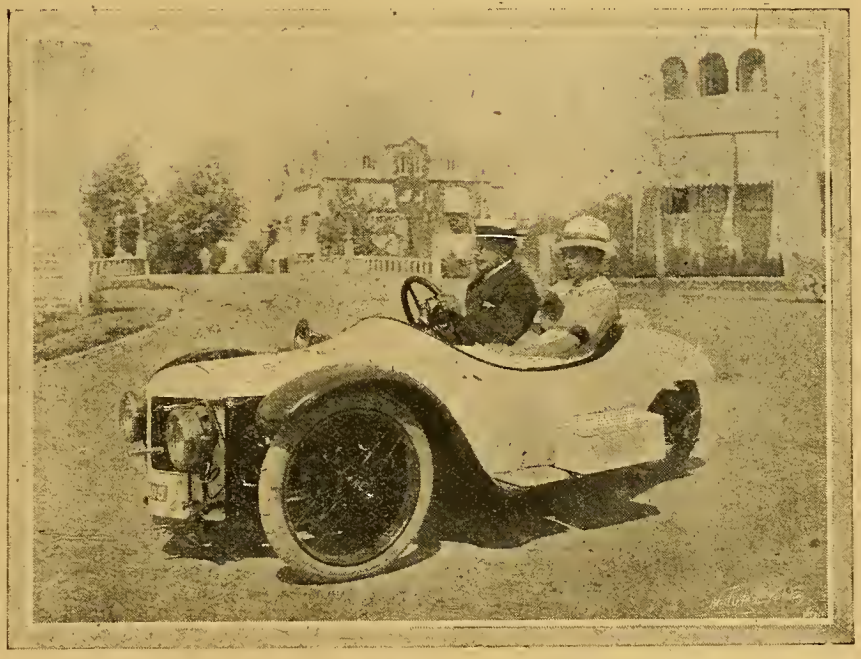
Chain transmission is used throughout with the well-tried sliding pinion three-speed gear. A combined hand and foot control is fitted to the clutch, this being a point of great convenience, since both forms of clutch control have their advantages, especially when traffic driving with sidecar. In general specification this model resembles the 4 h.p. single, except that the rear chain guard is deeper and that a quickly detachable rear wheel is fitted. The Grindlay spring wheel sidecar is fitted to these machines when required, this make having been adopted by the Bradbury Co. as standard for its 1920 specification. The finish on these machines receives much attention, and is of high order, the rounded tanks, enamelled black with a broad gold line, being particularly handsome.

A Dutch Three-wheeler.

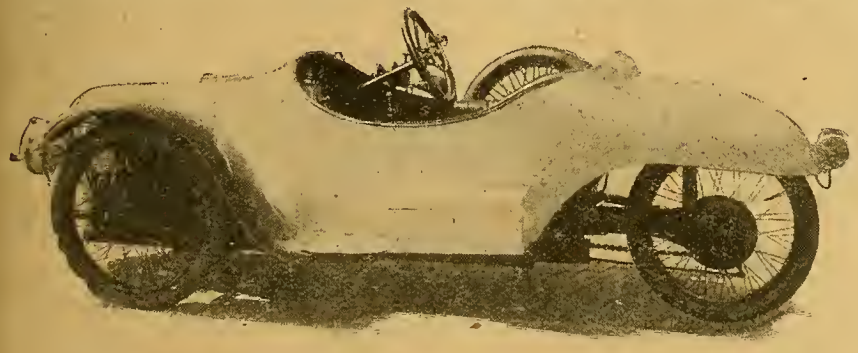
1920 Model Simplex produced by a Leading Amsterdam Firm.

THE three-wheel runabout type of machine has fascinated designers of most countries, but so far the only successful designs have been produced in England. America has been responsible for several novel designs, but at the present time there are none being sold in any quantities. France introduced three-wheelers long ago, as did Germany, but the majority had only a meteoric existence, as have most of the English designs. Of pre-war types, the Morgan seems to be the sole survivor, and to its success may be attributed the present-day popularity of the three-wheeler among designers. Few of these, however, are yet on the market, and they may be regarded as 1920 propositions. Among these is the new Simplex runabout produced by the Simplex Cycle and Motor Co., of Amsterdam—a more or less well known Dutch firm of motor cycle manufacturers.

As will be seen from the accompanying illustrations, the Simplex three-wheeler has a body which compares favourably with any three-wheeler produced in this country. Probably an English designer would have included a hood and screen, since one of the advantages of the three-wheeler over the sidecar is the possibility of affording protection from the elements for the driver. However, this omission may be rectified in production models.



The Simplex on the road. The position of the starting handle will be noted.



The Simplex three-wheeled cycle car, a Dutch production with body design of note.

Specification.

The specification of this machine includes a channel frame underslung at the front, the engine being carried in front of the axle and driving a three-speed and reverse gear box by means of a chain. The final drive, too, is by chain.

A water-cooled V twin engine of 10 h.p. provides the power, the radiator being placed at the rear of the engine and bonnet.

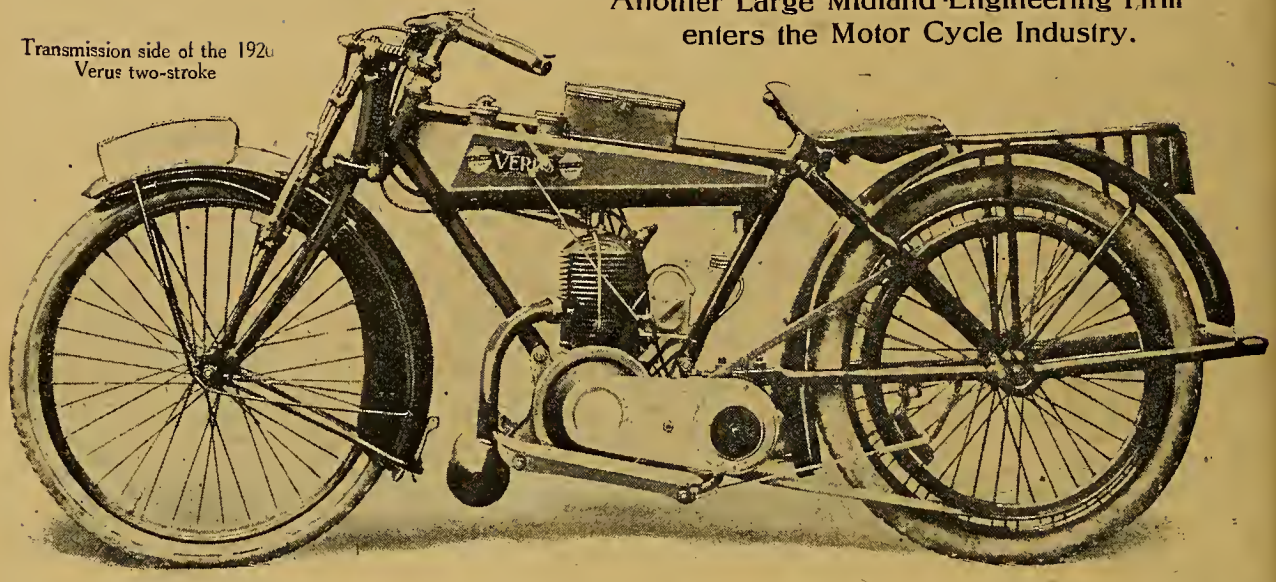
The rear wheel is suspended by quarter-elliptic springs, and may be detached without disturbing the transmission.

Quickly detachable and interchangeable wheels shod with 700 × 85 mm. tyres are fitted, while a spare wheel is carried on the right-hand side running board, a large tool box occupying a similar position on the other side.

The petrol tank is at the rear of the seats, and is constructed as part of the body panelling.

VERUS MOTOR CYCLES.

Another Large Midland Engineering Firm enters the Motor Cycle Industry.



Transmission side of the 1920 Verus two-stroke

CONSIDERING the standing of its manufacturers, the Verus two-stroke made its *début* to the motor cycle world in a very unostentatious manner. Among the array of competing machines in the London-Edinburgh event at Whitsuntide lined up at Highgate, a little Verus attracted attention, firstly because it bore a new name, and secondly on account of its smart appearance. Few realised, however, that it was more than an "assembled" two-stroke machine; that its manufacturers, Messrs. Alfred Wiseman, Ltd., Glover Street, Birmingham, have works covering three and a half acres of ground; and that, with the exception of the gear box, it was produced throughout by its makers, who have plant to make all stampings, castings, and machined parts. In fact, Messrs. Wiseman handle everything from ore to complete machine, excepting the tubes and equipment. In addition, they have their own laboratory, a hardening department, and a plant for hydraulic forging. For several years, Messrs. Wiseman have made two-stroke engines for the trade, while their business in cylinder casting, machining, and grinding has been very extensive.

A Disastrous Fire.

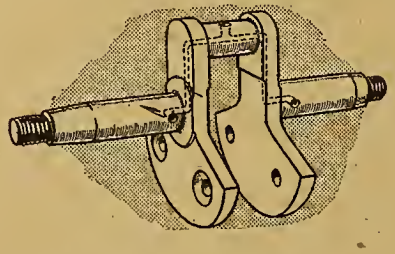
With such facilities and experience, it is not surprising that this firm became interested in the production of a first-class motor cycle, and a lightweight four-stroke was already designed when the Armistice was signed. By January all tools, jigs, and plant were ready to produce this model on a large scale, and parts for a thousand engines were in stock. Then a fire wiped out the works containing the department, and the only thing which escaped was one engine which happened to be in one of the other works. Drawings, patterns, tools, jigs, and stock, including over five hundred magnetos, were lost, and the machine in consequence must lose its place in the 1920 models which will be shown at Olympia.

Despite this set-back, however, quite a large number of Verus two-strokes have been sold during the present year, as it was found possible more quickly to reorganise to build the two-stroke engine, and recently an extension to the works was acquired, which shortly will place the company in a position to recommence on the lines laid down early this year.

The 1920 Models.

Recently we were afforded an opportunity to examine the 1920 models, which include a new 2¼ h.p. two-stroke single gear machine, a 2½ h.p. two-stroke with two-speed gear, a 2¾ h.p. Blackburne-engined four-stroke for solo use, and a 4 h.p. machine, also with a Blackburne engine, as a dual purpose mount. The last machine is not quite ready, but it is expected to be staged at Olympia.

The 2¼ h.p. engine is an exceptionally neat little unit, with a piston displacement of 211 c.c., the bore and stroke being 62 mm. and 70 mm. respectively. It is of the conventional three-port type, having a one-piece crankshaft and split bronze bushed big end. Balance weights are fitted on the inside of the crank webs, and the main shafts run in longer plain bearings than are usual.



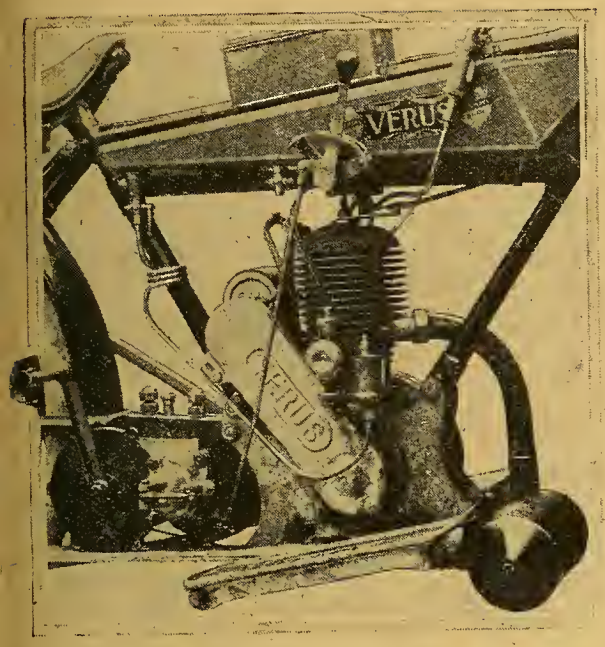
The one-piece crankshaft of the Verus two-stroke engine.

Lubrication System.

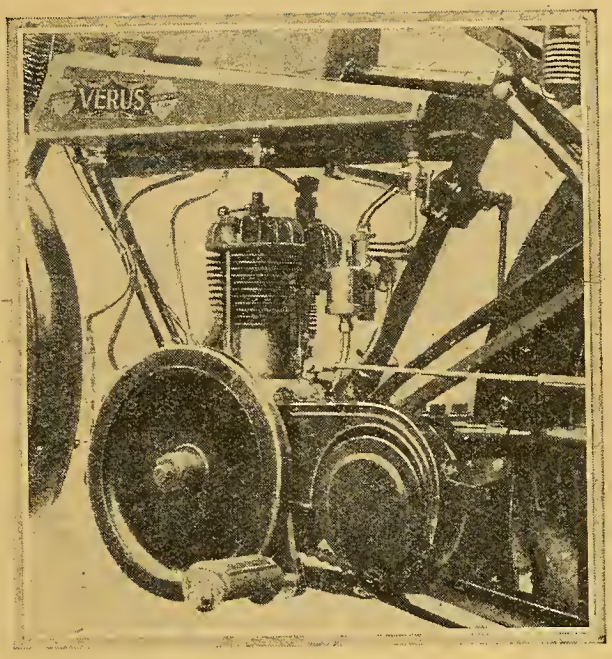
Mr. T. Weaver, who has been very successful on Verus machines in this year's competitions, and who is chiefly responsible for the designs, places the question of lubrication first in the essentials of the efficient two-stroke. (Incidentally, he also believes in a comparatively light cylinder casting as a means of eliminating overheating.) The Verus lubrication system is simple, but quite good. From a drip feed on the tank, oil is fed into an orifice in the side of the cylinder registering with the hollow gudgeon pin when the piston is at the bottom of the stroke. This ensures that the small end of the connecting rod and the cylinder walls receive their proper share of the lubricant. When the oil entrance is uncovered by the piston rising in the cylinder, the oil drains into a well in the top of the crank case communicating with the two main bearings by vertical ducts in the crank case casting. The crankshaft webs and crank pin are drilled, and oil passing into the shaft on either side is thrown up into the big end by centrifugal force. Thus the higher the engine speed, the more would be the supply of oil at this important point.

In the Verus engines, the magneto, chain-driven from the right side, is carried on a bracket, which is integral with the crank case, at the rear of the cylinder. Provision is made for magneto adjustment by the bracket being slotted for the securing bolts.

Unlike most two-strokes having a single exhaust outlet, the exhaust pipe is not "cranked," but leaves the cylinder a little to the side of the centre line at an angle, thus obviating sharp bends. The silencer consists of a large steel barrel.



Details of the Verus two-stroke—engine capacity, 269 c.c



The Verus lightweight fitted with a 2¾ h.p. Blackburne engine.

The larger model has a bore and stroke of 70 mm. (269 c.c.), and follows the 2¼ h.p. model almost at every point. In fact, the same crank case, crankshaft, and connecting rod are used. Amac or Senspray carburetters are fitted, according to requirements, while experiments are being made with a new single lever instrument known as the Walker.

On the two-speed model, a Burman gear box with clutch and pedal starter is used, and driven by chain from the outside of the flywheel, a neat aluminium casing covering the chain and serving also partly to "box in" the flywheel.

The framework is very good, embodying a diagonal top tube and Brampton forks. A shapely tank, distinctively decorated, on the top of which is carried a metal box, can be used either for tools or those oddments which usually have to be carried in the pocket. Almost straight handle-bars, approximating very closely to the D.R. type, form part of the standard equipment. The tyres are 26×2¼in., and the mudguards of ample width. With Brooks or Xl'All saddle, the price of the two-speed 2½ h.p. model is £75; while the smaller machine will be under £60, but 24×2in. tyres are fitted, and the transmission is by belt direct.

Blackburne Engined Models

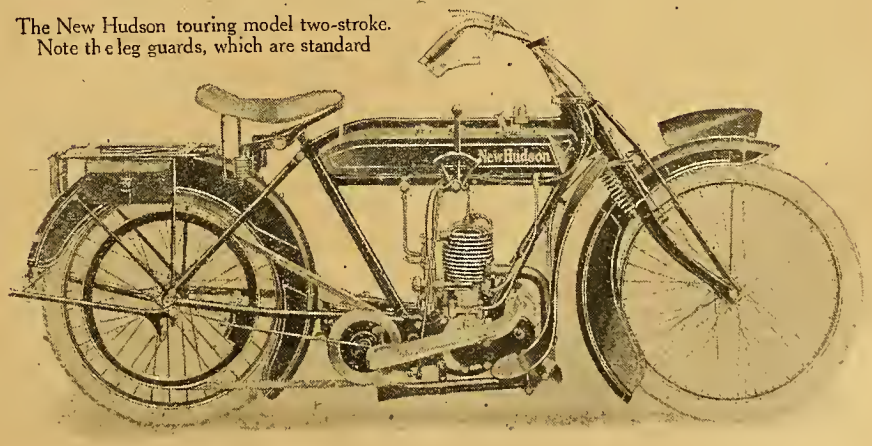
Very similar to the 2½ h.p. machine in its main details is the third model, engined with a 2¾ h.p. Blackburne power unit, which with a Sturmey-Archer gear box is to be catalogued; and a larger model, with the 4 h.p. single-cylinder Blackburne, for solo or sidecar work, will complete the Verus range for the time being. We think this new make will speedily attain a place in the front rank of modern motor cycles. as it is evident from a visit to the works that the three main essentials for success are behind its production. First, the makers are in a position to turn out a good machine; secondly, the men who are directly responsible for the designs are practical motor cyclists; and thirdly, the head of the firm so fully appreciates the desirability of giving satisfaction that a most complete system of inspection is insisted upon at the expense of a restricted output. Mr. Alfred Wiseman, the head of the firm, is to be congratulated upon the adoption of this policy, especially at a time when there is such great temptation to consider "output" the first consideration.

The New Hudson Motor Cycle for 1920.

Well-known Company Re-introduce Small Lightweight.

BEFORE the war, New Hudson motor cycles enjoyed a reputation quite in keeping with the standing of the firm in the world of wheels. So thoroughly did the company enter into the production of war material, however, that the output of 1919 motor cycles was very restricted, and chiefly confined to the lightweight model. It will be recalled that up to 1915 the New Hudson company made two other types which became very popular, *i.e.*, a single and a 6 h.p. twin for sidecar work, and it is with regret we hear that, for the present at all events, these models will not be manufactured. A little later on perhaps a new passenger machine may be introduced, but for the present the works are concentrating upon a small lightweight model, similar to the model made previously, but embodying certain refinements which will make a strong appeal to buyers of lightweights.

The New Hudson touring model two-stroke. Note the leg guards, which are standard

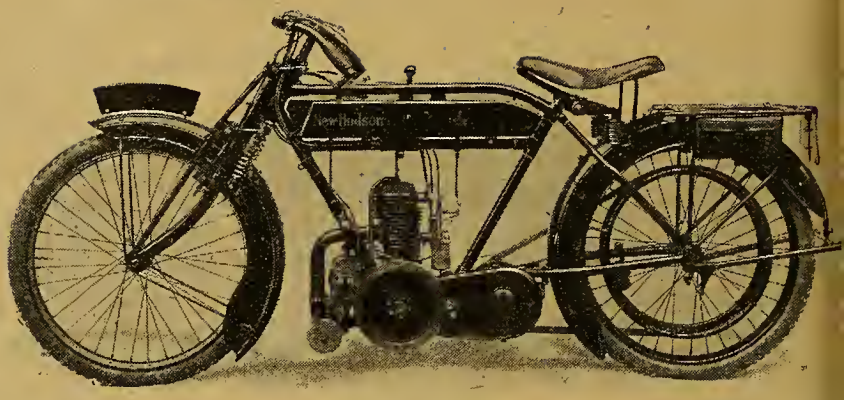


The New Hudson Motor Cycle for 1920.—

This little New Hudson is one of the best finished machines we have examined, and, with its black and dark brown finish, relieved with gold lines on the tank, it looks exceedingly smart. The engine fitted has a bore and stroke of 62 mm. and 70 mm. respectively, the piston displacement being 211 c.c. Two features of the engine which at once attract attention are the compression release and the method of fixing the exhaust pipe.

The first-mentioned device consists of a mushroom valve placed in a vertical position in the centre of the cylinder head, and operated by a rod worked by a bell crank lever carried on a member fixed to the horizontal tube of the frame directly under the tank. A small tube takes the release gas down to a position near the bottom of the crank case.

A large union nut of the castellated type is used to fix the exhaust pipe, instead of the more usual method of making the exhaust pipe and flange integral and fixed by means of studs. The actual flange is fixed in the usual manner, and is quite easy to detach when the cylinder is removed.



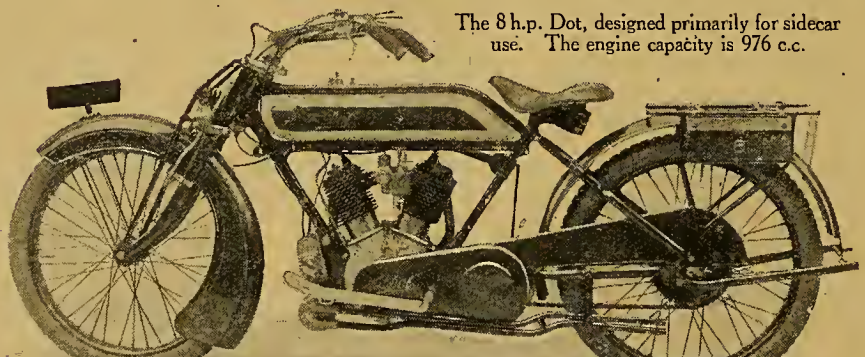
The sporting model New Hudson. This machine has all black finish.

As the machine is provided with 24×2in. wheels, the riding position is very low—a point appreciated by a large number of riders who use such machines for general utilitarian purposes, while ladies will find it most convenient to mount.

Two models are being made: a touris with aluminium footboards, upturne bars, and leg guards, and a sportin model with semi-T.T. bars and footrest Both machines are adequately muc guarded and the chain case is an oi tight unit.

DOT MACHINES FOR 1920.

2¾ h.p. Light Solo and 8 h.p. Sidecar Models.



The 8 h.p. Dot, designed primarily for sidecar use. The engine capacity is 976 c.c.

A SMART all-red lightweight machine is being manufactured for 1920 by Messrs. H. Reed and Co., Manchester, makers of the well-known Dot motor cycles, and it was illustrated on page 485 of *The Motor Cycle* for October 23rd.

It is a four-stroke model, and is equipped with the popular 2¾ h.p. single-cylinder J.A.P. engine, Amac carburetter, and E.I.C. magneto, the latter having a handle-bar timing control.

Neat Frame Design.

Transmission is by chain and belt, through an Albion two-speed box, the gears being changed by a lever at the side of the tank.

The frame is very sturdy, has neat engine supporting lugs and a minimum of clipped-on parts, even the carrier stays being so arranged as to encircle and carry the tool-bags. Saxon spring forks are fitted and the well-raked head and T.T. bars should render steering particularly safe. Rubber grips are fitted to the bars, and we think that this is a detail which should be universally copied, as they absorb the bulk of handle-bar vibration.

The tank is of the shape usually adopted on Dot machines, having slightly rounded sides, and is fitted with an Enots dome lubricator through which oil is automatically drawn to the engine. In addition to this, a hand pump is incorporated, so that extra lubricant may be forced through to the engine when desired. The wheels are fitted with 26×2 Dunlop tyres, and the rider is supported on a large Lycett pan saddle and neat aluminium footboards.

The large model Dot is an exceedingly neat looking machine, planned on well-tried lines. It is fitted with the 8 h.p. J.A.P. engine (85.5 × 85 mm. bore and stroke = 976 c.c.), and carries an E.I.C. magneto immediately before the front engine plates and above the silencer. The carburetter is an Amac. Transmission is by chains through a Sturmey-Archer three-speed gear box, with the new typ control and the well-known dry pla clutch. A metal case completely cove the front chain and clutch, and, extendin to the rear, covers the top of the fin driving chain and the upper half of th back wheel sprocket.

Sidecar Lugs Integral.

Sidecar lugs are built into the fram which is of neat design, low, and havin a wheelbase of sufficient length to secur comfortable running. A substantial an roomy carrier is fitted, into the sides c which large tool-cases are clipped. Broa mudguards are used, the front one havin deep valances, and aluminium footplate are included. Suspension at the front i carried out by a Saxon fork, which ha its spring well out of the way of mud an spray from the wheel, while the ride himself is insulated on an XL'All saddle

The finish of the machine is excellent being in dark red enamel, with a nicel rounded tank panelled in the same red o an aluminium grounnd, and carrying a Enots dome sight-feed lubricator.

R.A.C. AND BENZOLE.

IN view of the present high price c petrol and the general tendency t experiment with alternative fuels motorists will be glad to know that th Royal Automobile Club is taking a active part in the development of benzol At the forthcoming Motor Show a Olympia, London, the R.A.C. has place a portion of its stand (No. 8a) at th disposal of the National Benzole Associa tion, one of whose chemists will be i attendance to advise motorists, membe of the motor trade, and others intereste as to the immediate and future possibil ties of the new fuel.

A "BIG SINGLE" TWO-STROKE.

The Dunelt Motor Cycle—500 c.c. Engine with Truncated Piston.

The new Dunelt 500 c.c. two-stroke engine, which has a truncated piston giving a displacement on the under side of the piston of 770 c.c. Note its size compared with the foot rule alongside.

AT periodic intervals throughout the history of the motor cycle, the large single-cylinder two-stroke has made its appearance, but, in most cases, it is heard of no more. Each new engine, however, has shown some advance upon its predecessor; and, in view of the new discoveries concerning air-cooling which war experience afforded many engineers, it is not unreasonable to expect that all previous obstacles can be now overcome.

We know of at least three two-strokes with cylinders of 500 c.c. or over which are emerging from the experimental stages with every promise of success. One of these may be said to have passed this stage, and will be offered at Olympia as a serious proposition, intended for solo or sidecar work, at a popular price. This machine is the Dunelt, the production of Messrs. Dunsford and Elliott, Ltd., large Sheffield steel manufacturers, who have an experimental department in Birmingham.

For Cheap Production.

Often the view has been advanced that, with a moderately efficient two-stroke in the neighbourhood of 500 c.c., the main essential of the Ford type of motor cycle is secured; that with such a power unit it would be possible to produce a machine capable of taking the same place in the motor cycle world as that enjoyed by the famous American vehicle in the field of four-wheelers.

Messrs. Dunford and Elliott, recognising the enormous scope for a motor cycle suitable for solo or sidecar work, and which could be sold at a figure approximating to that of the lightweight, decided that only a two-stroke engine could make this possible; but, realising that the efficiency of the small conventional three-port engine would be difficult to obtain in a much larger size, it was decided to "borrow" one of the features of large two-stroke engines which are known to be satisfactory for marine and stationary purposes. This is the truncated piston—a type which is not exactly new to motor cycle practice, though this is the first time we have seen it embodied in a large single-cylinder engine which has been developed beyond the paper stage.

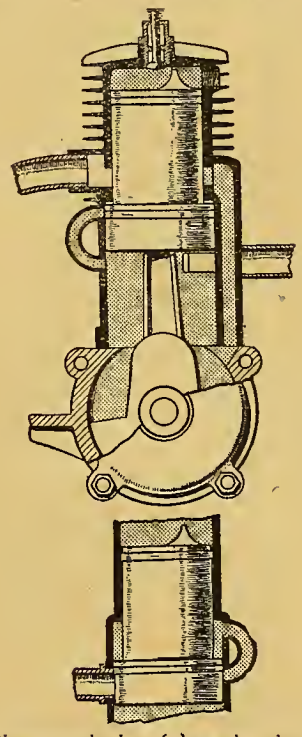
By the use of the two-diameter piston, it is possible to send through the transfer passage into the cylinder a charge greater than the capacity of the cylinder, while with the conventional two-stroke engine it is impossible to replace the dead gas by a volume equal to it. This will be appreciated readily when it is remembered that the displacement of a piston is only about 80% of the capacity of the cylinder, and dead gases must always be present in both two and four-stroke engines. For this reason, many engineers contend that the six-stroke engine promises greater efficiency. This, however, is by the way, and illustrates the fact that scavenging is desirable with a four-stroke engine, and almost essential in a two-stroke if anything but moderate efficiency is to be obtained.

A Double Diameter Piston.

In the Dunelt engine the scavenging is done by making the charge of new gas greater than the actual volume used, the displacement of the trunk piston being 770 c.c., while the working piston only displaces 500 c.c.

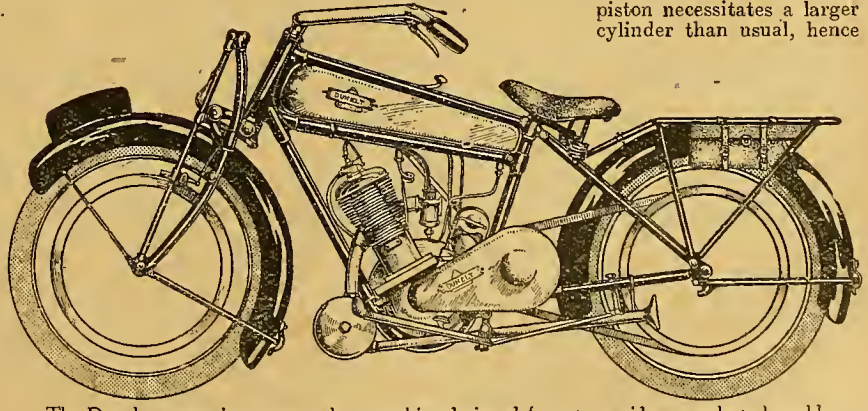
It may be argued that this will result in an extravagant waste of gas, but probably the overall efficiency will be quite proportionate to the more simple type of two-stroke, as, owing to the large quantity of dead gases always mixing with the fresh charge, an over-strong mixture is necessary to make the whole combustible.

In the Dunelt engine a better and "cleaner" mixture is retained in the cylinder, and approximates to the proportion of air and petrol vapour used in the four-stroke. We understand that 70 m.p.g. has been obtained with the Dunelt on the road, so its consumption cannot be said to be unduly heavy.



Diagrammatic view of the engine, showing the truncated piston. In addition to the initial displacement in the crank case, a charge is contained in the space above the trunk, which serves to cool the piston.

The use of a truncated piston necessitates a larger cylinder than usual, hence

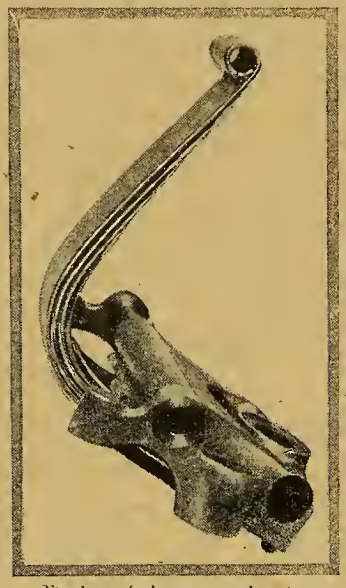


The Dunelt two-stroke motor cycle, a machine designed for solo or sidecar work, to be sold at a popular price.

A "Big Single" Two-stroke.

the Dunelt engine is quite an imposing unit. The bore and stroke of the working cylinder are 85 mm. and 88 mm. respectively, while the diameter of the trunk is 105 mm. With its large outside flywheel and massive cylinder the engine looks heavy, but, placed on the scales at our request, it was found to weigh but 65 lb., the average weight of a 3½ h.p. four-stroke engine.

From the diagrammatic view on page 509 it will be seen that, in addition to the crank case, there is an annular space above the piston trunk. This increases the compression in the crank case. The "cycle" is quite easy to follow with the aid of the diagram. On the up stroke of the piston a partial vacuum is created in the crank case, which is filled with new gas from the carburetter when the trunk exposes the intake. In the meantime, a small charge is being compressed in the annular space above the trunk, and immediately after the main charge has entered the crank case from the intake the up-going piston exposes a transfer port communicating with the annular space, thereby transferring this extra charge into the main volume of new gas. On descending, the trunk of the piston compresses the charge in the crank case while the annular space above the trunk is taking in its charge. Incidentally, it may be mentioned that this upper chamber is not required, but is one of those minor things which have to be endured for the sake of other advantages, but as the ports are shallow, in all probability the crank case space is not completely filled at high speeds, and the upper side of the pump is utilised to make good any partial vacuum at high speeds. It is the opinion of several internal combustion engine experts that the most important thing in engine design is to ensure that the gas reached the cylinder, which is an acknowledgment that this is a far more difficult undertaking than getting rid of the exhaust.



The front fork crown and spring.

Roller Bearing Big End.

In actual construction the engine is good, very substantial ball and phosphor-bronze bearings being used throughout, the gudgeon pin being ⅝in. diameter and the big end of the roller type. The drive is taken off the side opposite to the flywheel. The piston has two rings at the top and one on the trunk.

It will be seen from the illustration of the complete machine that, while unconventional, the design of the Dunelt is extremely clean. The engine is inclined towards the head and drives a neat two-speed gear of the expanding ring type by means of chains, the final drive being by belt. Embodied in the gear box is a kick-starter with enclosed mechanism.

The wheels are interchangeable, a brake rim being used on the front wheel exactly the same as that on the rear wheel. The tyres are 26in. × 2½in.

Domed mudguards 7in. across the beads, a two and a half gallon tank, and aluminium foot plates are included in the equipment, and altogether at the price at which the makers hope to market it, *i.e.*, about £70, the Dunelt will undoubtedly create a great deal of interest when it is exhibited at Olympia.

Flywheel side of the Dunelt engine, showing the wedge-shaped sliding member for magneto chain adjustment.

A New Friction-driven Cycle Car.

The Laurence-Jackson which is being Produced to Sell at £200. A J.A.P. Air-cooled Engine is Fitted.

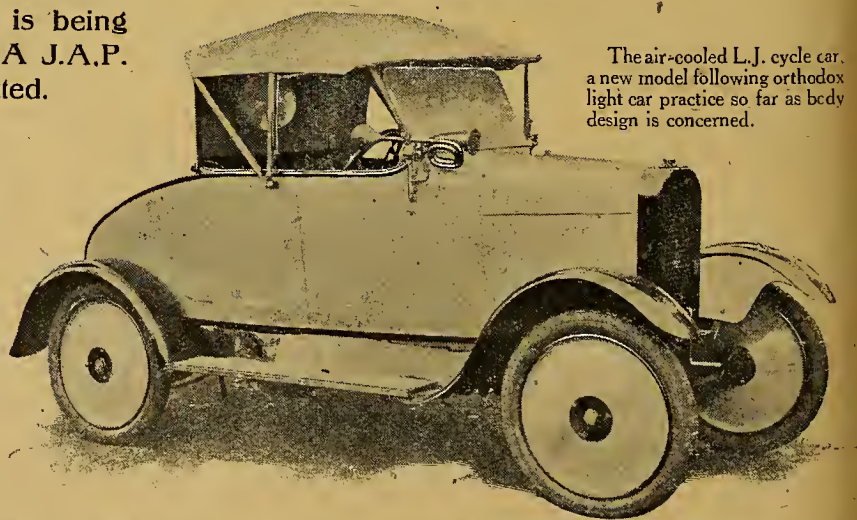
IT is doubtful whether the days of the early cycle car ever produced so large a number of vehicles of the "simple" type as are now being built as marketable propositions. In this connection, however, there is no comparison between the machines of 1911 and the present day, both on the point of appearance and of mechanical soundness.

We have dealt with many of these new machines, both of the three and four-wheeled types, which are likely to interest motor cyclists, and the latest we are able to illustrate is the Laurence-Jackson, made by a Wolverhampton firm.

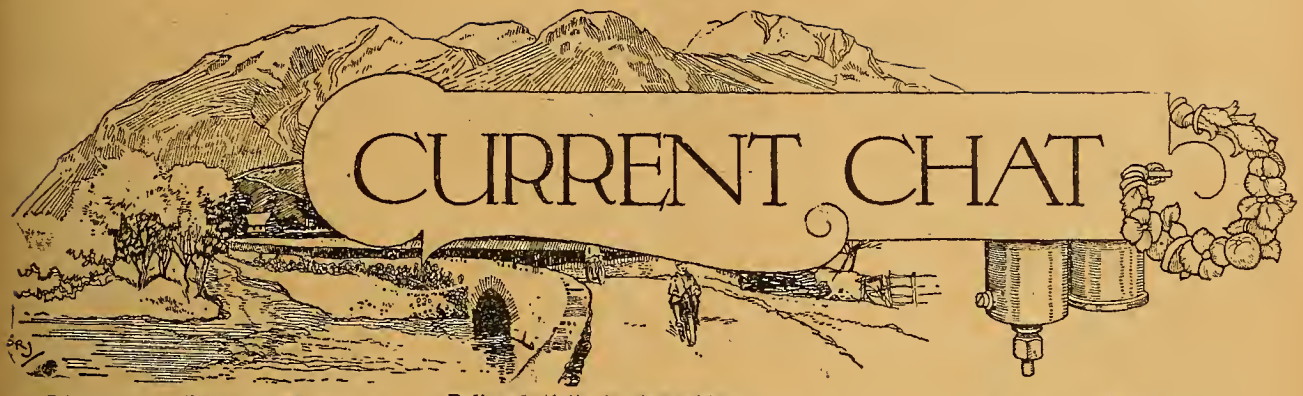
In this vehicle several points appear to have been considered from an aspect differing from the most general view. In the first place, a low sporting appearance has been deliberately sacrificed in order to seat the passengers fairly high above the road level.

The specification includes a pressed steel frame, transverse front and quarter-elliptic rear springs, 8 h.p. J.A.P. air or water-cooled engine, shaft and duplex chain transmission, and friction disc change speed, Lynton steel disc wheels, embodying detachable rims, internal expanding brakes, 700 × 80 mm. tyres, direct steering, and domed mudguards.

The car is being produced to sell at £200, and, we are told, orders are being accepted at this price.



The air-cooled L.J. cycle car, a new model following orthodox light car practice so far as body design is concerned.



Times to Light Lamps.

GREENWICH TIME.

Nov.	6th	4.54	p.m.
,,	8th	4.51	,,
,,	10th	4.48	,,
,,	12th	4.44	,,

British Motor Cycle in Canada.

The first shipment of Triumph motor cycles to reach Canada for some years arrived at Toronto recently.

Prices still Rising!

The following is a cutting from the *Birmingham Daily Mail:* "Allon, 1917, 2-speed, hand clutch, electrically equipped, excellent condition; £447 10s.; seen Saturday afternoon."

Police Trap.

We have received information of a police trap working in South End, Croydon.

There is a trap working near the village of Condorrat, on the main Glasgow-Edinburgh road, and about eleven miles from the former city.

Honours for Mr. Watson.

Mr. Duncan Watson, London manager of Messrs. the Harley-Davidson Motor Co., Ltd., who is mayor-elect for the borough of Marylebone, has just received news that he has been elected company director of the Harley-Davidson firm at Milwaukee.

Mr. Watson is an active motor cyclist, a keen and successful business man, both in the motor line and also in the electrical world, and a strenuous worker on behalf of the borough of Marylebone. He is also a member of the A.C.U. committee, and is taking an active interest both in that body and the corresponding organisation in America which is now being formed.

Cost of Motor Cycles.

At a recent meeting of the Management Committee of the Cycle and Motor Cycle Manufacturers' and Traders' Union it was concluded that there is no likelihood of a fall in to-day's price of motor cycles, the general tendency rather being in an upward direction. They state that since December the costs of raw material have risen again, and labour is even more expensive than it was at that time, and that it would, therefore, appear to be quite useless for intending purchasers to withhold their orders in the hope of prices falling.

Police Activity in Cambridge.

We are informed that the police in Cambridge and its vicinity are reporting all minor cases and technical offences—the magistrates being somewhat heavy in the extent of the fines inflicted. It therefore behoves motor cyclists in the district to exercise every care.

Garage Charges.

We understand that the Cambridge undergrads object to the garage charges now in vogue, and we are not surprised. Last summer the usual charge was 15s. for the term, but nearly 2,000 freshmen have matriculated this term, and the charge is raised to 30s., apparently by agreement throughout the town. A University term is about eight weeks, which means a charge of £9 15s. per annum.

THE SCOOTER IN INDIA.

Mr. C. J. Pool and his Autoped, the first vehicle of its kind seen in the streets of Bombay. It created great interest there, just as the scooter did when first ridden in the streets of London last year.

Special Features.

NEW MODELS.

OFFICIAL REPORT OF THE A.C.U. SIX DAYS TRIAL.

Swiss Prohibitions Withdrawn.

Some months ago it was announced in these columns that the Swiss Government had forbidden the use of motor vehicles, including motor cycles, in certain districts on Sundays between noon and 10 p.m., and total prohibition during certain days of the week on some of the mountain roads. We now have pleasure in stating that these prohibitions have been withdrawn.

A Motor Cycle Championship of France.

The well-known French motor cyclist, M. Colombel, has recently submitted to the Union Motocycliste de France a suggestion that each year a motor cycle champion of France should be selected. His idea is that the champion should be the motor cyclist who has gained the greatest number of points in the various competitions held throughout the year.

Our contemporary, *L'Auto*, says that the idea is well worth consideration, but it will be desirable for the U.M.F. to notify those competitions which should count for the championship.

Another "Race."

The *Edinburgh Evening Dispatch* of October 23rd announces that on Monday next the Edinburgh and District Motor Club has organised a *race* for the Palmer trophy. May we once again pray that the reporters of the lay press will desist from the practice of so misnaming reliability trials? Road races are illegal on the public roads of Great Britain, and, in consequence, no motor club arranges such events.

Trade Marks.

The President of the Board of Trade has appointed a committee to consider various points connected with the Merchandise Marks Act, such as the advisability of an extension or amendment in respect of the provisions relating to indications of origin, the utility of National Trade Marks or other "collective" marks, and the necessity for further international action for the prevention of false marking of goods.

Representatives of many trades, including the cycle and motor cycle industry, are on the committee. The secretary is Mr. M. F. Levey, the Patent Office, 25, Southampton Buildings, W.C.2.

A Coincidence.

By a strange coincidence, the total of marks awarded the winning B.S.A. team in the A.C.U. Six Days Trials was 557—the capacity in c.c. of the engine used.

A.C.U. Members at the Show.

Members of the Auto Cycle Union visiting the forthcoming motor cycle show to be held at Olympia, London, from November 24th to 29th, are invited to make use of the Princes' Rooms. There they will find full facilities for conducting correspondence and receiving letters, while there is also a lounge reserved for their convenience and provision for the serving of refreshments.

"The Autocar" Special Numbers

The Autocar, on sale to-morrow, and dated November 8th, forms a complete guide to the Olympia Automobile Exhibition, which opens its doors to-morrow at 10 a.m. The issue creates a new record in the annals of British motoring journals so far as completeness and bulk is concerned. Next week's issue of our parent journal, containing a full report of the car exhibits will be dated November 15th, and will be on sale at Olympia during the week.

Italian Ten Kilometre Races.

Eight competitors participated in record attempts on the road between Pignerol and Plossasco, Italy, on October 19th, the races being organised by the Turin Club. Davo (Della-Ferrara) succeeded in breaking the Italian ten kilometres record for 500 c.c. machines, made in 1913 by Maffeis. This stood at 6m. 4⅘s. The results of the ten kilometres trials are as follow:

500 c.c. CLASS.

	m.	s.
1. Dovo (Della-Ferrara)	5	42⅘
2. Borgotti (Fongri)	6	31⅘
3. Grignani (Fongri)	6	59⅘

Winner's speed in miles per hour=65¼.

1,000 c.c. CLASS.

1. Nozenzo (Della-Ferrara)	6	5⅕
2. Merio (Frera)	6	23⅘
3. Pezzaglia (Excelsior)	7	53

Winner's speed in miles per hour=61¼.

Old Timers' Dinner.

The annual Old Timers' Dinner—for which only members of the Fellowship of Old Time Cyclists are eligible—will take place at the Abercorn Rooms, Liverpool Street, E.C., on December 17th. E. H. Godbold, 8, Breams Buildings, E.C.4, is the hon. secretary.

THE MOTOR CYCLE

SPECIAL OLYMPIA SHOW NUMBERS.

Nov. 13th.—The feature of this issue will be a comprehensive survey of passenger machines.

Nov. 20th.—This issue will contain a forecast of the Exhibition, particulars of new models, also plan of the Show and list of exhibitors. This number will be on sale at the Show.

Nov. 27th.—Full Show report. This number will also be on sale at the Show.

Dec. 4th.—Review of sidecars, accessories, tyres, etc. Impressions of the Exhibition.

Stolen Motor Bicycles.

Information has been received of two motor cycles stolen from Hunter's Garage, Northland Drive, Scotstoun, Glasgow, during the night of October 16th-17th. The following are the particulars: Douglas, 2¾ h.p., W.D. model, 1916, but uncrated this year and in new condition, registered number GA 2137, engine No. 38,985, frame No. 39,999; Douglas, 2¾ h.p., 1914 (approximately), registered number EO 492, engine No. 10,110. Any information concerning these machines, and likely to lead to their recovery, should be sent to Mr. W. O'Brien, 116, Danes Drive, Scotstoun, Glasgow.

LIVERPOOL M.C. TRIAL.

THE judges' report and provisional results concerning the recent Reliance Cup Trial mentions that only twenty-five competitors succeeded in negotiating the watersplashes, which were 2ft. deep, and that it has been decided to rule out the five marks for failure in this section. The loss of marks at Sun Trevor (World's End), too, was ruled out. A bonus mark has been awarded to all who did not stop, making the maximum possible 102 instead of 100, and three competitors succeeded in gaining this number of marks. These were O. Wade (6 A.J.S. sc.), E. L. Boston (3½ Sunbeam), and R. R. Coes (7-9 Indian sc). Subject to final confirmation by the committee, the following are the results:

RELIANCE CHALLENGE CUP.—E. L. Boston (3½ Sunbeam).

MEAD MARTIN CUP.—O. Wade (6 A.J.S. sc.).

RELIANCE AMATEUR CHALLENGE CUP.—R. R. Coes (7-9 Indian sc.).

BUTTERWORTH TROPHY.—S. W. Phillpott (5 Brough sc.).

MOGRIDGE MEMORIAL TROPHY.—J. H. Green (7-9 Excelsior).

GOLD MEDALS.—V. L. Horsmann (4 Norton sc.), F. W. Giles (6 A.J.S. sc.), J. M. Parry Jones (5-6 Rover sc.), J. W. Wills (10 Henderson), G. E. Kuhn (2½ Levis), Geo. Brough (5 Brough), E. A. Colliver (7-9 Indian), A. W. Brittain (3½ Sunbeam), W. B. Gibb (2¾ Douglas), T. B. G. Vale (4 Norton), C. Collins (6 A.J.S. sc.), R. Charlesworth (5 Zenith), E. Williams (4 A.J.S.), G. S. Boston (8 Sunbeam sc.), P. V. Morris (3½ Sunbeam), J. A. Fox (4¼ B.S.A.), H. T. Williams (3½ Lea-Francis), J. A. Newman (3½ Sunbeam), N. H. Brown (7-9 Indian sc.), H. Marston (6 A.J.S. sc.), W. Heath (6 A.J.S. sc.), and H. Reed (8 Dot sc.).

SILVER MEDALS.—F. Marshall (3½ Sunbeam), W. Pattinson (4 Triumph), W. R. Haggas (8 New Imperial sc.), H. B. Denly (10 Morgan), S. Parker, Liverpool (10 Henderson), B. Kershaw (2¾ Venus), H. Poole (4 A.J.S.), A. W. Ratcliffe (5 Brough), M. Davies (3½ Sunbeam), H. Greaves (10 Morgan) S. Parker, Bolton (8 Enfield), and W. Ratcliffe (3½ Brough).

BRONZE MEDALS.—W. Edwards (4¼ B.S.A.), J. H. Place (8 Dot sc.), R. Arnold (6 A.J.S. sc.), N. Svanse (8 Morgan), R. H. W. Brown (6 A.J.S. sc.), W. Cottle (4¼ B.S.A.), T. Weaver (2¾ Verus), A. Moses (2¾ A.J.S.), R. E. Hugh (2½ Levis), G. Wray (3½ Triumph), L. T. Gilson (4-5 Zenith), T. Highfield (5 Brough), and R. Storey (7-9 Excelsior).

TEAM PRIZE (SILVER CUP).—A.J.S. Team No. I, 299 marks. W. Heath (96), F. W. Giles (101), and O. Wade (102)

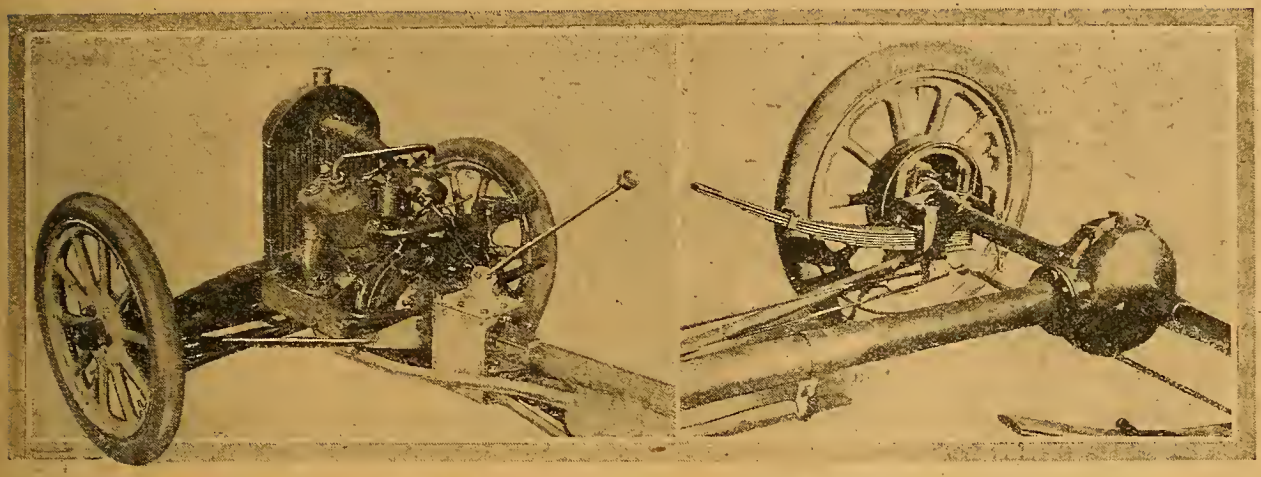
CLUB TEAM PRIZE (SILVER CUP).—Wolverhampton M.C.C., 294 marks. W. Heath (6 A.J.S. sc.), F. W. Giles (6 A.J.S sc.), and J. A. Newman (3½ Sunbeam).

A SIX DAYS TRIAL RECOLLECTION.

Interested spectators watching competitors in the C.D.T. on Panne Hill. The sidecar shown is the French G.L. On pages 515-518 will be found the official report of the trial.

THE EMSCOTE LIGHT CAR.

A Light Four-wheeler designed as a Competitor of the High-powered Sidecar.



The Emscote runabout, a light four-wheeler designed for competition with the powerful sidecar outfit. (Left) 8-10 h.p. water-cooled engine and three-speed gear box. (Right) The rear springing, brake, and differential.

FOR some time past there has been a good deal of talk about the possibility of constructing a sound four-wheeled light car which would be capable of competing, from a price point of view, with the more luxurious types of motor cycle and sidecar, and which would provide greater protection for the driver. A new firm, known as the Emscote Motor Company, Ltd., of Emscote, Warwick, has decided that such a feat is possible, and has devised a most ingenious little vehicle which, it is intended, shall be sold at a price but little higher than that of big sidecar outfits.

To accomplish a design which will provide both sound construction and cheap production facilities, it is, of course, necessary to eliminate all superfluous parts, and to reduce the amount of material to a strictly utilitarian basis. This has been cleverly carried out in the Emscote, and the first and most noticeable feature tending to this end is the entire absence of a frame in the ordinary sense of the word. The engine, gear box, propeller-shaft casing, and rear axle are bolted together so as to form a unit. This idea is, of course, not entirely novel, as it was carried out on the 6 h.p. Rover many years ago, but modern design has enabled unit construction to be used without detracting from the accessibility of vital parts. For instance, the engine unit can easily be removed from the small channel steel frame in which it is carried without disturbing any other part of the chassis.

Universal Joints Eliminated.

Directly behind the water-cooled V type engine lies a single disc dry-plate clutch, which transmits the power to a three-speed and reverse gear box, having a central change speed lever mounted on the top of the box and acting directly on the selector mechanism.

To the back of the gear box is bolted a stout tube enclosing the propeller-shaft and attached at its rear end to the bevel casing on the back axle. This form of construction obviates the necessity for any universal joints, and, consequently, saves both production cost and a certain number of wearing parts. The bevel casing is made in two pieces bolted together in the centre, and is fixed rigidly to tubular members enclosing the axle driving shafts. These tubular members carry on their outer ends spring pads and brake actuating brackets brazed to the tubes.

Brakes and Springing.

Both hand and foot brakes lie side by side in the rear wheel drums, and are enclosed by metal plates so as to prevent ingress of mud.

The unit is stayed by tie-rods from the rear axle to a point at the rear of the gear box, and the front axle is tied by radius rods in such a manner as to maintain wheel alignment in spite of the fact that any of the wheels can be raised to a very considerable height.

The springing is most ingenious, a single front transverse spring being used for the front axle. This spring is carried on a trunnion surrounding the starting handle bracket, which in turn is fixed to the channel steel engine frame, thus any of the four wheels may rise on striking an obstruction without interfering with steering or transmission, or imposing twisting strains on the chassis.

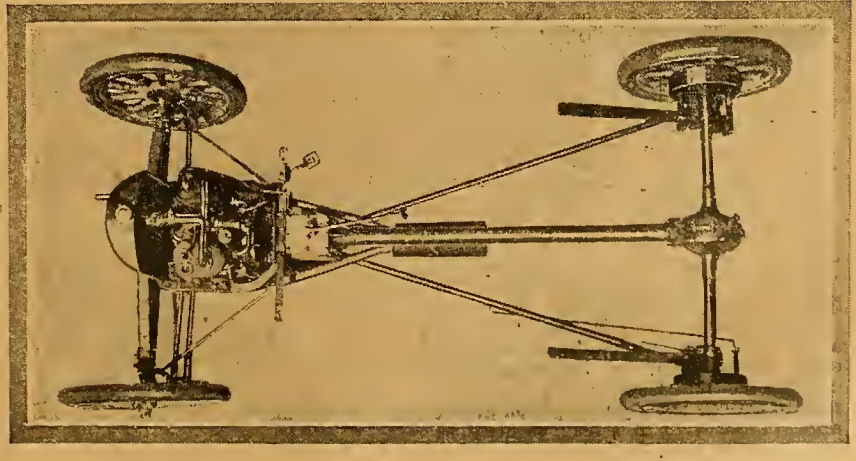
Just in front of the gear box lies a transverse spring to which the front end of the body is attached, the rear end resting on cantilever springs attached rigidly to the back axle, but free to move at the front end between rollers on the body. Steering is by rack and pinion.

On the preliminary model no differential has been fitted, but it has not yet been decided whether this feature shall be incorporated in the final design.

Detachable Wheels.

The wheelbase of the little machine is 6ft. 10in., and the track 4ft., and the specification includes 700 × 80 mm. tyres on detachable steel wheels, a spare wheel is included, and an electric lighting set.

It should be mentioned that undue strain on the gear box is obviated by the



Plan view of chassis. The body is bolted to the cross springs behind the engine, and is attached by slides to the cantilever rear springs.

The Emscote Light Car.—

fact that eight long bolts pass through the box to the propeller-shaft casing, and, in addition, there is a bracket at the front of the box which bolts to the engine cradle. Ball bearings are used throughout the construction of the gear box.

Rubber blocks are fitted between the radiator and the engine cradle, so as to relieve the radiator casing of vibration and undue strains, and a simple automatic carburetter is provided, by means of which easy starting is ensured without the necessity for either decompressor or exhaust valve lifter.

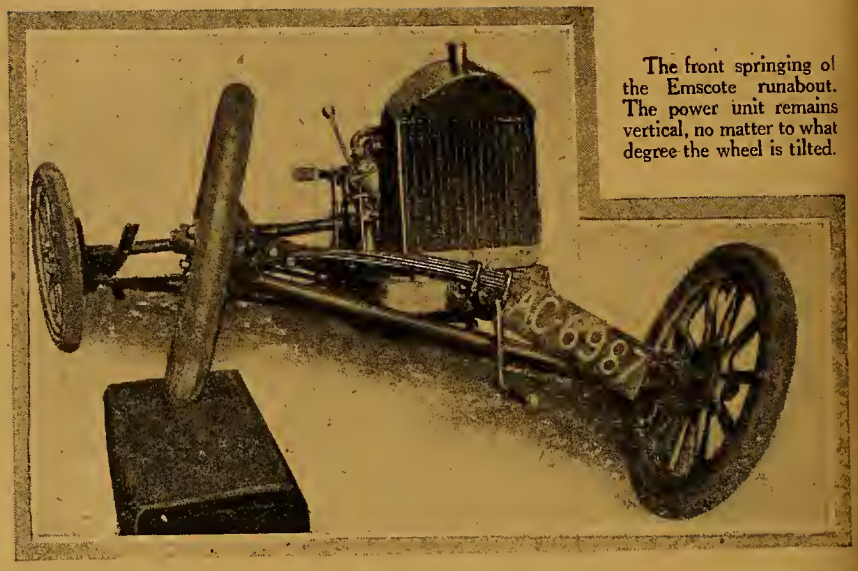
Quickly Detachable Body.

The construction of the complete vehicle is such that the body may be removed by merely undoing the steering and brake connections, the oil and petrol connections, and four body bolts.

We have examined the chassis, and find that it is thoroughly well carried out in all details. The weight of the complete machine is approximately 8 cwt., and it is intended that the selling price shall be in the neighbourhood of £230.

It is hoped that the Emscote will be in production shortly, but in the meantime, we are looking forward to a trial run on the experimental chassis, which is to take place in the near future.

It is hard to convey a correct impression of the size of the machine, but from the foregoing particulars and illustrations a fair idea may be obtained. In this respect the feature which most impressed us was that, though the chassis is remarkably small and neat, there was no cramping of passengers in the test body, and the lines of the complete machine are well proportioned. Of the many designs that have been put forward as competitors of the luxurious sidecar machine this is one of the most practical, though the question of price is all-important.

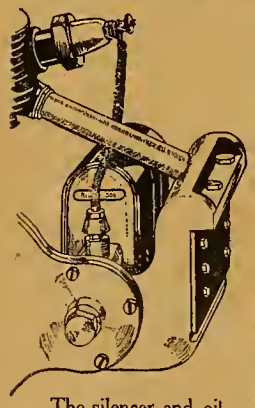


The front springing of the Emscote runabout. The power unit remains vertical, no matter to what degree the wheel is tilted.

THE SILVA SCOOTER.

A Design Embodying Modified Auto-wheel Power Unit

MESSRS. T. and T. Motors, Ltd., of 52a, Conduit Street, London, W.1, have recently departed from the manufacture of their principal product, the T. and T. engine oil, and have placed on the market a motor scooter possessing many interesting features.



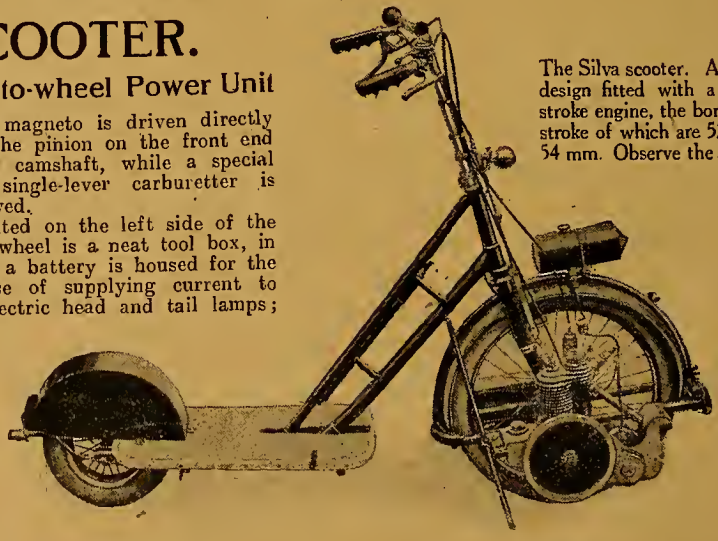
The silencer and oil sump cast integrally with crank case.

A small single cylinder engine, having a bore and stroke of 52.5 × 54 mm., is used, and although it is similar in design to that on the Auto-wheel, it has undergone no fewer than forty modifications to render it suitable for adaptation to the scooter.

An automatic inlet valve is fitted, whilst the exhaust valve is operated from a double-duty half-time layshaft located in front of the cylinder. The inner extremity of this shaft is provided with a chain sprocket, which, by means of a roller chain, drives a larger sprocket fitted to the front wheel, and gives a gear ratio of 8 to 1, but a larger pinion giving a gear ratio of 10 to 1 may be fitted as an extra when required for use in hilly districts.

The magneto is driven directly from the pinion on the front end of the camshaft, while a special S.U. single-lever carburetter is employed.

Located on the left side of the front wheel is a neat tool box, in which a battery is housed for the purpose of supplying current to the electric head and tail lamps; a switch is also fitted to the side of the tool box.



The Silva scooter. A clean design fitted with a four-stroke engine, the bore and stroke of which are 52·5 × 54 mm. Observe the stand

The neat front and rear lamps fitted to the Silva scooter.

The front mudguard is divided, and by releasing two fly nuts the front half may be removed, consequently reducing considerably the difficulty usually experienced when repairs to the front tyre have to be effected.

The rear wheel is equally accessible, a simple drop-out axle being employed. In view of the ridigity of the double girder frame, a special 300 × 60 mm. (12 × 2⅜in.) Palmer cord tyre is fitted to the rear wheel, which satisfactorily absorbs the smaller road shocks. The existing model, of which immediate delivery can be made, is priced at £55, and for the additional sum of £1 a seat will be supplied.

A.C.U. SIX DAYS TRIALS, 1919.

SUMMARISED OFFICIAL REPORT AND SCHEDULE OF RESULTS.

23 Gold Medals. 35 Silver Medals. 14 Bronze Medals. 9 No Awards. 29 Retire.

INTRODUCTION.

AS stewards of the meeting, we have pleasure in presenting the judges' report on, and the official results of, the Six Days Trials at Llandrindod Wells.

In view of certain protests that have been made, the following remarks may be of interest.

We have carefully examined the judges' report. We have also gone through the details and the markings with the judges personally, and we find no inaccuracies or mistakes in their calculations or procedure.

A. W. TORKINGTON, Chairman General Committee.
E. P. GREENHILL, Chairman Competitions Committee.
H. P. E. HARDINO, Chairman Touring Committee.

JUDGES' REPORT.

Before commenting on the results of the Auto Cycle Union Six Days Trials for 1919, the judges wish to draw attention to some of the new conditions under which this trial was held. The promoters considered that if the efficiency and design of motor cycles were to be really improved it would be necessary to apply a much more stringent examination test to each machine at the conclusion of the road test. Even though a machine had run the course, it might be seen, upon examination, that some parts would become unserviceable in a few hundred miles.

It is considered that a riding distance of 732 miles over a course chosen not only for the testing of springs and chassis, but of a nature which would demonstrate actual power maintenance, bears a not unfair comparison with the average life of a machine of perhaps three years, and is sufficient to show up at the final examination any serious defects in efficiency of design or manufacture. The trial was arranged under the following headings, the number of marks that might possibly be lost of a maximum of 200 being indicated after each test.

Reliability, 50; Acceleration and maintenance of efficiency, 20; Hill-climbing, 30; Brakes, 10; Mudguards, 10; Silence, 10; Condition at finish, 50.

Reliability.

Under the heading of Reliability the showing of the machines was distinctly good, and the proportion of riders unable to drive according to the scheduled rate of speed throughout the trial was not large.

Acceleration and Maintenance of Efficiency.

It should be noted that of the 466 marks lost by competitors who completed the trial in this combined test, 122 were for failure to drive at the maximum or minimum speeds set, *i.e.*, failures under "Acceleration." An analysis of the results indicates that the drivers of certain makes of motor cycle experienced difficulty in reaching the minimum speed set for the fast portion of the climb, whereas others in the same class exceeded it with ease.

Generally speaking, the maintenance of efficiency was excellent as regards the power output.

Hill-climbing.

Most motor cycles, by virtue of suitable gearing, are able to climb hills more or less satisfactorily, but the judges would point out that for an engine to run for any appreciable period suffering from incipient overheating, must eventually result in overstraining many parts. Even the larger machines have under these circumstances no reserve of power, and have made it very clear during the trial that efficient cooling has not yet been attained. The performance of the water-cooled motor cycles in the trial was very satisfactory; on the other hand, the state of many air-cooled engines after long climbs on low gear, as regards noise, smell, heat, and liability to knock, was not impressive.

Brakes.

The judges do not consider the brakes on most machines to be satisfactory, as they are not sufficient in many cases to ensure absolute safety. Observation of the machines in use was considered of secondary importance to the brake examination at the conclusion of the trial. It was intended to observe the descent of Fan Hill, not so much to judge of the holding power of the brakes as of their ease of operation and smoothness of working; unfortunately, a misplaced direction arrow caused a large number of competitors to miss this hill, and observations were therefore taken on another descent. A few cases were noticed when riders could not perfectly control their outfits without the assistance of the engine as a brake. This presupposes the transmission to be operative, which, apart from the aspect of safety, is not sufficient to conform with legal requirements. The hill finally selected was not so suitable for the purpose as the one originally chosen, and, moreover, competitors were not aware that the operation of their brakes was being observed. The few marks provisionally deducted on account of the road test of brakes have, therefore, been restored, and all penalties under the heading of "Brakes" have been made as a result of the examination of brakes at the conclusion of the trial.

Rear brakes were usually powerful, but are not always easy to renew, and were prone to excessive wear. The rods for operating should, as far as possible, be kept straight, and should not be

G. E. Stobart (5-6 James), followed by Jesse Baker (3½ Scott), on Machynlleth Hill in the Six Days Trials

Morris Isaac (3½ Rover) and a Triumph rider passing through Newtown on the third day of the Six Days Trial.

attached to pedals depending for their support upon a vulnerable portion of the footrests. The enclosed brakes of the Indian and A.B.C. machines are worthy of attention. The P. and M. motor cycles were fitted with a ratchet hand brake, and there is no apparent good reason why all passenger machines, at any rate, should not be provided with a ratchet brake instead of depending on engine compression, a stone, or the kerb, to prevent an unoccupied machine running away downhill.

Almost every machine having the ordinary stirrup pedal cycle front brakes (as distinct from brakes of the Lea-Francis and Chater-Lea type) finished with this brake in bad condition. On very many machines it was neither safe nor effective in operation, and such examples could not receive full marks under this heading. In very many cases these had become inoperative by the end of the trial, mainly owing to the design being such as to invite blocking and seizure of the operating mechanism by mud and grit. In some cases the total leverage available at the handle-bar to apply the brake was so small as to render it impossible to get more than an almost negligible braking effect. It is not desirable that it should be possible to lock a front wheel, but, short of this, a good braking effect is very necessary, especially for passenger machines.

Mudguards.

The mudguarding of machines has considerably improved, but in some cases the addition of detachable valances would appear to be desirable. The judge's decisions as to mudguards were based on their examination of the guards and the cleanliness of the machines at the end of the trial, in which they were to some extent guided by notes previously made by them as to the cleanliness of the drivers.

The judges deducted marks for obviously faulty protection, as many machines were cleaned *en route*, and could not, therefore, be entirely tested by observation. Mudguards varied greatly in condition, and the judges are of opinion that mudguard supports are not generally of sufficient strength at the points of attachment.

A good many cases occurred of sidecar mudguards being loose at the end of the trial.

Silence.

Under this heading, a simple apparatus was utilised to record the total air vibrations caused by the passing machines. The apparatus was placed in the position of an overtaken vehicle or pedestrian at a spot where the speed of the motor cycles and their distance from the apparatus was as nearly the same for all competitors as possible.

Most of the motor cycles were tested twice, and the judges individually noted the noisiness or otherwise, quite apart from the automatic and confirmatory tests.

Is is fully realised that differences of throttle opening and gear-changing may affect results, but these difficulties, together with that of machines passing together, are largely eliminated by holding the test primarily in a secret position and by its repetition.

Similar machines of the same make vary owing to timing and many other details just as their speed is never the same.

The general fitting of silencers is bad, and too often a simple push joint between exhaust pipe and silencer is used, resulting in much unnecessary noise and rattle. Little attempt has been made to silence mechanical and engine noises by enclosure (which is also a great preventive of wear), and it would, moreover, appear that the value of an expansion chamber terminating in a large pipe is not realised by many makers.

Final Examination.

As careful an examination as was possible in the time available was made. The condition of the machines before starting had been noted, and no attention was paid to the results of reported or otherwise obvious accidents. During examination the entrant was unknown to the judges, and attention was paid to the following points both before and after the road trial: General engine condition, including tappet side play, adjustment of gears, road wheel bearings, controls, frames, steering head, and general condition, excluding accessories.

Engines.

These in general show improvement, particularly as in this and other respects much difficulty is experienced by makers in obtaining suitable material. The cleanliness of the Matchless, Indian, Sunbeam, and A.J.S. power plants was creditable, but in far too many cases quite insufficient attention has been given to the retention of oil, leading to general dirtiness of machine and rider and wear to parts

Transmissions.

Transmissions show a decided advance in strength; but here again there are very few radical departures in design.

A general improvement in gear box condition was noted, though the adjustment of about 30% was found faulty.

Front Fork Bearings.

Adequate means for effectively lubricating the links, etc., of spring forks were frequently absent. Oil holes are utterly useless, and screw-down greasers appear to be the only proper solution.

Owing to lack of lubrication and lack of adequate bearing surfaces to take the lateral thrust (especially on sidecar combinations) of steering, wear rapidly develops, and a great deal of consequent sideplay was noticeable in many machines.

General Condition.

Chain cases seem better attached, but over the distance available in a trial of this nature no particular improvement is noticeable in the condition of enclosed over open chains. The springing of competing machines has not yet become at all general, and the constant complaint by riders of sore hands, etc., goes far to show that front springing is not yet quite satisfactory.

Where sidecar connections are made by lugs connected by bolts, the latter are practically without exception of the parallel type, which allows of no taking up of the play which invariably develops through road shocks, the bolt holes becoming elliptical and the bolts worn.

In some cases, crank-shaped tubular connections were used, and, as might be expected, these gave under severe road shocks, and tended to straighten out.

Controls.

These were weak and ill-fitted to withstand continuous rough usage and exposure. In particular, magneto controls and front brake connections were very frequently inoperative after four and a half days of fine weather driving.

A.C.U. Six Days Trials, 1919.—

Accessories.

Most of these were satisfactory, but speedometer drives are still very exposed. Lighting outfits are quite good, and the A.B.C. dynamo affords an excellent example of progress. Attention is directed to the exposed and vulnerable position of many magnetos. This is a particularly serious fault in the case of machines intended for colonial use.

Fuel Consumption.

On the run from Llandrindod Wells to Bala, of 68¾ miles over a trying course, petrol-driven sidecar machines covered approximately between 39 and 62 m.p.g. The three-wheeled cycle cars ran at about 43 m.p.g., and benzole-driven sidecar outfits at anything from 50 to 62 m.p.g.; that is to say, a distinctly better average than corresponding machines running on petrol. The figures in the next column were recorded.

No.	Machine.	M.P.G.	Fig. of Merit, Consumpti'n × Weight.	Fuel
115	Matchless sidecar	62·3	579	Benzole
98	Matchless sidecar	59	540	Benzole
85	Blackburne sidecar	55	530	Petrol
94	Indian sidecar ...	55	484	Petrol
101	Morgan Runabout	45	477	Petrol
66	Ariel sidecar	62	461	Benzole
112	Morgan Runabout	39	412	Petrol
105	Enfield sidecar ...	41	349	Petrol
89	Dot sidecar	39	329	Petrol

Special notice is merited by the general road performance of the following machines: B.S.A., Sunbeam, Scott, Triumph sc., Douglas sc., G.L. sc., Morgan, A.J.S., Levis, and Zenith.

Conclusions.

The judges hope to see much more attention given in the near future to the more completely enclosed machines with balanced multi-cylinder engines of all types and of medium weight. The performances of the small two-strokes were excellent, but the weights of machines in the trial were such that the true lightweight cannot be said to have competed.

This report has dealt largely with the faults of the motor cycle, nevertheless the trial has proved that in its most important qualities—speed, hill climbing, and maintenance of efficiency—the modern machine has reached another stage in its progress; the directions in which improvements should be sought have been indicated.

A. E. DAVIDSON, Lt.-Col. D.S.O.
H. H. GREGORY, A.M.I.M.E., M.I.A.E
A. M. LOW, Major, D.Sc., A.C.G.I., etc
D. F. NICHOLL, Lt.-Col., D.S.O.
T. W. LOUGHBOROUGH, A.M.I.A.E., Clerk of the Course.

[Suggestions accompanying the report for the improvement of motor cycles and future trials will be published next week.—ED.]

Tabulated Results showing Marks Lost and Awards under Various Headings.

Class.	Competitor and Machine.	No. of Cyls.	Capacity of Engine.	Weight.	Marks Lost.							Total Marks Lost.	Total M'rks	Awards.
					Deviation from Schedule.	C.D.T.	Stops on Hills.	Brakes. (Final Exam. only).	Mudguards	Silence.	Final Exam. (other than Brakes and Mudguards).			
c.c.			c.c.	lb.										
250	J. F. Lidstone (2¼ James)	1	226	220	—	8	1	1	1	9	12	38	182	Gold medal
250	P. Pike (2¼ Levis)	1	211	176	—	1	1	3	5	7	5	25	175	Gold medal
250	R. H. Baxter (2¼ Radco)	1	211	170	—	—	—	—	—	—	—	—	—	Retired Tuesday
250	L. C. M. Davies (2¼ Velocette)	1	220	180	—	—	—	—	—	—	—	—	—	Retired Wednesday
250	E. F. Goodman (2¼ Velocette)	1	220	196	—	11	4	1	3	5	2	26	174	Gold medal
350	T. J. Stordy (2¾ A.J.S.)	1	350	220	—	—	—	—	—	—	—	—	—	Retired Wednesday
350	S. T. Ashby (2¾ Connaught)	1	293	210	—	—	—	—	—	—	—	—	—	Retired Thursday
350	F. G. Ball (2¾ Douglas)	2	350	252	30	2	—	1	5	7	23	71	129	No award
350	W. B. Gibb (2¾ Douglas)	2	350	252	—	—	8	4	5	8	18	37	163	Bronze medal
350	H. L. Kitcher (2¾ New Imperial)	1	292	216	—	—	—	—	—	—	—	—	—	Retired Thursday
350	B. Kershaw (2¾ Verus)	1	293	238	—	—	12	2	2	5	11	35	165	Silver medal
500	J. Emerson (3 A.B.C.)	2	398	300	—	31	4	4	4	5	22	70	130	No award
500	H. Fairley (3 A.B.C.)	2	398	280	—	—	—	—	—	—	—	—	—	Retired Thursday
500	T. Peck (3½ Ariel)	1	498	304	—	4	8	1	1	7	10	37	163	Bronze medal
500	C. W. Smith (3½ Ariel)	1	498	292	3	20	—	1	5	7	8	74	126	No award
500	T. B. G. Vale (3½ Ariel)	1	498	308	—	4	—	1	5	5	7	25	175	Silver medal
500	P. J. Enticknapp (4 Blackburne)	1	499	272	—	5	1	2	3	6	5	25	175	Silver medal
500	J. Watson-Bourne (4 Blackburne)	1	499	316	—	7	—	3	3	5	16	34	166	Silver medal
500	W. P. Moffatt (3½ Douglas)	2	494	238	—	—	—	1	5	6	18	33	167	Silver medal
500	J. Edwards (3½ Humber)	2	496	304	—	—	—	—	—	—	—	—	—	Retired Wednesday
500	G. A. Strange (3½ James)	2	500	280	—	3	—	3	1	5	16	30	170	Silver medal
500	F. F. Chidley (3½ P. & M.)	1	498	268	—	—	—	—	—	—	—	—	—	Retired Thursday
500	W. Drake (3½ P. & M.)	1	498	300	—	11	4	—	4	4	—	23	177	Silver medal
500	R. Lewis (3½ P. & M.	1	498	308	—	4	—	—	4	6	1	15	185	Gold medal
500	W. Danskin (3½ Rover)	1	499	304	5	13	—	3	—	6	6	33	167	Silver medal
500	G. Featherstonhaugh (3½ Rover)	1	499	312	—	—	—	2	—	6	12	20	180	Gold medal
500	M. Isaac (3½ Rover)	1	499	298	—	1	4	—	1	6	4	16	184	Gold medal
750	J. Baker (3½ Scott)	2	532	276	2	3	—	3	1	6	2	17	183	Silver medal
500	M. Davies (3½ Sunbeam)	1	499	292	5	11	—	4	4	6	11	41	159	Bronze medal
500	W. R. Eadington (3½ Sunbeam)	1	499	290	—	4	—	2	2	8	4	20	180	Gold medal
500	G. Dance (3½ Sunbeam)	1	499	314	3	3	1	4	3	6	10	33	167	Silver medal
500	J. Dudley (3½ Sunbeam)	1	499	298	2	6	—	2	2	6	4	23	177	Silver medal
500	T. C. De la Hay (3½ Sunbeam)	1	499	304	—	3	—	3	3	6	8	23	177	Silver medal
500	Capt. Oliver (3½ Sunbeam)	1	499	301	—	—	—	—	—	—	—	—	—	Retired Thursday
500	J. A. Newman (3½ Sunbeam)	1	499	295	—	—	—	3	2	5	2	12	188	Gold medal
500	T. Rutherford (3½ Sunbeam)	1	499	304	—	—	—	3	3	5	5	16	184	Gold medal
500	J. T. Shillito (3½ Sunbeam,	1	499	304	16	—	—	3	5	6	50	78	122	No award
750	E. W. Choldcroft (4 A.J.S.)	2	550	336	—	5	—	—	—	7	—	12	188	Gold medal
750	F. W. Applebee (4½ B.S.A.)	1	557	308	—	1	—	—	1	7	4	13	187	Gold medal
750	H. F. Edwards (4½ B.S.A.)	1	557	296	—	1	—	—	1	7	—	9	191	Gold medal
750	L. L. Sealey (4½ B.S.A.)	1	557	304	2	10	1	—	1	6	2	25	175	Silver medal
750	F. Turvey, Junr. (4½ B.S.A.)	1	557	292	—	1	—	—	1	7	—	9	191	Gold medal
750	A. E. Wood (4½ B.S.A.)	1	557	268	30	1	—	—	—	6	3	43	157	Bronze medal
750	V. E. Horsman (4 Norton)	1	633	308	—	1	—	5	1	5	18	33	167	Bronze medal
750	A. Lindsay (4 Norton)	1	633	276	—	3	—	2	1	7	10	26	174	Silver medal
750	D. H. Noble (5 Rover)	2	654	332	—	—	—	2	—	7	2	11	189	Gold medal
750	W. J. Guy (3½ Scott)	2	532	280	5	1	—	1	1	5	11	27	173	Silver medal
750	C. P. Wood (3½ Scott)	2	532	294	—	8	—	2	1	5	5	21	179	Silver medal
750	H. O. Wood (3½ Scott)	2	532	292	—	—	—	2	1	4	6	13	187	Gold medal
750	B. Alan Hill (3½ Scott)	2	532	291	—	1	—	4	1	3	4	13	187	Gold medal
750	F. C. Townshend (4 Sunbeam)	1	556	304	—	—	—	—	—	—	—	—	—	Retired Friday
750	C. Cather Cooke (4 Triumph)	1	550	258	23	11	—	2	1	7	2	46	151	Bronze medal
750	E. Cross (4 Triumph)	1	500	256	4	8	—	—	3	5	3	26	174	Silver medal
750	H. Pattioson (4 Triumph)	1	550	272	1	1	12	—	7	5	11	44	156	Bronze medal
750	M. Ryecroft (4 Triumph)	1	550	281	—	—	—	—	3	7	5	22	178	Silver medal
*1000	E. W. Merrall (8 Morgan)	2	998	712	—	—	—	—	—	—	—	—	—	Retired Friday
750	A. V. Sumner (5 Zenith)	2	654	324	—	—	—	—	—	—	—	—	—	Retired Monday
750	G. Browne (5 Zenith)	2	554	288	—	1	8	3	4	4	5	25	175	Silver medal
750	R. Charlesworth (5 Zenith)	2	654	316	—	1	—	3	4	5	7	23	177	Silver medal
750	Kaye Don (5 Zenith)	2	654	284	—	—	8	2	4	2	2	18	174	Silver medal
1000	J. W. Wills (5-7 Ariel)	2	795	336	—	4	—	3	4	5	6	22	178	Silver medal
1000	E. Bottomley (7-9 Harley-Davidson)	2	988	330	—	—	—	—	—	—	—	—	—	Retired Thursday

* Passenger machine class.

Tabulated Results showing Marks Lost and Awards under Various Headings (*continued*).

Class.	Competitor and Machine.	No. of Cyls.	Capacity of Engine.	Weight.	Marks Lost.								Total M'rks	Awards
					Deviation from Schedule.	C.D.T.	Stops on Hills.	Brakes. (Final Exam. only).	Mudguards	Silence.	Final Exam. (other than Brakes and Mudguards).	Total Marks Lost.		
c.c.			c.c.	lb.										
500	F. E. Jones (3½ Ariel sc.)	1	498	444	—	1	8	3	5	6	25	48	152	Silver medal
500	W. J. Chambers (3½ B.S.A. sc.)	1	499	542	19	4	8	1	1	8	11	52	148	Silver medal
500	Reg. Brown (3½ Sunbeam sc.)	1	499	461	—	—	—	—	—	—	—	—	—	Retired Tuesday
750	C. Collins (6 A.J.S. sc.)	2	748	527	21	20	—	3	2	6	8	60	140	Bronze medal
750	F. Williams (6 A.J.S. sc.)	2	748	572	—	—	—	—	—	—	—	—	—	Retired Wednesday
750	O. Wade (6 A.J.S. sc.)	2	748	572	—	—	4	2	2	4	6	18	182	Gold medal
750	F. W. Giles (6 A.J.S. sc.)	2	748	584	—	—	—	2	2	4	7	15	185	Gold medal
750	H. C. Heath (6 A.J.S. sc.)	2	748	556	—	7	—	3	2	7	7	26	174	Silver medal
750	W. Edwards (4½ B.S.A. sc.)	1	557	464	—	—	—	—	—	—	—	—	—	Retired Wednesday
750	H. R. Lane (4½ B.S.A. sc.)	1	557	518	44	35	56	1	1	8	4	149	51	No award
750	H. Thorpe (4 Douglas sc.)	2	593	544	4	10	4	4	2	8	13	45	155	Bronze medal
750	F. Thorp (5-6 G.L. sc.)	2	635	532	—	1	12	5	4	5	6	33	167	Silver medal
750	T. Stevens (4½ James sc.)	1	600	512	—	24	8	3	1	7	42	85	115	No award
750	G. E. Stobart (5-6 James sc.)	2	662	544	—	28	4	2	2	5	5	46	154	Bronze medal
750	S. Sawet (4 Norton sc.)	1	633	472	1	3	4	3	3	6	11	31	169	Silver medal
750	F. G. Edmond (4 Triumph sc.)	1	550	491	—	—	—	4	4	7	5	20	180	Gold medal
750	G. Shemans (4 Triumph sc.)	1	550	524	16	1	32	4	3	7	50	113	87	No award
1000	F. J. Watson (6-7 Ariel sc.)	2	790	488	30	20	—	5	5	6	12	78	122	No award
1000	J. L. Stocks (6-7 Ariel sc.)	2	795	512	—	—	—	—	—	—	—	—	—	Retired Wednesday
1000	J. S. Holroyd (8 Blackburne sc.)	2	998	664	—	4	—	1	3	7	7	22	178	Silver medal
1000	S. S. Debeoham (6 Campion sc.)	2	770	580	—	—	—	—	—	—	—	—	—	Retired Tuesday
1000	R. Creak Davis (8 Chater-Lea sc.)	2	964	688	—	—	—	—	—	—	—	—	—	Retired Thursday
1000	Hugh Gibson (8 Clyno sc.)	2	925	656	—	—	—	2	2	6	25	35	165	Silver medal
1000	H. Reed (8 Dot sc.)	2	980	544	—	—	—	—	—	—	—	—	—	Retired Thursday
1000	J. H. Place (8 Dot sc.)	2	980	564	—	—	—	—	—	—	—	—	—	Retired Wednesday
1000	W. A. Fell Smith (7-9 H.-Davidson sc.)	2	988	644	3	—	4	—	3	6	2	18	182	Gold medal
1000	E. A. Colliver (7-9 Indian sc.)	2	997	626	—	—	—	2	5	7	30	44	156	Bronze medal
1000	J. D. Prytherch (7-9 Indian sc.)	2	997	580	—	33	4	3	5	8	20	73	127	No award
1000	L. A. Bees (7-9 L.M.C. sc.)	2	960	518	—	—	—	—	—	—	—	—	—	Retired Wednesday
1000	C. R. Collier (8 Matchless sc.)	2	976	640	2	2	—	2	—	6	15	27	173	Silver medal
1000	Rex Mundy (8 Matchless sc.)	2	976	629	2	1	—	2	2	4	3	14	186	Gold medal
1000	G. D. Hardee (8 Matchless sc.)	2	976	664	3	16	8	3	—	5	7	42	158	Bronze medal
1000	Jas. A. Hoult (8 Matchless sc.)	2	976	630	—	7	—	3	—	5	9	24	176	Silver medal
1000	G. C. McGlashan (8 Matchless sc.)	2	976	660	6	5	4	3	—	6	6	30	170	Silver medal
1000	F. W. James (8 Morgan)	2	980	724	—	2	—	3	3	7	11	26	174	Silver medal
1000	H. F. S. Morgan (8 Morgan)	2	980	759	—	—	—	—	3	7	5	15	185	Gold medal
1000	N. Svanso (8 Morgan)	2	980	764	—	—	—	—	—	—	—	—	—	Retired Tuesday
1000	W. R. Haggas (8 New Imperial sc.)	2	980	648	—	—	—	—	—	—	—	—	—	Retired Thursday
1000	J. Drew (8 New Imperial sc.)	2	964	516	—	—	—	—	—	—	—	—	—	Retired Tuesday
1000	D. Alexander (8 Enfield sc.)	2	976	552	—	2	—	2	1	5	5	15	185	Gold medal
1000	J. Dosher (8 Enfield sc.)	2	976	560	3	3	8	4	1	5	7	31	169	Silver medal
1000	D. C. Guise (8 Enfield sc.)	2	976	560	—	8	4	3	1	6	6	28	172	Silver medal
1000	S. Parker (8 Enfield sc.)	2	976	604	5	8	4	2	3	7	10	39	161	Bronze medal
1000	J. G. Lowles (8 Sunbeam sc.)	2	996	676	—	—	—	—	—	—	—	—	—	Retired Tuesday
1000	H. Jepson (8 Zenith sc.)	2	976	572	—	—	—	—	—	—	—	—	—	Retired Wednesday
* —	S. Hall (10 Morgan)	2	1096	780	15	3	—	2	3	5	6	34	166	Silver medal
* —	W. J. Barker (10 Henderson sc.)	4	1168	588	—	—	—	—	—	—	—	—	—	Retired Tuesday
* —	H. Greaves (10 Morgan)	2	1096	756	2	20	—	1	3	8	5	39	161	Bronze medal
* —	W. D. Hawkes (10 Morgan)	2	1096	764	—	—	—	—	—	—	—	—	—	Retired Tuesday

*Over 1000 c.c. class.

SPECIAL PRIZES.

TEAM PRIZE (Gold Medal presented by the A.C.U.): B.S.A. Team A (H.F. Edwards, 191 marks; J. L. Sealey, 175; and F. Turvey, jun., 191). Total marks, 557.

Order of Merit of Competing Teams: 2nd, Scott (539 marks); 3rd, Rover (536); 4th, Enfield (526); 5th, Sunbeam (521); 6th, Morgan (520); 7th, Blackburne (519); 8th, Matchless (507); 9th, Douglas (459); 10th, Triumph (445); 11th, James (439).

PRINCIPALITY PRIZE (Cup presented by Messrs. Tom Norton, Ltd., for the best performance by a Welsh competitor): M. Isaac, 3½ Rover.

FUEL PRIZES for best performances in each class on Benzole (presented by the National Benzole Association):

Class D.H. O. Wood, 3½ Scott (187 marks).
Class E. J. W. Wills, 6-7 Ariel (178).
Class G. F. E. Jones, 3½ Ariel sc. (152)
Class H. S. Sawer, 4 Norton sc. (169).
Class K. Rex Mundy, 8 Matchless sc. (186).

ANALYSIS OF RESULTS: DIVISION I.—MOTOR CYCLES.

Class	Qualifications. Maximum 200 Marks. For Gold Medal.	For Silver Medal.	For Bronze Medal.	Results. Started	Finished.	Non-starters.	Gold Medals.	Silver Medals.	Bronze Medals.	Finished. No Award.	Retired or Disqualified. Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Totals.	Total Entries.
	marks.	marks.	marks.														
A. (250 c.c.) ...	150	135	110	5	3	—	3	—	—	—	—	1	1	—	—	2	5
B. (350 c.c.) ...	180	165	140	6	3	2	—	1	1	1	—	—	1	2	—	3	8
C. (500 c.c.) ...	180	165	140	25	21	—	6	10	2	3	—	—	1	3	—	4	25
D. (750 c.c.) ...	185	170	145	23	21	—	7	10	4	—	1	—	—	—	1	2	23
E. (1000 c.c.) ...	185	170	145	2	1	1	—	1	—	—	—	—	—	1	—	1	3
Totals	—	—	—	61	49	3	16	22	7	4	1	1	3	6	1	12	64
% of Starters ...	—	—	—	—	80.3	4.9	26.2	36.0	11.4	6.6	—	—	—	—	—	19.6	—
DIVISION II.—MOTOR CYCLES WITH SIDECARS AND THREE-WHEELED CARS.																	
G. (500 c.c.) ..	160	145	120	3	2	—	—	2	—	—	—	1	—	—	—	1	3
H. (750 c.c.) ...	180	165	140	14	12	—	3	3	—	3	—	—	2	—	—	2	14
K. (1000 c.c.) ...	180	165	140	30	18	1	4	9	3	2	—	4	4	3	1	12	31
L. (unlimited) ..	180	165	140	3	1	—	—	1	—	—	—	—	—	—	—	2	3
Totals	—	—	—	50	33	1	7	14	7	5	—	7	6	3	1	17	51
% of Starters ...	—	—	—	—	66.0	2.0	14.0	28.0	14.0	10.0	—	—	—	—	—	34.0	—
Grand Totals ...	—	—	—	111	82	4	23	36	14	9	1	8	9	9	2	29	115
% of Starters ...	—	—	—	—	73.9	3.6	20.7	32.7	12.6	8.1	—	—	—	—	—	26.9	—

A Twenty-four Hour Ride of 540 Miles.

Italian Despatch Riders enter Sunbeams in an Italian Long-distance Trial.

ITALY, like France, is now taking an extraordinarily keen interest in motor cycle matters, and the trials that are organised in the former country rank in severity with those held here. A long distance run from Milan to Naples was held last week over vile roads, and constituted a twenty-four hours' trial, as the competitors took approximately that time to cover the distance—540 miles—between the two cities.

The finish, which ought to have been at Naples, was at the last moment brought back about fourteen miles to Caserta on account of the impossible state of the roads. Unluckily, this modification caused the two fastest riders to lose their way, and they arrived at Naples instead of Caserta, thus loosing the race. They were Maffeis, riding a Motosacoche, and De Leonardi (a despatch rider), on a Sunbeam.

Twenty-nine competitors started from Milan at 9.30 p.m. on Saturday, and, touching Bologna, Florence, and Rome, had to reach their destination, riding continually through the night and the best part of the next day, stopping only for the necessary replenishments at the various controls along the route.

The first 200 kilometres (125 miles), over good roads and under a beautifully moonlit sky, were covered at a speed of nearly 40 m.p.h. by all competitors, but after Bologna the crossing of the Apennines through the mist and over damp and slippery roads soon lowered the average considerably. Falls were frequent, and punctures numerous, so that at Florence already several competitors had fallen out and others were very late.

Pavè and Pot-holes.

When daylight came, however, everybody seemed to pick up courage, and the pace was as fast as the state of the roads permitted, and in all fifteen competitors arrived at Rome (375 miles) in the maximum time fixed. After this, however, came the worst part of the journey, the roads from Rome to Naples being absolutely vile. For the first twenty-five miles it is all *pavé* (and riders who have been in France know what that means), and afterwards a succession of pot-holes and mud inches deep (the weather having meantime changed to bad). This is due to the continual passage of carts having very narrow rims; these break up the surface, which is very friable. Two of the favourites, Acerboni (Frera) and Finzi (Rudge), had to give up on account of serious falls when almost in sight of the goal. Unluckily, as mentioned above, the two leaders lost their way when about six kilometres from the finish, and proceeded on to Naples, arriving at about nine o'clock, whereas the remainder of the competitors kept on the proper route, arriving in the following order:

		h.	m.	s.
1.	Girardi (2¾ Garelli) .. .. .. Average speed, 24 m.p.h.	21	56	2
2.	Pasquale Amerio (3½ Sunbeam) ..	22	5	7
3.	Giuseppe Russo (Sunbeam)	22	9	17
4.	Pierino Maggi (Motosacoche) ..	24	23	50
5.	Davide Gambini (2¾ Douglas) ..	26	42	10

These are the only survivors, plus the two that arrived at Naples in the following order, and covering 25 km. more.

	h.	m.	s.
Maffeis (Motosacoche)	22	23	0
De Leonardi (3½ Sunbeam)	22	59	0

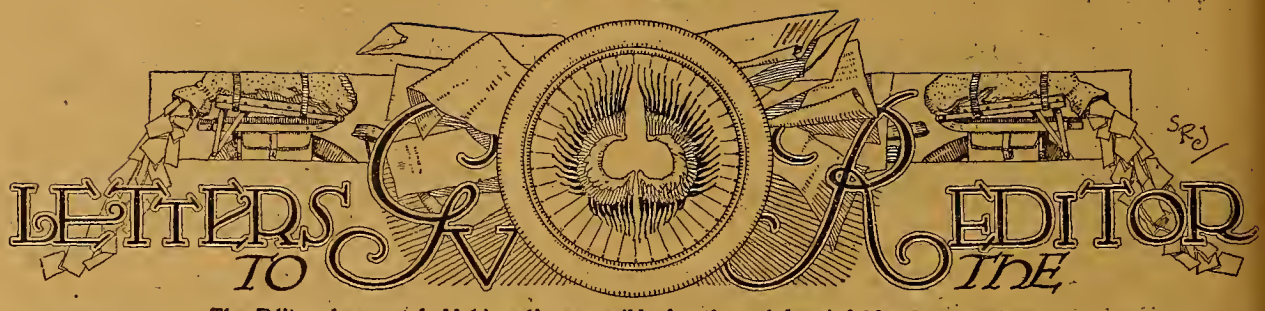
D.R.'s in the Trial.

The winner, Girardi, rode a 350 c.c. two-stroke Garelli, a new machine which has already competed successfully during the year, and will be put on the market in large quantities at the beginning of next year. It is a two-cylinder *monobloc*, side by side, placed transversely across the frame, 50 mm. bore and 89 mm. stroke to each cylinder. The mixture is taken into the left cylinder, and the burnt gases are exhausted through the right cylinder, as the cylinders are intercommunicating, and have one combustion chamber in common. The two pistons also work simultaneously on a single crankshaft. A great economy is claimed by this system, and it has certainly proved efficient. The gear box (two speeds) is incorporated in the crank case, as is the magneto, which is of special design and completely covered in, thus being protected entirely from water, mud, etc. This machine has a lovely purr, quite distinctive from others, and quite a good turn of speed. At the start, in the dark, it was easily recognised by its distinctive exhaust. The three Sunbeams were the only team to finish; they also made a splendid show, though one of them did not arrive at the official finishing point. Their riders are despatch riders who, owing to the sporting conduct of their officers, have been allowed to enter various competitions this year. Their first revelation was in the military trial, where they all finished amongst the first ten, classed with the same number of points. They received no official help from the makers of the machines they were riding (which, by the way, are Army property), and came through on their own resources. Truly a splendid performance. The small Douglas's performance is also remarkable, and the Motosacoche, to say the least, was very unlucky.

Board of Trade Removal.

The announcement is made that the offices of the Board of Trade are being removed immediately to Great George Street, where the new premises have been secured. The whole of the departments will gradually leave Whitehall Gardens as further accommodation becomes available.

At the start of the Milan-Naples long-distance trial. (1) Maffeis (Motosacoche); (2) Eng. Garelli, the designer of the winning machine; (3) Bonacossa, the president of the Italian A.C.U.; (4) Ettone Girardi, the winner.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

BUTSER HILL.

Sir,—I was interested to read in your issue of October 16th of the experiences of a correspondent, B. S. Nortsunbeam on Butser Hill, near Portsmouth. I have done a great deal of riding in that district, and can fully bear out his statements. My machine, which ascends hills like Birdlip and the Welsh Uplands without the least difficulty, invariably appears to lose power when ascending Butser. I can give no reasonable explanation at all, as I have examined the hill, and can find nothing out of the ordinary. Further experiences of your readers might prove interesting in this connection. J. G. SIMPSON LEE, Lt., R.M.

Sir,—The apparent loss of power ascending Butser used frequently to be commented on, and was by some ascribed to the wind in the cutting, but that could not always be the cause.

In 1905 and 1906 I could never get a single-geared sidecar machine up; even with l.p.a. on a 5-6 h.p. twin triette, it was the same. I used to stop and cool it on the railway bridge, but always had to resort to the tow rope, specially carried for Butser. After a long absence, in 1914 I tried it with a Ford. The road was up at the quarry, and we had to stop. Immediately getting into top, on restarting, I finished up close on 40 m.p.h.—no effort at all.

Again in January this year, on a new W.D. Douglas combination, the front exhaust pipe ran red hot on second near the top. Obviously, something upsets the cooling of an air-cooled engine. C. ROBERTS.

Sir,—In reply to "Nortsunbeam," page 436, in your issue of October 16th, *re* Butser Hill. I have been on this hill on an average once a fortnight for the last five years, riding several different makes of machines—"posh" and otherwise—and have never once noticed the apparent loss of power your correspondent speaks of, and I cannot understand "really fine machines" dropping down to 25-30 m.p.h. He states that he has made good ascents considering what others have been doing whenever he met them. Apparently, he is on that road at other times than I am, as my present machine will climb Butser at 50 m.p.h., with a passenger on the carrier, and that without "blinding" down the railway bridge, and there are plenty of machines on the road capable of doing the same. Possibly your correspondent overheats his engine before reaching the hills.

Farnborough. POWERPLUS.

A.B.C. PERFORMANCE AND A.C.U. TRIALS.

Sir,—May we correct a slight error which appeared in a paragraph in your issue of October 23rd, wherein you refer to an A.B.C. motor cycle at the Mont Ventoux hill-climb in France gaining six prizes in the 500 c.c, 750 c.c., and 1,000 c.c. classes?

The machine was certainly built to A.B.C. designs, but not in France, and it may interest your readers to know that, not only was it built in our own works, but was the actual machine that was ridden by Emerson through the A.C.U. Six Days Trials.

It was not our intention to complain at the loss of a medal, due to the ill-conceived and justly condemned "Consistent driving test," but recent references in the press attributable to the A.C.U., and suggesting that the public should form its opinions of certain machines according to the number of marks awarded in these trials, lead us to protest strongly against injustice being done where not incurred.

As a means of determining the "maintenance of efficiency" the "Consistent driving test" was a complete failure, and we imagine that the A.C.U. judges will have some difficulty in convincing the public that they are acting justly if they retain this in considering the final awards.

It would surely cost the A.C.U. nothing to acknowledge that an error of one second in a guessing competition cannot justly be compared in equal loss of marks with a delay of sixty seconds through trouble on the road; and an excellent indication of the insufficiency of this test is given in the performance of the A.B.C. machine in the French hill-climb above referred to.

This machine was returned to our works after the Six Days Trials on the Monday evening. It had the lighting set removed, was fitted with footrests, dropped handle-bars, and a lower gear, without any change in the engine, except the grinding in of the valves. On the Wednesday of the same week it was sent over to France without having been tried on the road for more than one mile, and as in France it proved its "maintenance of efficiency" in open competition, it will readily be seen that in the case of the A.B.C., as probably of a great many other machines, the result of the A.C.U. Six Days Trials, when judged by the number of marks awarded, is opposed to the truth, and is consequently, misleading to the public, besides being a direct injury to the trade.

Another point concerning the judging of these was the silencer test, mechanically recorded by Dr. Low. According to the results of these tests, the instrument is quite incapable of recording those sounds which most greatly affect the human ear, which, after all, is the only test concerning noise that we need bother about.

Some of us have observed the production of gramophone records, in which certain instruments (by no means the loud ones) are placed many yards further away from the receiving trumpet than others, in order to prevent the reproduction being completely distorted; and one is prompted to ask if the instrument used by Dr. Low was first verified by capable judges, and if the officials of the A.C.U. are satisfied that its accuracy was undeniable.

As judged by the awards, one can only conclude that the A.C.U. Trials were a failure, in that they defeat their own object, and as it must be of far more importance to manufacturers and the public to have the real truth stated than to the A.C.U. judges to "stick to their guns," could they not be induced to take a consensus of opinion amongst your readers concerning these two tests at least, and boldly acknowledge that their awards need modifying?

A.B.C. MOTORS, LTD.,
GRANVILLE BRADSHAW, Engineer.

SATURDAY TRIALS.

Sir,—As a motor cyclist of long standing—in fact, I have been riding since the days of the early Werners and Minervas—I want to air a little grievance.

How is it that all day trials and hill-climbs are held on Saturdays? I have no doubt there are hundreds of motor cyclists, like myself, who cannot possibly get away on Saturdays, but who would like to compete in competitions if they were held sometimes in the early part or middle of the week.

Perhaps in 1920 you could approach one or two of the leading clubs and see what the feeling is. I feel sure there are a lot of Birmingham riders who would enter for a run, say on the Wednesday closing day. TWO-STROKE.

Stratford-on-Avon.

SPEEDMAN'S WOBBLE.

Sir,—I asked a mathematical don at Oxford the explanation of speedman's wobble. He said it was a question of dynamics. Up to a certain rate the faster a motor cycle goes the steadier the equilibrium. Over that rate the equilibrium becomes unsteady, and any wobble there may be at the lower rate increases as the pace increases over what I may call the critical rate. This wobble is accentuated if the motor cycle goes over any bumps. The brake under these circumstances would act as a bump, and might throw the rider immediately. I have a 3½ h.p., and when riding it solo at a rate of 45 to 50 m.p.h. cannot feel any bumps on a moderately uneven road. I cannot get my motor cycle over 58 m.p.h , and at this rate engine vibration is so great I cannot take note of the effect of outside forces. MARTIN BEHRENS.

HONOUR TO WHOM HONOUR!

Sir,—One of the most useful features in your valuable paper is the column devoted to the experience, satisfactory and otherwise, of your readers. I should like to call attention to a smart piece of repair work. I recently purchased a sidecar from the Sandum Sidecar Co., which, owing to heavy mileage and bad roads, developed a weakness in the springs and also to the back axle. I communicated with the makers, and, placing the machine in their hands at 1 p.m. received it back with new springs and a straightened chassis at 6 p.m. same day, no charge being made, and the utmost courtesy was given me.

I have no interest in the firm beyond that of a satisfied customer. J. H. WHITE.

Sir,—I have read several letters in your most excellent paper referring to the great difficulty in getting repairs done to motor cycles, and I should like to give you my experience. Last week I took my machine to Messrs. Robertson, of Great Portland Street, to get a small but difficult repair done; and explained to them that it was most important that I should drive the machine home that night. The machine was ready for me four hours later, in spite of the fact that they had to send to several different places to get the part that was required. I have no connection whatever with Messrs. Robertson, but I should like other motor cyclists to know the name of at least one firm in the motor cycle repair trade who are out to do their best for anyone in difficulties. C. H. BLISS.

Sir,—I note from time to time letters are inserted in your valuable paper giving the names of reliable motor cycle agents, where repairs are quickly and satisfactorily carried out. I had the misfortune to smash both my footrests in a rather bad accident. I took my bicycle to Messrs. Henley and Son, Ocklynge Parade, Eastbourne—the repair was carried out in less than half an hour, and a most excellent job they made of it; the charge was 1s. At a later date they took my engine down and thoroughly cleaned and decarbonised it for 5s.

I understand that the proprietor was for several years a tester at the F.N. motor cycle works, and was in charge of an Army motor cycle repair shop in France during the war.

I have no interest in the business except as a satisfied customer. PERCY C. BIRD.

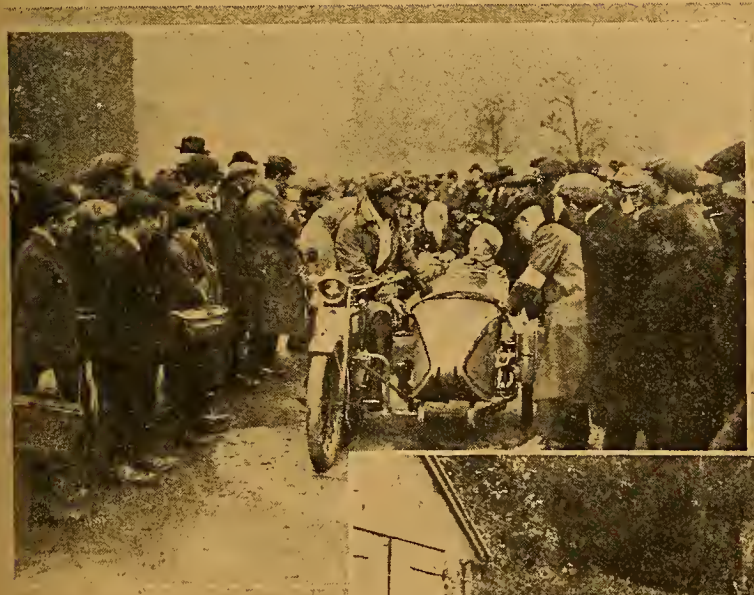
Sir,—I have been much interested in the correspondence which has been appearing in your columns with reference to good and bad treatment meted out to customers at various garages.

Perhaps a recent experience of mine may be of interest. On Sunday last I was driving an old pattern machine, when the front wheel cone worked loose, jamming the wheel. I was directed to Messrs. Campbell and Sercombe, of Approach Road, West Norwood, and they at once came to my assistance and freed the wheel sufficiently to allow of the machine being wheeled to their garage, where it was found that the threads were damaged. The machine was left for the night after some two hours' work, and next morning one of the partners drove me with the wheel to the makers' London depot, where a makeshift repair was effected. Eventually I proceeded on my way at about 4 p.m. on Monday, after various adjustments had been made and the time of the partners had been taken up for practically the whole day, in addition to the work on Sunday.

I was naturally prepared for a fairly stiff hill. Judge then of my astonishment when payment was emphatically declined, and all objection on my part swept aside.

I may say that both partners displayed a most workmanlike knowledge of motor cycles, and the muddle unfortunately associated with some garages was conspicuous by its absence. Usual disclaimer.

DOUGLAS SAMUEL.
Flying Officer, R.A.F.



LIVERPOOL M.C. ONE-DAY TRIAL.

(Top) J O. McLean (Harley-Davidson) at the start. Public interest in the competition was marked.

(Bottom) Competitors waiting to climb Sun Trevor Hill.

A detailed description of the trial was given in last week's issue.

Sir,—After many wearying attempts to obtain businesslike treatment from manufacturers, I have at last discovered an ideal firm. I refer to W. J. Green, Ltd., of Coventry, makers of Omega-Jap motors.

This summer my wife and I ordered machines from this firm. We have received every consideration. They never appeared to find it too much trouble to send lengthy and explicit replies to queries regarding mechanical details, and they made two considerable deviations from the specification at my request and without extra charge.

As they were unable to procure Hans Renold chains in time for delivery, they fitted another make, and afterwards sent us the Hans Renolds, informing us that we might retain the original ones as spares.

Last, but by no means least, this firm sends out all machines by passenger train and pays carriage.

Finally, I regard the Omega-Jap as the solo mount *par excellence* for the person who values reliability and clean design, combined with strength. I live amongst famous, or more correctly infamous, hills, and I find that these machines have a very real reserve of power. I have ridden most things from the 8 h.p. "hogbus" to the 1 h.p. auxiliary.

I add the usual disclaimer and enclose my card.

Barnstaple. VERBUM SAT SAPIENTI.

THE LIGHTING REGULATIONS.

Sir,—I must as a constant reader of your paper a cyclist and a motor cyclist emphatically protest against your leading article on Lighting regulations. The toleration you speak of is a toleration of motorists only a minority and always will be as far as cyclists are concerned; who have the prior right if our boasted brag of the majority ruling counts for anything. Accidents to cyclists and pedestrians are caused by excessive speed in 99% of cases as you know quite well; and you must be aware that no country in the wide world passes them off in the scandalous manner as is done here; life being more sacred with them than with us; you are decidedly wrong when you say that a pedestrian is more easily seen than a cyclist; he is certainly not as he carries no head lamp; and it is not his business to jump into the ditch every time he sees side lights. Both motor cars and motor can run slowly on dark nights; they all have speed gears and it is simply a matter of economy only with them. How many motorists will throw in a second speed turning a corner in the dark—Only few If motors are constructed as to be untractable; it is up to the makers to make them so

Personally riding slowly at nights I can see cyclists and pedestrians with all safety to them, and I am an elderly man.

The villany of the whole concern; a man going to his work in early mornings to mess about with two lamps in the dark and cold; and ditto at night; what for? to convenience motorists, who in 'nine' out of ten cases are not tied to five minutes. No Mr Editor—when the public not your idea of such, decides on rear lights and is willing to submit; then let rear lights stand. ISAAC BARTU.

Cork.

[We think that our correspondent misrepresents us; but, on the principle of giving a hearing to both sides, we print his letter exactly as received.—ED.]

Sir,—With regard to the question of rear lighting at present under discussion, and the somewhat acrimonious correspondence appearing in the press (not in *The Motor Cycle*), will you favour me with space to air my views?

I have been a cyclist for some thirty years, and, therefore, claim to have some knowledge of matters cycling, my experience embracing twenty-five years as a pedal cyclist and later as a motorist.

In the first place, there is evident in many of the articles I have read, both letters and "leaders," a striking absence of that spirit of tolerance and fairplay on which we Britishers have been wont to pride ourselves. Although now a confirmed motor cyclist, after a protracted experience of the delights thereof, I find it difficult to associate myself with the views expressed by some of my brothers of the petrol engine. Their arguments for enforcing the use of the rear light on cyclists are, surely, of the "boomerang" order. To say that a cyclist must carry such light in order that his presence may be thereby known to the motorist is certainly one of the most absurd grounds that could possibly be put forward. In addition to cyclists, one will occasionally come across pedestrians, cattle, stray horses, broken down carts, parcels dropped from vehicles (my own experience), bricks, and numerous other sources of possible trouble. What form of danger signal do the enthusiasts of the rear light propose for these impedimenta? Is it to be wondered at that the non-motoring public are forced to the conclusion that the whole agitation is the outcome of the unfortunate craze for speed amongst the more reckless members of our fraternity? I have, myself, on numerous occasions escaped by a hair's breadth being smashed up by passing motorists at night—in spite of my rear lamp! I say to these selfish madcaps that no one has any right to be travelling at night at such a speed that he cannot discern any other traffic in time to avoid it! The arguments, or rather statements, put forward in some quarters on behalf of the rear lamp are such as to make one wonder at the mentality of the writers; witness the piffle recently published in one of the motoring papers, where it is stated that "the cyclist is always wanting to dictate to the motorist," "he pays nothing for the use of the roads," etc. As we say in the law, "No case, abuse the other side."

For myself, if I were still a pedal cyclist, I should carry a rear lamp, not because I considered it necessary to indicate my presence to the reasonable motorist, but simply and solely as some protection (for what it is worth) against the scorching road-hog. At the same time, I would resist by every means in my power the attempt to *enforce* its use upon cyclists. Recent events have proved its utter failure as a reliable safeguard against accidents. SIVEL.

London, N.

COMPRESSION RELEASE V. EXHAUST VALVE LIFTER

Sir,—I was glad to see this question raised by Mr. Maggs. As a matter of fact, the idea of using a compression release valve instead of an exhaust lifter was put into practice by me early in 1917, and the same valve has been in constant use since then on different machines. The body of the valve was made out of an old sparking plug and the valve out of a Douglas valve. It is placed in the centre of the cylinder head instead of the compression tap, and connected up to the exhaust lifter lever by Bowden wire. After an extended trial of over two years I have come to the conclusion that an exhaust valve lifter is entirely unnecessary, as the release valve has the following uses:

(1.) For injecting petrol.

(2.) For cooling the engine when coasting down hills, as it sucks in cold air directly from the atmosphere.

(3.) As an engine brake when partly open.

(4.) As a dog frightener, being far more effective than making a hissing noise with the mouth.

All the aforementioned uses are, I consider, advantages over the exhaust lifter. Other points in favour of the release valve are that there is practically no strain on the Bowden wire, and it is commercially cheaper to fit than the exhaust lift mechanism and compression tap combined.

C. S. BURNEY.

SUMMARY OF CORRESPONDENCE.

Mr. R. Griffiths, of Saundersfoot, Pembrokeshire, writes to say that he was refused admission to Jones's Garage, Swansea, as motor cycles and sidecars are not garaged there.

BOOKS AND MAPS FOR MOTOR CYCLISTS.

Issued in conjunction with "*The Motor Cycle.*"

	Price net.	By post.
"MOTOR CYCLES AND HOW TO MANAGE THEM." The standard handbook on the motor cycle—its care and management. Twentieth Edition. 286 pages. 400 illustrations	2/6	2/10
"HINTS AND TIPS FOR MOTOR CYCLISTS." Containing over 400 useful "wrinkles" and helpful hints in regard to motor cycles. Sixth Edition. (Second Reprint.)	2/-	/9
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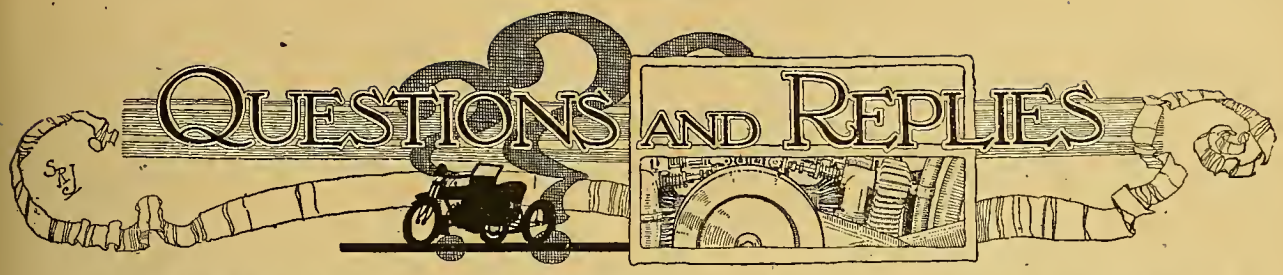
Obtainable by post (remittance with order) from ILIFFE & SONS Ltd., 20, Tudor Street, London, E.C.4, or of leading Booksellers and Railway Bookstalls.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Fitting a Speed Gear.

I have a 1912 A.S.L. 4 h.p. Precision engined motor cycle. Can you please tell me what kind of speed gear or variable pulley gear would be suitable for fitting to the machine for sidecar work? —T.S.

We do not know of any speed gear other than one for the engine-shaft that can be very readily fitted to your machine. A Philipson pulley would be satisfactory or one of the N.S.U. type two-speed gears now being manufactured in this country.

Colonial Prospects.

I am contemplating making a trip to South Africa, Australia, or New Zealand, with the object of starting a garage, and should like your opinion on the matter. Would you say the prospects were good for engineers, and which country would you prefer for opening business?—L.W.H.

From information we receive from time to time, the prospects of the motor cycle industry are excellent in all the colonies you name, but especially so in New Zealand and South Africa. We think you will find the greatest scope in the Antipodes.

Pilfered Accessories.

I met with an accident to my motor cycle and had to leave it at a garage for repair. Later, I discovered that all my tools were missing. Before leaving the machine, I pointed out to the proprietor that all my tools were in the sidecar, and he said that they would be quite all right. Now he refuses to replace them, but is quite willing to let me have them at cost price. Can I make him replace them? I might state that my wife was with me at the time. Also he informs me that I ought to have had them checked. —V.M.

Under the circumstances you describe, there appears to have been some laxity in handing over the machine and its accessories to the garage proprietor, and we fear that you are rather in his hands. If you can provide witnesses, however, who will bear out your statement that the tools were in the sidecar when you left the machine, and can also prove negligence on his part in storing your machine, there is no doubt you could enforce their return. At the same time, the value of the articles involved is so small that it would not be worth while incurring a legal action.

Fitting Lighting Dynamo

As I am not anxious to make use of a magneto as a light generator, I have a dynamo (weight 2 lb.) which could be fitted to my machine. The speed of the dynamo must be over 3,000 r.p.m., but the maximum voltage is automatically controlled. Do you think a pulley could be attached to the engine-shaft (3½ h.p. Rudge Multi) by cutting a hole in the timing cover? If so, please give necessary details for the work, so as to avoid putting the pedals out of action. What is the engine speed on a 3½ to 1 gear at about 25 m.p.h.?—A.U.

In adapting the lighting dynamo to your engine it would be necessary to gear it from the engine-shaft with a 3 to 1 ratio. It would be very difficult to drive it from the Rudge engine without interfering with the starting mechanism. The engine speed on a 3½ to 1 gear at 25 m.p.h. is approximately 1,200 r.p.m.

Gearing and Carburation.

Would you be kind enough to give me information on the following: (1.) My 1919 4 h.p. Triumph is geared 5 to 1 top. I ride solo, and wish to raise the gear to 4, or even 3½, to 1, if possible. The present engine sprocket has fifteen teeth, and as the chain case can be removed over the sprocket without sliding forward, I think it will give sufficient clearance for a larger sprocket. Will you tell me the size of sprocket required to give the gears before-mentioned, and where I can obtain them? (2.) My standard Triumph carburetter (Pratt's No. 1 petrol) averages 80 to 90 m.p.g. I am told that either of the following will give lower consumption and better running: *(a)* Bowden extra air valve. *(b)* Smaller jet. Your opinion and advice will greatly oblige. I have never had occasion to use the air lever, except for very slow turning over.—H.W.L.

(1.) We do not recommend so high a gear as 3½ to 1. Probably a seventeen-tooth sprocket (4.4 to 1) would raise the gear sufficiently for your requirements. The Triumph Co. will supply. (2.) We should not recommend the fitting of an extra air valve. A smaller jet might effect some economy in petrol consumption, but if you obtain 90 m.p.g. this is quite satisfactory. The use of benzole would improve the consumption by about 15%. The air lever on the Triumph carburetter is very seldom used.

Stove Enamelling.

(1.) Is it possible to install a small stove at home for enamelling purposes? (2.) Whether gas or coal required, and at what temperatures? (3.) Is a specially prepared enamel used?—G.G.M.

(1.) Stove enamelling can be done on quite a small scale. (2.) Enamelling stoves are usually gas heated. The temperature required depends upon the colour of the enamel used. The greatest heat is necessary in stoving black—about 300° F. (3.) Special enamel is required; it may be obtained, as also the apparatus necessary, from any wholesale cycle factor.

Acetylene as Fuel.

Has anyone ever invented any article for driving a motor cycle or car on carbide instead of petrol, and, if so, has it been tried, and with what success?—S.N.R.

Internal combustion engines have frequently been run on acetylene gas. Some considerable danger attends its use in an engine primarily designed for the consumption of petrol. In any case, the use of acetylene as a motor fuel has been found to result in uncontrollability and harsh running. A description of a Swiss patent on the lines in which you are interested appeared in the issue of *The Motor Cycle* dated October 9th, 1919.

Retarding Ignition.

If there is an appreciable loss when retarding the spark, can you tell me the reason why motor cycle manufacturers never give the matter any attention, but still continue to fit the same principle of magneto year after year, when obviously they are losing a certain amount of power?—H.F.

The reason for the adherence of manufacturers to the present type of magneto is largely one of convenience. At moderately high speeds the loss of sparking efficiency, due to retarding, is not so great as to cause any practical disadvantage. Magnetos have been made which give maximum efficiency over a full range of advance and retard, but they are not so simple to manufacture, and the design introduces other weaknesses. This quality is usually obtained by rotating the field magnets round the armature in place of moving the contact breaker cams. The polar inductor type of magneto, such as the American Dixie, also has maximum sparking efficiency through its full range.

READERS' REPLIES.

N.S.U. Gear Trouble.

With reference to the reply to "H.F." concerning N.S.U. gear trouble. I had the same this summer with one of these gears, and cured it by fitting a small washer over the stud at the bottom of the rotating rod, thus giving the extra pressure necessitated by the wear on the inclined planes.—H. WEBSTER.

Removing Indian Cylinders.

For the information of "C.L.W.," who wishes to dismantle Indian cylinders, he should remove the head and then unscrew three of the studs out of the crank case; the cylinder can be removed quite easily. Being an Indian rider, I can assure "C.L.W." that the heating of the crank case is nothing to worry about; this makes no difference to the running of the engine, and is, I believe, due to conduction.—W. CLEMENTS.

Two-stroke Triumph Gear Box.

Re the enquiry from "H.E.G.M.," in *The Motor Cycle* dated October 16th, in connection with some apparent metallic substance in the grease of his Triumph gear box. Perhaps he may be mistaken, as I was. I bought a 1919 Triumph second-hand, and, when about to fill the gear box, was greatly disturbed to find similar particles in the grease. I therefore took the gear box down and found everything in order and no sign of worn teeth. Upon a close examination I discovered the "metallic substance" was only graphite, which forms part of the grease, and, of course, is not in any way injurious, but quite the reverse. I should advise "H.E.G.M." carefully to make sure whether it is metal before going to the expense of new parts.—E.J.F.

RECOMMENDED ROUTES.

DURHAM TO IRLAM.—J.H.

Durham, Darlington, Scotch Corner, Leeming Bar, Ripon, Ripley, Blubberhouses, Bolton Bridge, Skipton, Gisburn, Clitheroe, Whatley, Accrington, Haslingden, Holcombe, Bolton, Walkden, Patricroft, Irlam.

BIRMINGHAM TO CATERHAM.—T.A.B.

Birmingham, Coventry, Daventry, Dunstable, St. Albans, Watford, Rickmansworth, Denham, Uxbridge, Colnbrook, Staines, Kingston, Worcester Park, Sutton, Purley, Caterham. Approximately 110 miles.

NEWCASTLE-UNDER-LYME TO NEWCASTLE-ON-TYNE.—J.F.T.

Newcastle-under-Lyme, Leek, Buxton, Tideswell, Totley, Sheffield, Barnsley, Cudworth, Hemsworth, Pontefract, Ferrybridge, Aberford, Wetherby, Boroughbridge, Thirsk, Yalm, Stockton, Durham, Chester-le-Street, Newcastle-upon-Tyne.

WORCESTER TO CLACTON-ON-SEA.—G.W.R.

Worcester, Evesham, Broadway, Moreton-in-the-Marsh, Chipping Norton, Deddington, Aynho, Bicester, Aylesbury, Tring, Berkhampsted, Boxmoor Station, St. Albans, Hatfield, Hertford, Bishop's Stortford, Great Dunmow, Braintree, Colchester, Clacton-on-Sea.

F.R.S. in Australia.

We learn that F.R.S. lamps are now represented in Australia by Finlay Bros., Barb Cycle Works, 322-324, Elizabeth Street, Melbourne.

Leather Transmission Belting.

The business of W. Pollin, Silverhill, Hastings, has now been reorganised as W. Pollin and Son, and will be carried on at Hollington, St. Leonards-on-Sea, specialising on leather and balata belts.

A Six Days Echo.

One of the few machines to make a maximum road performance in the A.C.U. Six Days Trial was the 8 h.p. Clyno outfit. It was lubricated with Vacuum BB oil, and the engine never faltered on any hill.

Autoped Scooter Deliveries.

Messrs. A. W. Gamage, Ltd., Holborn, London, E.C., inform us that they are now able to give delivery from stock of the Autoped motor scooter. The Autoped figured in the first scooter trials organised by *The Motor Cycle* during the summer, and was first described in *The Motor Cycle* of January 25th, 1917.

Enfield Balance Sheet.

The directors of the Enfield Cycle Co. recommend a further dividend of £7 per cent. per annum on the A preference shares for the half year, and 12½% on the B preference and ordinary shares for the twelve months. In view of the considerable increase of the company's business, a further issue of 50,000 ordinary £1 shares is proposed; these will be offered to present shareholders only.

Bates Tyres in the North.

Increasing popularity of Bates tyres and other goods manufactured by W. and A. Bates, Ltd., St. Mary's Mills, Leicester, has led to the necessity of opening a wholesale distributing depôt in Manchester, the address being St. Mary's Buildings, Quay Street. All the Lancashire, Cheshire, Yorkshire, and North Wales business of the firm will be dealt with from the Manchester house.

The South African Tourist Trophy Race.

A special commemorative prize—a gold medal with diamond centre—was awarded to J. P. Booth (Triumph Junior) for his wonderful performance in the South African Johannesburg-Durban race. Despite the small capacity of his engine, he finished fifth over the 397 miles course, with an average speed over the full distance of over 25 m.p.h. C. H. Young (4 Triumph), who finished second, was the fastest of the single-cylinders, averaging 36.3 m.p.h., as against 36.8 m.p.h. by the 7 h.p. Harley-Davidson, which, ridden by R. Blackburn, made fastest time in the race.

The Bowden Brake Co., Ltd.

In the directors' report of the Bowden Brake Co., Ltd., it is stated that a dividend of 15% is to be paid on participating preference shares, and also on the ordinary shares, both free of income tax.

British Tyres in Spain.

We learn that in the twelve hours motor cycle race, held recently in Spain, the winners in all classes were running on Dunlop tyres. This success of British goods is specially gratifying at a time when the export trade is so vital a factor in the country's interests.

Address Wanted.

The Licences and General Insurance Co., Ltd., 24, Moorgate Street, London, E.C.2, inform us that one of our readers, Mr. H. A. Connell, has written to them, but has omitted to send his address. On hearing further from him, the company will immediately send a reply to his communication.

Premises Wanted.

A well-known competition rider is offering £10 reward to anyone who will find him suitable premises. He requires a showroom and repair shops in the West End, South, or South-West of London, but a suitable shop in the provinces might meet the case. We shall be pleased to forward letters.

Dissolved Acetylene Cylinders.

Many of our readers are anxious to try dissolved acetylene as a means of illumination. These will be interested to hear that Messrs. Vivian Hardie and Lane, Ltd., 24, Woodstock Street, Bond Street, London, W.1, have the D.A. cylinders and all the necessary fittings in stock.

Metro-Tyler Hints and Tips.

Any rider of a 1919 Metro-Tyler may have a copy of "Metro-Tyler Hints and Tips to Users" on quoting the number of his engine, and communicating with the Tyler Apparatus Co., Ltd., Bannister Road, Kilburn Lane, London, N.W.10. The leaflet published gives four pages of useful hints, which should be of great value to users of this popular lightweight.

Sunbeams in Italy.

Sunbeams have been extraordinarily successful in a recent motor cycle race in the land of sunshine. In the Milan-Naples event, extending over 526 miles, the only team to arrive complete was the Sunbeam, which was composed of three motor cycles which had been two years on military service. They arrived second, third, and sixth among thirty competitors, but nine minutes after the first arrival.

Activity in Bournemouth.

Messrs. Perrins, of Aldwych, London, recognising the scope for motor engineering, and also the lack of garaging space, in the town of Bournemouth, have opened a branch in Sea Road, Boscombe. Among the agencies secured are those for the Skootamota, Norton, and for Monobloc cars. It may interest some to learn that the directors of the company are Capt. M. Perrin, A.M.I.C.E., Capt. G. E. Thomas, Capt. H. S. Keightley (all late of the R.A.F.), and Mr. T. B. Woodward.

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S. 6h.p. Combination, fully fitted, military model, for rough work, late 1918 model, splendid condition, spare wheel (interchangeable), with spares; genuine; £155, or offer.—Archbold, 79, Banastre St., Liverpool. [X7365

1919 A.J.S. 6h.p. Combination, interchangeable wheels and spare, wind screen, hood and side screen, all in perfect order, delivered last September; owner bought car; £180.—Blackburne Williams, Ty Mawr, Abergele. [X7465

A.J.S. 6h.p. and Coachbuilt Sidecar, 1913-14 model, 3-speed, countershaft, clutch, all chain drive, kick start, lamps complete, just been overhauled, excellent condition, little used during war; inspection invited; £98.—Apply, 39, Britannia Sq., Worcester. [1935

1914-15 6h.p. A.J.S. Combination, in splendid condition, all spares, tyre, tube, lamps, etc., canoelet C.B. sidecar, unscratched, with spring shock absorber, and special upholstering; £110, a bargain; solo machine in part exchange considered.—1, St. Patrick's Houses, St. Paul's Rd., Peterborough. [X7288

Alldays.

ALLON. — Caffyns, Ltd., Eastbourne, for delivery shortly. [0063

ALLON.—Guaranteed early delivery latest 1920 models.—Parker's, Deansgate, Manchester, Bradshawgate, Bolton. [X7422

ALLDAYS Allon, 2-speed, all accessories, recently overhauled, engine perfect, all in exceptionally good condition; £48.—116, Askew Rd., Shepherd's Bush, W. [1659

ALLDAYS Matchless, 1914-15, 4h.p., variable gear, Bosch, Senspray, lamps, horn, speedometer, spares, perfect condition; bargain, £50.—30, Chandos Rd., Cricklewood, N.W.2. [1557

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0027

ALLON, 1916, new lamps and horn, perfect condition throughout, owner emigrating; £45.—70, Ringstead Rd., Catford. [1546

ALLDAYS Matchless 4h.p., 2 speeds, F.E., enclosed valves, spring footboards, Amac, Bosch, new belt, good tyres, lamps, horn; offers.—50, Beulah Rd., Thornton Heath. [1767

1919 Allon Model de Luxe 2-stroke, hand clutch, 2-speed, kick starter and lightweight sidecar, as new, ridden only 40 miles; offers.—Surridge, 133, Sloane St., Chelsea, S.W. [1724

1915 Allon 2¾h.p., 2-speed, perfect condition, not run 4,000, good climber, smart, lamps, horn, tools, spare tube, tyres good; £55; after 5.—73, Cricklade Av., Streatham Hill, S.W.2. [X7412

F.O.C.H. have a 1919 Alldays Allon actually in stock, and brand new.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9464

ALLON, recent model, 2-speed, Hutchinson tyres, saddle, lamps, pillion seat, all new, complete tools and accessories; £50; seen by appointment.—Adams, 50, Redcliffe Rd., South Kensington. [X7608

ALLON 1918 2¾h.p., clutch model, with light car, fully equipped, very smart turnout, starts easily, and goes beautifully, run 722 miles, practically as new; room reequired for car; £75.—Box 679, c/o *The Motor Cycle.* [X7297

ALLDAYS Matchless, 2¾h.p., 2-stroke, 1919 Villiers engine, new tyres, all accessories, in perfect order and condition; a bargain, £42; owner buying 2-seater car; call after 5 p.m.—87, Buxton St., Mile End, E.1. 'Phone Avenue 6787. [1424

1919 Alldays Allon 2¾h.p. 2-stroke, single gear, new August, run 1,500 miles, perfect order, Cowey speedometer, head and tail lamps, complete set tools, spare belt, etc.; £65.—C. F. Plowman, 27, Chancery Lane, W.C.2. 'Phone: 5516 Holborn. [1719

F.O.C.H. for the new Allon de Luxe, 2-speed, kick starter.—Book your order now for early 1920 deliveries, starting January. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9469

Ariel.

ONE 1919 3½h.p. 3-speed Ariel, delivered September; £92.—P. H. Allin and Sons, 12, Bridge St., Cambridge. [1485

ARIELS for 1920, any model, no premiums, first deliveries.—W. T. Dunn, Ltd., 326, Euston Rd., London. [1887

1914 (Sept.) 3½h.p. Ariel Coachbuilt Combination, 3-speed countershaft; £78.—3, Cliff Terrace, St. John's, S.E.8. [1401

JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0028

1914 Ariel and Sidecar, 3-speed countershaft gear; price 99 gns.—Motors, Hampstead, 78, High St., Hampstead, N.W.3. [1634

ARIEL, 3½h.p., 3-speed countershaft gear, standard specification, just delivered; £95.—Cobb's Cycle and Motor Depot, Arbroath. [1576

"Some Folks are wise and some otherwise."

Smollett.

It is not always an easy matter to decide what to do—so much depends upon circumstances.

What are the chances of obtaining a new machine of your choice during 1920? If not already on a waiting list very little, we are afraid, as in most cases the demand far exceeds the expected supply. For this reason the following offer should appeal to most folk as

An Exceptional Opportunity

to get immediate delivery of a thoroughly reliable combination at a reasonable price.

Immediate Deliveries.

Cash or Deferred Payments.

5-6 h.p. **Rover,** Twin-cylinder J.A.P. engine, countershaft 3-speed gear, kick-starter, hand controlled clutch. Tool bag (no tools) and coachbuilt Sidecar with apron. W.D. finish. Makers' list price to-day **£188**

For Cash **£125**

For Deferred Payments

First instalment, **£34 10 0**

and twelve monthly payments of **£8 11 8**

8 h.p. **New Imperial,** Twin-cylinder, J.A.P. engine, countershaft 3-speed gear with hand-controlled clutch, kick-starter, tool bag (no tools) and coach built sidecar with apron. W.D. finish. Makers' list price to-day **£144 18 0**

For Cash **£135**

For Deferred Payments

First instalment, **£37 10 0**

and twelve monthly payments of **£9 5 0**

Mechanically these machines are perfect having had little or no wear; the original tyres being as new and in excellent condition.

Moreover each machine is guaranteed by Godfrey's

These combinations can be seen and inspected in our Show Rooms.

We are executing orders in strict rotation as received. Send yours in at once to avoid disappointment.

GODFREY'S Ltd.

208,

Gt. Portland St.,

LONDON, W.1.

'Phone: 7091 Mayfair (2 lines).

MOTOR CYCLES FOR SALE.

Ariel.

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare part stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

1915 Ariel 3½h.p., 3-speed, kick starter, B. and B., lamps, speedometer, Bramble sidecar attached, just overhauled; £75.—Biggs, Hunsdon, Ware, Herts. [1586

1919 (June) Ariel 3½h.p. Combination, lamps, all accessories, owner going abroad; £105, or best offer.—7, Howard Rd., Church Hill, Walthamstow. [X7585

ARIEL 1917 3½h.p., 3-speed countershaft, chain-cum-belt, hand and foot clutch, tools, not done 3,000, in splendid condition; £90.—C. Brittain, 10, High St., Grantham. [X7440

1916 Ariel and Sidecar, fitted with 3-speed countershaft gear, P. and H. head lamp, Lucas horn, in very good order; £98.—King and Harper, 6 and 7, Bridge St., Cambridge. [1343

1919 (August) 3½h.p. Ariel and Sidecar, horn, tail lamp, heavy Dunlop tyres, spare valves, tube, only done 500 miles; £130; Cambridge.—Box L5,197, c/o *The Motor Cycle.* (D) [1448

ARIEL 1919 (April) 6h.p. Combination, 3-speed, countershaft, Milliford sidecar, speedometer, lamps, Klaxon, Tan-Sad, insurance, overalls; £128.—Oglesby, 12, Leaside Av., Muswell Hill N.10. [1710

1919 6-7h.p. Ariel and Coachbuilt Sidecar, 3-speed countershaft, clutch, Lucas head lamp, mat, watch, horn, spares, tools, delivered last month; price £155.—Platt, 2, Sheffield Rd., Warmsworth, Doncaster. [X7508

F.O.C.H. have a 1919 6-7h.p. twin Ariel coach combination, fully equipped, small mileage, perfect throughout.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9459

LATE 1913 3½h.p. Ariel Combination, coachbuilt, 3 lamps, fitted heavy Dunlop outer, Clincher inner, both new, all accessories, splendid climber, good condition, smart turnout; £60, no offer.—Cooper, 139, Green Lane, Stoneycroft, Liverpool. [1555

Auto-Wheels.

AUTO-WHEEL, splendid condition, cheap.—To be seen at Dyche's Garage (nr. Station), Cookham-on-Thames. [1455

WALL, just overhauled, new crank and shock absorber; best above 9 gns. secures.—287, High Rd., Leyton. [1897

AUTO-WHEEL, in good condition, really helps, 11 gns.; with lady back tandem 19 gns.—Rev. Thorp, Cossington Rectory, Bridgwater. [1397

WALL Auto-wheel, No. 44629, stored last 2 years, wants retiming, tyre and tube good; £8, offers.—Apply, Postmaster, Llanrhaeadr, Denbigh. [1431

AUTO-WHEEL, De Luxe Model, 1914, not much used, in perfect running order; can be seen and tried; £12; Herts.—Box 696, c/o *The Motor Cycle.* [X7581

AUTO-WHEEL, B.S.A. de Luxe model, in excellent condition, particularly good hill-climber, almost new tyre; £9.—Gregory, Russell Court, St. James' (opposite St. James' Palace). [1369

WALL Auto-wheel, with bicycle, for sale, both practically new, wheel been stored in Holland during war, as export prohibited; £21; no dealers, no offers.—Apply, Van Maurik, The Firs, Edinbridge, Kent. [1446

AUTO-WHEEL, 1914, perfect, fitted to 1919 (August) 3-speed cycle, 22in. frame, 26in. wheels, hardly soiled; £22, or separate, £11 each; would exchange for good lightweight, 2 or 4-stroke; cash adjustment.—Haynes, Church St., Longton, Staffs. [X7610

Bat-Jap.

4h.p. Bat-Jap, spring frame, 2-speed, drip feed, Senspray, re-enamelled; £35; London.—Box L5,174, c/o *The Motor Cycle.* [1377

BAT-J.A.P. 5-6h.p. 2-speed Combination, and accessories, tip-top condition, sidecar coachbuilt; £75.—89, Abbey Rd., St. John's Wood, N.W.8. Paddington 2423. [1921

BAT-J.A.P. Combination, 8h.p., magnificent sidecar, 2-speed, clutch, kick start, chain drive, good condition; 80 gns.—Seen Underdown, 64, Bellamy St., Balham, S.W. [1873

BAT-J.A.P. 4h.p., T.T., Grado, Bosch, B. and B., good tyres, belt, lamps, and horn, long brass exhaust; £29 secures; sidecar, £3; bargains.—Bartlett, Milford-on-Sea, Hants. [1539

BAT-J.A.P. 4½h.p., recently rebored, comfortable, spring frame, Bosch, B. and B., Mabon, h.b.c. clutch, adjustable pulley, take sidecar; trial; £35.—F. Andrews, Folly Farm, Alkham, Dover. [1410

Blackburne.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [4016

BLACKBURNE, brand new, just delivered from makers; £115.—J. Smith and Co., 16, Hampstead Rd., London. [1854

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Blumfield.

BLUMFIELD 4h.p. Sporting Combination, 3-speed, clutch, lamps, etc., splendid condition; £85.—G. A. Giles, Crown Cottage, King's Rd., Windsor. [1473

5-6h.p. Blumfield Twin-engined Solo Motor Cycle, mechanically perfect, Bosch waterproof mag., B and B. top feed, tyres and belt in good condition; £55.—Ridings, 32, Long St., Middleton, Lancs. [X7138

Bradbury.

BRADBURY 4h.p., 2-speed, combination; £58; trial.—Fuller, 1, Victoria Rd., Brighton. [1543

BRADBURY 3h.p., mag., B. and B., nearly new tyres, belt, spares; £23.—Harwood, Cefn Cottage, Weigate Rd., Ewell. [1342

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9575

BRADBURY, 4h.p., 1913, new condition, 2-speed, free, kick start, Bosch mag.; £45.—Swinton, 23, Francemary St., Ladywell, S.E. [X7605

BRADBURY 4½h.p. Combination, kick starter, 2 speeds, mechanically perfect; £55.—Watchmaker, 75, Leigh Rd., Leigh-on-Sea. [1849

4h.p. Bradbury and Sidecar, free engine, good tyres and belt, lamp, horn, speedometer, excellent order; £55.—Owen, 95, High Rd., East Finchley. [X7463

BRADBURY 4h.p., S.A. 3-speed gear, coachbuilt sidecar, been carefully used, trial run here; £74.—Whitmore, 41, Attleborough Rd., Nuneaton. [X7566

3½h.p. Bradbury, 2 speeds, Bosch, B. and B. carburetter, lamps, horn, nearly new Dunlops, chain drive, splendid order; trial; £45.—Scott, 67, Edinburgh Rd., Norwich, Norfolk. [X7271

BRADBURY 1915 6h.p. Twin Combination, just overhauled, and in perfect condition, new tyres on all 3 wheels, fully equipped; £95.—Capt. Carter, Lord Derby War Hospital, Warrington. [X7615

BRADBURY 4½h.p. Chain Driven Combination, countershaft 3-speed gear, kick starter, hand controlled clutch, splendid coachbuilt sidecar, new Dunlop heavy cover and tube on rear wheel, the whole outfit is in splendid condition, and perfect in every way; any trial given; £95.—Griffin, Coombend, Radstock, Somerset. [X7246

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SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., Official Dealers, Liverpool and Manchester. [7039

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3½h.p. Brown Combination, 2 speeds, kick starter, tyres good, new rear, all accessories, excellent condition; nearest £50.—Brasher, 4, Hawthorn Terrace, Dovercourt, Essex. [1796

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£50.—B.S.A., 4h.p., perfect.—Write, Box L5,031, c/o *The Motor Cycle*. [9676

B.S.A. 1920 Models; strict rotation.—Taylor's Garage, Wednesbury. [X6849

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B.S.A. Combination, 1914, 3 speeds, clutch, electric lights; must realise; £62/10.—51, Maplethorpe Rd., Thornton Heath, S.E. [1741

B.S.A., 1914, T.T., 3-speed, countershaft, chain-belt, spares, perfect condition; £78.—Anderson, 125, High St., Merton, S.W.19. [1928

1919 B.S.A. Combination, 4¼h.p., 3-speed, as new, not done 500 miles, horn, spare belt and plug.—Hedges, Commercial St., Hereford. [X7520

B.S.A., 1915, 3-speed, 4¼h.p., all chain drive, and 1919 Coronet coach sidecar; £96.—Halifax Motor Exchange, Union St. South, Halifax. [1589

B.S.A. Combination, C.B. sidecar, 3-speed, clutch, hub gear, Bosch, Amac, good tyres and condition; £60.—27, Maplethorpe Rd., Thornton Heath. [1444

1913 B.S.A., 3½h.p., 2-speed, countershaft gear, in excellent condition; price 40 gns.—Motors, Hampstead, 78, High St., Hampstead, N.W.3. [1633

B.S.A., 4¼h.p., 1919, all chain, new Oct. 1st, sidecar, only done 500 miles, splendid condition; £120, or nearest offer.—Butler, 84, Bradford St., Walsall. [X7325

B.S.A., 1915, 4h.p., 3-speed countershaft, clutch, tyres and belt as new; 65 gns.—King Edward Garage, Church End, Finchley. 'Phone: 278 Finchley. [1437

1916 B.S.A., 4¼h.p., 3-speed, countershaft, kick start, chain-cum-belt, perfect mechanical condition; £67/10.—Severn View Cottage, Sharpness, Glos. [X7579

B.S.A., late 1915, 4¼h.p., chain-cum-belt, K.S., 3-speed countershaft, Milford C.B. sidecar, good running order; £85.—93, Belvedere Rd., Burton-on-Treat. [X7130

1919 B.S.A., 3-speed, Model K, T.T. bars, 2 Lucas lamps, horn, discs, knee grips; any trial; first offer over £90 secures.—Baxter, Eden Vale, Morecambe, Lancs. [1736

B.S.A., 1917, all chain combination, 3 speeds, K.S., new Dunlops, mechanical horn, lamps, tools, etc., perfect, better than new; 89 gns.—5, Belgrave Rd., Slough. [X7504

B.S.A. Autowheel De Luxe, A1 order, any trial, with Triumph 26in. cycle; £22, or near offer; autowheel only, £12/12.—County Garage, Banbury. 'Phone: 158. [X7538

B.S.A. 3½h.p. (October, 1911), coachbuilt combination, 2 speeds, kick start, perfect condition, had little wear; trial; best offer.—P. Hawkins, Great Wyrley, near Walsall. [X7558

B.S.A. 4h.p., 1914, 3-speed, clutch, kick start, chain-cum-belt, in perfect condition, unused for 3 years; bargain, £60.—S., 125, Balmoral Rd., Gillingham, Kent. [X7431

B.S.A., 1917, all chain, smart coachbuilt sidecar, Lucas lamps, speedometer, mechanical horn; £90; without speedometer, £88; privately owned.—69, Bexley Rd., Erith. [1870

B.S.A. Combination, 2-speed, free, clutch, pedal start, Bosch, new belt, good tyres, lamp set, horn, tools, screen, etc., just overhauled; £75.—Hope, 26, Princes Parade, Finchley, N.3. [1705

1919 B.S.A. 4¼h.p., chain-cum-belt, 3-speed, countershaft, small coachbuilt sidecar, 2 head lamps and generators; £105.—J. Robinson, 28, Gratton Rd., West Kensington. [1914

B.S.A. Specialists.—All replacements in stock; B.S.A. hub gears, etc., repaired.—The County Cycle and Motor Co., Broad St., Birmingham. Tel. Midland 733. T.A. Comocyco, Birmingham. [8224

B.S.A., 1919, brand new, unused, Model K, 3-speed countershaft, just delivered; 99 gns.; makers' full guarantee, owner unable to use.—Hunt, 10, Ash church Grove, Shepherd's Bush, W. [1658

B.S.A., 1916, 4¼h.p., 3-speed countershaft, all-chain drive, clutch, kick start, all accessories, recently overhauled, splendid engine, excellent condition; 7 gns.—Mason, 68, Gordon Rd., Ealing, W. [1688

1916 B.S.A., all-chain, Millford C.B. sidecar, and Easting wind screen, excellent running order tyres as new, Lucas lamps and horn, speedometer, etc. £95.—T., 49, Wyndham Rd., Salisbury. [X714

B.S.A. 3½h.p., free engine model, pedal start, Montgomery cane sidecar, Lucas lamp, horn, Stewart speedometer, good condition, stored 3 years; £60.—Stones Garage, London Rd., Westcliff-on-Sea. [155

1915½ B.S.A., 4¼h.p., chain-cum-belt, 3-speed countershaft, kick start, sidecar, lamps, etc., new tyres, low mileage; £105, or offer; seen any time.—Ward, 23, Heath Crescent, Graigwen, Pontypridd. [X728

B.S.A. Combination, 1915, chain-belt, 3-speed countershaft, etc., F.R.S. head, sidecar and rear lamp, tyres new, spare tube and belt, stored 2 years, splendid condition; £75.—Write, H., 19, Cardigan Rd., Richmond, Surrey. [200

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)CTOBER, 1919, Douglas, 2¾h.p., run only 300 miles, absolutely splendid machine; £80.—rite, or call mornings, Smith, 4, Christchurch Rd., mpstead. [X7243

)OUGLAS 2¾h.p., 1915, 3-speed Colonial model, semi T.T. bars, lamps, mechanical horn, kuee ps, just overhauled; £62.—T., 27, Holwood Rd., omley, Kent. [1531

3h.p. Douglas, standard W.D., 1919 (August), speed-4 ometer, mechanical horn, lamps, spare belt, tube, l chain; £88.—7, Grove Terrace, Burton Rd., Wittingn, Manchester. [X7530

)OUGLAS, late 1914, in excellent condition; £50, with spares and accessories. Wanted J.A.P. .p., condition immaterial.—Sheppard, 108, The escent, Slough. [1771

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)OUGLAS 1919 (February) receipt shown 4h.p. Combination, lighting, tools, spares, tyres good; 0 gns.. No offers.—175, Camberwell Grove, S.E.5. hone: Brixton 286. [1809

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)OUGLAS 4h.p. Combination, 1916, 3-speed, new valves, Klaxon horn, good running order; £100; en at week-end only.—Neville, 12, St. James's Mans, West End Lane, N.W.6. [1775

)OUGLAS, 2¾h.p., excellent condition, not ridden during war, new back Dunlop tube, lamp, horn, mp, spare tyre, various sundries; £38.—Ranger, Merood, Woodbridge Rd., Guildford. [X7329

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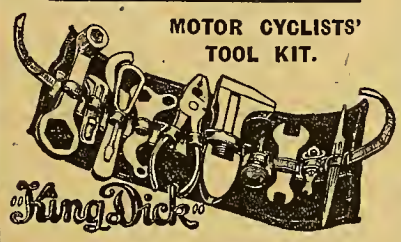

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Enfield.

2¼h.p. 2-stroke Enfield, 1917, good condition; offers over £50.—Milsom, Pontnewynydd. [X7385

1919 Enfield 2-stroke, 2¼h.p., perfect condition, full equipment; £50.—A.B.W. Tel.: Holborn 26. [2011

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0031

ENFIELD.—Excellent delivery latest 1920 8h.p. combination models.—Enquire Parker's, Bradshawgate, Bolton. [X7424

ENFIELD 1914 6h.p. Combination, C.B. sidecar, in good running order; £90.—House, 119, King St., Hammersmith. [1709

ENFIELD Combination, 6h.p., 1916; nearest £120; any evening or Saturday afternoon.—Thomas, 34, Alexandra Rd., Croydon. [1368

ENFIELD 6h.p. Combination, perfect, accessories, insurance; £85; close offer.—Sutton, Royal Garage, Sutton Coldfield. [X7507

ENFIELD 2¾h.p., 2-speed, lamps, horn, tools, good running order, new tyres; £40.—J. Jilks, Upper Tysoe, Kineton, Warwick. [X7523

ENFIELD Combination, 1918, Lucas dynamo lighting, new condition; £140, or near.—49, Passey Rd., Moseley, Birmingham. [X7389

1916 Enfield Combination, lamps, horn, tools, speedometer, etc., little used, excellent condition; £120.—H. Wright, Arlesey, Beds. [1551

ENFIELD 6h.p. Combination, with child's seat in sidecar, lamp, horn; after 6 p.m.; £90.—120, Estcourt Rd., South Norwood. [1754

1919 6h.p. Royal Enfield Combination, fully equipped, and low mileage, insured; £148.—Greyshott, Cresthill Av., Grays, Essex. [1984

MOTOR CYCLES FOR SALE.

Enfield.

2¾h.p. Enfield Twin, Bosch mag., Amac carburetter, brand new back tyre, in good order; £32.—22, Rockford Rd., Basingstoke, Hants. [X7318

3h.p. Royal Enfield, 1915, 2-speed model, kick start, twin-cyl. engine, smart and serviceable; £47/10. —Wauchope's, 9, Slice Lane, London. [1954

ENFIELD 1917 3h.p. Twin, under 3,000 miles, 2-speed, kick start; £60; owner bought combination. —Elizabethan House, Boreham Wood, Herts. [X6640

6h.p. Enfield and Sidecar, just overhauled, electric lamps, luggage grid, 700×80 car tyres, top-hole condition.—Egerton's, Northgate St., Ipswich. [X7644

ENFIELD Motor Cycle and Sidecar, 6h.p. 1916 model, twin, done little work, good as new, no agents.—A. G. Stacey, Bush Hill Cottage, London Rd., Enfield. [1469

1917 Enfield 3h.p. Twin, 2-speed, K.S., lamps, horn, accessories, recently overhauled by makers at cost of £16, perfect order; £70.—Turner, Ashbrook, Hitchin, Herts. [1769

1918 6h.p. Enfield Combination, war model, Bosch mag., lamps, horn, tyres as new; view after 5 o'clock.—Allan, 8, Polygon Mews, Porchester Place, Edgware Rd., W. [1588

1916 Royal Enfield 6h.p. Combination, in splendid condition, little used, with sidecar, speedometer, lamps, etc.; £125.—W. Wilkes, Castle Foregate, Shrewsbury. [X7613

ROYAL ENFIELD 1916 Twin 3h.p. Combination, wind screen, lamps, tools, good running order; £90, near offer.—Seen Underdown, 64, Bellamy St., Balham Hill, S.W. [1875

ROYAL ENFIELD Combination, 1919 model, 6h.p., only driven few hundred miles, 700×80 tyres; £150, or near offer; owner purchased car.—Box L5,221 c/o *The Motor Cycle.* [1609

1919 6h.p. Enfield Combination, electric lighting, horn, screen, apron, tyres as new; £155; buying car; seen London or Brighton, appointment.—Owner, 55, Lee Rd., Blackheath. [X7274

3h.p. T.T. Enfield, 1914, stored during war, fast, condition perfect, large F.R.S. lamp, horn, spare tube; £47 for immediate sale; seen any time.—Hood, White Hart, Ely, Cambs [1850

ENFIELD 3h.p., 2-speed, recently overhauled, plated and enamelled by makers, engine, tyres, etc., in first-rate condition; £50, or near offer.—Watson, Whitecroft, Forest Row, Sussex. [X7505

ENFIELD 2¾h.p. Twin, 2-speed, Bosch mag., electric horn, generator and all accessories, recently overhauled, splendid condition and appearance; £45. —Fenwick, 52, Waverley Av., Wembley. [X7387

ENFIELD Combination, 6h.p., 1917 (late), hood, wind screen, apron, Lucas lamps, horn, new tyres, tools, just overhauled; £140 net; Birmingham district.—Box 693, c/o *The Motor Cycle.* [X7524

ENFIELD 1919 3h.p., tools, lamps, mechanical horn, spare inner tube, 800 miles, perfect condition; 75 gns.; inspection by appointment.—Gerald Thomas, Eryldon, Caswell Hill, Swansea [X7411

1915 Enfield Combination, screen, hood, etc., very fair order, good tyres; severe trial given; £93, or exchange for solo and cash; private seller; bargain. —Green, 78, Newlands Park, Sydenham, S.E.26. [1795

ENFIELD 3h.p. Twin, chain drive, 2-speed and free, 1916 model, practically new condition, and very little wear, clean and smart, and ready to ride away; £87, cash down.—Write P. Willmott, Church Path, Wanstead. [X7343

ENFIELD Combination, 1915, 6h.p., very powerful engine, climb anything, excellent mechanical condition, has been carefully driven; bargain, £90, no offers.—Jarrett, Grays Lodge, St. Leonard's-on-Sea. 'Phone 700. [1836

6h.p. Enfield Combination, 1915-16, Lucas lamps, horn, speedometer, Tan-Sad, luggage grid, Cameo wind screen, overall cover, just been thoroughly overhauled, new chains throughout, splendid condition; £130. —6, Forrest St., Latchford, Warrington. [X7277

ENFIELD 1916 6h.p. Combination, complete, with luggage grid, hood, 3 lamps, speedometer, new back outer cover and tube, new driving chain, just overhauled, excellent condition; £145; seen by appointment.—142, Belgrave Rd., Wanstead, E.11. [1638

6h.p. Enfield Combination, late 1916, wind screen, pillion seat, lamps and generators, Stewart mechanical horn, spares, stored during restrictions, mechanically perfect and practically unscratched; £120.—W. James, 36, King St., Cwm, nr. Newport, Mon. [X7421

1919 Royal Enfield 6h.p. Combination, fitted with 3 Lucas electric lights and 2 large accumulators, Cameo wind screen, Tand-Sad seat, Gloria mechanical horn, spare chain, luggage grid on sidecar; the whole outfit in beautiful condition; £155.—Sampson, Quinton Rd., Coventry. [X7639

ROYAL Enfield 6h.p. Combination, practically new condition, unscratched and guaranteed perfect, not run 1,500 miles, original Palmer cords, tread unworn, Cameo wind screen, apron, 3 lamps, luggage rack, horn, full tools, instruction manual, etc., magnificent turnout; best offer over £130.—Moorside, Hereford Rd., Harrogate. [X7242

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ENFIELD 1918 6h.p. Combination, as standard field specification, has just been completely ov hauled, and fitted with new chain, new rear tyre a tube, and sundry small parts, other tyres as ne mechanically and in appearance absolutely perfect, cessories include P. and H. lamps (three), and 2 gen ators, and mechanical horn; a real end of season b gain, £126; guaranteed perfect.—Watson, 132, Hi St., Aldeburgh, Suffolk. [18

Excelsior.

ONE 1919 2-stroke 2-speed Model British Excelsi just delivered.—P. H. Allin and Sons, 12, Brid St., Cambridge. [14

AMERICAN Excelsiors.—Place your orders now save disappointment. 'Phone 943.—Horswill, Bridge St., Chester. [21

EXCELSIOR 1919 2-stroke, 2-speed, as new, mi age 100; £60.—Apply, H. E. Thomas, Avee House, Gravesend. [14

LANCASHIRE, Cheshire, North Wales, Isle of M Only.—American Excelsior; enquiries.—J. Bla and Co., Official Dealers, Liverpool-Manchester. [70

BRITISH Excelsior, now in stock for immedis delivery, 2½h.p., 2-stroke, 2-speed, £58/16; wi clutch and kick starter, £64/17/6.—The Premi Motor Co., Aston Rd., Birmingham. [94

AMERICAN Excelsior, new and latest model 7-9h. 3-speed, with Montgomery De Luxe sidecar immediate delivery from stock; £160.—The Premi Motor Co., Aston Rd., Birmingham. [94

MOTOR Cycle, British Excelsior, Bosch mag., St mey 3-speed hub and clutch, Lucas lighting s King of the Road, Amac carburetter, drip feed lub cation, everything in good order; best offer accepted Apply, Rev. W. Turner, Rose Ville, Knighton, Ra [X69

AMERICAN Excelsior, 1916, 8-10h.p., 3-speed, ki start, Bosch, new chain, underslung streamli wicker sidecar, in excellent running condition; ch cheque for 100 gns. secures, or trial run by appoin ment.—Capt. William Lait, Woodcombs, West Byfle Surrey. [13

1916 American Excelsior Combination, 7-9h.p., speeds, hand and foot clutch, kick starter, wi handsome Sandum coachbuilt sidecar, disc whe throughout, lighting set complete, new tyres, enamell battleship grey and red, absolutely sound, powerful a sweet running engine, magnificent turnout; any trial examination invited; £115, or best offer.—A. G. Ro Highfield, Gainsborough. 'Phone 36. [X75

F.N.

F.N., 5-6h.p., excellent condition, very fast on hil £42, offers.—Atkins, Crowhorough. [13

F.N., 4-cyl., 3-speed, clutch, Bosch, Amac; £40 Collins, Casleton, Farnham, Surrey. [X75

2¼h.p. F.N., 2-speed, hand-controlled clutch, ju overhauled and rebushed, good condition; £3 after 6 p.m.—Keen, 101, The Avenue, West Ealin W.13. [16

1914 2¾h.p. F.N., shaft drive, 2-speed, clute lamp, horn, pump, and tools, very good con tion; £35.—C. Sharp, Gt. Doddington, Wellin borough, Northants. [X75

F.N. 4-cyl., 5 to 7h.p., late model, 2-speed, clute kick start, shaft drive, external and internal brak cantilever spring forks, enamelled Henderson blue, sta walking, pulls like a car, make fine sidecar machin £40, or nearest.—Pearson, 110, Marston Lane, Co croft, Bedworth. [X74

F.N. Olivos, 4-cyl., 2-speed, clutch, converted r chanical valves, saddle, tanks, semi T.T. ba discs, enamelled yellow and black, Claudel carb retter, 80 m.p.g., 5 to 55 m.p.h. on top, splend order, a unique 'bus, with aero engine power a road with 2-stroke docility; offers.—Olivos Moto 120, Bollo Bridge Rd., Acton, W.3. [15

Harley-Davidson.

LATEST Brand New 7-9h.p. Harley-Davidson; wi offers?—Reynolds, Waterbeach, Cambs. [15

HARLEY-DAVIDSON.—Secure your order no deliveries now expected.—Parker's, Bradsha gate, Bolton. [X74

1919 Harley-Davidson, brand new Model J, j arrived, electrical equipment; £170.—Box L5,1 c/o *The Motor Cycle.* [1

1917 7-9h.p. Harley-Davidson, dynamo, mag., e trically equipped; any reasonable trial; £16 Sherman, Carr Vale, Chesterfield. [X7

HARLEY-DAVIDSON C.B. Sidecar, perfect or new tyres, engine thoroughly overhauled; £1 or nearest.—Geall, 26, George St., Hove. [1

HARLEY-DAVIDSON, 1915, Remy electric lig ing, Mills-Fulford sidecar; £110.—56, Cam Mews, N.W.1, or 245, Euston Rd., N.W.1. [1

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James.

19 6h.p. James and Sidecar, mileage 1,500, complete with Klaxon, wind screen, lamps, etc.—to Hall, 4, Anerley Park Mansions, Anerley, 0. [1899

18 James Combination, Lucas dynamo lighting and horn, speedometer, James sidecar, lovely con-, climb anywhere; £120.—Broadway, Stalbridge, t. [1792

MES 1919 5-6h.p. Twin Coachbuilt Combination, as new, 3 lamps, horn, Cameo wind screen, ge grid; any trial; 138 gns.—30, Crystal Palace Rd., Sydenham. [1687

19 5-6h.p. James Combination, beautifully kept, run 1,200 miles, plenty of spares and all fittings; r bought car.—C. L. H. Humphreys, 28, Victoria London. Tel.: Victoria 5228. [1597

MES 1915-16 Coach Combinatios, 4¼h.p., 3-speed, clutch, Jones speedometer, horn, lamps, excellent condition; £100, or near offer.—Led-20, Bridge St., Berwick-on-Tweed. [X7438

MES 4¼h.p. Single, roomy coach combination, 2-speed, kick starter, lamps, speedometer, me-ical horn, splendid running order.—Davison, 34, ent St., Balsall Heath, Birmingham. [1494

19 5-6h.p. James Combination, perfect, lamps, horn, and tools, spare, new Rom combination, and tube, speedometer; sacrifice, £150, or near any trial.—County Garage, Banbury. 'Phone: [X7539

MES Combination, 1919, 5-6h.p., 3-speed twin, de luxe sidecar, wind screen, tools, electric ing, ready to ride away; £140; can be seen any ; owner bought car.—Tait, 20, Greenhill Crescent, ow. [X7577

h.p. James Combination, coachbuilt sidecar, 3 speeds, chain driven, speedometer, lamps, tools, not ridden 5,000 miles, in first-class order; price —Apply, F. L. Richardson, 2, Church Rd., Upper ood, S.E.19. [1387

MES 4¼h.p. Combination, 1916 (been stored), quite equals new, 3-speed, kick start, 3 lamps, Klaxon lometer, and all accessories; genuine bargain; st £100.—Can be seen, 18, Portman Mews North, man Sq., W.1. [1833

MES Motor Cycle, 4½h.p., with Canolet sidecar, complete with Bosch mag., luggage carrier, Jones lometer, horn, electric head lamps and side lamps, anulator, Brooks saddle and tools, for sale; £85; by appointment.—Write, C.A.B., 48, Queen's Rd., .8. [1489

J.A.P.

h.p. J.A.P., just overhauled; £25.—A. H. Groves, Magor. [1500

.P. 3½h.p., enclosed mag., in good order, £35; smart sidecar, £10.—Apply, Geary, 155, Uxbridge Burton-on-Trent. [X7475

.P. 4h.p., T.T., weatherproof Bosch, Amac, lamps, tools, pump; £50; view Saturday.—Smith, Iona, ield Av., Woodford Green. [X7341

.P., T.T., 8h.p. 1915 J.A.P. engine, enamelled red, in first-class condition, very fast; price 55 -Motors, Hampstead, 78, High St., Hampstead, .3. [1629

.P. 6h.p. Twin, 2-speed, free engine, watertight Bosch, sporting coachbuilt sidecar, wind screen, wheels, petrol carrier; £80.—43, Devonshire Rd., st Hill. [1412

J.E.S.

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NCASHIRE and Cheshire Only.—J.E.S. motor cyclette and attachment sets; enquiries invited.—leke and Co. Liverpool-Manchester. [7042

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h.p. J.H., M.A.G. engine, fitted with underslung sidecar, countershaft 3-speed Sturmey-Archer gear, engine, and h.b.c. clutch; £110.—Wauchope's, 9, Lane, London. [1955

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NO-VILLIERS 2-stroke, 1917 type, owing to war delivered 1919, lamps, etc.; £45/10.—55, Tenison Cambridge. [1364

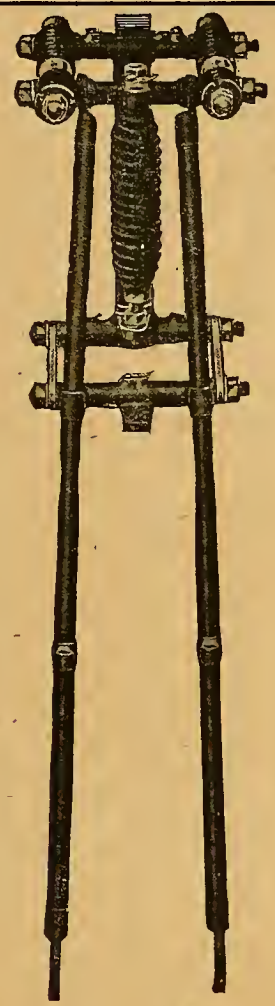
Lea-Francis

A-FRANCIS 1920 Model, brand new, 4b.p., combination, Montgomery sidecar; £135.—Broom, Marylebone Lane, Oxford St., W. [1750

A-FRANCIS.—Orders are now being booked for future delivery of these splendid machines.—klebridge, 133, Sloane St., London, S.W.1. [X3511

A-FRANCIS, 1919. Place your name on our waiting list for delivery of these aristocratic its.—A. J. Sproston, 198, Gt. Portland St., W.1. [6612

19 Lea-Francis and sidecar, condition as new, fitted with P. and H. lamp, Montgomery sidecar; £140. g and Harper, 6 and 7, Bridge St., Cambridge. [1347



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Levis.

LEVIS Popular, good tyres, Klaxon, tools, etc.; £35.—A., 18, Emperor's Gate, S.W.7. [1866

LEVIS 2¾h.p., Bosch waterproof, lamps, splendid condition; £32.—14, Phœnix St., Euston, N.W. [1975

LEVIS Popular, 1917, perfect condition; £40; owner bought heavy machine.—Box 697, *The Motor Cycle*. [X7597

LEVIS 2¼h.p., 1915, Busch, Amac, Dunlops, perfect; 33 gns.—Kettell, High St., Colnbrook. [X7335

LEVIS Popular, 2¼h.p., 1916, faultless; £36/10; gift.—Ball, 49, High St., Kingston-on-Thames. [X7237

2¼h.p. Levis, in splendid running order; first offer over £35 takes it.—Apply, 89, Wyley Rd., Coventry. [X7643

LEVIS Popular, late model, splendid condition; £45, or near offer.—58, Granville Park, Lewisham, S.E.13. [1429

LEVIS Popular, new July, 1919, little used, two patterns of handle-bar; £42.—Dr. Woodfolde, Ashwell, Baldock, Herts. [X7395

LEVIS Popular, as new, fitted with lamps and mechanical horn; price £45.—49, Annesley Av., The Hyde, Hendon, N.W.9. [1730

LEVIS Popular, late model, Lucas lamp, horn, practically new condition; 40 gns.—Richards, The Square, Penkridge, Staffs. [X7135

LEVIS 2-stroke, single and 2-speed models.—Early deliveries from the appointed agents, Lloyd and Son, 29, Station St., Lewes. [9582

1919 Brand New Levis 2¼h.p. in stock, unused.—Lewis, 19a, Upper Charlton St., Carburton St., off Gt. Portland St., W.1. [1668

LEVIS 2¼h.p. Popular (June), perfect condition, unscratched, P. and H. lamp; £46, or offers.—E. T. Loveluck, Boot Maker, Kenfig Hill. [X7375

LEVIS 2¼h.p. 2-stroke, fully equipped; great bargain, £35.—Speechley, 1, Cannersbury Lane, opposite Red Lion, Acton Hill, W.3. [1711

LEVIS, 1915, 2-speed, new lamps, perfect running order; £40.—Carter, 82, Leghorn Rd., Harlesden, N.W.10. 'Phone: 176 Willesden. [X7580

LEVIS Popular, the finest 2-stroke in the world; book now for early delivery and super-service.—The Walsall Garage, Walsall. Tel.: 444. [9578

1919 Levis 2½h.p. Model de Luxe, 2-speed, all-chain drive, all accessories, ridden one week only; cost £70, what offers?—41, Halifax Rd., Cambridge. [X7517

LEVIS Popular, 1917 model, excellent condition, new mag., belt and tyres; £38; inspection Saturday afternoon or Sunday.—King, 109, Beecham Rd., Reading. [1863

LEVIS, 1916, E Model, sidecar combination, excellent condition, only run 2,000 miles, complete; £60; seen by appointment.—George, Roden Av., Kidderminster. [X7592

LEVIS 1914-15 2¾h.p., 2-speed, Bosch, Senspray, good tyres, Dunlop-Kempshall, Triumph belt, head and rear lamps, ride away; £44.—156, Dalmally Rd., Addiscombe, Croydon. [1917

Lincoln-Elk.

3½h.p. Lincoln-Elk (1913 believed), Grado gear, Bosch, lamp set, mechanical horn, new tyres and belt, spare belt and tube, complete spares for mag., carburetter, engine, etc., full kit of tools, everything in first-class order; £31, lowest; seen any day between 3 and 6. —Gist, 9, Brynmorgan Terrace, Abertillery, Mon. [X7332

L.M.C.

L.M.C., 4h.p., 3-speed, Bosch, Senspray, excellent condition, ride away; £39.—Atkins, Crowborough. [1372

ONE 1919 4½h.p. L.M.C., 3-speed, clutch, kick start, brand new.—P. H. Allin and Sons, 12, Bridge St., Cambridge. [1486

1915 L.M.C., 4½h.p., 3-speed countershaft, kick starter, hand clutch, fine condition; £75; after 6 p.m.—133, Westcombe Hill, Blackheath, S.E. [1839

Matchless.

MATCHLESS, Victory model, lamps; £160; exchange lightweight.—17, Abbey Rd., Croydon. [1885

CROW Bros., High St., Guildford, West Surrey agents for the new Matchless.—Order now for early delivery [4085

MATCHLESS.—Latest 1920 spring frame models; guaranteed early delivery.—Parker's, Bradshaw-gate, Bolton. [X7427

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Matchless.

JONES' Garage, special agents for Matchless, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0032

1914 Matchless, 4h.p., hand clutch, new tyres, T.T. bars, lamp, horn, tools; £55.—Sadler, 31, Pembroke Sq. Kensington. [1439

MATCHLESS Combination, 8h.p. J.A.P., new tyres, belts, lamps, 2-speed, good running order; £70.—Lawrence, Bourton-on-the-Water. [X7466

MATCHLESS 8h.p. Coachbuilt Combination, 2-speed, K.S., speedometer, lamps, wind screen, etc.; £85, lowest.—3, Islingword Rd., Brighton. [1702

6h.p. Matchless-Jap, 2-speed, coachbuilt combination, step body, luggage grid, speedometer, tools, horn, pedal start; £80.—39, Church St., Tewkesbury. [X7482

MATCHLESS Combination, 1915, 4h.p. single, 3-speed, clutch, K.S., C.B. sidecar, good running order; first cheque £70.—Hallahan, Queen's College, Cambridge. [1433

1920 Matchless Combination, brand new Model H, latest spring frame, wind screen, etc.; £190, or nearest offer; Cambridgeshire.—Box L5,214, c/o *The Motor Cycle.* [1508

MATCHLESS Model H., spring frame, done 200 miles, spare wheel, screen, horn, tools, etc.; £190. Apply after 6 p.m.—Washington, Pembury, Weston Park, Ditton. [1561

MATCHLESS Victory Model Combination, 4 interchangeable wheels, Lucas lamps, complete, only used 500 miles, good as new; £160; Essex.—Box L5,215, c/o *The Motor Cycle.* [1509

MATCHLESS 8h.p. Combination, 1919 Victory Model, hood and screen, all usual accessories, new July, only done 800 miles; owner going abroad; bargain, £175.—Captain Yearsley, 31, Chatsworth Rd., Brighton. [1403

1917 Matchless Combination, M.A.G., 7-9h.p., 3-speed, excellent condition, hood, screen, horn, luggage and petrol carrier, tools, etc., electric lighting, accumulator, 3 lamps, carefully ridden; after 7; £160.—Perry, 3, Lushington Rd., Harlesden, London. [1566

1915 Matchless Combination, 7-9h.p. M.A.G. engine, seat 3, 3-speed countershaft, clutch, kick starter, perfect condition, speedometer, special wind screen, lamp, 3 spare tubes, etc.; £115.—2, Grenville Place, South Kensington, S.W.7. Tel. No.: Western 2946. [1690

MATCHLESS.—The new Model H spring frame will shortly be ready; write and book for earliest delivery; Lucas dynamo lighting at option; decide now, and order the best combination; no premium, and 5% on deposit to date of delivery.—J. Tassell, 1a, Bloomfield Rd., Plumstead. [6798

F.O.C.H. for the new Model H Matchless Combinations.—Book your order now for the very earliest 1920 delivery. Our motto, "Strict rotation and no preminms."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [8616

F.O.C.H. have a late 1918 Victory model 8h.p. Matchless coach combination, 3-speed, clutch, kick starter, spare wheel, lamps, horn, tools, perfect throughout.—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9466

MATCHLESS Combinations.—Book your orders early from T. J. Ross, 86, High Rd., Lee, S.E., for 1920 spring frame 8h.p. Matchless combinations; a H model always on view at above address. Deliveries guaranteed strictly as per order received. Retail price as ruling at time of delivery. [1505

MATCHLESS-J.A.P. Combination, 1915, 8h.p. engine, completely overhauled by J.A.P. (invoice to show), 3-speed, clutch, Bosch, speedometer, lamps, spare wheel, K.S., dissembled and enamelled Matchless grey, not been on road, as new from makers, ready few days; £150.—Neville Winlove, Hunstanton. [1337

MATCHLESS, T.T., 1915 8h.p. J.A.P., single speed, Bosch, Amac, cut-out, knee-grips, horn, in magnificent condition throughout, engine as new, fast and powerful, enamelled smart grey, sporting and reliable; any examination or trial invited; £65, or best offer.—W. Rose, Highfield, Gainsborough. 'Phone 36. [X7551

MATCHLESS Combination, new in November, 1918, tyres good, spare wheel, luggage carrier, Lucas head, side, and tail lamps, Klaxon horn, mirror, new sidecar springs, very carefully used, complete, and ready to go anywhere; £150.—Julians, 84, Broad St., Reading, 'Phone 1024. Biggest dealers in the South. [0076

MATCHLESS Combination, new August, 1919, 3 Lucas-acetylene lighting sets, Lucas horn, 4 700×75 Palmer cord light car tyres, spare wheel, Easting wind screen, special lubrication, tuned up for competition work, winner of silver cup, 2 gold medals, and fuel prize; offers; seen, London.—Rex Mundy, Box 683, c/o *The Motor Cycle.* [X7128

MATCHLESS Combination, July, 1919, 8h.p., specially equipped with wide handle-bars, adjustable to any angle, spare wheel, all interchangeable, discs to all wheels, D.A. cylinder, all lamps, special large footboards with mudshields, Dunhills wind screen, only done 1,000, very fast and smart; £200; any trial and inspection by appointment.—G. L. Hawkins, The Nag's Head, Lechlade, Glos. [1801

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1919 Metro-Tyler 2-stroke, fitted with lamps, month's running.—Can be seen at Perr Garage, Ashford, Middlesex. [1

METRO-TYLER, 1919, discs, long exhaust, per condition throughout; £54.—Boniface, 55, rose Av., Wimbledon Park, S.W. [1

WE are now in a position to give immediate livery of the sporting Metro-Tyler lightweight list prices.—Edward and Gill, 118, Hampstead N.W. [1

METRO-TYLER, 1919, absolutely as new, run miles, lamps, generator, Klaxon, etc., barga best offer over £49; viewed in London.—May, Bar House, Wheathampstead. [1

2½h.p. Metro-Tyler, 1919 engine, 2-stroke, fitted Ju not done 400 miles, splendid condition, Dun tyres like new, 1914 frame; £42.—38, Chamberla Rd., Kensal Rise, N.W.10. [1

Minerva.

3½h.p. Minerva, B. and B., cradle plates, exhau good condition, less mag.; £6/10.—Langlan Leadenham, Lincs. [X7

MINERVA 2½h.p., B.B., Dunlop, Michelin cov just overhauled and enamelled, running ord bargain, £17.—Askey, Swallow Rectory, Caistor, Linc shire. [X7

Monarch.

TWO 1919 Brand New Monarch 2¾h.p. 2-str 2-speed motor cycles; list price, £57/10.—Lev 19a, Upper Charlton St., Carburton St., off Gt. Pc land St., W.1. [1

Monopole.

MONOPOLE 2-stroke, late model Villiers, drip fe spare cover, splendid condition; £30.—374, Str Stanton Rd., Coventry. [X7

Moto-Reve

MOTO-REVE Lightweight, mag., B. and B., tyre, tube back, needs adjusting, stored war; ow lost arm; first £18 secures; carriage paid.—F. Thorn 30, Broad St., Griffithstown, Mons. [1

Motosacoche.

MOTOSACOCHE 2½h.p., Bosch, Druids, Dunlo lamps, horn; £20.—103, St. Albans Av., Ch wick, W. Saturday after 3. [1

1¾h.p. Motosacoche Unit, thorough good order; exchange for Auto-wheel, or sell £10.—1 Walton Rd., East Molesey, Surrey. [1

New Hudson.

NEW HUDSON.—Immediate delivery latest 6h.p. speed combinations.—Parker's, Bradshawga Bolton. [X7

3½h.p. New Hudson, 3-speed, tyres, tubes, and b new; £37, or nearest.—Bailey, Brampton, Madl Hereford. [X7

NEW HUDSON 2½h.p., Bosch mag., just ov hauled, good as new; £45; near offers.—Houlto Bath House, Mansfield. [X7

1914 New Hudson, 3½h.p., 3-speed, clutch, ki start, wicker sidecar, perfect running ord powerful; £60.—Address, Croad, Newmarket St., L bury. [X7

NEW HUDSON and sidecar, 3½h.p., 3-speed, Bos splendid condition, and running order, all acc sories; £45.—Evans, Royal George Hotel, Pembrok S. Wales. [1

1919 New Hudson, August, 2-stroke, 2-speed, perfe condition, tools and hors; £59, or part excha combination; appointment.—Anderson, Swiss Cott Queensville, Stafford. [X7

NEW HUDSON Combination, 1919 (July), litt used, 3-speed, hand-controlled clutch, large tyr Klaxon, speedometer, mirror, electric lamps, spri luggage grid, full insurance; £135.—45, Quentin R Lee, S.E.13. [1

1916 New Hudson Big Six Combination, 3-spe countershaft, lamps, horn, and spares, only us Sundays, after 2 years' storage, condition and appe ance equal to new; best offer over £120; Leede distri —Box 694, c/o *The Motor Cycle.* [X7

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NEW IMPERIAL.—Caffyns, Ltd., Eastbourne, booking orders for delivery shortly. [0

NEW IMPERIALS.—Call and inspect the lat models.—Sole London agents, Rey's, 173, Gre Portland St. 'Phone: Mayfair 879. [9

BROOK Bros., Burnham-on-Sea, have a 1916 N Imperial-Jap to offer, complete with 2-speed ge box, footboards, lamps, horn, etc.; £43 nett. [9

NEW IMPERIAL, 8h.p., issued 1918, very lit used, Canoelet sidecar, Klaxon, electric ligh speedometer; £140.—Brown, 11, Manor Grove, Beck ham. [1

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, count shaft, lamps, toolbag, good plating and engin mechanically sound; £38.—37, Malden Rd., Kent Town. [1

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NEW IMPERIAL, W.D. model, 1919, 8h.p. J.A.P., 3-speed, enclosed chain drive, Sunbeam sidecar, and new, 6 months' guarantee from date of purchase: £35.—Write or call, Cock Hotel, High St., N. [1339

NEW IMPERIAL-J.A.P., 2¾h.p., 1917, 2-speed countershaft, Klaxon, Lucas lighting set, Dunlop studded, with spare tube and belt, excellent condition; sacrifice £46, no offers.—27, Elm Crescent, Kingston. [1575

N.O.C.H. for New Imperials, sole agents for Hampstead and district.—Book your order now for the very earliest delivery of 1920 models; a few this year. F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [8620

1919 New Imperial, 8h.p. J.A.P., and 5-point suspension sidecar, Watford speedometer, lamps, Klaxon, tools, spares include valve, springs, front chain, and engine sprocket, done about 4,000 miles, in excellent condition; only reason for selling, owner going abroad.—Marshall, Woburn, Beds. [X7518

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NORTON.—Excellent delivery all models; secure your order now.—Parker's, Bradshawgate, Bolton. [X7426

NORTON 1915, Brooklands special medal winner, Southend and Luton; £85.—Beach, Rosedale, Wervidge. [1715

1919 Norton, fitted with Bonniksen speedometer, P. and H. lamp, horn, rear lamp, couchbuilt sider, in very nice order; £130.—King and Harper, 6 and Bridge St., Cambridge. [1349

NORTON 3½h.p., T.T. model, 3-speed, 1919 (September), Montgomery sidecar, Lucas accessories; what offers.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [X7512

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N.S.U. 3½h.p. Combination, 2-speed, free engine, Bosch mag., B. and B., torpedo sidecar, ride away; bargain, £45; offer.—35, Theberton St., Islington, N. [1764

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STANLEY RUSSELL, Newport, sole Isle of Wight agent for N.U.T.-J.A.P. motor cycles; early delivery [4019

N.U.T., 3h.p., o.h.v., T.T., overhauled, fast; price £55 gns.—Motors, Hampstead, 78, High St., Hampstead, N.W.3. [1636

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O.K. Junior, chain and belt, 2-speed, new tyres; £45.—62, Ufton Rd., Dalston, N.1. [1517

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O.K. Junior, 1915 model, new tyres, head and tail lamps, thoroughly overhauled; £40, or close offer.—Lloyd, Motors, Lewes. [1599

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2¾h.p. Omega-Jap, 2-speed, as new, fitted with lamps and mechanical horn; price £52/10.—49, Anneley Av., The Hyde, Hendon, N.W.9. [1731

OMEGA-J.A.P. Model de Luxe and 2-speed Models; 68 gns. and 58 gns. respectively.—Stocked by Lloyd and Son, 29, Station St., Lewes. [9584

OMEGA-J.A.P. 2¾h.p., 2-speed countershaft, fine condition, new September, 2 lamps, horn, pump, tools, as new; £58. Rover wanted.—Deeming, Polesworth, Warwickshire. [1817

P. and M.

P. and M. and Sidecar, in good order, 2 speeds; trial; £38.—85, Church Rd., Willesden. [1363

1919 P. and M. Combination, and horn, just delivered; £120; after 6.—64, Gladsmuir Rd., Highgate, N.19. [1616

P. and M., 1915, 3½h.p., and P. and M. coach sidecar; £89/10.—Halifax Motor Exchange, Union St. South, Halifax. [1592

1919 P. and M., R.A.F. model, good condition, lamps, tools, etc.; best over £85.—Mosley, 31, Hodges St., Wigan, Lancs. [X7281

P. and M., 3½h.p., 2-speed, F.E., Bosch mag., splendid condition, smart turnout, lamps, etc.; £45, near offer.—Mr. Richards, 67, Gt. Dover St., Borough, S.E.1. [X7296

1919 P. and M., 3½h.p., 2-speed, F.E., kick start, Lucas lamp set, perfect condition, just as new, low mileage; bargain, first £90.—31, Claremont Rd., Moss Side, Manchester. [X7481

P. and M. 3½h.p. Combination, kick starter, acetylene lamps, horn, speedometer, watch, plenty spares, tools, new tyres; £70, or offer.—58, Burlington Av., Kew Gardens, S.W. [1394

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THE P. and S. 2-stroke, 2-speed, clutch, and kick start; in stock now.

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PEUGEOT 6h.p. Twin, B.B., Bosch, fast, powerful, long racing model; £25.—Myles, 207, Railton Rd. Herne Hill, S.E. [1708

PEUGEOT 6h.p. Twin, racing model, too fast for owner, new tyres, copper tank; accept £40.—104, Albion Rd., Newtown, New Mills, near Stockport. [X7576

Pope.

POPE 7-9h.p. Twin, fast and powerful, very little used, tyres almost new, ideal machine for double seater sidecar; £65.—136, Gt. Dover St., S.E.1. [1471

Precision.

PRECISION 4h.p., 2-speed, free, lamps, mechanical horn, good condition; £40; by appointment.—67, Silvermere Rd., Catford. [1545

PRECISION, 1914, 3-speed hub, clutch, mechanically and tyres good, sidecar chassis to fit; £60; offers.—Bullock, 39, Hawthorne Rd., Bexley Heath, S.E. 1530

Premier.

1914 3½h.p. Premier, 3-speed countershaft, Bosch mag., requires few repairs; £25.—Below.

1914 3½h.p. Premier, as above, less tyres and wheel spindles; £20.—Bull, 228, Wellingboro' Rd., Northampton. [X7484

PREMIER 3½h.p., good condition, Grado pulley, lamps, horn, and tool roll, etc.; £35.—Black, Westwood Place, Preston, Faversham. [1890

PREMIER 1914 4h.p., 3-speed countershaft, kick start, very little used, combination smart.—Brown, Rangemore Village, Burton-on-Trent. [X7477

PREMIER, 1914, 4h.p., 3-speed, kick starter, lamps, spares; £50; Saturday after 9 a.m.—Smith, Roycroft, King's Av., Buckhurst Hill, Essex. [X7398

PREMIER, 3½h.p., 1911, smart and thoroughly reliable machine; 25 gns.—Longman Bros., 17, Bond St., Ealing; and 387, Uxbridge Rd., Acton. Chiswick 1578. [1786

T.T. Countershaft 3-speed K.S. Premier, 1915, single, new tyres, very fast, in good condition; must sell, going abroad; any trial; best offer.—6, The Avenue, Tonbridge. [1327

PREMIER 1914 4h.p., countershaft speed gear, clutch, handle start, new Dunlop, enamel unscratched, very powerful easy start.—96, Madeley Rd., Ealing, W.5. [1860

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3½h.p. 1914 Premier, adjustable pulley, Bosch, Sen-spray, T.T. bars, footboards, Miller head, Lucas tail lamps, excellent condition; £40.—Box L5,176, c/o *The Motor Cycle.* [1379

1914 3½h.p. Premier, 3-speed, K.T., Montgomery S.C., new Dunlops, generator and lamps, horn, luggage and petrol carrier, excellent condition throughout; first £75 secures.—Longworth, Woodstock, Oxford. [1411

P.V.

P.V., Villiers 2¾h.p., 2-speed, spring frame, 1919; £60.—Cronford, 32, Mayow Rd., Sydenham. [1683

Quadrant.

QUADRANT 3½h.p. and Torpedo Sidecar, Bosch; £25; trial.—North, 1, Victoria Rd., Brighton. [1542

QUADRANT 1919 4½h.p., 3-speed Sturmey-Archer gear, latest type engine, delivery from stock; £92.—Orders can now be accepted for early delivery from Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0068

Radco.

RADCO, 2¼h.p.; £35, or nearest offer.—Gorman, 61, New Rd., Woolwich. [1445

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Radco motor cycles; delivery commenced. [401

RADCO 2¾h.p., not done 500 miles; £35.—Blake, 116, Streathbourne Rd., Upper Tooting, S.W. [1535

RADCO, 1919, in perfect condition, lamps, etc.; any trial given; £40, lowest.—36, Holbrook Rd., West Ham. [X7336

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [0034

RADCO 1917 2-stroke, in first-class condition, only done 1,200 miles; £32.—Watson, 24, Broadfield Rd., Catford, S.E. [1968

RADCO, 1915, Dixie, Amac, tools, leg shields, complete, splendid condition; £29/10; after 5.30 and week-end.—184, Boundary Rd., Wood Green. [1838

RADCO.—Immediate delivery of 2¼h.p. standard model, £42/11; 2-speed model, £50/16.—The Premier Motor Co., Aston Rd., Birmingham. [9457

RADCO 2-stroke, in excellent order, easy starting, lamps, new Dunlop behind, footboards; £28.—Smith, Star Inn, Norman's Bay, Pevensey, Sussex. [1878

Rex.

REX 3½h.p., new Dixie and tyre, carburetter needs adjustment; offers.—Carnforth, Borrowby, Thirsk. [1650

REX 5-6h.p. Combination, 2 speeds, free, hand start; trial given; £45, complete.—21, Lord St., Heywood. [1319

REX 2½h.p., rubber footboards, engine requires repairing; £22; stamp.—109, St. Andrew's Terrace, Kilmarnock. [X7457

REX 3½h.p., mechanical valves, low, fast, reliable; £10.—Bambridge, Decorator, Riverside, Kingston-on-Thames. [X7236

6h.p. Twin Rex, 2-speed, free, very fast, guaranteed perfect, with or without C.B. sidecar; offers.—Claydon, Eastry, Kent. [X7372

REX 5-6h.p. Twin, Bosch, B. and B., 2 lamps, generator, o.i.v., good condition; £42.—Sawyer, Lidden Cottage, Hungerford, Berks. [1587

3½h.p. 1911 Rex, in good condition, adjustable tappets; £7. Wanted, Philipson pulley for 1916 Triumph.—Donovan, Electricity Works, Shrewsbury. [X7291

3½h.p. Rex, in good running order, slight wear on tyres, brand new belt, no front brake, otherwise perfect; first order £28.—Sollis, Statfold, Tamworth, Staffs. [X7511

REX 2¾h.p., ZE1 Bosch, B. and B. variable carburetter, belt and tyres good, mechanical horn, engine wants slight repairs and assembling; offers.—Nightingale, Builder, Chorley, Lancs. [X7470

REX Coachbuilt Combination, 6h.p., 2 speeds, F.E., B.B., Bosch, new belt, tyres, tubes, speedometer, lamps, horn enamel, plating good, fast, powerful; offers.—50, Beulah Rd., Thornton Heath. [1768

REX 1914 8h.p. Combination, C.B. sidecar, 3 lamps, 2 generators wind screen, grid, take 2 up anywhere, in splendid condition, cause of sale bad health; £82; after 2.—8, Effra Parade, Brixton, S.W. [1652

5-6h.p. 1913 T.T. Rex, new Dunlop back and new B. and B. carburetter; a real goer; £30, or nearest offer; will exchange for good 2-stroke, cash adjustment if necessary.—William Kean, Blackridge, West Lothian [1745

4h.p. Rex Combination, 3-speed, clutch, K.S., all accessories, good running order, £50, or offers; as new, Smith's speedometer, also 7ft. 6in. of brand new ¾in. Dunlop belt, 70/-.—55, Victoria St., Wolverton. [X7556

REX 1914 5-6h.p. Twin Coachbuilt Combination, engine recently overhauled and rebushed, kick start, B. and B., new belt, lamps, etc., splendid condition ride away; £75; after 6 p.m., Saturdays after 3.—47, Richmond Rd., Ilford. [1637

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5-6h.p. Rex Coachbuilt Combination, 1913, just overhauled and fitted complete with new be Bosch mag., B. and B. carburetter, lamps, horn, spare belt and tyres; seen Saturday afternoon o day morning; trial run up to 50 miles; £75.—Ar Alveton, Leek, Staffs. [

Rex-Jap.

1914 6h.p. Rex-Jap Combination, Bosch, 2 s handle start, horn, lamps, etc., C.B. ca sidecar, with wind screen and apron, everythi good condition and running order; £70.—Gill High St., North Shore, Blackpool. [

Roc.

4h.p. 2-speed Roc and Sidecar, good order, away; £35.—Sheldon, Wheatley, Oxford.

3½h.p. Roc, 2 speeds, free engine, overhaul makers; £4; good tyres and tubes; £23.—Wh 28, Westgate Rd., Dartford.

Rover.

ROVER, new 3½h.p., 3-speed countershaft actually in stock.—Moss, Wem. [

1918 3½h.p. Rover and coachbuilt sidecar, with dynamo lighting set, in very nice condi £137.

1919 5-6h.p. Rover, fitted with lamp, horn, coach sidecar with disc wheel, as new; £150.— and Harper, 6 and 7, Bridge St., Cambridge.

3½h.p. Rover, F.E., T.T. model, new tyres, anywhere; £45.—19, Eynham Rd., Wood W.12. [

JONES' Garage, special agents for Rovers, B way, Muswell Hill, N.10, and Woodside Pa North Finchley. [

ROVER 3½h.p. Combination, bought new Febr 1919; £135, or best offer.—Star Inn, Rawm nr. Rotherham. [X

1914 3½h.p. Rover, 3-speed, coachbuilt sidecar cessories; Saturday; £70.—15a, Elsham Kensington, W. [

ROVER Combination, 3½h.p., 1915, 3-speed, F mag., lamps, horn, tools, etc.; any trial; 80 —Sharman, Carr Vale, Chesterfield. [X

3½h.p. Rover Combination, 3-speed, C.B. sidecar, screen, electric lighting; £90.—7, Grove Ter Burton Rd., Wittington, Manchester. [X

1919 3½h.p. Rover Combination, new, deliv from works this month, lamps and horn; o wanted.—95, Willes Rd., Leamington. [X

1914 3½h.p. 3-speed Rover, in good running o bargain; £40. Seen Saturday or Sund Stuart, Hatfield Heath, Harlow, Essex. [

1914 T.T. Rover, 3½h.p., N.S.U. 2-speed and stored since September, 1915, splendid co tion; 65 gns.—Wildsmith, Undertaker, Leytonsto [

ROVER Single and Twin Models; a limited nu available for next season.—Particulars of deli dates and prices from Lloyd and Son, 29, Station Lewes. [

1915 3½h.p. Rover, 3-speed countershaft, lamps, tools, speedometer, under 3,000 miles, exce condition; £65.—MacDowell, Dunello, Broughty Forfarshire. [X

3½h.p. 1914 Rover Combination, 3-speed, and cl Bosch mag., B. and B., in splendid condi £70, or nearest.—Frazer, 9, Japan St., Cheetham Manchester. [X

ROVER, 3½h.p., 1913, Bosch, B. and B., 3-s clutch, semi-T.T., new belt and Dunlops, just hauled and repainted; must sell, 50 gns., or near —Write, 5, Green St., Cambridge. [X

ROVER 1917 Combination, 3½h.p., 3-speed cou shaft, done about 1,000 miles, comfortable Ca let sidecar, lamps, horn, and spares, perfect; bar £105.—J. Byrd, Hinstock House, near Market D ton. [

3½h.p. Rover, single speed, in good running o complete with front and rear lamps, horn, lop belt, Bosch mag., B. and B. carburetter, Pal Dunlop tyres, new; £45; very fast.—50, East St., bury, Suffolk. [X

1918-19 3½h.p. Rover, Philipson pulley, Lucas and rear lamps and generator, hand phone, grips, spares and tools, unscratched, only used week-e open to any trial; £70; Basingstoke.—Box L5,219 *The Motor Cycle* [

6h.p. Jap-Rover, new April this year, with sid 3-speed clutch hand and foot, cased chain d in excellent condition, trial any time by appointe full tool kit and lamps; price £125, or very offer.—L.H.B., 13, Chichester Rd., Croydon. [

Royal Ruby.

ROYAL RUBY 2-stroke, 1919, new; £50.—S ton, Ltd., 198, Gt. Portland St., W.1. [

JONES' Garage, special agents for Royal R Broadway, Muswell Hill, N.10, and Woo Parade, North Finchley. [

1919 8h.p. Royal Ruby-Jap Combination, as £158.—Lewis, 19a, Upper Charlton St., burton St., off Gt. Portland St., W.1. [

MOTOR CYCLES FOR SALE.

Royal Ruby.

1919 2¾h.p. Royal Ruby 2-stroke, splendid machine, equal new, little used, lamp set; bargain, first 45.—31, Claremont Rd., Alexandra Park, Manchester. [X7139

1919 Royal Ruby and Sidecar, 8h.p., 3-speed, countershaft, complete with lamps, as new; rice £148, or near offer.—Motors, Hampstead, 78, ligh St., Hampstead, N.W.3. [1635

ROYAL RUBY, excellent condition, 2¾h.p. Villiers, 2-speed, recently overhauled, equipped with lamps, c.; no reasonable offer refused; call or write.—Weight-an, 6, Lansdowne Rd., Hounslow. [1388

h.p. 1919 Royal Ruby Combination, fitted with 8h.p. twin-cyl. engine, 3-speed countershaft gear, all-ain drive transmission, clutch and kick starter, smart d reliable; £150, includes pillion seat and all acces-ories.—Wauchope's, 9, Shoe Lane, London, E.C. [1948

ROYAL RUBY Coachbuilt Sporting Combination, 4-5h.p. twin J.A.P., 4-speed gear box, smartest most luxurious outfit, mileage 2,000, Lucas and ewart accessories; any trial after 7; climbs Alms, unnesbury, and Porlock hills; 115 gns.—Batty, 53, hristchurch Rd., Reading. [X7454

Rudge.

NEW Rudge Multi Roadster; list price; no premium. —Grimes, 18, Bruton Place, W.1. Mayfair 4792. [1778

RUDGE Multi, June, 1919, 200 miles; £85.—Goodey, Brightview, Hadley Rd., New Barnet. [1662

1916 Rudge Multi, good running condition; what offers?—Webster, Crawshaw Villa, Pudsey. [X7378

RUDGE 3½h.p. Clutch Model, lamps, horn, 39 gns.; with cane sidecar, 42 gns.—56, High St., Tooting. [1693

RUDGE 3½h.p., 1913, C.A.V. Lodge Aero, excel-lent condition; £39.—Clarendon, Staplegrove, aunton. [X7616

1913 Rudge, clutch model, in perfect mechanical condition, just overhauled; £35.—1, Othello ., Liverpool. [1823

ONES' Garage, special agents for Rudge, Broad-way Muswell Hill, N.10, and Woodside Parade orth Finchley. [0037

1914 3½h.p. Rudge Multi, in excellent condition, lamps and spare belts; £55.—Massey, c/o Cann, Glenfield Rd., Leicester. [1672

1919 Rudge Multi, Lucas lamps, horn, spare belt and tube, as new; £90, or near offer.—28, Ox-rd Rd., Acock's Green, Birmingham. [X7497

1915 Rudge and Sidecar, 3½h.p., sporting model, ad-justable pulley, fast, and in good condition; £50, rgain.—Ward, 15, Wyeths Rd., Epsom. [1359

1919 Rudge Multi, new condition, fitted with Lucas head lamp and tail lamp; £110.—King and arper, 6 and 7, Bridge St., Cambridge. [1350

RUDGE Multi 3½h.p., Millford sidecar, speedometer, lamps, tools, first-class condition; £75.—46, rtborne Rd., Honor Oak Park, S.E.23. [1916

h.p. Rudge, clutch model, in good running order, 2 lamps, good tyres; £32/10.—Whisstock and ngley, Woodbridge, Suffolk. 'Phone: 62. [1904

RUDGE, real hot stuff, will do 60 m.p.h., engine top hole, accessories; accept £32, first M.O.—W. H. ewers, 13, Warren Cottages, Handcross, Sussex. [1714

RUDGE 3½h.p., T.T., with C.B. sidecar, in good running order, lamps, horn, and pump; £54; first eque secures.—129, Burnley Rd., Padiham, Lancs. [X7338

RUDGE Multi Combination, 1919, done few miles only, £20 extras, in new condition throughout; 130.—Sproston, Ltd., 198, Gt. Portland St., W.1. [1924

1919 3½h.p. Rudge Multi, delivered July, Lucas lamps and horn, Bonniksen speedometer, fully sured, both tyres unpunctured; £95.—Lyon, 80, Park ., Slough. [1798

-6h.p. Rudge Multi, 1915 model, with Rudge coach-built sidecar, lamps, horn, and tools, in first-class ndition; £80, or nearest.—David Murphy, Blackridge, est Lothian. [1744

RUDGE Multi, 1919, 3½h.p., practically new, mile-age about 200; £85.—Longman Bros., 17, Boad ., Ealing; and 387, Uxbridge Rd., Acton. 'Phone: iswick 1578. [1784

RUDGE Multi, 3½h.p., Lucas head lamp, electric tail, speedometer, horn, disc wheel, long exhaust, cellent condition, fast; £70, or near offer.—2, Pike's alk, Cambridge. [X7284

1919 3½h.p. I.O.M. Rudge Multi, very fast, special cams, mechanical horn, spare belt; 90 gns.; ar offer considered.—Capt. Reid, 163, Cromwell Rd., ensington, S.W. [1512

RUDGE 1919 Roadster, now due from works; list price; who's for it? Now booking for 1920 odels, early deliveries.—W. T. Dunn, Ltd., 326, uston Rd., London. [1888

1919 5-6h.p. Rudge Multi Combination, Montgomery sidecar, horn, lamps (gas and electric), full kit, lendid condition, unscratched; £127.—Tanner, 32, ng's Rd., Camden Town. [1749

RUDGE Multi, 1919, I.O.M. T.T., delivered last week, fully equipped, lamps, horn, etc., guaran-ed; first cheque £95 secures.—Brown, Golden Cross, rridale St., Wolverhampton. [1443

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Rudge

RUDGE Multi Combination, hand clutch, pedal start, splendid running order, lamps, Klaxon, speedometer, etc.; £60. Seen by appointment.—64, Old Winton Rd., Andover, Hants. [1810

1919 3½h.p. Rudge Multi, graduated gear, Dunlops, Jones speedometer, Lucas lamps, horn, and all accessories, done about 100 miles, as new; £95.—Petty's, 3, Norbury Parade, Norbury, S.W. [1314

RUDGE Multi 5-6h.p. Combination, C.B. twin side-car, underslung, splendid condition, and very fast; any test and inspection; drive away; £85, no offers. —Lee, 14, Half Moon Crescent, London, N.1. [1979

5-6h.p. Rudge Multi and Canoelet sidecar, complete with new large P. and H. generator, tail lamp, new horn, belt, and Tan-Sad, machine lately re-enamelled and overhauled, very powerful; £80.—Box L5,212, c/o *The Motor Cycle.* [1506

1919 3½h.p. Rudge Multi, and Canoelet C.B. side-car, speedometer, Klaxon, 2 lamps, pump, and tools, fully insured, low mileage, condition perfect; 117 gns.—Write appointment, Huges, c/o Thos. Cook and Sons, Ludgate Circus, E.C. [1623

F.O.C.H. for Rudges.—Book your order now for the very earliest 1920 delivery, all models. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [8619

5-6h.p. Rudge Multi Combination, genuine Rudge-Whitworth coachbuilt sidecar, just overhauled, condition perfect, tyres nearly new, all tools, 3 lamps, spare belt, etc.; price £75; no offers.—Can be seen and tried any time at Cliverley's Garage, Oxted, Surrey, or by appointment, King's Mead Lodge, Seaford, Sussex. [1580

1919 3½h.p. Rudge Multi, T.T. model, fitted with Dunlop 3-rib tyres, Dunlop belt, and Lodge plug, not done 200 miles, accessories, value £8, include Lucas lamps and horn, spare Dunlop belt, spare Lodge plug, tyre repair outfit and tools; accept no offer under £90.—Preece, Marchant Rd., Wolver-hampton. [X7403

RUDGE Multi, late 1917, 3½h.p., T.T. clutch, racing bars, long copper exhaust from cylinder, new oversize back tyre, speedometer, horn, 8½-in. plated head lamp and rear lamp with generator, full set tools, perfect condition, ultra sporting; first cheque £95 secures.—J. S. Williamson, Pembroke Col-lege, Cambridge. [1867

Ruffells.

1919 (October) Ruffells, 2¾h.p. Villiers, 2-speed gear, 26in. Dunlops, no mileage; cost £64, sell £50; invoice produced; owner disabled; approval or deposit; dealers' inquiries invited.—P. Nagle, 5, Spittal St., Tipperary. [1335

Scott.

1915 Scott and Sidecar, in perfect order; £75.—Brook Bros., Burnham, Somerset. [1909

1919 Scott, brand new, just delivered; **£115/10.**—Stebbings, Attleborough, Norfolk. [1734

NEW 1919 Scott Combination; £170.—King and Harper, 6 and 7, Bridge St., Cambridge. [1352

SCOTT, 1915 W.D., 2-speed, K.S., lamps, splendid running order, very fast; £60; after 6 o'clock.—20, Cowley Mansions, Cowley Rd., Brixton, S.W.9. [1826

3¾h.p. Scott Combination, C.B. sidecar, 2-speed, clutch, Bosch, lamps, horn, speedometer, just overhauled, tyres good as new, in excellent condition throughout; £70, or nearest offer.—A. D. Cruickshank, Hill House, Wheatley, Oxon. [X7259

SCOTT Combination, canoelet, wind screen, 2-speed, K.S., Bosch, Binks, excellent condition and running order, just overhauled, accessories, tools, spares; any trial; no dealers; £80, or near offer.—S., Court House, Epsom. 'Phone 313. [1416

1915 Scott Combination, 2-speed, kick starter, sound running order, engine and gears recently overhauled by makers, radiator replated, Klaxon, speedometer, lamps, spare heavy Palmer cover, Canoe-let wicker C.B. sidecar, with luggage grid and tool box; after 3.30 Saturday.—Poole, Ivydene, Alexandra Rd., Heston, Hounslow, N. [1521

Singer.

3½h.p. Singer, 2-speed, new Dunlops, very fast; £35.—Cartwright, Highwood Hill, Mill Hill. [1641

2¾h.p. Singer, Dixie mag., in good running order; ride away; £24.—4, Lower North St., Poplar. [1425

SINGER 1913 Combination, or separate, 3½h.p., 3-speed, perfect running order; £45.—Digby, Mersea, Colchester. [1707

1914 Singer, 4h.p., countershaft 2-speed, clutch; £48, bargain; very good condition.—Burns, Preben, Dale Rd., Purley. [1686

3½h.p. Singer, 1914, Sturmey 3-speed, clutch, Bosch, thorough good condition, splendid engine, been stored; £55.—Harman, Somerton, Somerset. [1727

LATE 1914 4½h.p. Singer Coach Combination, countershaft, 2-speed, kick start, enclosed chain drive; any trial; £85, no offers.—45, Brookfield Rd., Bedford Park, W.4. [1716

MOTOR CYCLES FOR SALE.

Sparkbrook.

SPARKBROOK 1915 2-stroke, 2-speed, sound condition; £38.—Gillott, 158, Saeinton Boulevard, Nottingham. [X7533

6h.p. Sparkbrook Combination, Bosch mag. J.A.P. engine, chain-cum-belt, B. and B., Dunlop tyres throughout, windscreen, and lamp, splendid order; £100.—Smith, Plumber, Wivenhoe, Essex. [1820

2½h.p. Sparkbrook, Villiers 2-stroke engine, 2-speed gear; £60, or on extended payments, 4% extra.—Harrods Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [1406

Sun.

SUN-VILLIERS 2½h.p., 2-speed, free, T.T. bars, long brass exhaust, speedy; £42.—Clarendon, Staplegrove, Taunton. [X7617

SUN-VILLIERS 1915 2-stroke, in good order; 30 gns.—Smith's, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station). [1271

SUN-VILLIERS 2¼h.p., completely re-enamelled and plated, engine overhauled, perfect condition; £35; owner bought Indian.—37, Malden Rd., Kentish Town. [1565

Sunbeam.

1919 Sunbeam 3½h.p. Model, indistinguishable from new; any trial.—Parker's, Bradshawgate, Bolton. [X7430

SUNBEAM 3½h.p. Motor Cycle, with accessories, condition as new; nearest offer £100.—Welch, Ammerham, Chard. [1481

1916 3½h.p. Sunbeam, splendid condition, speedometer, lamps, horn, spares; £90.—Capes, 96, Lennard Rd., Beckenham. [1815

SUNBEAM 2¾h.p., in splendid condition, new tyres, full equipment, 2-speed, clutch, kick start; bargain, £60.—15, Radnor Av., Harrow. Harrow 561. [1706

SUNBEAM, 3½h.p., 1918, 3-speed, kick start, all-black finish, unscratched, like new, tyres unsoiled; £105; appointment only.—Martin, 34, Cecil Rd., Acton. [1691

1919 3½h.p. Sunbeam, just delivered, unused; best offer over £120 secures.—Box L5,258, c/o *The Motor Cycle.* [1993

1916 3½h.p. Sunbeam Combination, complete with lamps, tools, spare tube; seen at Eastbourne by appointment; price £110.—Write, Box 672, c/o *The Motor Cycle.* [1728

8h.p. Sunbeam Combination, 1914, but with 1919 J.A.P. engine, excellent order and appearance, nearly new 700×80 tyres, numerous spares; £180.—Box 695, c/o *The Motor Cycle.* [X7560

SUNBEAM 1916 3½h.p. Combination, leg shields, Lucas equipment, maximum hand trip speedometer, spares, tyres perfect, good condition; £126.—18, Hestercombe Av., Fulham, S.W. [1862

SUNBEAM Combination, black and gold, August, 1919, little used, perfect, Lucas head and rear lamps, Klaxon horn, Amac; £152/10, no offers; taking over 8h.p.—Sims, China Stores, Chatham. Tel. 450. [X7487

1918 3½h.p. Sunbeam Combination, G.S. engine, new tyres, mileage under 3,000, perfect, any reasonable trial; £155; reason for sale taking 1919 model.—Vigornia, Barnsole Rd., Gillingham, Kent. [1880

1919 Sunbeam 4h.p., French military model, Henderson sidecar, Binks carburetter, Lucas lamps, horn, complete tool kit, spare jets, mileage 1,500; £140, or offers.—Rose, 18, Alma Rd., Heaton Moor, Stockport. [X7491

5-6h.p. Sunbeam-Jap 1914 Combination, nearly new Palmer tyres (rear light car studded), Gloria sidecar, just overhauled at cost of £20; expert examination invited; £140.—Lieutenant, 14, Parkhurst Rd., Bexhill-on-Sea. [1330

SUNBEAM Coachbuilt Combination, late 1914, war model, 6-8h.p., 3-speed countershaft, all chain drive, kick start, Lucas lamps, tyres nearly new, just overhauled, splendid condition; £130, or near offer.—Shaw, 1, Bath Place, Cheltenham. [X7234

1919 Sunbeam 3½h.p., as new, perfect, delivered only recently; £128, with good C.B. sidecar, £140, not ridden 800 miles, unpunctured; most carefully ridden and kept, could ride to London, owner buying car.—Offley Grove, Newport, Salop. [1759

SUNBEAM Combination, 1916, 8h.p. M.A.G. engine, interchangeable wheels, spare wheel, hood, screen, lamps, mechanical condition and appearance excellent; £145.—Longman Bros., 17, Bond St., Ealing; and 387, Uxbridge Rd., Acton. 'Phone: Chiswick 1578. [1781

1919 (June) 3½h.p. Sunbeam Combination, 3-speed, clutch, K.S., Lucas horn, lamps, Watford speedometer, saddle rest, insurance, tools, mirror; £145; owner's new position precludes use; letters.—Smith, 59a, The Grove, Wandsworth, S.W.18. [1660

1919 Magnificent New 3½h.p. Sunbeam, black and gold, not done 200 miles, fitted with Sunbeam leg shields, Lucas horn, large F.R.S. electric lighting set, speedometer, knee grips, special cut-out, other extras; £145 nett.—6, Churchways Crescent, Horfield, Bristol. [X6679

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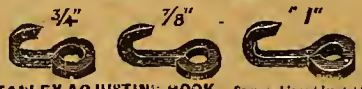

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1919 3½h.p. Sunbeam Combination, fitted sport sidecar; this machine has been specially b by Sunbeams, and is guaranteed to be the fast 3½h.p. machine on the road; just completed o trial, 62 m.p.h., with passenger in sidecar, gea 6—1; there are 2 spare gears in this machine solo work; the machine and sidecar are unscratcl and the smartest little 3½h.p. on the road; open best offers.—J. Smith and Co., 16, Hampstead H London. [1

T.A.C.

T.A.C., 4-cyl., 7h.p., 3 speeds, hand and foot clut handle starter, shaft drive, worm, sprung quar elliptic fore and aft, 2 external expanding bral footboards, horn, T.T. bars, Bosch mag., with cut-o B and B. carburetter, just been overhauled, ty perfect; owner going abroad; seen any time; tri £65, worth £75.—Hewson, Uplands, East She S.W.14. [1

Torpedo.

2½h.p. Torpedo Precision, engine new, Bosch, and B., tyres and condition good, P. and lamps.—Chatterton, 5, Northbrook St., Newbury. [1

Triumph.

1914 Triumph Coachbuilt Combination; 75 gns 143, Walworth Rd., S.E.17. [1

TRIUMPH 4h.p. Combination, late model, 3-sp countershaft, like new; £98/10.—Below.

TRIUMPH, 4h.p., 1914, 3-speed Sturmey-Archer, new; £68/10; cash wanted.—353, King St., Ha mersmith. [1

TRIUMPH, 3½h.p., clutch model, fast, reliable, j overhauled.—Mitchell, Halimote Rd., Aldersho [X72

TRIUMPH 3½h.p., clutch, good tyres and con tion; £45; week-ends.—21, Ardiland Rd., N [X74

TRIUMPH, 1914, 3-speed, clutch, perfect con tion; £60.—Collins, Casleton, Farnham, Surr [X75

TRIUMPH 4h.p., countershaft, in new condition, gine No. 44594; 68 gns.—55, Wiltshire Rd., Br too. [15

TRIUMPH 1917 Combination; this outfit is h new; £78.—51, Maplethorpe Rd., Thornton Hea S.E. [17

TRIUMPH Combination, late 1913, 3-speed, clut very little used; any trial; £80.—23, Thomas S Bath. [X73

1914 Triumph 4h.p. C.B. Combination, 3-speed, go condition; what offers.—38, Drayton Av., W Ealing. [X75

TRIUMPH Countershaft 4¼h.p., Dunlop heavies, good as new, fast, perfect; £72.—329, Old Fo Rd., E. [13

1911 Triumph, new Dunlops, lamps, belt case, perf order throughout; £30.—Haddon, 101a, Bro St., Coventry. [X76

JONES' Garage, special agents for Triumphs, Bro way, Muswell Hill, N.10, and Woodside Para North Finchley. [00

2¼h.p. 2-stroke Triumph, 2-speed model, accessor included; £52/10.—Wauchope's, 9, Shoe La Fleet St., London. [19

TRIUMPH, 1913, 3-speed, clutch, lamps, horn, et in perfect running order; £55.—18, St. Luk Rd., Clapham, S.W. [15

TRIUMPH, 1913, 3½h.p., clutch model, splend running order; £40.—10, Melrose Villas, B lard's Lane, Finchley. [96

TRIUMPH, 1917, countershaft, in new condition; reasonable offer refused.—Maddox and Co., Hammersmith Rd., W.9. [15

4h.p. Triumph, 3-speed, countershaft, new Palm cord tyres, etc.; £80.—Clapham (Motors), Ki George St., Greenwich, S.E.10. [19

1917 Triumph 4h.p., 3 speeds, countershaft, engi gears guaranteed sound condition; best offer 20, Valnay St., Tooting, S.W. [19

TRIUMPH, 1909, good running order, unused duri war, Millers lamps, tools, new belt; £30, or off —Maitland, Sauchieburn, Stirling. [X72

TRIUMPH, 1906, 3h.p., fixed engine, Bosch ma handle-bar controls, running order; £30.—Dav 34, Hill Rise, Richmond, S.W. [17

1919 Baby Triumph, as new, little used, perfect c dition, all accessories, etc.; owner buying c 65 gns.—Hawker, Davigdor Rd., Hove. [15

TRIUMPH, 1916, 3-speed countershaft, mach practically like new; genuine bargain, 62 gns.— Bennet Hill Rd., Kingston-on-Thames. [18

TRIUMPH, 3½h.p., Bosch mag., B.B., splendid ord take sidecar, N.S.U. gear; £38, or offer.—50, Clements Mansions, Fulham Cross, S.W.6. [13

1915 Baby Triumph, new Easter, 1919, done unc 500, tip-top condition, legshields, brand ne £60.—Flower, The Hill, Stratford-on-Avon. [X74

1919 Triumph, with new Montgomery coachbu sidecar, only done about 300 miles; £132.—K and Harper, 6 and 7, Bridge St., Cambridge. [13

NOVEMBER 13TH, 1919.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry five lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
Telephone: 620 City.

Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

COLONIAL AND FOREIGN AGENTS:
UNITED STATES—The International News Agency, New York. CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver: Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
AUSTRALIA—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).
NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin INDIA—A. H. Wheeler & Co., Bombay, Allahabad and Calcutta.
SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Passenger Machines.

THE words "passenger motor cycles" cover a field which is widening almost daily. From the earliest days of the motor cycle movement riders have evinced a desire to share their pleasures with other people, and by this desire they have extended the sphere of utility of motor cycles to a very great degree. First of all came the trailer attached to a single-geared motor cycle of perhaps 2 h.p. This was undoubtedly the least pleasant form of motor cycling, for the rider was compelled to pedal with considerable vigour on every hill, and the passenger received the full benefit of all the dust and smoky exhaust.

Next came the tricar, with the passenger in front, and this type had quite a vogue. Indeed, in the case of a well designed tricar, the seating accommodation was good, and, but for the fact that conversation was limited, and nervous passengers were apt to feel that in case of a collision they would be the first to suffer, the tricar might have become a very popular vehicle, in spite of the fact that it became somewhat over-developed and had an unfortunate habit of breaking its back, and of becoming somewhat unmanageable in the event of the rear tyre being suddenly deflated.

The craving for greater sociability was probably responsible for the first side by side seating arrangements, and from the early basket chair the sidecar has developed, in spite of mechanical difficulties, into the luxurious form in which we now know it. In spite of the great strides that have been made sidecar design has by no means reached finality. There are many details capable of improvement, though it is satisfactory to note that nearly all the weak points are receiving the serious attention of present-day designers.

Such events as the A.C.U. Six Days Trials show that sidecar frames can still be fractured under abnormal use, and that some form of spring wheel or flexible chassis is desirable. In this connection a modification of the old flexible sidecar may have possibilities, though the flexibility must be limited or the disadvantages of this type will again become apparent. Mudguarding, especially with regard to the front wheel of the combination, is still capable of improvement, and some form of sprung luggage carrier may be said to be a necessity.

Three and Four-wheelers.

Ever since the introduction of the three-wheeled runabout, certain of the lighter forms with side-by-side seating accommodation found a ready market, though until recent times there has been only one really popular survivor. The advantages of this type are many, but a large section of the motor cycling public appears to be prejudiced against three tracks. It is, therefore, interesting to see that there are symptoms of a revival of three track runabouts at the present time. A new factor is also making its presence felt in the introduction of well designed light four-wheelers, usually having air-cooled engines, and transmission on car lines. It is intended by the manufacturers that these little four-wheelers shall sell at the prices now ruling for motor cycles and sidecars, and if, by mass production, this end is attained, they will undoubtedly attract many adherents. The cycle car proper with motor cycle transmission also has its possibilities if only sufficient care is expended in the design of the chassis and transmission details, and it must be obvious to everyone that the type of passenger machine which sells at the lowest cost will prove to be the survivor, provided that it is capable of doing efficiently the work for which it is designed.

Thousands of motor cyclists will attend the motor cycle exhibition at Olympia with the purpose of purchasing either their first mount or a new machine to replace a pre-war model. Of these a very large proportion will be seeking a vehicle capable of carrying at least one passenger. For this reason, and perhaps for this reason only, it is unfortunate that four-wheelers are excluded from the motor cycle Show.

An Index to the advertisements in this issue will be found on the page facing the back cover.

Starting with a Broken Valve Lifter.

I AM much indebted to Mr. Frank for his kindly hint on pushing off with a shut throttle when endeavouring to start with the valve lifter out of action. I promptly tried it, and that it absolutely failed me is no fault of Mr. Frank's, for the machine has been a pig to start ever since it was delivered, and I have never had time to experiment with its adjustments. The engine in question has a colossal compression, alike in tightness and in ratio; it is no child's-play to get it going with the valve lifter available, at any rate in "maker's tune." Presently I shall have time to play about with it, and, when it is more docile, I will apply Mr. Frank's tip to it and report further. I remember having heard of the method before, but it had escaped my memory.

Climbing on One Cylinder.

RECENTLY, I took a 1915 machine out for a joy-ride. Approaching a freak hill, one cylinder stopped firing suddenly. I made no fuss for the moment, as the engine was full of oil, and the piston rings of the front cylinder were a trifle sloppy. In fact, I did not trouble to investigate, but merely dropped my feet, leant down and unscrewed the suspected sparking plug. Judge of my disgust at finding it in perfect order. I was now seriously alarmed—and well I might be—for the tappet, rocker, and rocker pin of an overhead exhaust valve were missing. I put the machine on the stand, and searched a wet and weedy ditch diligently for half an hour. By this time it was beginning to grow dark, and I was carrying no lamps. So at last, with the sparking plug removed from the idle cylinder, I made a start home. I was nicely trapped in a trough between two freak hills, one of which had to be climbed somehow. I selected the milder of the pair, which was nevertheless of the true A.C.U. kidney; and, by dint of a little foot-slogging on the worst knuckle, got home safely but slowly. The people who talk so glibly about overheating should have felt and smelt my engine after its long bout of full throttle on a gear of 14.1. Needless to say, it did not mind in the least.

The Limit.

IN the good old days, we motor cyclists used to buy small items germane to our hobby with a nonchalant recklessness. Tools and the smaller accessories were cheap then. A knot of the boys would meet in the evening at some local garage and scrutinise the showcases critically. If anybody saw a gadget which pleased him, he would put it in his pocket with a nod to the proprietor, and seldom trouble to ask the cost. We shall have to revise these easy habits. I was badly had a few weeks ago over an imitation 4½in. King Dick spanner, which was duly charged up to me at 7s. 6d. But I never dreamt of danger last week when I told my supply man to send me a foot and half of unplated copper petrol piping. This ridiculous little purchase figured in the bill at the portentous sum of 12s. 6d., and needless to say it is going back double quick. I will case-harden some macaroni rather than pay such a price.

The Fair Sex and Scooters.

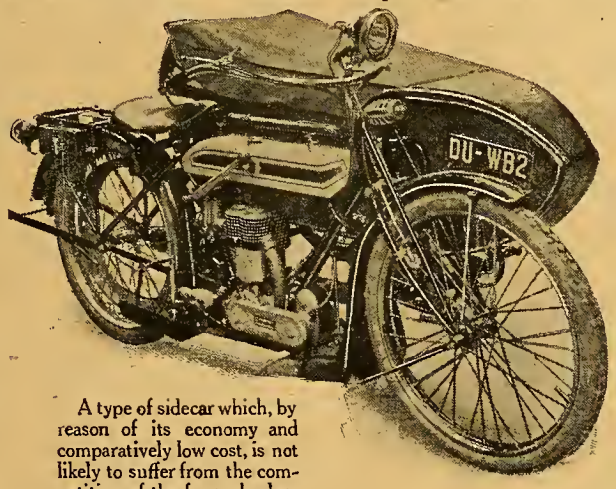
WHATEVER the future of scooters may be, there is no manner of doubt that women of all ages are intensely interested in them. Since their advertisements began to appear, hundreds of ladies, ranging in age from six to sixty, have questioned me about them. Some of the fair enquirers were joy riders in various categories—tennis players, golfers, and the like. But a large proportion were interested in the scooter from a purely utilitarian standpoint. For example, this week's enquirers include a district nurse, a widow who administers a small but scattered property, a rural housewife, and other short-distance travellers, few of whom will see forty again. I am specially struck by the motives and the ignorance of these enquirers. Without exception, they are attracted by cheapness and lightness. They funk motor cycles, because even a lady's model Douglas is too heavy for them, and also because they will not or cannot expend £60 or more. They are waiting for something at about £30, and weighing considerably under 100 lb. I do not say that they may not in time accept a £50, scaling 120 lb., if development trends in those directions; but they would not look at such prices and weights just yet. In the second place, they are woefully ignorant of the fundamental facts. None of them know enough to ask whether the particular scooter which has tickled their fancy can climb steep hills, or is comfortable to ride, or prone to skid, or maintain its power. They take hill-climbing for granted by analogy with cars; for similar reasons they imagine that a nominal 1½ h.p. engine necessarily develops 1½ b.h.p. after a thousand miles. Some of these good ladies have actually never ridden push-bicycles, but are game to begin scooting as soon as they can get delivery. It is obvious that the A.C.U. must hold their scooter trial as soon as production is in sight; and that the riders should be women, for preference, and in other respects the trial bristles with thorny little problems. It must be long enough to identify those wee engines which do not fade away after two or three hundred miles; at the same time 1,000 miles would be a purgatory for the riders. It must include hills steep enough to reproduce average riding conditions in our hillier counties; yet there must be no crop of failures on these hills. 'Pon my word, I think I'd rather organise ten T.T. races than one scooter trial.

The Passenger Outlook for 1920.

The Coming Contest between the Three and Four-wheeler—Price the Deciding Factor.

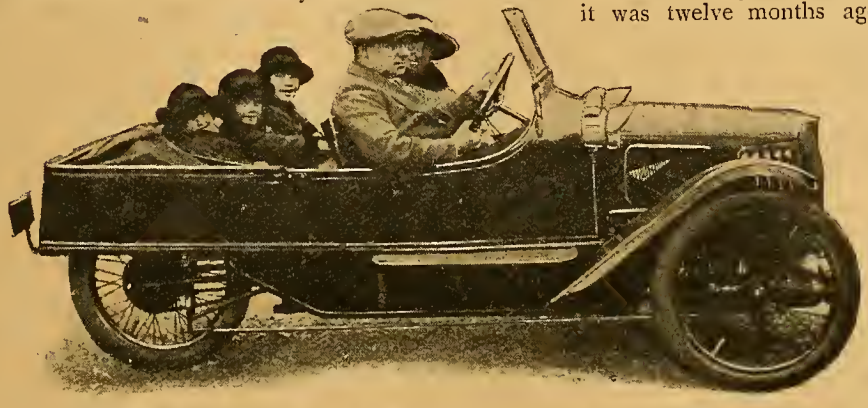
By B. H. DAVIES.

I HAVE not yet seen any printed recognition of the outstanding factor in the passenger outlook for 1920. For perhaps the first time in the records of the industry four-wheelers—and sound four-wheelers at that—are on offer at lower prices than some of the best sidecar outfits. To quote an instance, the Speedy light car (four wheels) is listed at 110 guineas. I know very little of this vehicle, but it is stated to be a mass production job, and its figure is nearly fifty per cent. *lower* than that at which a number of the most famous three-wheeled outfits are rated. But the sidecar will probably meet more formidable competitors in sundry light cars which command higher prices. The A.B.C. sports-car (with a four-speed gear box and a differential), the Cosmos (with a three-cylinder engine and dynamo lighting), and the Rover (with a car reputation corresponding to that of the Triumph Co. in the motor cycle industry), are all four-wheelers at prices which represent the average for a first-grade high-powered three-wheeler, and may indeed be rather beneath the sums asked for certain motor cycles and sidecars.



A type of sidecar which, by reason of its economy and comparatively low cost, is not likely to suffer from the competition of the four-wheeler.

Frankly, I hardly know what to make of this extraordinary situation. Some will say that a three-wheeler is not so suited to modern "production" methods as a four-wheeler, and is bound to be undersold when an expert manufacturer goes the whole hog on a cheap car. Some will claim that the three-wheeler lends itself admirably to production methods, but that no firm in the world has yet applied those methods to three-wheelers, *i.e.*, that existing combinations cost a good deal more than they would if Sir Henry Austin had stooped to them. There may be truth in both theories. For myself I adopt a third line. These new cheap cars are very new indeed. The general public suspects them of savouring of the experimental, and is also extremely dubious as to when mass deliveries will commence. On the other hand, we know the best and the worst of the sidecar and the three-wheelers generally; we have had business dealings with the firms who make them; we trust their delivery promises (with not too big a pinch of salt); and we know that the modern sidecar outfit *de luxe* is extraordinarily fast and reliable, a magnificent climber, and cheap to run. It has had years of concentrated development, and at last it is alike well fitted, well designed, and well made. So—even if we can get a four-wheeler for the same money, we only vouchsafe one regretful glance at the superior driving comfort which the latter affords; sure delivery of a proved article by a known firm counts for much. Incidentally, these are days in which it does not pay to delay a decision. A new motor is not a great deal easier to get than it was twelve months ago, when frenzied men paid two or three hundred pounds for dusty old junk hardly deemed worth storage room in 1914, and destined for the marine store as soon as a lorry wanted a load. We ordered; we may not have got delivery yet; but we have waited six, nine, or maybe



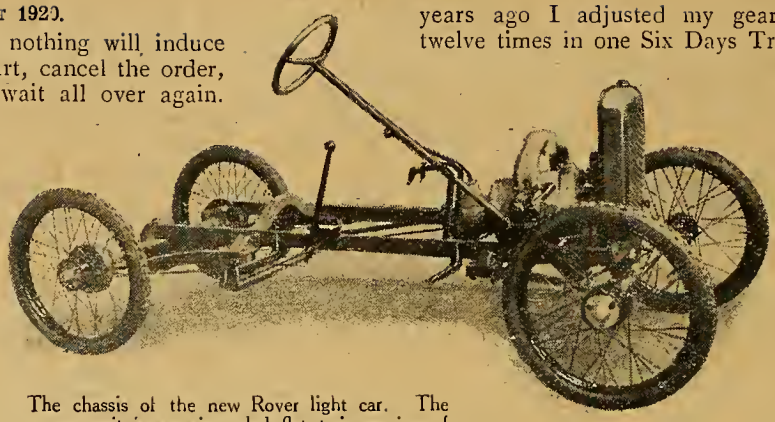
The latest Morgan will go far to meet the requirements of the "family" man, who found the ordinary body too small to accommodate an extra passenger.

The Passenger Outlook for 1920.

twelve, months; and nothing will induce us to call it a false start, cancel the order, and begin the weary wait all over again.

In twelve months' time things will get exciting, so far as the cheap transport of two persons is concerned. Some of us will be so poor that the carrier of a baby two-stroke will be all we can offer to the damsel who takes our fancy. But all of us will see a battle royal between the cheap cycle car-light car hybrids and the three-wheelers. The lists are already set out for the tourney, but the joust has not begun, because in these days you can sell anything that has a carburetter on it. I will not venture to prophesy the ultimate victor. But it is clear that, if lean years are coming, the cheapest vehicle which will do the work has the best chance. From a production standpoint, the Morgan type of three-wheeler is better than the sidecar outfit, and a sidecar, produced on a scientific system in quantities, ought to have a few pounds in hand of any decent four-wheeler.

Stepping back into the real province of this journal, there are three main features to chronicle. The first is that the single-cylinder sidecar outfit is at last equal to that of any country. Engine cooling now permits us to use any low gear ratio we may fancy. No hill can stop the modern 3½ h.p. sidecar. The second high spot is the phenomenal quality of the *de luxe* combinations from every point of view. Of this, more anon. The third is the fact that several firms have learnt from the Morgan that there is still money and fame in what used to be known as a "tricar," and is now rechristened a "runabout."



The chassis of the new Rover light car. The power unit is an air-cooled flat twin engine of 85 × 88 mm. (998 c.c.), built integral with a three-speed and reverse gear box. Simplicity and light weight are the keynotes of its design

The Dogged Single Cylinder.

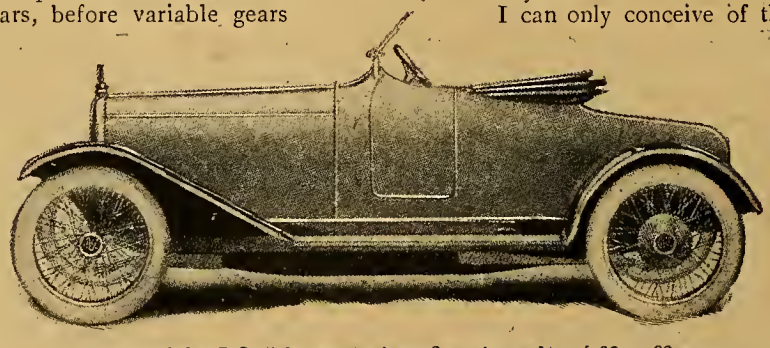
Never before has it been possible to select a 500 c.c. single, almost at random, put a sidecar on it, plan a route without any timidity about hills, load up with a wife (fat and forty, if you like), the baby and/or twins, and/or triplets, the corresponding luggage, and surge with an even mind up the worst hills in our islands. For many years, before variable gears came in, we used to do this sort of thing, and run alongside up a hill like Dashwood, breathing like a gold-fish that has leapt out of its bowl. Then variable gears appeared, and hill-climbing became anxious for other reasons. Sometimes the gears would not gear (seven or eight years ago I adjusted my gear box—think of it—twelve times in one Six Days Trial); more frequently the engine objected to 800 yards on an 8 to 1 gear, and showed its resentment by knocking or seizing or pre-igniting or scaling a valve. To-day any duffer on any 500 c.c. machine you like, with a well-nourished fairy in the sidecar, deserves expulsion from all his clubs if he cannot climb Sutton Bank with something in hand.

When we turn to combinations of 8 h.p. or thereabouts, there is even more room for pride. If any reader has not sampled a recent model over a wicked course, I advise him to do so without delay: it takes a very hot car to hold it. On one occasion this summer I put a 1919 8 h.p. over a peculiarly appalling route: so bad that I would not have sent a car of my own over it. The outfit held the road like a postage stamp, shook us less than most good cars would have done, took practically everything on second, travelled so fast that a good rider on a very hot single could not leave us, and never turned a hair in a gruelling that was calculated to fracture a tank.

The Sidecar *de Luxe*.

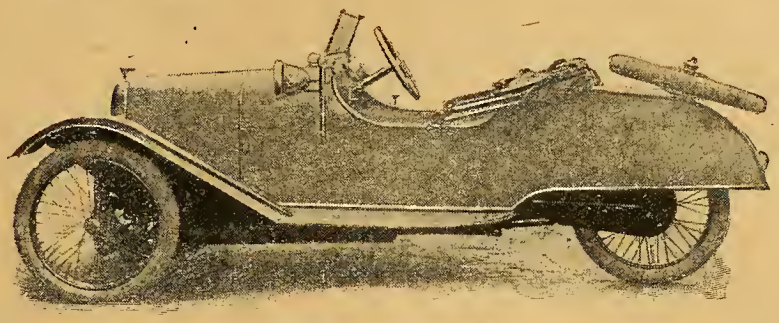
The Llandrindod Trials provide additional evidence on such points, and we ought not to forget that the lightning steering, high speed, and side wrenches to which sidecars are by their nature subjected, intensify the severity of such tests. Moreover, if the big sidecar is capable of feats, it has also become delightfully well equipped, so that it is very convenient to handle. Its lighting outfit compares with those of the best cars. It possesses interchangeable wheels of equal handiness. Its chair is comparable in comfort with the best seat in the best car; indeed, I know many people who prefer a good sidecar to a big car if they are called upon to ride through an Edinburgh. Windscreens and hoods are obtainable for those who fancy them.

I can only conceive of three details in which sidecars of the best type are not perfect. The first defect is presumably inevitable: the exposure of the driver can be minimised, but he can hardly be protected in a fashion which compares with car comfort. More can be done, and will be done, but this is the sole real snag. The second



The air-cooled A.B.C. light car, having a flat twin engine of 92 × 92 mm (1,223 c.c.) The intention is to produce this little vehicle at the comparatively moderate price of £200 or thereabouts.

is still, to my mind, undervalued by designers. The passenger of a sidecar is seated low down, very close to the road, and where there is surface water about, a good deal of liquid dirt is apt to enter the body. The mudguarding of the front and side wheels deserves closer attention, and the fitting of a windscreen is a coward's solution, for in summer it is best to take the breeze on one's face. The third point is also worthy of factory attention. As I have already stated, the reliability of the sidecar outfit is high. But when attention at last becomes necessary, the mechanism is seldom decently accessible. The presence of the body is an obstacle which a cunning engineer will outflank, either by unhitching its front end and tipping it, or by transferring vulnerable items to the far side of the chassis, or by a variety of dodges. But, quite apart from this, some luxurious sidecars are a veritable jungle of piping and rods and wires and gadgets. We love a machine which serves us well on the road; but we reserve the depths of our affection for one which serves us no less pleasantly in the garage. In this respect the high-powered sidecar outfit still falls below the standard which rival types of motor have set.

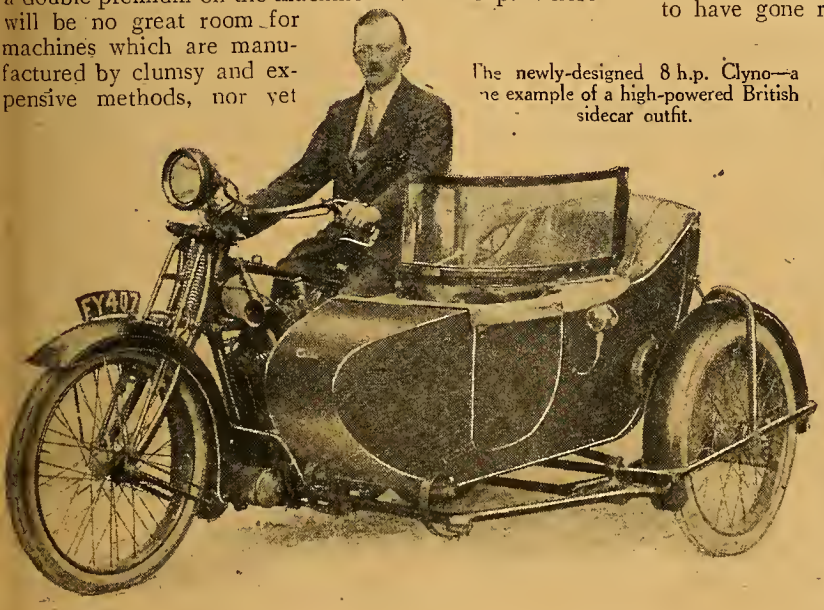


The Coventry Premier—an example of the fully developed three-wheel runabout which at the same time does not appear as a car on three wheels.

Comfort a Great Feature.

It is quite on the cards that the tricar or runabout type of three-wheeler has a brighter future than the sidecar. The three tracks and the single driving wheel are weak points in theory. The latter is shared with the sidecar, and the former is more than balanced by the comfortable driving seat and the level seating of the crew. Driving comfort is a very, very strong point indeed; and it is possible to argue that the chassis can be a better production job than a sidecar frame. If that is so, it means much.

Probably the keynote of the future market—say in 1921 or 1922—will be over-production by the trade and rentrenchment by the user. Such conditions put a double premium on the machine that is cheap. There will be no great room for machines which are manufactured by clumsy and expensive methods, nor yet for machines which are awkward to make because of their design. Some authorities, rightly or wrongly, regard the three-wheeled runabout as more likely to flourish in those days. The Morgan is no longer alone in that class. Few of us know what the Premier and the Merrall and others of the type can do; we know them only through the columns of the technical press. But we shall watch them very closely. I shall speak for a large public if I say that we do not necessarily expect a full motor car specification from a three-wheeler *The Motor Cycle* readers include thousands who once enjoyed road work on single-geared sidecars and forecars: aye, and on trailers. Some such have been hard hit by the war. Others are not rich, and never will be. We cannot help thinking that the gap between our old single-geared atrocities, with their wicker chairs, and the modern 8 h.p. cum-dynamo, cum-three-speed gear, cum-lots of other luxuries, has never been perfectly filled. We visualise a simple three-wheeler, with protection and comfort for the driver, produced in quantities at a low price. Perhaps when the battle between the sidecar *de luxe* and the air-cooled light car has been fought out, some genius will Fordise the three-wheeler for men of the class I have indicated. During the war I heard yarns of a machine with a 4 h.p. flat twin engine, an ash frame, and an infinitely variable gear, which sounded as if it might have filled this particular bill; but it seems to have gone right west.



The newly-designed 8 h.p. Clyno—a fine example of a high-powered British sidecar outfit.

The Super Runabout.

On the other hand, there is evidently a permanent place for the runabout *de luxe*. Its chassis can always be as simple a job as that of a cheap four-wheeler, and it will always be cheaper by at least the cost of a wheel and tyre. It is perhaps surprising that no runabout has yet appeared with one of the better types of engine. Frame difficulties hamper the sidecar designer who wishes to fit a four-cylinder or a flat twin. No such problems affect the lay-out of a runabout. Nobody can pretend that the best V twin is quite as nice as a good four or flat twin. We might never have seen a single V twin but for the peculiarities of the standard motor cycle frame, and it is certainly odd that this engine monopolises the high-powered motor cycle field, irrespective of frame contours.

The Passenger Outlook for 1920.

Let me talk seriously. There are several controversial theories about scientific production, but the mildest of them presupposes a minimum output of 10,000 per annum. Now, the largest British pre-war output of solo machines was little more than half that number, and I do not suppose that any sidecar or runabout specialist ever approached an annual output of 2,000. Several very simple cars or cycle cars—call them which you will—have engaged expert staffs, laid down new plant in new factories, and are organising for outputs of 10,000. They will turn out good stuff, and undersell the sidecar and (probably) the runabout. Unless suitable action is taken, the result would be that the runabout would disappear altogether, and that sidecars would survive only as auxiliaries fitted to standard solo machines. This would be an evil in two main respects. In the first place, rationally or irrationally, quite a lot of men are sidecar enthusiasts or maniacs. They would rather drive a sidecar (or a runabout, as the case may be) than anything else. They will be restricted to the "gum-on" sidecar with any bicycle you please. Secondly, other things being equal—design, production, etc.—a three-wheeler must be cheaper than a four-wheeler; and if production methods are not applied to the three-wheelers, impecunious motorists will be deprived of a mount which suits their purse.

Mass Production of Sidecars.

For these reasons I expect the three-wheeled trade will shortly undergo a marked transformation. Somebody will organise mass production of detachable sidecars for a certainty. The small outputs of complete combinations will get hard hit as time goes on. The small outputs of three-wheeled runabouts will also feel an increasing breeze. The logical outcome will be a marked reduction in the number of makes. Production light cars (or cycle cars) will eat into the passenger motor cycle market in due course: they are doing so already, though the motor famine conceals the extent. The correct counterblast is threefold:

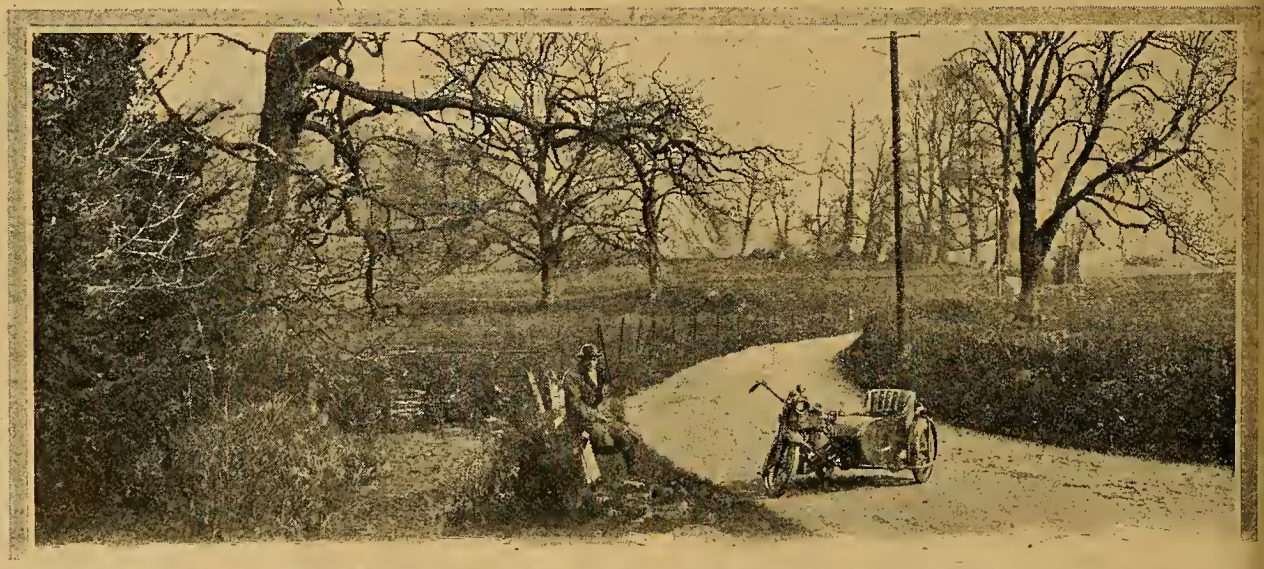
(1.) Mass production of detachable sidecars by a few firms.

(2.) Mass production of complete combinations by a few firms.

(3.) Mass production of runabouts by a few firms—let us hope one runabout *de luxe* and one cheap, simple runabout will figure in the list.

Open Minded Users.

I have said so much about the new light cars and cycle cars in general terms that I ought to close with a few particulars. I have personally tried many of these designs. I ask any open-minded user what chance the sidecar and the three-wheeled runabout have against the 1914 type of water-cooled four-cylinder light car? The answer is obvious. We all know many ex-motor cyclists who have bought Singers, Calcotts, Calthorpes, Morris-Cowleys, and what not; but few of us can cite a solitary individual who has made the reverse change except under financial compulsion. It is quite commonly suspected that the new air-cooled cars compare most unfavourably with the 1914 light cars. I daresay some of them do. Those I have tried do not. The components which are common to both have been improved: the engines, gears, brakes, springs, and bodies of the newcomers are appreciably better. The climb is faster. The speed on the level is higher. The petrol and oil consumptions are superior. The cooling is fractionally better—the 1914 types steamed on really bad hills, the 1919 types show no deficiency in cooling. It is a moot point whether the fuel and the sound of a flat twin engine with two fair sized cylinders will please the average user more or less than the smooth burr of four lilliputian cylinders. But the cream of these newsters is quite extraordinarily good. And they are listed at lower prices than will be asked this winter for quite a lot of three-wheelers. Hence I am sure that the three-wheeler industry as a whole will have to get a big move on during the coming year, for the days have ended in which costly methods of turning out a thin trickle of machines can earn a dividend.



An autumn scene near Ledbury Bromesborrow. The modern motor cyclist does not store his machine with the fall of the leaf, but continues his motor cycling throughout the winter, even though his riding may be purely for pleasure.

Official Notes on the Six Days Trials.

Extracts from the Officials' Report upon the Recent Event in Wales, together with Suggestions for the Next Six Days Trials based upon this Year's Experiences.

IN submitting the judges' report of the recent Six Days Trial (published last week), the chairmen of the General, Competitions and Touring Committees—Messrs. A. W. Torkington, E. P. Greenhill, and H. P. E. Harding respectively—made the following suggestions for consideration of the Competitions Committee for future trials:

(1.) That a speed test at the conclusion of the road trial, in which engines would be required to run at full load for, say, half an hour on such a track as Brooklands, would go far to eliminate the necessity for a detailed examination of condition at the finish.

(2.) That if a speed test is not practicable a more complete examination of the machines should be made, in which the vital parts should be taken down and inspected. For this purpose it would probably be necessary to extend the time of the trial.

(3.) That the competitor or a representative of the entrant should be present at the examination of that machine after the trial in order that he may understand the reasons why marks are lost on examination, and to enable these points to be corrected in manufacture.

In commenting upon the course and weather conditions, the judges stated that the 1919 trial was organised to encourage the improvement of the motor cycle to such a pitch that its usefulness will be increased and not in any way restricted.

Referring to the course, the promoters stated that the route chosen was not so trying as to gradients as in the 1914 trials, but, by length of hills and persistency of strain, was more representative of the worst treatment to which a motor cycle might be expected to be subjected whilst in constant use under ordinary conditions.

Weather Conditions.

The trial was held with Llandrindod Wells as a centre, the competing motor cycles being parked every night in the Drill Hall and another depot near by. Monday morning was devoted to the preliminary examination, and the road test commenced at 2.30 p.m. in fine weather with 111 starters. The mid-run control this day was from 5.30 to 7 p.m., so that for the homeward journey lamps were required to be lit. No lamp failures were observed.

On Tuesday (110 starters) the weather was again favourable, and, in spite of the numerous watersplashes and rough going, schedule time was well kept.

Wednesday (102 starters) was again fine, but a thick mist for the first forty miles or so was troublesome.

Thursday (93 starters) was fine until the afternoon, when a drizzling rain commenced which got worse as the trial proceeded, and added to the difficulties of the route.

Friday (84 starters) started with showery weather, but the morning's run was comparatively easy. The afternoon, however, continued showery, and, as the route was the most difficult of any half-day, the performances of the eighty-two finishers, of whom seventy-four checked in punctually, were creditable.

The relatively large number of those who finished, the high proportion of medals awarded, and the small proportion of marks lost under the headings of reliability and hill-climbing, indicate that the route chosen did not err on the side of severity. On the other hand, the daily mileage was unavoidably greater than the judges consider desirable, as such distances must severely test the personal endurance of the drivers.

Maintenance of Tune.

These tests were conducted simultaneously under the title of the "Consistent Driving Test." The judges consider that such a term is liable to give an erroneous impression, and they would recommend that in future tests of this description the personal driving element should be discounted by arranging that a better performance on the second occasion of the hill-climb should be called for rather than a repetition of the first performance.

Comments upon Design.

The judges regret to see so few examples of the larger multi-cylinder engine, both four and two-strokes; they consider also that attention might usefully be directed to water-cooled multi-cylinder two-strokes for sidecar use where cleanliness, together with the absence of uneven torque, noise, smell, and dirt is of maximum importance.

The Scott engine is worthy of very special commendations as to the above requirements.

The importance of the final examination and the basis of marking in connection therewith appear to have been somewhat misunderstood. In previous Six Days Trials, a maximum of 12½% of the total losses was possible under "condition at finish," and in practice only 6% was deducted for such a serious fault as a frame breakage, whilst comparatively small faults, such as the steering head bearing slightly worn, were not penalised at all. In the report of the 1914 trial, the judges drew attention to this and strongly recommended that in future trials the condition at the finish should be a much more important factor in determining the final award. This year a maximum loss for final condition of fifty marks (25%) was laid down, and the judges were instructed that only machines which finished the trial in perfect condition and adjustment should retain full marks.

It would appear that the need of rapid accessibility and low gears has prevented a more general use of enclosed transmission in a Six Days Trial, whilst the belt drive continues to satisfy both makers and users in the present transitory period.

The judges regret the absence of any examples of shaft drive, which lends itself admirably to total enclosure upon a machine of general utility. A general improvement in gear box condition was noted, though the adjustment of about 30% was found faulty.

Bearings.

There is room for much improvement in this respect, as sideplay interferes greatly with steadiness of steering.

A great deal of play was noticed in the steering heads of many machines, showing either inadequate ball bearings or the absence of provision for proper lubrication. Larger bearings would appear to be desirable in most cases, or a longer head.

Sidecars.

The oustanding point of the modern sidecar combination is, apparently, its extremely inartistic appearance. These outfits, with few exceptions, compare unfavourably in appearance with the cycle car type of vehicle, and, as they afford little or no protection to the driver, it is necessary that they should excel in other directions.

It would appear that the bad roads, now common, together with tyre failure, are sufficient to cause a distinct liability to fracture, alteration of alignment, and spring breakages of sidecar chassis.

The judges would draw attention to the fact that where severe stresses have to be considered due to the road and the inertia of the motor cycle itself, the possibilities of flexibility and springing are greatly neglected.

Sprung bodies may increase passenger comfort, but they do little to reduce unsprung weight or to relieve the frame itself. The unsprung weight of some outfits must approach that of a relatively large and heavy car, and the mere stiffening of the chassis of the combination cannot cope with the strains set up by the prevention of relative movement between the wheels of the sidecar and the motor cycle. An endeavour to prevent breakages or to resist stress by the addition of weight is extremely unsatisfactory.

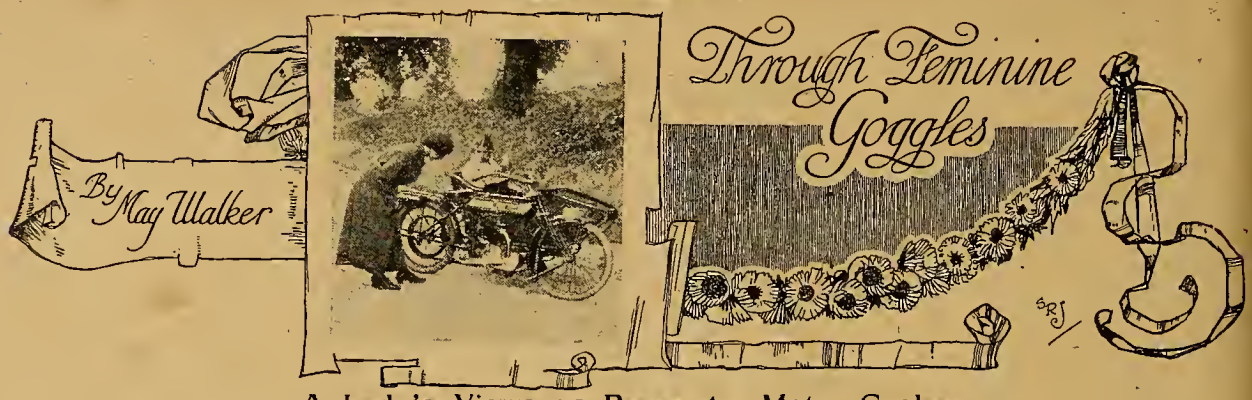
There is very great room for improvement in the attachment of sidecar mudguards, and, as it appears to be almost hopeless without unduly heavy and clumsy stays, etc., properly to secure them to the unsprung portion of the sidecar chassis, the obvious solution seems to be to attach the mudguards to the sidecar body.

Silence.

Silence and cleanliness, together with ease of cleaning, appeal to many people far more than speed, and there is no valid reason why these characteristics, supplemented by increased comfort and radical redesign of control should not approach car conditions.

The judges feel that severe condemnation of these faults alone will help to produce eventually a machine of universal appeal. The motor cycle would thus possess a far larger sphere of usefulness, and, for convenience, cost, and economy would be unapproachable by any other form of road vehicle.

The judges were Lt.-Col. A. E. Davidson, D.S.O., Mr. H. H. Gregory, A.M.I.M.E., M.I.A.E., Maj. A. M. Low, D.Sc., A.C.G.I., etc., Lt.-Col. D. F. Nicholl, D.S.O., and Mr. T. W. Loughborough, A.M.I.A.E.



A Lady's Views on Passenger Motor Cycles.

THE greater number of machines marketed to-day are designed for passenger use. Even the sporting solo rider, as the wintry weather draws in, often couples up a sidecar to make his mount less liable to skids, and, finding the convenience that accrues from the attachment, he is likely to continue it when drying roads no longer make it a thing of necessity. There is no doubt that the passenger machine supplies the cheapest form of motoring for two, with the exception of pillion riding, which, personally, I do not recommend. For business purposes, for carrying the tradesman's wares, or for a day's trip in the heart of the country, it is the mount *par excellence*. It will accommodate two or three persons, guns, and dogs, and will go wherever there is a good enough surface to provide wheel grip. It can also be turned into a gateway and there left till the day's work or play is over.

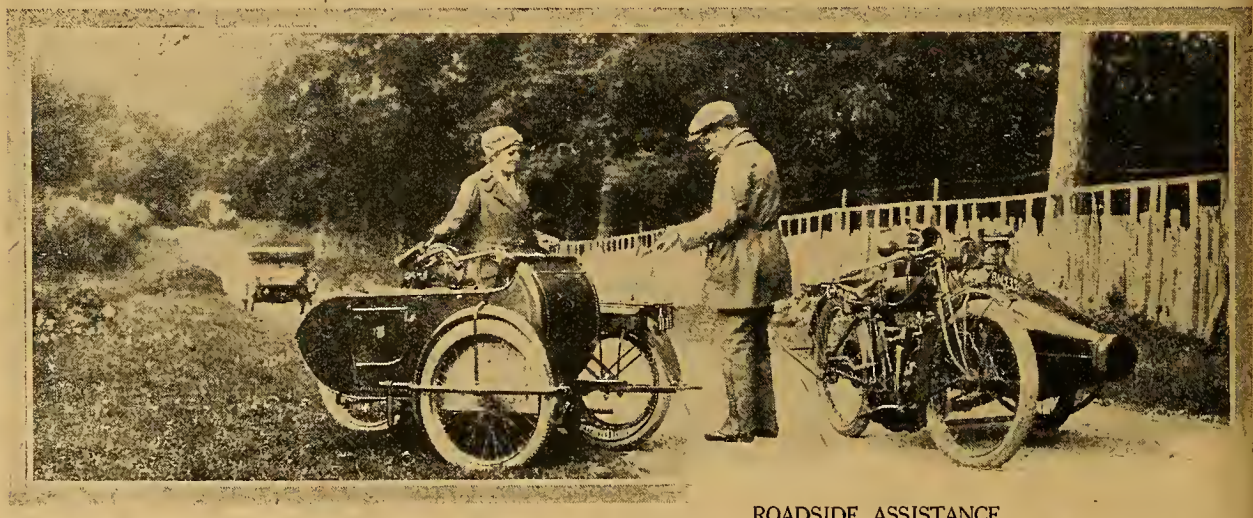
Some Desirable Features.

I have owned many types of sidecars, and each season find improvements on the old. The modern sidecar is as unlike its early predecessor as the pneumatic tyre to the solid variety. Yet I have still to find my ideal in every particular. All first-class makes have their good points, and if I enumerate a number of them perhaps some day an enterprising manufacturer will carry all my fancies to actuality.

Probably the first thing that attracts the feminine eye is the contour and lines of the bodywork. The torpedo or streamline effect is most pleasing, but ease and comfort must not be sacrificed to effect and shape. A bulbous back (favoured by the James Co., the Gloria Sidecar Co., and others in their 1920 models) provides the last word in elegance. The ideal sidecar that I am looking for must have the bulbous back with a large locker opening outwards, another locker under the seat for carrying spares and articles to which one needs to resort less often, a roomy body allowing plenty of freedom for the feet, a footboard such as Ariels fit to their sidecar, and, of course, a door. I must also have a spring wheel, for of all the types that have passed through my hands I have found none that give such a marked degree of comfort. One needs a sidecar so designed that cramping on a long journey is practically non-existent. Those tiny contraptions that are often affixed to speed mounts may be very well for short jaunts, but something more practical and substantial is required for long journeys.

Luggage Accommodation Essential.

Again, the reclining attitude with an absence of backrest is not the most comfortable. To return to my ideal. I want more lockers still. The sliding drawer that is fitted in the toe of the new Enfields is a step in the right direction; the double thickness



ROADSIDE ASSISTANCE.

There may be grounds for the present day complaint of lack of roadside courtesy when the stranded one is a mere male, but we still await news of a lady motor cyclist being refused immediate assistance when held up by trouble with her machine!

Through Feminine Goggles.—

of wood, too, should help towards warmth, and maps and small odds and ends can be kept here out of the way. When I go visiting for a few days I need a special kind of locker, as it is impossible to pack one's best frock in any of the lockers I have seen provided. The receptacle for that must be of suit case shape and impervious to dust. I am aware that I can attach a case to the luggage grid, but it is fairly troublesome to strap on, and I generally find it has worked loose enough to jar against the back of the sidecar and scrape off paint. The best arrangement would be a permanently fitted aluminium suit case, or, rather, three cases in one, capable of expanding to two or three tiers as necessary. I should then only need to lock the lid and be relieved of all the bother of strapping. In addition to this, I want a fixture for carrying the spare petrol can upright, somewhere between the motor cycle and sidecar, lined with very thick felt to prevent rattling. At present the usual place is on the carrier, and it goes to one's heart to find at the end of a journey that precious spirit has leaked along the road.

Family Sidecars.

Various types of tandem sidecars have appeared on the market, and though these are usually not pretty, where the whole family has to be taken out, usefulness must stand before beauty.

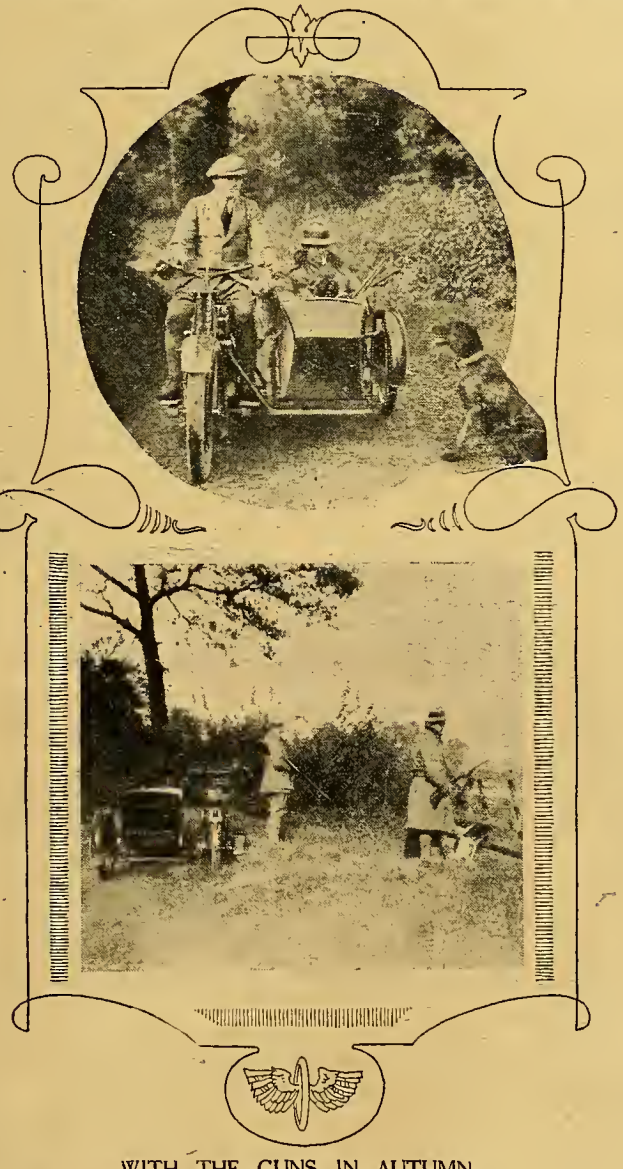
The most luxurious modern sidecars are fitted with hoods and side curtains, so that the occupant has all the advantages of a closed carriage, but though such fittings are most useful and comfortable for those who enjoy them, a hood has no attractions for me. I feel that the few times that I should need to use it would not justify the weight and expense. All else being to my fancy, I could dispense with a windscreen. One might provide one for an elderly passenger, or one who never intended to take a turn at driving, but I bring up my passenger "in the way she should go," and if I am ever to have a taste of the luxury of the sidecar, I must not allow a screen, or she would never come from behind its sheltering folds. I once had a screen made to my own design and fitted for the comfort of a delicate passenger, but on recovering health she soon required its removal.

General Appearance.

These additions that I have mentioned add to the weight of the outfit, and are more suitable where the power of the machine is more than 4 h.p.

Mudguarding of the sidecar wheel is an important point, and should be ample; a wide guard gives a better finish besides serving its purpose better. Most firms, however, are giving more attention to protection from mud and dust; we hope the rest will follow.

Some of the latest sidecars are certainly striking in appearance, and one of the most pleasing colour schemes is mauve bodywork edged with aluminium. The passenger is generally a member of the fair sex, and to her colour is a great attraction, although drab tints may satisfy the mere man.



WITH THE GUNS IN AUTUMN.

The utility of the sidecar strongly appeals to the sportsman who finds it a great convenience in reaching home from outlying parts of country.

At the Show, now so close at hand, we all hope to see our own individual tastes indulged and ideals realised. Already in our mind's eye we can see the gay stands at Olympia, the salesman expounding the good points of his models and slurring over any faults in design. Human nature is often provoking, and patience is required by the stand attendant.

Future Developments.

The war hindered evolution in all except engines, but once the world settles down again, and motoring questions are tackled in an enterprising spirit, the accumulation of experience gained during the past five years' time should produce some really fine designs in which both motor cycle and sidecar are manufactured under the eye of one designer who has considered them as essentially inseparable in so far as the mechanical conditions of springing, power production, transmission, and accessibility are concerned. In the latter case we may hope to see the universal employment of interchangeable wheels, all-round springing, and luxurious accommodation for the passenger, together with ample luggage carrying capacity.

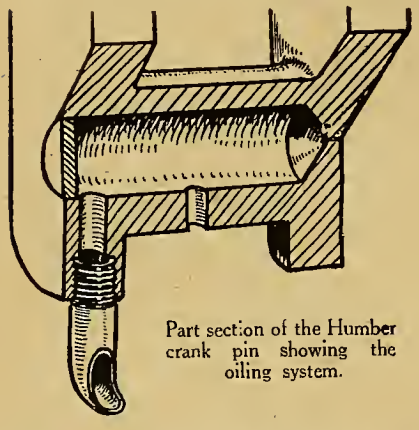
NEW MODELS.

A 4 h.p. HUMBER FLAT TWIN.

FOR some time past we have been aware that Messrs. Humber, Ltd., have been experimenting with a passenger machine on the lines of their well-known 3½ h.p. flat twin, but having a rather larger engine.

Recently, we were afforded opportunity of examining this new production, and of having a short road test.

At first sight the new 4½ h.p. model so closely resembles the 3½ h.p. that one might be forgiven for mistaking the two types. However, closer inspection reveals several modifications which are of considerable importance, although they are not very conspicuous.



Part section of the Humber crank pin showing the oiling system.

The engine has a bore and stroke of 75 × 68 mm., giving a swept volume of 600 c.c. As in the 3½ h.p., both inlet and exhaust valves are readily detachable with the seatings and pockets. A new feature, however, is incorporated in the lubrication system, for a gear type oil pump, driven from the crankshaft, raises oil from a sump below the crank case, and delivers it to constant level troughs.

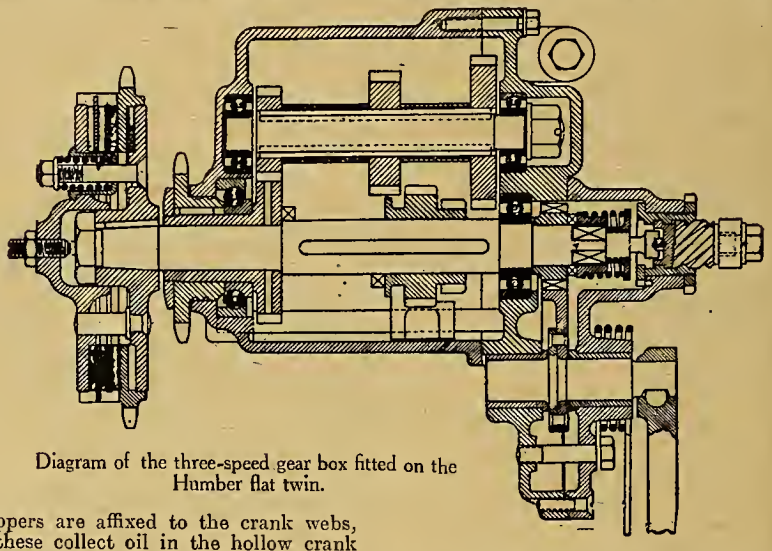
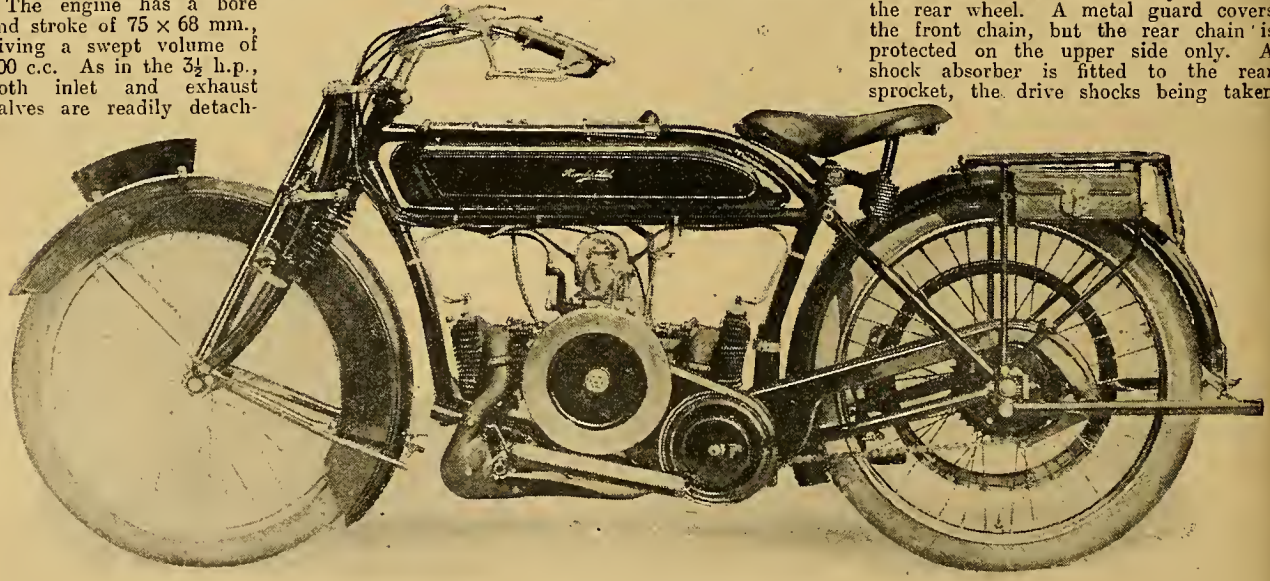


Diagram of the three-speed gear box fitted on the Humber flat twin.

Dippers are affixed to the crank webs, and these collect oil in the hollow crank pins; subsequently this oil is thrown by centrifugal force to the white metal big ends, through a hole drilled radially in each crank pin.

The primary chain transmits the drive through a floating disc Ferodo clutch to a three-speed countershaft gear. This gear is a modified form of Humber gear box, the chief differences from that of the 3½ h.p. model being that it incorporates a neat kick starter, stub teeth gears, and both middle and low gears are now formed with the sliding member. This last modification was introduced in order to prevent loss of power due to oil churning of the constant mesh low gear wheels.

The final transmission is by chain to the rear wheel. A metal guard covers the front chain, but the rear chain is protected on the upper side only. A shock absorber is fitted to the rear sprocket, the drive shocks being taken



The new 4½ h.p. flat twin Humber, fitted with an engine of 75 × 68 mm = 600 c.c.

New Models.—

by a series of coil springs and the rebound by rubber blocks.

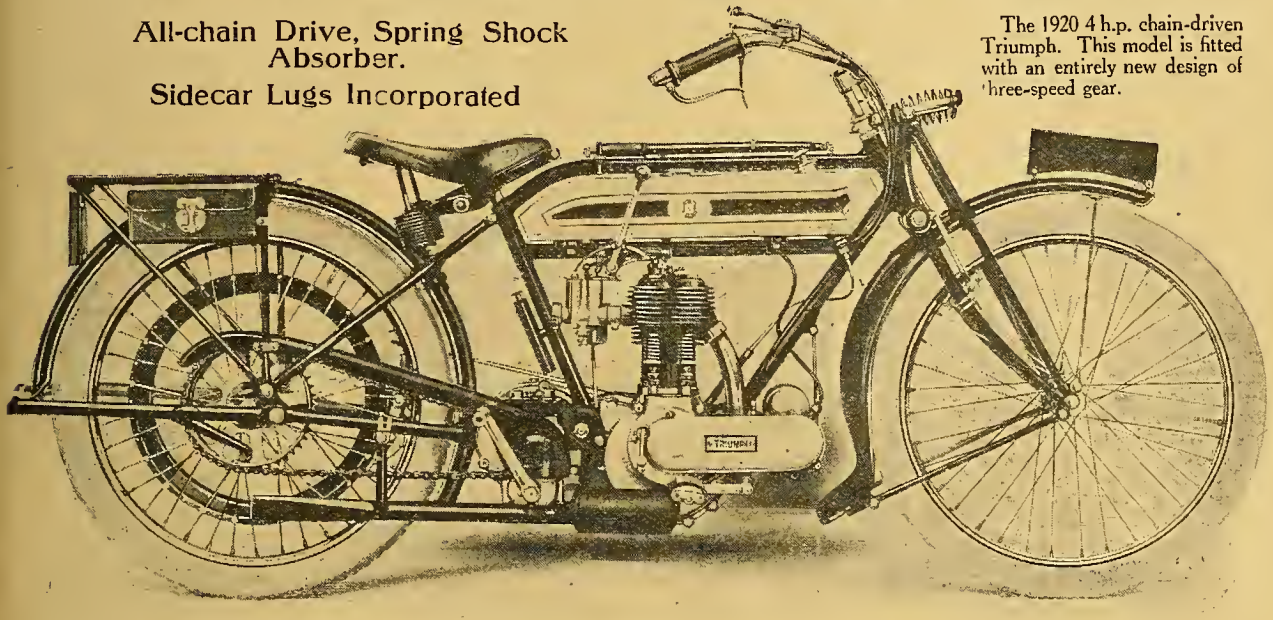
It should be mentioned that the rear wheel is very quickly detachable, the chain and brakes being undisturbed by the operation. A hinged rear guard facilitates wheel removal or tyre repairs.

The specification includes a Claudel M.I.A. automatic carburetter, E.I.C. magneto, and 26 × 2½in. Dunlop tyres. A Millford Corvette sidecar is attached at four points, and forms a roomy and comfortable conveyance for the passenger. The finish is in black and gold, and is very smart and serviceable.

On the road, we found the engine was extraordinarily quiet and smooth running, and the gears also were silent and easy to engage. The new model, with its 2¼ gallon petrol tank, is undoubtedly a very attractive medium-powered sidecar machine, and will draw many admirers at Olympia.

THE CHAIN-DRIVEN TRIUMPH MODEL.

All-chain Drive, Spring Shock Absorber. Sidecar Lugs Incorporated



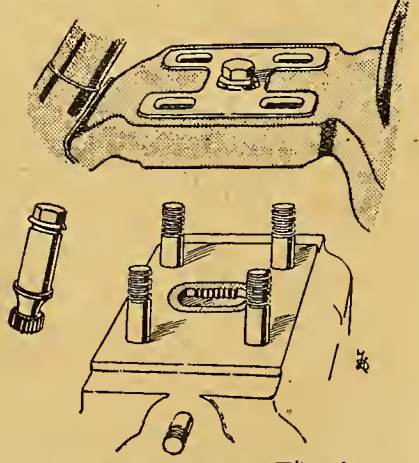
The 1920 4 h.p. chain-driven Triumph. This model is fitted with an entirely new design of three-speed gear.

IT has long been an open secret that the Triumph Cycle Co. contemplated an all-chain driven model. Nine months ago we were permitted to make an extended trial of one of the early experimental models, which, we may say, demonstrated the advance made in single-cylinder machines for sidecar work. To a certain extent the firm showed their hand by entering machines of this type in the A.C.U. Trials—in which, by the way, the Triumph was the only single-cylinder sidecar machine to gain a gold medal. With characteristic caution and thoroughness, the Triumph Co. elected to try out every detail of the new model by continued and strenuous road tests before deciding to place it before the public as a finished article, and it was only on Monday last that the press were given an opportunity of studying the final design.

The 4 h.p. engine, which has already earned an enviable reputation for reliability and pulling power, both under strenuous war conditions and in everyday use, remains unaltered, save for special bosses on the crank case to provide fixings for the chain case. It is in the transmission that the most important features lie, and these features are so pronounced that they are worthy of detailed description.

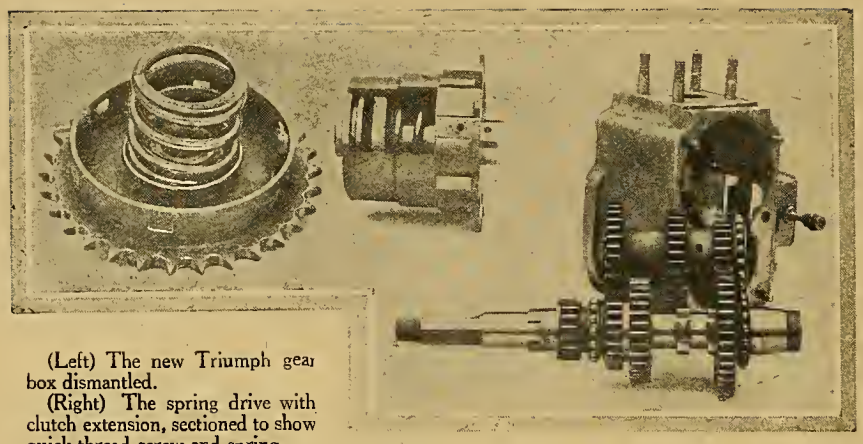
First of all the primary chain is enclosed in a special oil-tight case made of aluminium castings, held together by a series of studs. This case is fed with oil through a hollow stud in the lower part of the gear box, the oil being filtered through a gauze strainer before reaching the case. An overflow is provided to prevent an undue accumulation of lubricant, and a vent to avoid the possibility of air pressure due to heat.

Within the driven sprocket lies a disc clutch made up of seven pen steel and seven phosphor bronze plates held in contact by a powerful coil spring, the pressure of which can be released in a most ingenious manner.



Micrometer adjustment for Triumph gear box. By turning the toothed plug, which acts on a rack in the top of the gear box, a fine adjustment is provided for the front chain.

Between the gear box and sprocket lies a fixed three-faced cam, engaging with which are three feet on a rotatable collar, the movement of which is controlled by the clutch lever. A movement of the clutch lever thus causes the feet, and, consequently the collar, to rise on the cams, and thus, through a suitable thrust race, to force outwards a clutch withdrawing flange. This flange is fitted with three short pegs, which pass through the flange of the chain wheel and press against the clutch spring thrust race. By this means, the pressure on the clutch plates is relieved before any lateral motion of the chain wheel takes place. So much for clutch actuation; but the most interesting feature of the transmission lies within the diameter of the clutch spring, for the drive is not taken directly from the plates to the gearshaft, but passes from an extension of the inner clutch member through a quick-thread screw to a bronze member suitably and slidably mounted on the gearshaft. This bronze member is normally pressed outward by a coil spring, but any sudden snatch, such as is caused by an engine pulling at slow speeds, causes the screwed member to be forced inwards against the action of the spring, thus permitting a certain amount of relative motion between the two screwed parts. In practice, this device forms a most efficient shock-absorber, and, though difficult to describe, is extremely simple and effective in action.



(Left) The new Triumph gear box dismantled.
(Right) The spring drive with clutch extension, sectioned to show quick thread screw and spring.

There is nothing to go wrong, and should the spring break (a most unlikely occurrence), the owner would be left with a rigid drive and could continue on his way until the replacement could be conveniently carried out.

The new Triumph gear box is a fine piece of work, the layshaft being of large enough diameter to permit the kick-starter spindle to pass through the inside. It is formed in one piece with all the gear wheels, and runs on large diameter caged ball bearings. Similar, but smaller, ball bearings support the mainshaft and top gear wheel, the shaft passing through a long hardened steel bearing in the gear wheel. A sliding member, composed of the low and middle gear wheels, slides on the mainshaft, which is suitably castellated. The high gear is engaged by the usual type of dog jaws. Middle gear is engaged through meshing the two spur wheels as in car practice, and low gear is engaged in the same manner, though, between middle and low, there is an interval in the castellations, so that the sliding member is free to revolve on the shaft.

Easy Gear Changing.

Another feature of the gear box is that when the gears are engaged there is practically no "back lash" in the dogs. This, of course, would be impossible if provision was not made for "centring" the sliding member before final engagement. This is done by means of a set of dogs having a great deal of clearance through which the dogs on the sliding member pass, thus being brought into direct line with the driving dogs for final engagement. This feature renders the gear box practically foolproof.

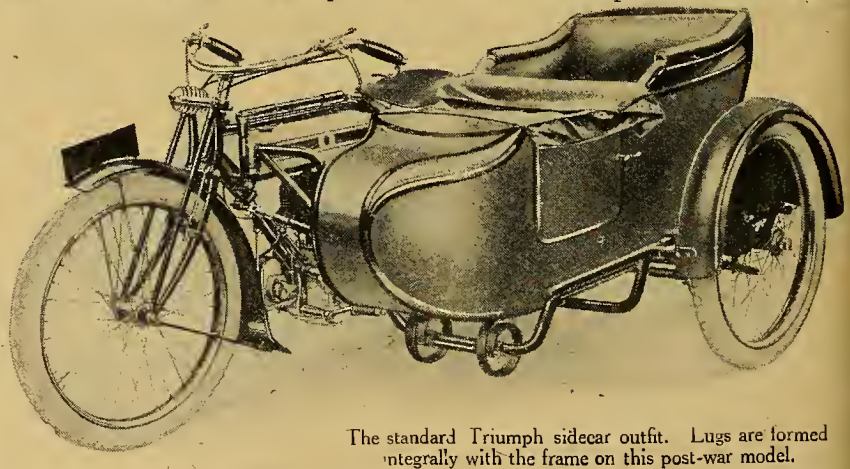
Primary Chain Adjustment.

The final drive is brought across to the right-hand side of the machine so as to be clear of the sidecar for inspection, and this chain is protected only on the upper side. The whole box is held up to the bottom bracket by four studs, and a particularly neat micrometer chain adjustment is provided. As previously mentioned, the kick-starter shaft passes through the centre of the layshaft, and a full gear wheel on the end meshes with a smaller pinion dogged to the chain wheel; thus the kick-starter operates directly and not through the clutch. The ratchet gear is positive and most ingenious, and the teeth are automatically tripped out of action when the starter pedal is returned to the normal position.

Integral Sidecar Lugs.

For the first time sidecar lugs are incorporated in the Triumph frame, and a beautifully finished Gloria sidecar, with spring suspension wheel, can be obtained with the machine, in combination form. At present, all Triumph models will be sold with the existing type of spring fork, but the enclosed spring type previously described in *The Motor Cycle* of April 24th, 1919, will be standardised as soon as production facilities admit. In addition to the above model, which will sell at £110 solo, and £154 with sidecar, the well-known chain-cum-belt model, with Sturmey-Archer gear, can be obtained for £97 solo, or £141 with the same type of sidecar.

The Triumph Junior (two-stroke) remains unaltered, and will sell at £63. In addition, a 3½ h.p. competition machine is on the stocks, but this will not be available for the public for several months.



The standard Triumph sidecar outfit. Lugs are formed integrally with the frame on this post-war model.

Electric Lighting for Motor Cycles.

A Noticeable Tendency. Will Combined Lighting and Ignition be Standardised?

THERE is every promise that before very long electric lighting will be as general on motor cycles as it is on present-day cars. We have already published details of several dynamos suitable for motor cycles, and elsewhere in this issue we are able to give advance particulars of another combined ignition and lighting unit which, being practically the same size as a conventional magneto, is particularly suitable for solo machines of even the smallest type. There are others, including one which will sell at a figure in the neighbourhood of £5, and another, with lamps and accumulator complete, for about £12 10s. So, provided these cheaper outfits prove to be reliable, there will shortly be no reason why every motor cyclist, if he so desires, should not have the conveniences of an electric lighting set, which at present is regarded more as something only the most opulent class of motor cyclists can afford.

Unquestioned Advantages.

Only those who have used an efficient dynamo lighting set on a motor cycle can fully appreciate its great convenience and cleanliness. Practically every car manufactured in this country and in America is catalogued with electric lighting equipment, and most of the motor cycles produced in the U.S.A., too, are so equipped. In this connection, it is interesting to know that a scooter and an auxiliary motor attachment are fitted with a magneto of the flywheel type from which current is available for lighting purposes. Therefore it is not unreasonable to expect an electrical unit on similar lines ultimately to find favour with designers on this side of the Atlantic.

At the present time there are many riders who look askance at electrical equipment, especially when it is combined with the ignition, but little need be feared on the score of unreliability, especially with some of the later systems which do not depend on the storage batteries for their efficiency.

1920

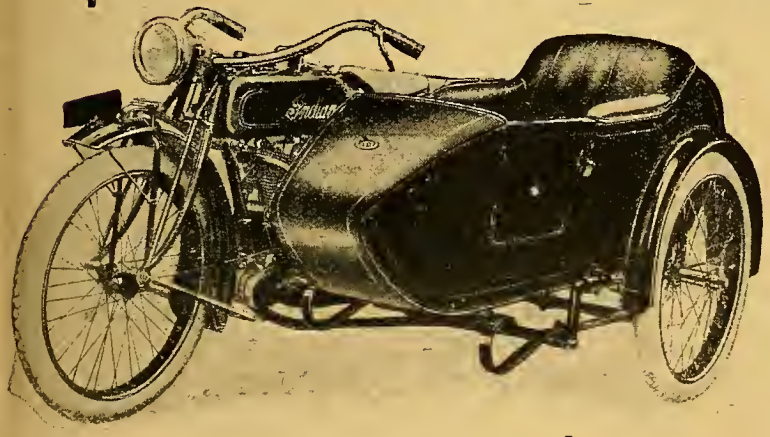
Indian

Motocycles

Will be on Exhibition at

OLYMPIA
STAND 93.

Do not finally decide on your new mount until you have inspected our latest productions.
In the meantime send for an advance announcement and the name of the nearest appointed Indian Agent.



NE20—7 h.p. Powerplus Combination.

"Indian Motocycle" Hendee Manufacturing Co.

HENDEE MANUFACTURING CO.,
"Indian House,"
366-368, Euston Road, LONDON, N.W.

Telephone: Museum 1643.
Telegrams: "Hendian, Eusroad, London.

AUSTRALIA—109-113, Russell St., Melbourne. AFRICA—Indian House, 127-9, Commissinner Street, Johannesburg Indian House, 579, West Street, Durban. Indian House, Strand Street Port Elizabeth.

Humber

At Olympia Stand No. 85.

The 4½ h.p. Humber Motor Cycle exhibited at Olympia has a flat twin cylinder engine, as in the 3½ h.p. model, but it should create a greater demand, because it is constructed for sidecar work as well as solo, whereas the 3½ h.p., though it did splendid service for riders with combination attached, was generally recognised as a "solo machine."

There is ample margin of power reserve in sidecar work with the 4½ h.p. Humber, and among other decided advantages note particularly these :—

A very efficient silencer.

Specially constructed frame to allow of easy removal of cylinders.

A kick-starter, in place of the handle-starter used on the 3½ h.p.

The 4½ h.p. model has been severely tested and proved thoroughly reliable, as well as economical in running.

It will be staged at Olympia, November 24th-29th, both as solo and with attractive and comfortably-sprung sidecar.

STAND 85.

HUMBER, LIMITED.

Head Offices and Works:

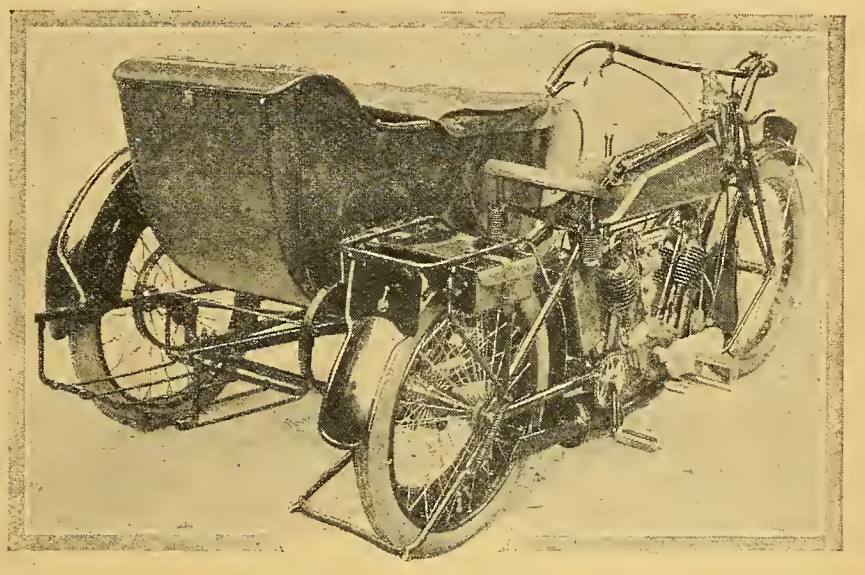
COVENTRY.

The 7-9 h.p. Rudge Multwin.

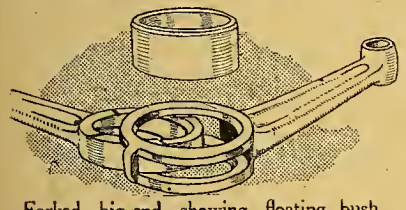
50° V Twin Overhead Inlet Valve Engine, Multi Gear. A Design largely based on Standard Rudge Practice throughout.

THE twin-cylinder Rudge engine was first planned some little time before the war, and is now definitely announced as one of the range of models offered to the public during the 1920 season.

To those riders who favour the infinitely variable type of belt transmission, the new engine will make a special appeal, since the necessary limitation of the lower gears with this form of drive has rather ruled out the small Rudge models for heavy sidecar work in mountainous districts. The larger engine, therefore, supplies the extra power which is desirable, and, being of the full 998 c.c. capacity, should answer every requirement, and withal, may be expected to have more than ordinary speed, by virtue of the 3½ to 1 top gear.



A powerful sidecar outfit. The 7-9 h.p. Rudge Multwin, which is designed on exceedingly graceful lines.

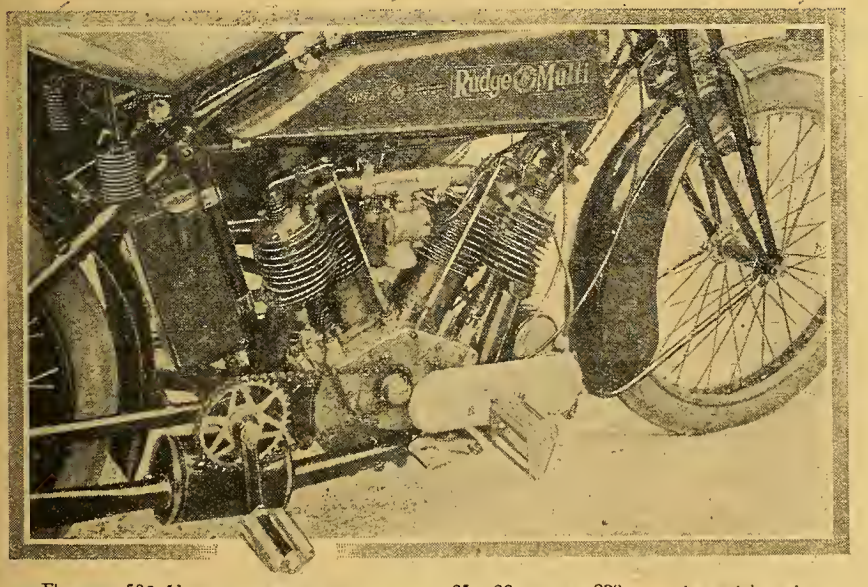


Forked big-end showing floating bush which runs on roller bearings on the crank pin. Note the off-set connecting rod.

The engine, so far as externals go, and excepting the *désaxé* cylinder setting, is at once recognised as being characteristically "Rudge," for the chief details are similar to those of the well-known single model; the inlet valves being placed above the exhausts in detachable domes. A very clean exterior characterises the crank case, which is an aluminium casting, entirely free from ridges, designs, or lettering of any kind likely to hold dirt or interfere with ease of cleaning.

Roller Bearing Connecting Rods.

A T shaped induction pipe, which telescopes directly on to the inlet dome stubs and is there secured by clips, carries a vertical model Senspray carburetter, which depends between the cylinders.



The new 50° V-twin engine, bore and stroke 85 × 88 mm. = 998 c.c. A special vertical Senspray carburetter is fitted, and a chain-driven magneto.

Top feed to the float chamber is employed, and the air intake points downwards.

Neat valve lifters, similar to those of single-cylinder models, operate by means of small levers under the tappet heads, and the usual Rudge pedalling gear, rotating the engine through a positive acting friction device on one of the half-time wheels, is retained for starting purposes.

Rudge engines are noteworthy as being amongst the few made which are fitted with roller bearings in both big and small ends of the connecting rod, and this practice is followed in the twin-cylinder model. The application of rollers to the crank bearing of a V twin, in which both rods work on a common pin, is not without its difficulties, and the usual side-by-side arrangement was not considered perfect. In order to eliminate the short couple, which would otherwise exist, a peculiar construction of forked rods is used; the single rod works inside the double one, and the latter has a small stiffening piece bridging the two sides of the fork. A steel bush passes through the eyes of the rods, and is a floating fit in both; this bush bears on rollers which run between it and the crank pin, and these are the full width of the combined big end. The workmanship in this part is exceptionally good, ample provision being made for lubrication.

T.T. Frame Design.

Oil is carried in the tank behind the saddle tube, and delivered to the engine through a foot operated pump. The latter discharges through a short pipe into the crank case in such a way that each fresh charge of oil is injected between the two flywheels directly on to the big ends.

A type of frame popularised on the Rudge T.T. models is used on the 7-9 h.p. twin; it has a sloping top tube, and

The 7-9 h.p. Rudge Multwin.

has a large tank holding a full two gallons of spirit. In other respects, also, the Rudge specification is followed. It is satisfactory to note that all the lugs employed in the frame are steel stampings, and that these, together with the connecting rods, flywheels, and other parts capable of being stamped, are manufactured throughout in the Rudge works.

The well-known Multi gear, with free engine clutch on the engine-shaft, is used, and this, in conjunction with the large reserve of engine power available, should render satisfactory service, even when a heavily laden sidecar is being towed; incidentally, the machine is neither too weighty nor too unwieldy for solo use, and should be an ideal fast touring mount.

The detail work is well carried out, and all the refinements associated with this make are included, such as screw-down greasers to the fork bearings, spring-up rear stand, hinged rear number plate, and mudguard extension, drop pedal footrest, and celluloid finished handle-bars, hubs, and gear lever; 650 × 65 mm. light car tyres are fitted on extremely heavy round base rims.

The M-L Lighting and Ignition Unit

A Novel Electrical Machine generating Current for Lamps and Ignition.

MUCH attention of late has been devoted by manufacturers of electrical ignition apparatus to the incorporation in one machine of suitable means whereby not only the functions of the magneto are performed, but also the generation of lighting current is made possible.

The latest device of this nature which we have had the opportunity of inspecting is the M-L lighting and ignition unit, which, while being neither a combination of magneto nor dynamo as ordinarily known by the motor cyclist, yet embodies the characteristics of each and performs in the dual capacity.

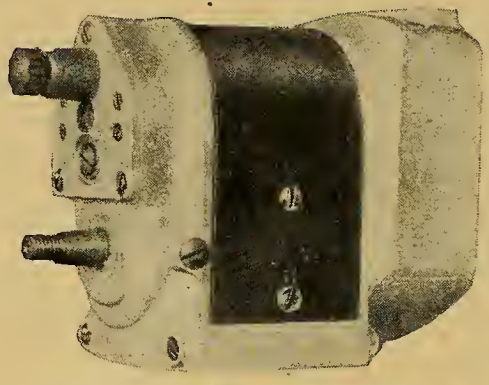
This particular instrument is no larger than a pre-war single-cylinder magneto, excepting for the end extension, which forms the housing for the primary circuit interrupter and its reduction gear, and the weight is only slightly in excess of a standard magneto.

Since it is still in the experimental stage, and production of the present model has not yet been decided upon, precise details of the interior mechanism must be withheld, but its action may be briefly described.

Small Accumulator.

The apparatus consists essentially of the following parts: a low-tension generator running at one and threequarter engine speed, a stationary transformer, and a contact-breaker running at half engine speed working in conjunction with a wipe contact device which short-circuits the transformer except at the moment when the sparking current is required.

A battery is connected to the circuit, but it is not essential to the working, and its failure or removal in no way interferes with the ignition or lighting; it is merely used to steady the lights and



Exterior view of the M-L lighting and ignition unit. In size it is little greater than the ordinary magneto.

to provide illumination when the engine is stationary, hence its dimensions may be kept quite small. Another advantage of this system is that, owing to the use of permanent magnets, the voltage from the generator fluctuates surprisingly little with varying rates of engine revolutions, and that charging of the battery commences at the lowest speeds, thus dispensing with the need for any other control than the simplest form of mechanical cut-out.

A brief explanation of the working of the system will be of interest to the technically inclined reader, and its simplicity will be evident from the diagram herewith.

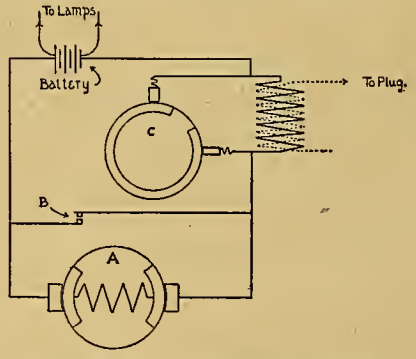


Diagram showing the circuits. The working principle is very simple and can be readily understood by reference to the explanation in the text.

The generator A, driven at one and threequarter engine speed, is an H-section armature, running between the poles of a permanent magnet of ordinary magneto type. A simple two-segment commutator enables a continuous current to be collected by two dynamo pattern brushes. At B are two platinum points through which the generator winding may be short-circuited, and these are closed by a cam fixed to C, and rotating at half engine speed. C is an interrupted segment through which, by means of suitable brushes, the primary winding of the high-tension transformer may be either short-circuited or brought into the path of the current from the generator to the batteries.

Now let us consider the action. With the segment C in the position shown, and the contact points open, the current generated by A passes directly to the batteries or lamps. When the instant in the cycle of operations for the requirement of the spark approaches, the interrupted portion of C comes under one of the brushes, thus bringing the transformer primary into series with the generator, and the cam closes the platinum points, and shorts the generator windings. A primary current of great intensity is built up, and when the armature reaches the maximum position the points separate, and the inductive flow rushes through the circuit by way of the transformer primary, and a high-tension current is induced in the secondary winding, and the spark occurs at the plug.

Steady Voltage.

It will be seen that the ignition in no way depends on the battery; indeed, we have seen a standard single-cylinder outfit running on this apparatus with the battery disconnected, and the fluctuation of the lights was remarkably small, even when the engine was alternately opened out and shut off to a mere tick over.

We were altogether much impressed by our preliminary inspection of this unit, and can congratulate its designer on his achievement, which, without being freakish, entirely departs from the beaten track, and at the same time avoids the weaknesses of some of the earlier efforts to achieve the same result.

A £100 CYCLE CAR.

FOR years manufacturers have been fascinated by the £100 mark to which to produce a four-wheeled runabout, and it must be said that, even in the days when the purchasing power of money was twice as much as it is to-day, very few succeeded. It is, therefore, all the more interesting to know that a serious attempt to market a £100 two-seater is being made by a Golders Green firm for 1920, and, from particulars to hand of the preliminary model, a reasonable measure of success appears to be in sight. The machine will be known as the Challenge, and its specification includes a 6 h.p. engine, two speeds, and transmission is by a single chain and belt. A sporting two-seater body is fitted.

Current Chat

Times to Light Lamps.

	Greenwich Time.
Nov. 13th	4.43 p.m.
,, 15th	4.40 ,,
,, 17th	4.38 ,,
,, 19th	4.35 ,,

The Triumph Directorate.

Lieut.-Col. C. V. Holbrook, A.S.C., late Director of Mechanical Transport and Controller of the Disposal Board, has been elected to a seat on the board of the Triumph Cycle Co., Ltd., Coventry.

Brussels Show.

A motor car and motor cycle show will be held at Brussels from January 10th to 18th inclusive. The exhibits are confined to Belgian manufacturers of cars, motor cycles, cycles, and accessories.

A Meet of M.M.G.S., 26th Battery, at Olympia.

Mr. Southcombe May, hon. secretary, Motor Cycling Club, and formerly sergeant No. 3 Section, 26th Battery, M.M.G.S., writes suggesting that old boys of the M.M.G.S.—particularly of the 26th Battery—meet at Olympia. As the later batteries rode Clynos, the suggestion is that the meeting place be the Clyno stand on the Wednesday evening. Mr. Southcombe May has obtained permission of the Clyno Engineering Co., who fell in with the idea readily. We think the idea a good one, and no doubt many ex-Service men will be pleased to take this opportunity of meeting old comrades.

THE MOTOR CYCLE

SPECIAL OLYMPIA SHOW NUMBERS.

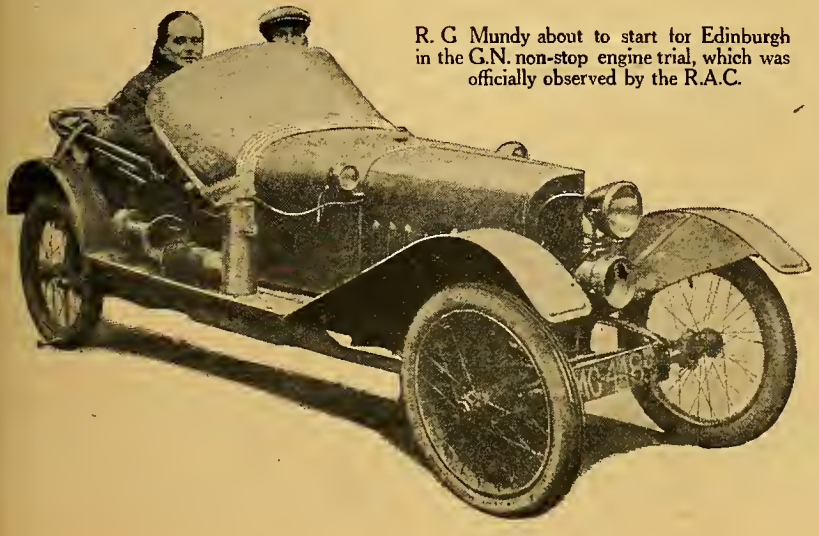
Nov. 20th.—This issue will contain a forecast of the Exhibition, particulars of new models, also plan of the Show and list of exhibitors. This number will be on sale at the Show.

Nov. 27th.—Full Show report. This number will also be on sale at the Show.

Dec. 4th.—Review of sidecars, accessories, tyres, etc. Impressions of the Exhibition.

The Institution of Automobile Engineers.

Advantage is to be taken of the presence of the motoring world in London during Olympia Show week to hold a reception of members of the Institution of Automobile Engineers. The idea is to afford members an opportunity of meeting the council and each other in a more sociable manner than is generally possible at the monthly meetings. The reception takes place at the Kensington Town Hall, to-day, at 3.30 p.m. Speeches will be followed by tea and music.



R. G Mundy about to start for Edinburgh in the G.N. non-stop engine trial, which was officially observed by the R.A.C.

Special Features.

THE PASSENGER OUTLOOK.
PASSENGER MACHINES FOR 1920.
SIDECAR HINTS.

French Driving Licence.

There is just a possibility that the driving licence *(permis de conduire)* may be abolished in France. A committee sat recently in Paris to consider the question.

To the Rescue!

The Beckenham fire brigade's motor cycle fire outfit rendered first-aid at a local fire last week. The tricar, two firemen, and chemical extinguisher speedily overcame the outbreak.

Black and Gold.

The black tank, lined with gold, is increasing in numbers and popularity, and quite an array of machines so finished will be staged at Olympia. Does this mean that eventually the coloured tank will disappear? At one time the aluminiumised tank was recognised as *the* finish, but it now takes second place.

The R.A.C. 5,000 Miles Benzole Trial.

The two Triumph motor cycles which have been undergoing a strenuous trial on benzole finished their 5,000 miles a little after three o'clock on Wednesday, the 5th inst. Both machines were, naturally, covered with mud, as the weather conditions during the latter part of the trial were exceptionally bad. Neither had experienced any trouble whatsoever. The dismantling of the cylinders of both machines will take place at Queensberry Mews, South Kensington, London, S.W., under the official observation of the A.A. and M.U., and the report issued very shortly.

The Annual General Meeting of the Motocycle Club of France.

At the recently held Annual General Meeting of the Motocycle Club of France, the Marquis de Nareinty-Tholozan was elected president. The new president was a captain in the French Aviation Corps during the war, and is an old and active motor cyclist. Several vice-presidents were elected, and also the competitions and touring committees. Contrary to the practice usually followed in English clubs, the competitions committee consists of several members of the trade and several trade riders. At the end of the meeting M. A. W. Polak, the former president of the club, was elected honorary president. M. Polak has always been a keen worker on behalf of the M.C.F., and is representative in Paris of Messrs. Brown Brothers, Ltd., and the Birmingham Small Arms Co., Ltd.

Passenger Machines of 1920

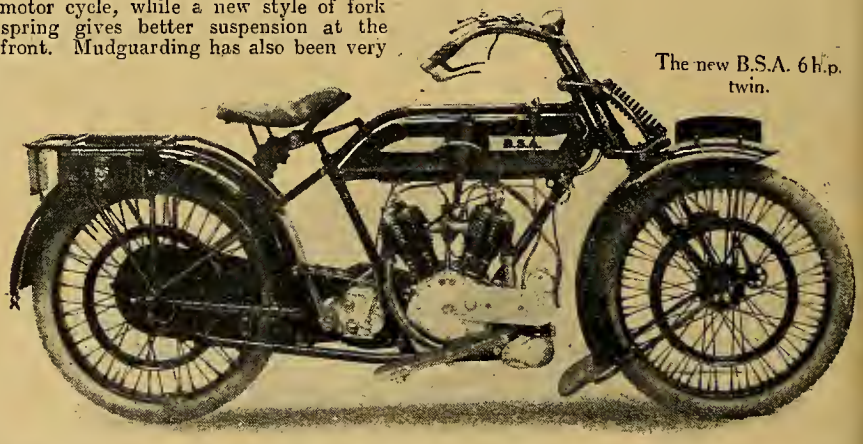
Anyone who spends but a few hours on a main road cannot fail to be impressed with the number of passenger motor cycles and runabouts that pass. Before the war the greater number of motor cycles were ridden solo, but the passenger machine has been steadily increasing in popularity until at the present day there are comparatively few motor cycles designed for solo work only, excepting, of course, lightweight two-strokes and a few four-strokes.

The reason is not far to seek. The increase of prices and decrease in the value of money has driven many car owners to economise, and added to this a very large section of the community has come into touch with things mechanical during the last five years, and has been bitten with the fever, as might be expected. Undoubtedly, light three and four-wheelers are the cheapest form of travel for two, and the freedom of the road has an attraction which must be experienced to be realised. A week end in the country is an easy matter for the owner of a modern motor cycle, and if he is a family man it is wonderful how many of the family can be accommodated on a motor cycle and sidecar. Only the future can show whether the new light four-wheelers will encroach upon the enormous demand for motor cycles and sidecars, but whether or not this will be the case, we shall continue to encourage all types of economical motor vehicles which are of real interest and likely to appeal to the motor cycle public—sidecar outfits, three-wheelers, or four-wheelers, it matters but little to the man of limited means, provided that the price approximates to that of a motor cycle and sidecar and the article is mechanically sound.

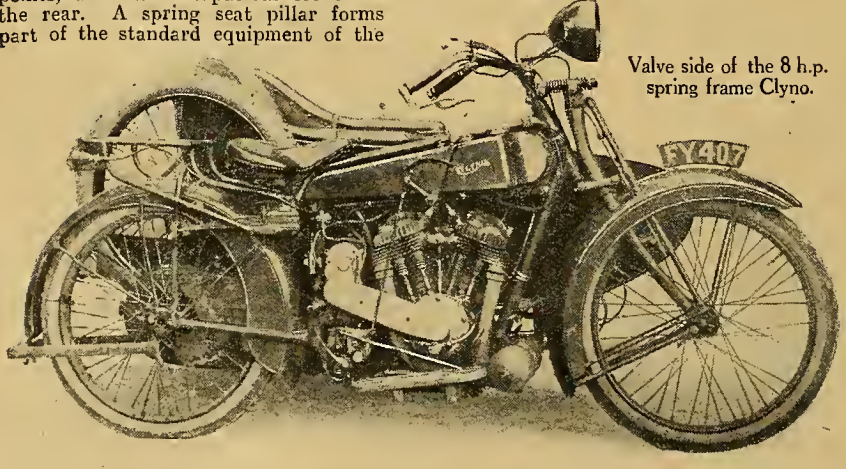
THE B.S.A. ENTERS THE TWIN FIELD.

UNDOUBTEDLY one of the most popular machines of 1919 has been the B.S.A. single-cylinder motor cycle, and its success in the big competitions was crowned by the winning of the team prize in the recent A.C.U. Six Days Trials. For 1920 the range of passenger machines will include the 4¼ h.p. chain drive machine at £95, a chain-cum-belt 4¼ h.p. model at £93, and the new 6-7 h.p. twin model described in *The Motor Cycle*, October 2nd. The price of this machine, with 28 × 3in. tyres, is £130, and £38 for sidecar.

This latter model has a mechanically lubricated twin engine of 76 × 85 mm. (770 c.c. capacity), having roller big ends, and the general specification includes three-speed gear, all-chain transmission, enclosed in neat but substantial cases, and interchangeable wheels. The sidecar is particularly roomy, attached at four points, and has a capacious locker at the rear. A spring seat pillar forms part of the standard equipment of the motor cycle, while a new style of fork spring gives better suspension at the front. Mudguarding has also been very efficiently carried out, enormously wide domed guards being fitted.



The new B.S.A. 6 h.p. twin.



Valve side of the 8 h.p. spring frame Clyno.

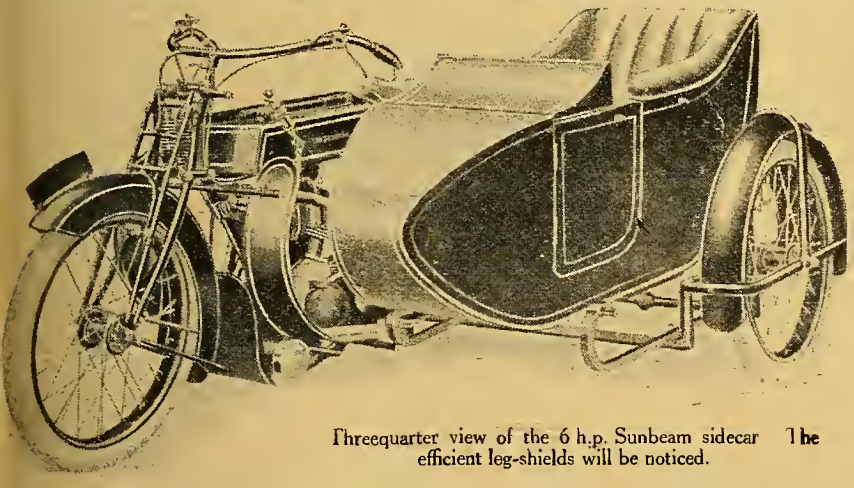
THE CLYNO SPRING FRAME MACHINE.

Long anticipated as one of the outstanding machines of the few new designs produced since the end of the war is the 8 h.p. spring frame Clyno, which was fully described in *The Motor Cycle* so far back as February 20th this year. Difficulties in changing over from war work, however, have held up the production of the machine, but there is now every promise that deliveries will commence early next year. Having exceptionally high ground clearance, rear wheel sprung by laminated springs, and 28in. × 3in. wheels, the Clyno is in every way a colonial model such as is demanded by overseas' buyers as well as a large percentage of motor cyclists in this country. The engine has a bore and stroke of 76 × 102 mm. respectively, the total capacity being 925 c.c. The cylinders, which are set at 42°, have heads and barrels which are quickly detachable by removing one nut and slackening off another. Lubri-

cation is by mechanically-driven pump, and a hand pump is also fitted, with which, by means of a two-way tap, the driver may deliver a charge of oil to either engine or gear box. An efficient shock-absorber on the engine-shaft renders the drive particularly smooth. The chain cases are of cast aluminium. The illustration shows the machine fitted with the Lucas Magdyno and lamp equipment.

AN 8 H.P. TWIN WITH OUTSIDE FLYWHEEL.

If only on account of its outside flywheel, the 8 h.p. twin Blackburne stands in a class by itself. For many years the Blackburne single, in various forms, has been regarded as a prototype of the engine of the future, but the big twin, embodying the same features, *i.e.*, detachable heads, plain bearings, and outside flywheel, is a proposition comparatively new to the present-day motor cyclist. It made its public debut in the London-Edinburgh run last Whitsuntide, and all who saw it were impressed by its smooth and silent running.



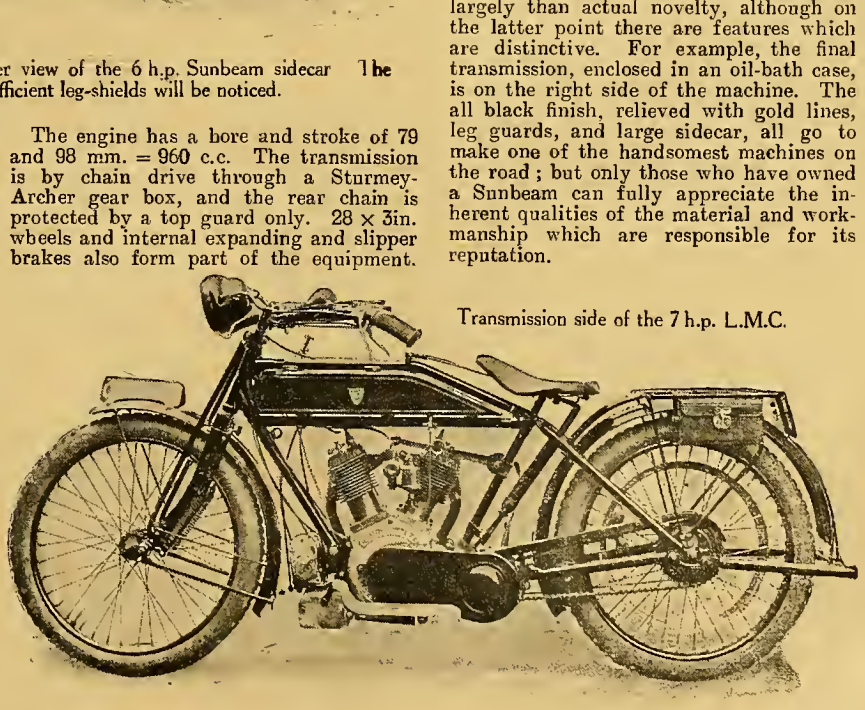
Threequarter view of the 6 h.p. Sunbeam sidecar. The efficient leg-shields will be noticed.

The cylinders are 85 × 88 mm. (998 c.c.), and the engine is placed sufficiently high in the frame to give ample ground clearance for overseas as well as home country requirements. The magneto is placed at the rear of the seat tube. Large in capacity, the sidecar is suspended on coil springs, and, in every way, the Blackburne twin is a most attractive machine of the de luxe type.

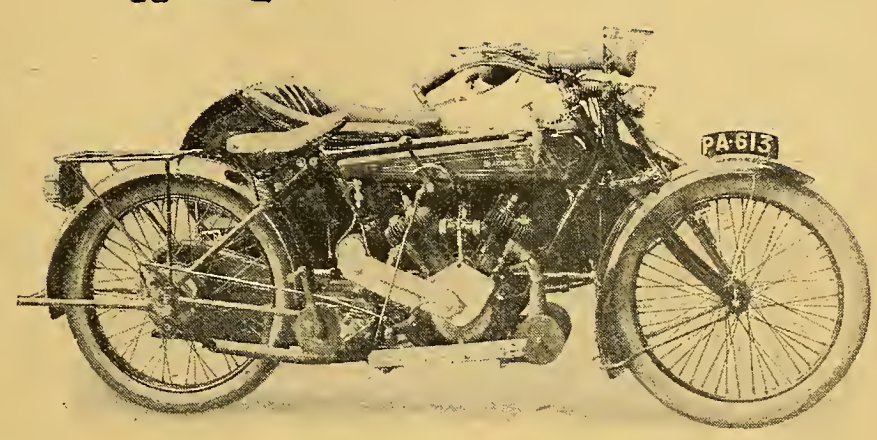
A LARGER L.M.C. TWIN FOR 1920.

Long stroke engines are coming into favour with designers of twin-cylinder power units; in fact, one may say that all the new designs of V twin engines are of this type. The new 7-9 h.p. L.M.C. is an example, and is a model embodying many features which will appeal to the sidecar owner at home and abroad. Among these may be mentioned the method of springing the driver's weight. The saddle is supported on a long leaf spring, pivoted at its forward end on the frame at a point about midway along the top tube. At its rear end the spring swivels on the top of a spring-loaded plunger, which is connected by tension rods to the footboards. In addition, the seat-pillar also contains a plunger with a roller head which bears upon the centre of the main frame of the saddle. Below this plunger are inserted springs of predetermined strength to suit the weight of each individual rider.

The engine has a bore and stroke of 79 and 98 mm. = 960 c.c. The transmission is by chain drive through a Sturmey-Archer gear box, and the rear chain is protected by a top guard only. 28 × 3in. wheels and internal expanding and slipper brakes also form part of the equipment.



Transmission side of the 7 h.p. L.M.C.



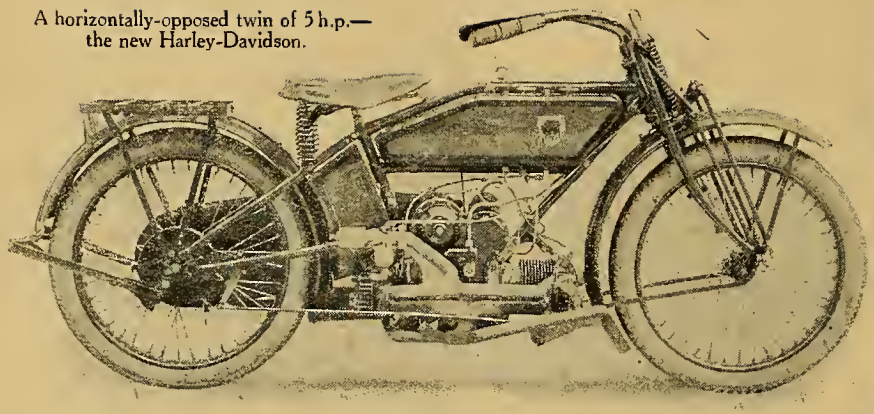
Valve side of the 6 h.p. Blackburne sidecar.

THE SUNBEAM PROGRAMME. 3½ AND 8 H.P. MODELS

Considering the success and popularity of the 3½ h.p. Sunbeam, both as a solo and sidecar machine, it is not surprising that it will again be marketed as one of the Sunbeam chief products. For next year, however, an improved front fork springing will be embodied, which comprises a single leaf spring, and is of particularly pleasing design. The Sunbeam sidecar for this model possesses several features which will interest visitors to Olympia. Incidentally, the way in which this engine pulls a sidecar over arduous trial routes is sufficient proof that the 500 c.c. unit will accomplish serious passenger work.

The 8 h.p. model remains practically unaltered—a handsome machine in the front rank of the world's motor cycles—in which refinement, quiet running, and general reliability figure more largely than actual novelty, although on the latter point there are features which are distinctive. For example, the final transmission, enclosed in an oil-bath case, is on the right side of the machine. The all black finish, relieved with gold lines, leg guards, and large sidecar, all go to make one of the handsomest machines on the road; but only those who have owned a Sunbeam can fully appreciate the inherent qualities of the material and workmanship which are responsible for its reputation.

A horizontally-opposed twin of 5 h.p.—the new Harley-Davidson.



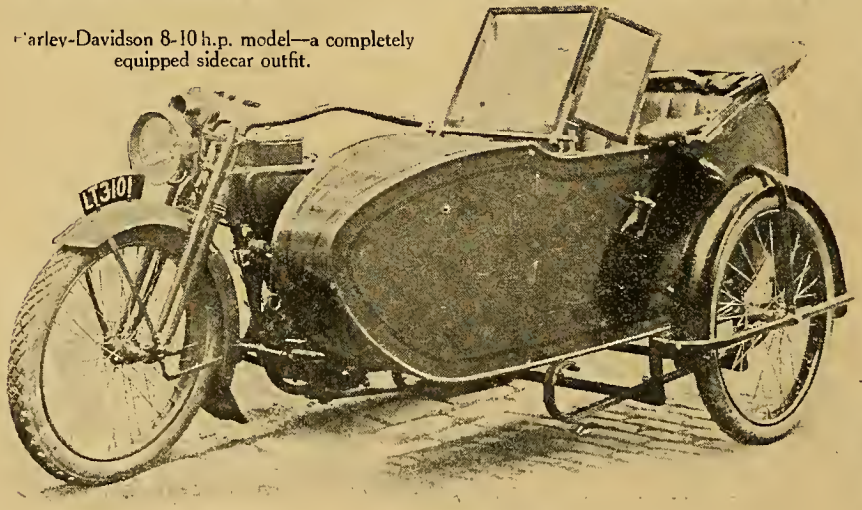
THE FLAT TWIN HARLEY.

Although designed as a solo mount, the new Harley-Davidson opposed twin is of a size used for sidecar work in this country, and as such it may have a strong appeal with British motor cyclists. It departs from conventional flat twin practice by embodying the gear box on the upper side of the crank case, hence the transmission case is somewhat long and disposed at an angle. The engine, which has a bore and stroke of 70×76 mm. respectively (584 c.c.), embodies several interesting features, including a cast aluminium manifold combining the exhaust pipes and the heated inlet pipe, staggered valves on the side of the engine, and a kick-starting device with its mechanism behind the flywheel and enclosed by the shield covering the latter. Three speeds are provided by the gear box. This machine was fully described in *The Motor Cycle* for August 14th. The 7-9 h.p. Harley-Davidson has become one of the most popular "big twin" sidecar machines.

The capacity of the engine is 988 c.c.; overhead inlet valves, mechanical lubrication, and combined lighting and ignition are among its many features.

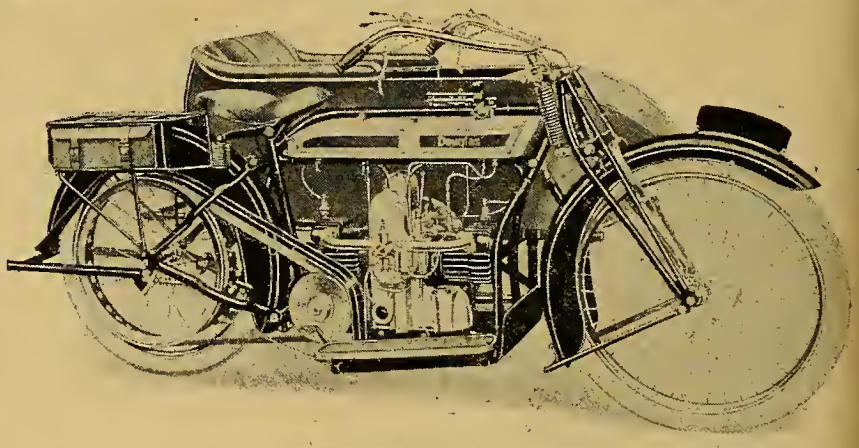
Amongst the many details connected with the Harley-Davidson which will appeal to the practical rider, an outstanding feature is the interconnected clutch and gear control mechanism whereby the gears cannot be changed until the clutch is disengaged.

Harley-Davidson 8-10 h.p. model—a completely equipped sidecar outfit.



A 4 H.P. OUTFIT. THE HORIZONTALLY-OPPOSED TWIN DOUGLAS.

Many lessons were learned by the makers of the Douglas machines during the war, and the experience gained from the use of the 4 b.p. outfit in military service is reflected in the latest models. While the engine remains almost unaltered, the frame and forks have undergone detail improvements from time to time, and now appear in a highly practical form. The spring forks have renewable bushings to the spindles, and screw-down grease cups are fitted, adequate oil grooves being cut in all the bearing surfaces. A round-cornered tank is now fitted, which greatly improves the general appearance. Mudguarding is very efficient, and a large underscreen is fixed beneath the footboards, and this is upturned at the front so as to stop the spray arising from the front wheel. Large toolbags are fitted into the sides of the carrier, and are of more sensible dimensions than those usually fitted to motor cycles. The Douglas sidecar is very roomy, and has a large receptacle for spares and equipment behind the back rest of the seat. A four-point chassis is used, the wheel axle is supported at both ends, and the body is carried at the rear on transverse springs. Amongst medium-weight sidecar outfits, the 4 h.p. Douglas is deservedly popular. Its controllability, due to the handle-bar operated clutch and the easily changed three-speed gear, together with the smooth running obtained from the chain-cum-belt transmission and the even torque of its engine, are extremely desirable features. In this connection also the mechanical lubrication must not be forgotten, since it absolves the rider from the trouble of oiling.



Transmission side of the 4 h.p. Douglas

THE 8 H.P. DOT.

Finished entirely in dark-red enamel, the Dot is particularly attractive, and examination of its mechanical details in no way belies the promise of its appearance. A J.A.P. engine, of 8 h.p., forms the power unit, and this is equipped with an Amac carburetter and E.I.C. magneto. All the standard features of this engine are retained, such as the adjustable tappets and the enclosed exhaust valve lifter. Beneath the magneto platform a large silencer is fitted transversely at the front of the engine, and two pipes lead from this to the rear of the machine.

Transmission is by chain throughout, a Sturmey-Archer gear box, fitted with kick-starter and the well-known Ferodo disc clutch, supplies the necessary gear reductions. Complete chain cases are not fitted, but a cover which encloses the primary chain and clutch is continued so as partially to enclose the rear chain and sprocket. The saddle fitted is an XI-All, and Saxon forks are used. Side-

car lugs are made integral with the frame, and the passenger attachment is thus firmly secured at four points. A roomy sidecar body, which is extremely well upholstered, is carried on four C springs. The chassis is of strong duplex construction, and the wheel is surrounded by a tubular framework in which the axle is supported at both ends.

THE 6 H.P. A.J.S.

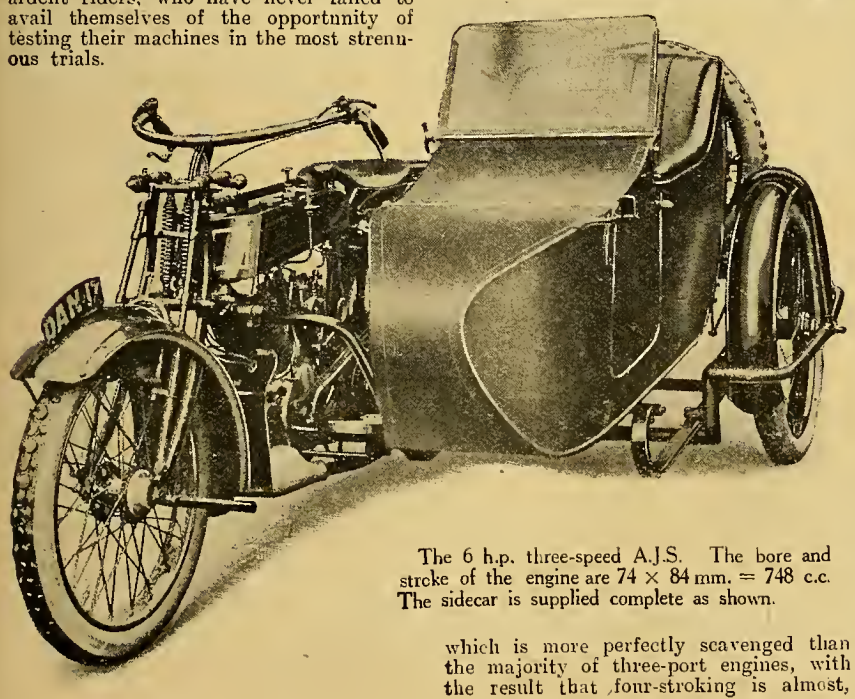
There is no doubt that among the "class" machines of 1919, the A.J.S. is one of the most important. It has been an exceedingly popular machine, and, since it was entirely redesigned early in the year, but few alterations will be found in the 1920 model.

Having detachable heads, the cylinders are 74×87 mm. (748 c.c.)—a size which before the war was most popular on account of its economy. On this account it is perhaps surprising that there are so few survivors; many of the makers hitherto fitting this size are now offering 8 h.p. machines.

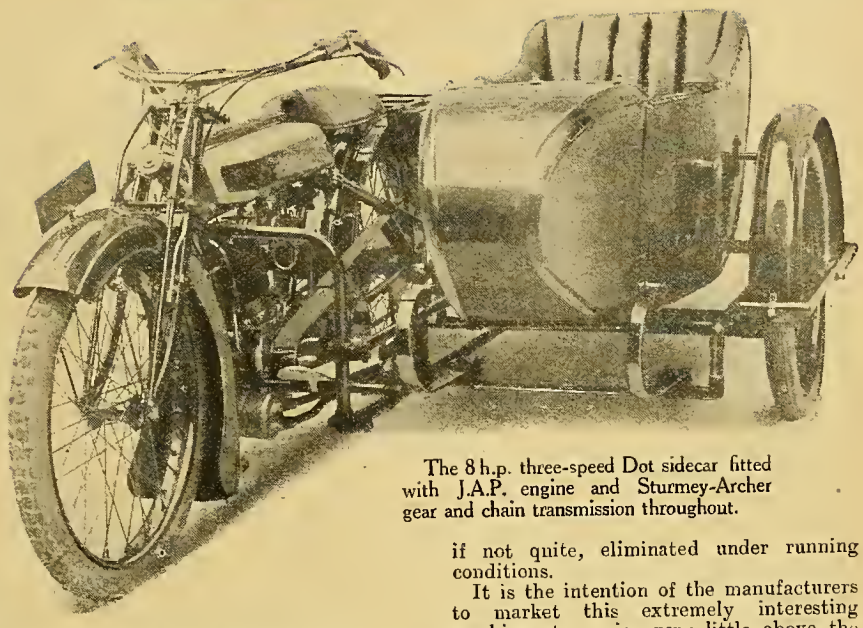
A.J.S. machines are noted for their quiet running, their large mudguards, quickly detachable wheels, and the good qualities of the sidecar, which is fitted with a glass screen and hinged dash as standard equipment. The interchangeable and quickly detachable wheels are shod with 700×80 mm. tyres, a spare being carried at the rear of the sidecar body, which also has a neat luggage platform sprung with it—a most desirable feature. A sprung seat-pillar is fitted, and an important feature is the lever on the rear stand by which the raising of the machine is rendered quite an easy matter.

Not only in finish, but in the practical nature of its detail mechanism, the A.J.S. reflects ripe experience and understanding of the motor cyclists' requirements.

This, no doubt, is the outcome of the fact that the principals of the firm are ardent riders, who have never failed to avail themselves of the opportunity of testing their machines in the most strenuous trials.



The 6 h.p. three-speed A.J.S. The bore and stroke of the engine are 74 × 84 mm. = 748 c.c. The sidecar is supplied complete as shown.



The 8 h.p. three-speed Dot sidecar fitted with J.A.P. engine and Sturmey-Archer gear and chain transmission throughout.

DUNELT BIG SINGLE TWO-STROKE.

The introduction of a 500 c.c. single-cylinder two-stroke engine by a large firm of steel manufacturers and engineers is a matter of great interest, especially to those who maintain that the two-stroke engine will eventually take as prominent a position among sidecar machines as with lightweight solo motor cycles. The machine to which we refer is the Dunelt, described in last week's issue, and which will be exhibited at Olympia on the stand of Messrs. Dunford and Elliott (Sheffield), Ltd.

By the use of a truncated piston, the designers of the Dunelt have succeeded in producing a large two-stroke engine which is more perfectly scavenged than the majority of three-port engines, with the result that four-stroking is almost, if not quite, eliminated under running conditions.

It is the intention of the manufacturers to market this extremely interesting machine at a price very little above the present-day price of the average lightweight.

THE G.L. 6 H.P. MACHINE.

A French motor cycle built largely of British components and conforming to British ideas of conventionalities, is the G.L., which was awarded a silver medal in the recent Six Days Trials. This machine will be imported by Messrs. Vivian Hardie and Lane, of Woodstock Street, W.1, and is manufactured by M. Georges Levy, of Argenteuil.

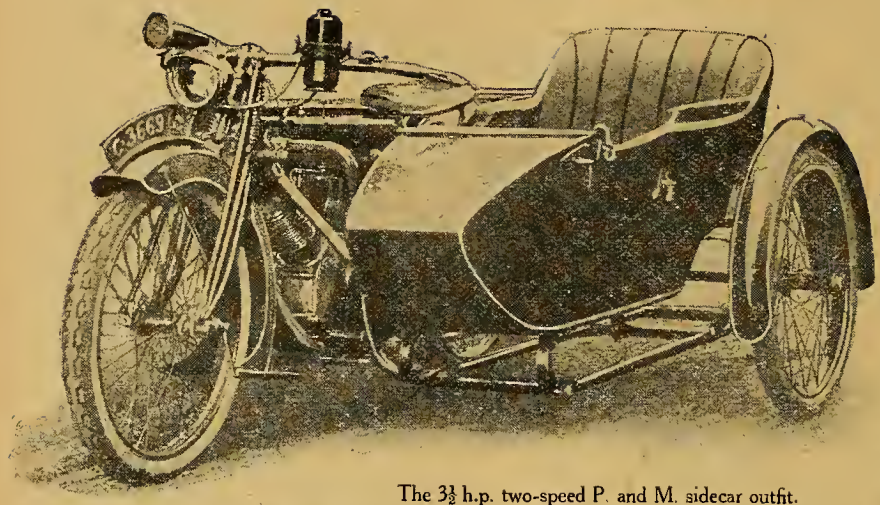
The G.L. is distinctive in appearance, and will make a strong appeal to riders on account of the neatness and refinement of its design. The engine fitted is a 6 h.p. J.A.P., which drives through a Sturmey-Archer three-speed gear box by means of chains. All wheels are detachable and interchangeable, and no tools are required to remove them. A spring saddle-pillar is one of the several features in its design, while a band brake on the engine-shaft is distinctly novel. The sidecar fitted is also designed by M. Georges Levy, and is extremely light and pleasing to the eye.

A 4 H.P. VERUS.

The makers of the Verus lightweight motor cycles will produce a single-cylinder dual purpose machine engined with a 4 h.p. Blackburne engine and fitted with a three-speed gear box.

THE P. AND M. SINGLE-CYLINDER MACHINE.

A machine which did good service in the R.A.F. as a sidecar mount, the 3½ h.p. P. and M., will appeal to the owner who appreciates a quiet running engine. The 1920 model, which was fully described in our issue for September 11th, has not undergone any startling alterations as regards design, but there are several improvements which help to keep the machine thoroughly up-to-date. The tank now slopes slightly at the rear, the kick starter is rendered more efficient and is placed further back, and a newly designed expanding brake has been added.



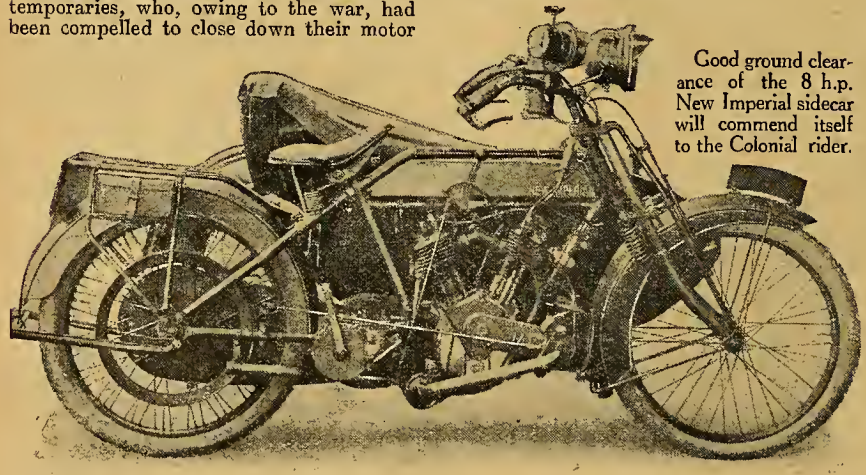
The 3½ h.p. two-speed P. and M. sidecar outfit.

One feature which is most commendable is the ratchet quadrant, by which one of the brakes may be secured. This is a great convenience, especially to the owner who lives in a hilly district, and not only relieves the hand of strain on a long descent, but facilitates an easy start, being made on a grade, since the driver does not have to attend to the brake when starting the engine.

The 1920 machine embodies a newly designed fork, and instead of the central enclosed springs in compression—the system on previous models—two separate coil springs in tension are provided. All moving parts are provided with grease cups of large size.

THE NEW IMPERIAL BIG TWIN.

Of the several J.A.P.-engined 8 h.p. twin machines on the market for 1919, the New Imperial figured prominently. It was originally designed as a military model for one of the Allied Governments, which used quite a large number of them for purposes of war. The requirements of this Government were practically identical with those of the average owner of a "big twin" sidecar, hence the New Imperial works at the signing of the Armistice were in a position to offer to the public a machine which had advanced in design more than several of their contemporaries, who, owing to the war, had been compelled to close down their motor cycle departments. It is not surprising, therefore, that few alterations have been found necessary for the 1920 model, and although improved or modified at minor points, the passenger machine which will appear at Olympia will not differ drastically from the 1919 machine. A black finish, however, perhaps gives the model a more handsome appearance, although the New Imperial has never been lacking in this connection. The standard sidecar is exceptionally large and comfortable, besides being well made.



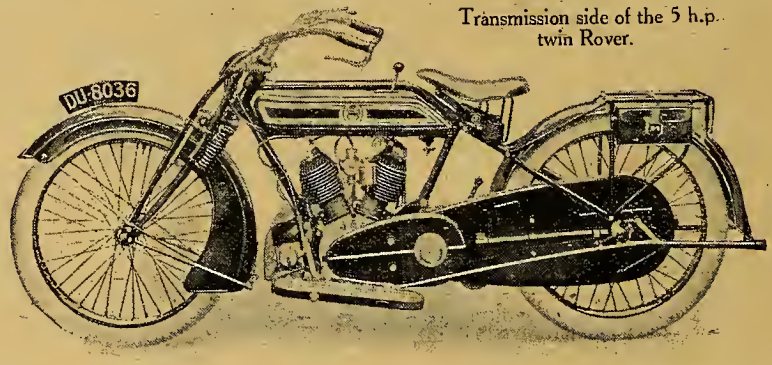
Good ground clearance of the 8 h.p. New Imperial sidecar will commend itself to the Colonial rider.

THE 5 H.P. ROVER.

Rover motor cycles have always been noted for their quiet running, and the 5 h.p. twin model introduced during the war for one of the Allied Governments is no exception in this respect. Having an engine of 654 c.c. capacity, it is one of the smallest twin-engined passenger machines on the market, but from our experience with it on the road it must be said that the impression gained, from speed and acceleration, is that the engine is much larger. The 1920 model differs very little from the 1919 machine, but, instead of a complete case enclosing the rear chain, a guard only is fitted.

The bore and stroke of the engine are 70 and 85 mm. respectively. The gear box is of the same type which has given such satisfaction on the 3½ h.p. model, which also will be retained as a passenger machine.

The finish, both mechanical and external, on the Rover products is extremely fine. Spring top links, for instance, have been fitted to the Druid pattern forks for many seasons, while the gear control is neatly concealed and works in a slot through the tank. This is one of the few machines employing a silent chain between engine and gear box.

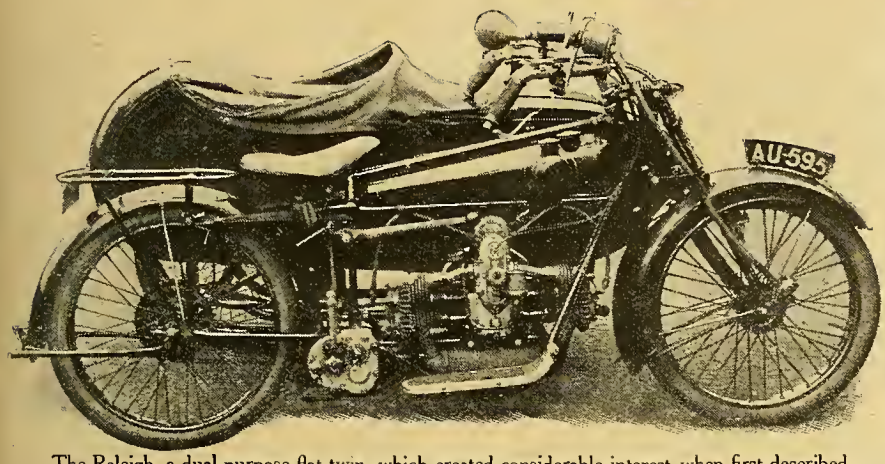


Transmission side of the 5 h.p. twin Rover.

THE RALEIGH DUAL-PURPOSE FLAT TWIN.

Although described in *The Motor Cycle* so far back as May 30th, last year, the Raleigh flat twin is a machine which will be offered to the motor cycle public for the first time at Olympia. The Raleigh Co. was among the leading motor cycle makers thirteen years ago, but for several years the firm has concentrated upon the production of high-class pedal cycles. The reputation created in this particular field makes the new motor cycle model of especial interest, and as the designer was for many years closely associated with a famous motor cycle, it is only reasonable to expect that the Raleigh flat twin will take its place in the front rank.

The engine is a beautiful piece of work, and has a bore and stroke of 77 and 70 mm. respectively, the capacity being 654 c.c., making it a machine equally suitable for solo or sidecar work. The frame is of the duplex type, and is of neat design, which makes possible a comparatively short wheelbase, the weight of the complete machine being only 240 lb. with a full tank and equipment. This is exceptionally light for a machine of its size, and which has a spring frame.



The Raleigh, a dual purpose flat twin, which created considerable interest when first described.

Transmission is by chains through a Sturmey-Archer gear box, placed compactly in the frame.

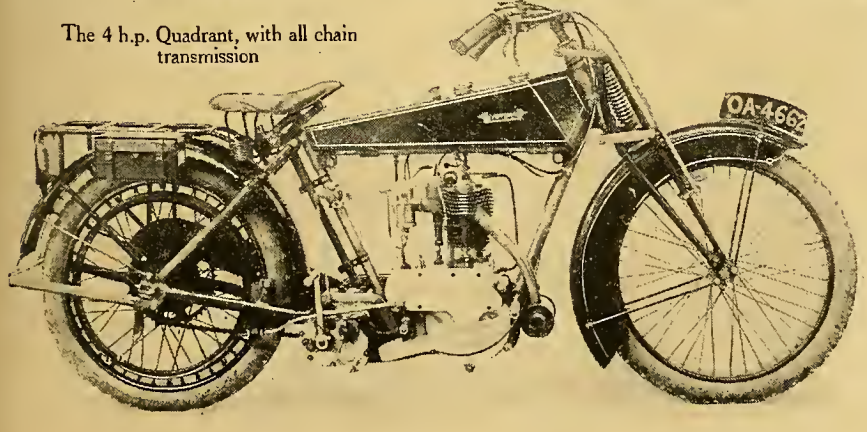
The illustration depicts the experimental model, but, we understand, the machine which will be exhibited at Olympia will differ only in minor points.

BIG SINGLES—THE QUADRANT PROGRAMME.

Two single-cylinder passenger machines will form the leading products of the Quadrant Company. One of these has an engine with a bore and stroke of 87 and 110 mm. respectively (654 c.c.), and the other 95 × 110 mm. (780 c.c.). Thus, the two Quadrants probably will be the largest singles offered at Olympia. Of particularly sturdy construction, both machines have diagonal top tubes, and are fitted with saddle tanks. The smaller model follows more or less conventional lines and has a Sturmey-Archer three-speed gear box and all-chain drive, but the larger machine has a three-speed gear incorporated in the crank case construction, in a most ingenious manner. These machines were described fully in *The Motor Cycle*, October 30th.

The Quadrant name has been associated with motor cycle developments from the earliest days of the movement, and it is therefore significant that, despite the present tendency in the direction of light high-speed power units, this firm is still faithful to the big single-cylinder.

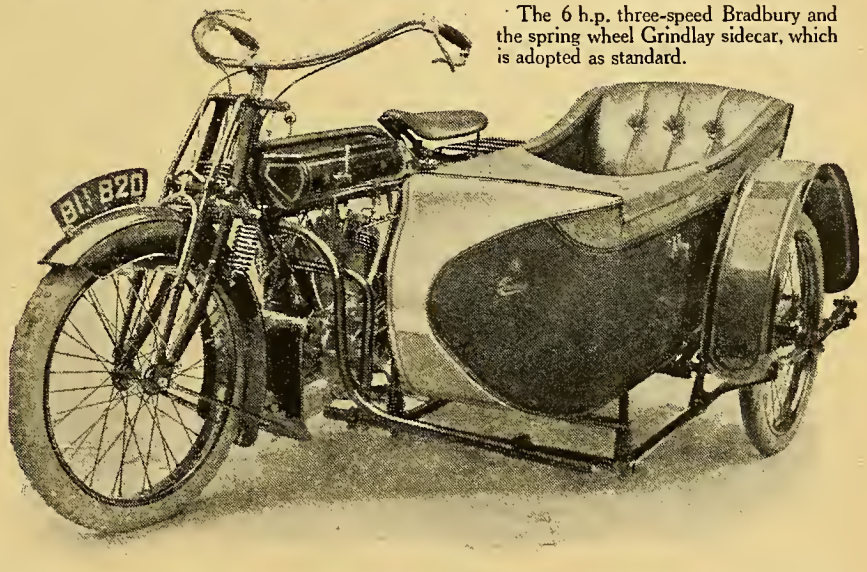
The 4 h.p. Quadrant, with all chain transmission



BRADBURY PASSENGER MODELS.

This Northern firm has long been noted for sturdily constructed machines, and has made history many times in the past with the 4 h.p. single-cylinder models. Although this type is still being manufactured, the 6 h.p. V twin is now being put forward for the prior claim as a passenger motor cycle. Since the general specification is the same for both types, most of the details below are applicable to both, although it must be remembered that the crank case of the single-cylinder model is built into the frame, while the twin engine is fitted with bolts and plates in the usual manner. The 6 h.p. engine has a bore and stroke of 74.5×86 mm. = 749.75 cc. and is fitted with detachable cylinder heads. A B. and B. carburetter and E.I.C. magneto are used, the latter being controlled by a lever on the side of the tank. Transmission is by partially enclosed $\frac{5}{8}$in. × $\frac{3}{8}$in. chains, and a Bradbury three-speed gear is fitted. This gear incorporates a cork insert with interconnected handle-bar and foot controls clutch, and a very efficient kick-starter. Druid forks are fitted, and the general finish is excellent, black and gold being used. Large tyres of light car section are fitted, and the rear wheel is quickly detachable, leaving the chain sprocket and internal expanding brake *in situ*. The Grindlay spring wheel sidecar has been adopted as standard, and this is fixed by four points of attachment, the duplex front down tubes of the motor cycle being built into a heavy lug adapted to receive the main front sidecar construction.

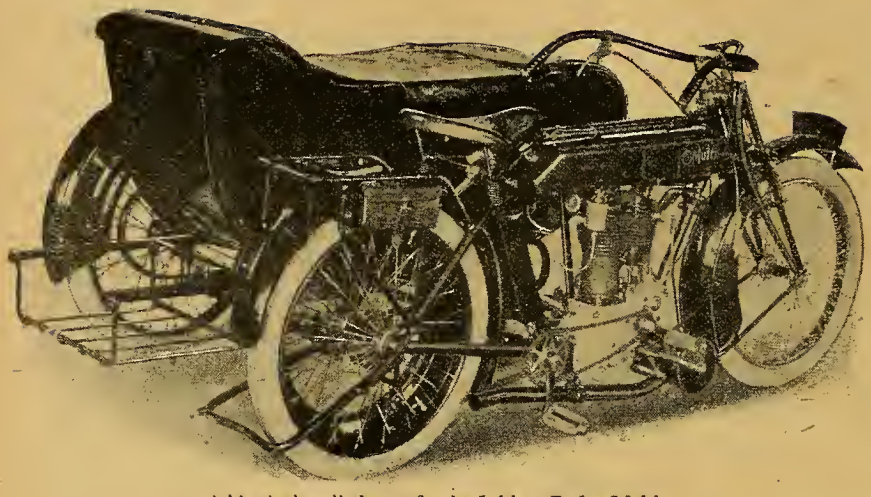
The 6 h.p. three-speed Bradbury and the spring wheel Grindlay sidecar, which is adopted as standard.



THE RUDGE SIDECAR RANGE.

Those who prefer high speeds with moderate engine revolutions and the smooth running of an infinitely variable belt transmission, will find that the Rudge machines conform to their requirements.

Two models are being specially recommended for sidecar work—the 5-6 h.p. single-cylinder (85×132 mm. = 750 c.c.) and the 7-9 h.p. twin (85×88 mm. = 998 c.c.). In each case the specification is similar, and both embody the well-known multi-gear with plate clutch on the engine-shaft. As in previous models, overhead inlet valves are employed, and these are carried in domes secured to the cylinder by three accessible stud nuts. Elsewhere in this issue, a detailed description of the 7-9 h.p. engine appears, to which the reader is referred.



A big single-cylinder outfit, the 5-6 h.p. Rudge-Multi.

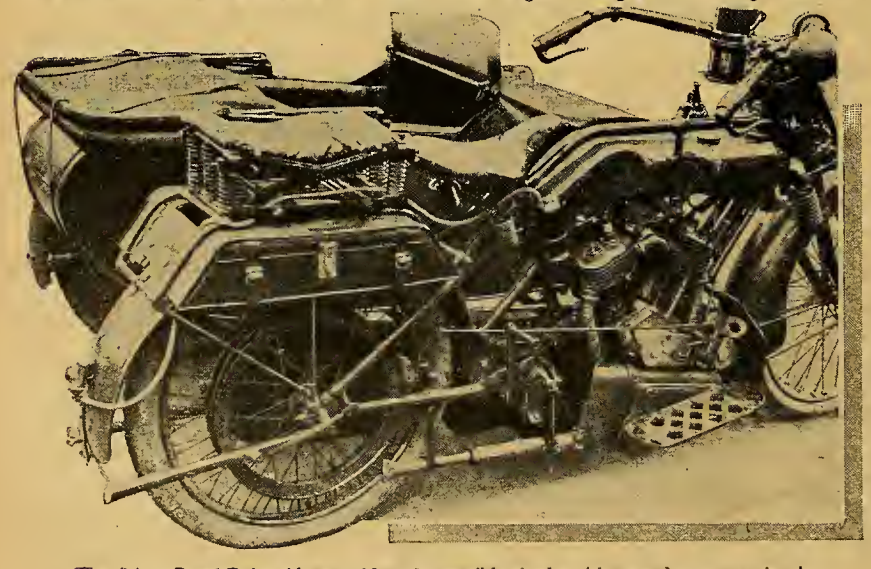
The Rudge sidecar is worthy of special note, since its bodywork is of exceptional finish, the appearance being enhanced by a polished aluminium front panel. Carried on springs is an angle-section steel subframe, and on this is mounted the body, luggage grid, and mudguard, so that everything is insulated from the effects of vibration.

Connections between the sidecar and cycle are four in number, and, as these are entirely composed of straight tubes, no danger of the sidecar coming out of alignment or leaning away from the vertical need be anticipated. Another excellent feature of the sidecar is its luggage-carrying accommodation, since, in addition to the capacious grid, a large locker is contained in the body at the rear.

THE ROYAL RUBY TWIN.

There are several noteworthy features on the twin Royal Ruby—a machine which has of late taken an important position among high-powered outfits. Engined with an 8 h.p. J.A.P. unit, the frame construction is unique, having triple tubes forming the member between engine and the steering head, while an additional tube forms a triangle within the larger triangle formed by the rear wheel frame. The carrier is exceptionally sensible in design, and accommodates two large valises protected on the sides and back by a metal case. A large pad brake working inside the V of a special rim, all-chain enclosed drive, and a large and comfortable sidecar form part of the equipment.

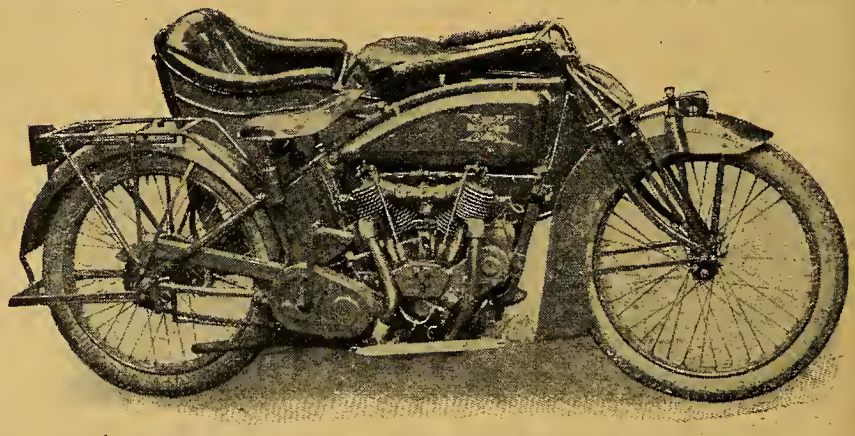
Amongst other things which should be noticed on the machine to be exhibited at Olympia is the improved type of spring frame. The designer responsible for the Royal Ruby has made a special study of springing, and his device, therefore, is eagerly anticipated.



The 8 h.p. Royal Ruby sidecar Note the sensible sized tool bags and unconventional design of carrier.

AMERICAN EXCELSIOR BIG TWIN.

Described in our issue for September 18th, the American Excelsior is a big twin of which more will be known in the future. The lastest model is a great improvement on the point of finish over the pre-war machines. The engine capacity is 1,000 c.c. and it has overhead inlet valves. The valve gear is extremely simple, there being only one large gear wheel with a cam on each side, one operating, through roller rockers, the inlet valves and the other the two exhaust valves. A Midco combined lighting and ignition set is standard equipment and consists of a generator, transformer, and contact-breaker, the whole being carried in the position usually occupied by the magneto. The all-chain drive is on the right side of the machine.



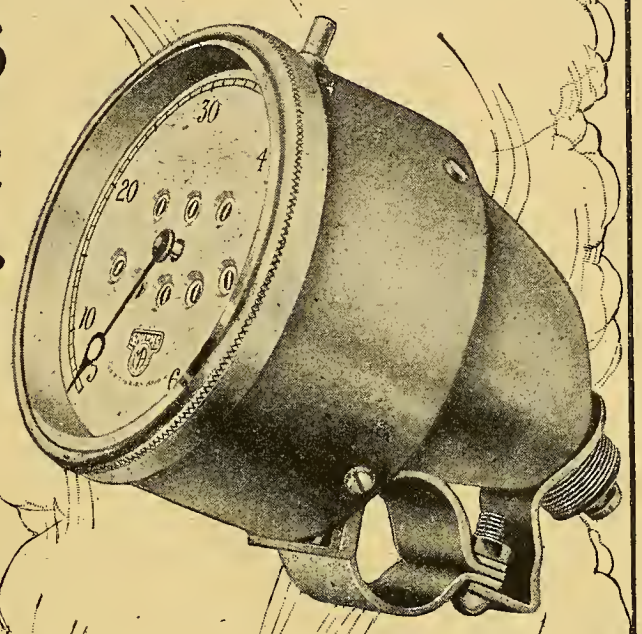
Valve side of the 7-9 h.p. American Excelsior. Sidecarists will note with interest that the transmission is on the right side.

A TWO-STROKE OUTFIT—THE $3\frac{3}{4}$ H.P. SCOTT.

By reason of its unconventional appearance, the Scott is perhaps not so universal in its appeal as it deserves to be. Those who ask for smooth torque, the maintenance of high average speed, simple control, and silent running will find their requirements met in this two-cylinder, water-cooled two-stroke mount. The frame is open and consists of straight tubes throughout, the oil being carried in the main frame tubes, while the petrol tank, which is covered with a leather-surfaced fabric, encircles the seat tube.

Lubrication is automatic, and a separate drip feed controls the supply to each crank chamber; a much deeper radiator is used than heretofore, and the engine keeps remarkably cool.

Smith's Motor Cycle Speedometer



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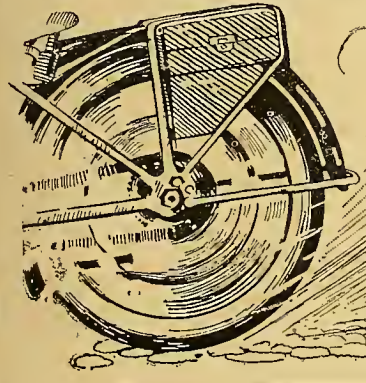

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The G.N., evolved over eleven years ago to meet the needs of a simple and efficient two-seater, has, through strenuous application and in the light of practical experience, developed a high standard of performance, economy and comfort.

A WELL-EQUIPPED MODERN WORKS, capable of turning out 100 cars a week, has now been acquired, and the present output will be greatly increased in the next few months.

IN FRANCE, ALSO, the G.N. is starting on quantity production, and was a great attraction at the Paris Salon.

THUS, AFTER ELEVEN YEARS, the G.N. perfected, offering the luxurious comfort of the touring car at the cost and economy of the motor cycle and side car, has not only proved itself in constant service and open competition, but is in mass production in two countries to meet its ever-growing demand.

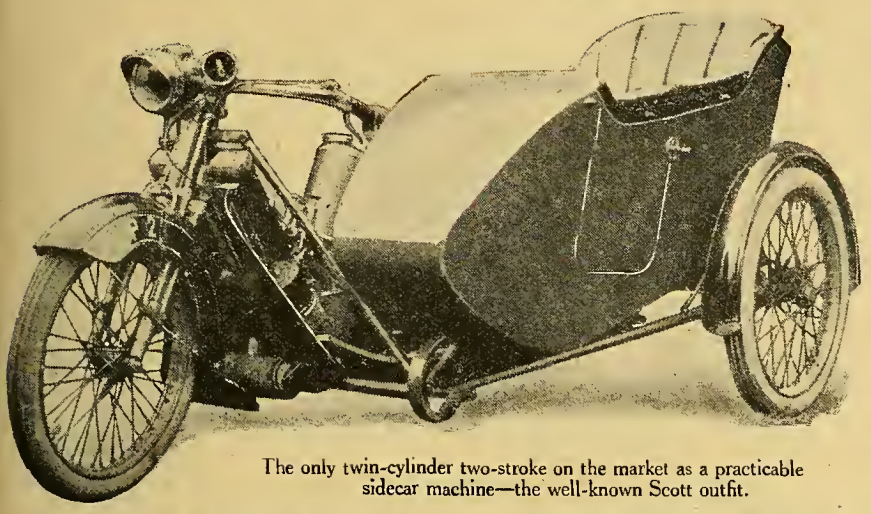
G.N., *Limited*, EAST HILL, WANDSWORTH.

AT OLYMPIA

STAND

6

In answering this advertisement it is desirable to mention "The Motor Cycle."



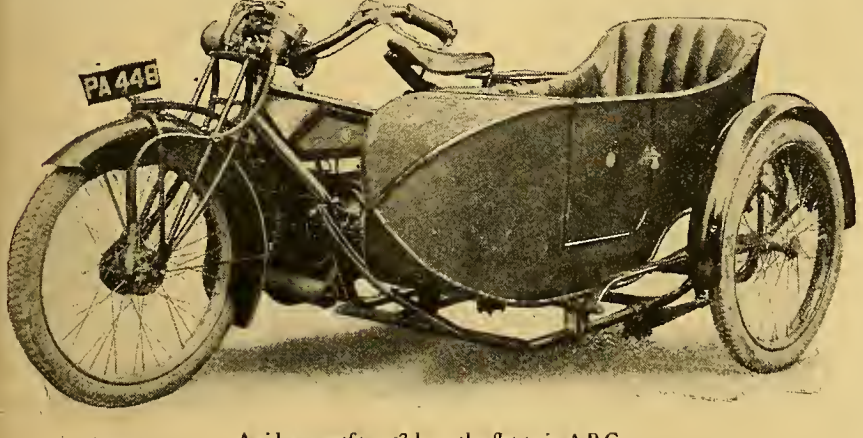
The only twin-cylinder two-stroke on the market as a practicable sidecar machine—the well-known Scott outfit.

Two speeds are fitted, both gears being direct; the transmission is through two chains to the countershaft sprockets and one to the rear wheel. Expanding clutches, operated by a pedal, connect either high or low gear sprockets to the countershaft, which carries the final driving sprocket.

A very handsome sidecar is supplied to fit directly on to the four sidecar lugs fitted in the frame, and the chassis follows the same principles of triangulation as the motor cycle. No curved tubes are employed, and the connections need no adjustments. The body is fitted with a receptacle in the front for spares, waterproofs, and other oddments, and a large locker behind the seat, to which access may be had without disturbing the passenger. Luxurious suspension by a system of levers and coil springs is incorporated, the front of the body also being mounted on a large central leaf spring.

A.B.C.

Although designed primarily as a solo machine, the A.B.C., in spite of the small size of its engine (68.5 × 54 mm., 398 c.c.), has proved itself well able to take a sidecar. This was made very evident on Peace Day, when it won the sidecar class on Stile Cop, beating large machines both on time and formula. Only a few of our readers have had an opportunity of sampling the A.B.C., but most of them know that its principal features are a flat twin engine set transversely in the frame and fitted with steel cylinders and aluminium pistons, also a very comfortable springing system. The engine has an enclosed flywheel, but not in its crank case, and the transmission consists of a bevel drive, a four-speed gear box, and a chain to the back axle. A special platform has been arranged to accommodate a Lucas dynamo, as fitted to the Magdyno recently described in our pages, and a speedometer drive is also contained in this most complete unit. Springing is by means of laminated springs, those in the rear being anchored at both ends, one leaf only running the full length of the spring, and forming the bottom leaf in front and the top one in the rear. The front spring is anchored over the wheel instead of in the usual position beneath the head, and the sidecar wheel is sprung to suit the bicycle. Lubrication is by a mechanical pump from an oil supply in the tank.

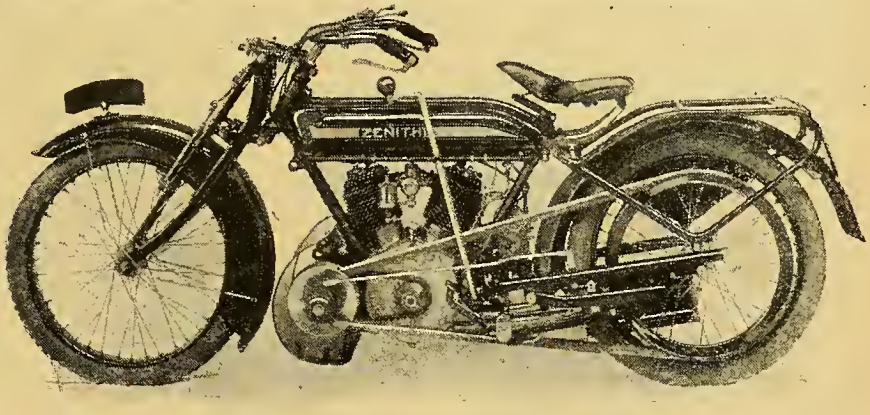


A sidecar outfit o. 3 h.p., the flat twin A.B.C.

THE ZENITH 8 H.P. TWIN.

The 8 h.p. Zenith has always had a special attraction for the sporting rider, probably because of its low and racy build. In spite of this, the machine is none the worse as a touring proposition; in fact, the Gradua gear provides a means of obtaining a correct gear ratio for all normal hills, and though it is not possible to obtain as low a bottom gear as is the case with a gear box, the direct chain and belt drive has the advantage of increased efficiency, in that there is no loss through oil churning and friction in the gear box.

Our readers will remember that modern Zeniths have a chain driven countershaft in front of the engine. With this countershaft a clutch is incorporated, and because of its position a very long final belt drive is obtained—a sound feature, which is worthy the attention of other makers.



Zenith motors will retain the essential features of the pre-war models

The latest improvement in Zenith passenger machines is the adoption of the Barnes spring saddle, a device patented by Mr. F. W. Barnes, of the Zenith Company. The springing of this saddle is so efficient that it is likely to take the place of a spring frame in certain 1920 mounts.

Both the Zenith-Gradua gear and the J.A.P. engines, with which this machine is fitted, are too well-known to need description; and Zeniths have proved their worth both on road and track too often to require our praise. A 5 h.p. model is also made and fitted with the J.A.P. engine and Gradua gear.

THE MOTOSACOCHE.

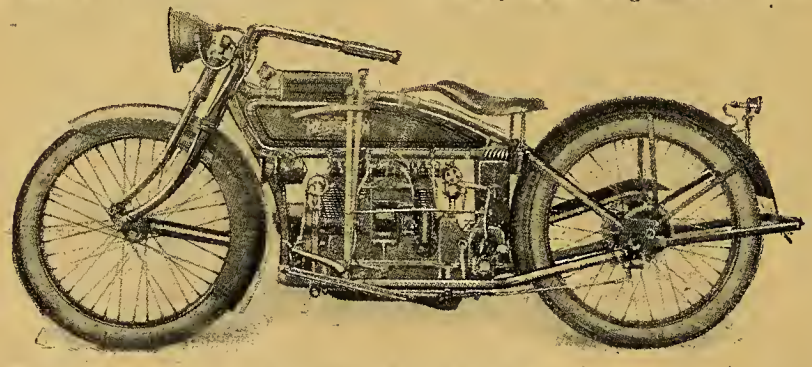
Since the day when it made its first appearance as a "motor in a toolbag," the Motosacoche has developed very greatly, and the 8 h.p. (82×95 mm. = 1,003 c.c.) is an eminently desirable sidecar machine The M.A.G. engine has overhead inlet valves, and the operating rods work in tubes through which oil can pass from

the crank case to lubricate the overhead rockers. These are, of course, enclosed. An adaptation of the Enfield expanding clutch gear has been devised, which gives three speeds instead of two (by means of three chains running between the engine and countershaft), and is very readily adjusted for the purpose of taking up wear, which takes place very slowly. Quickly detachable wheels are supplied, and both front and rear brakes work inside the V of the dummy belt rims. The saddle tube and footrests are supported on a large coil spring in tension—somewhat after the manner of the Bat. The engine is started by a handle through the countershaft.

THE FOUR-CYLINDER HENDERSON.

Those who like plenty of power combined with a sweet running engine are bound to be attracted by the big four-cylinder Henderson. As is the case with other American machines, the Henderson refuse to be limited by our arbitrary maximum of 1,000 c.c., and the latest models have a capacity of 1,168 c.c.

The four-cylinder engine has its inlet valves placed directly above the exhaust valves, and the three-speed gear box is formed in the flywheel cover plate. The arrangement, though somewhat unusual, is very neat. A multi-plate clutch is housed in the flywheel, and the power is transmitted through a pair of bevels to the gearshafts, which lie across the frame. The final drive is by chain.



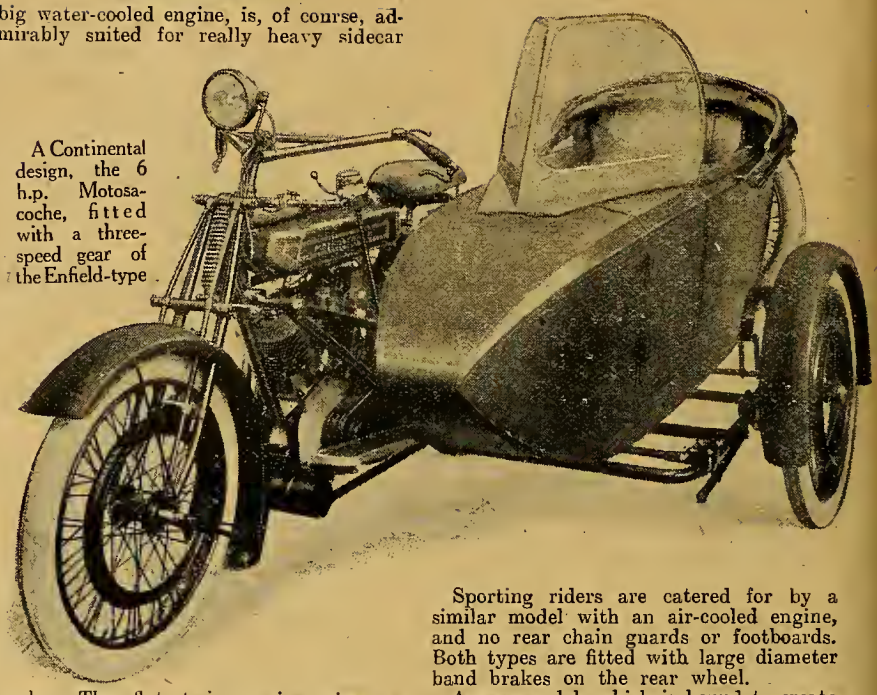
The American 10 h.p. four-cylinder Henderson.

A duplex frame carries the power unit, and the absence of saddle tube is counterbalanced by specially stout construction throughout.

As might be expected with a large luxurious mount of this description, an electrically equipped model is standardised. It is perhaps hardly necessary to state that the owner of such a sidecar outfit is not likely to be troubled with insufficient power unless the engine is seriously out of tune. Other features common to most American motor cycles are mechanical lubrication, 28in. × 3in. tyres, twist grip control, and folding footboards. A comfortable and well sprung saddle is employed in lieu of a spring frame.

WILLIAMSON.

One of the few water-cooled motor cycles on British roads is the 8 h.p. Williamson, which has a flat twin engine of 85 × 85 mm. bore and stroke. This big water-cooled engine, is, of course, admirably suited for really heavy sidecar work. The flat twin engine gives a regular impulse and excellent balance, so that there is no discomfort even on long stretches of low gear work. Chain drive is employed throughout, both primary and secondary chains being enclosed. A two-speed gear is mounted on the neat duplex frame, and, in addition to deeply valanced mudguards, very long footboards help to protect the rider.



A Continental design, the 6 h.p. Motosacoche, fitted with a three-speed gear of the Enfield-type.

Sporting riders are catered for by a similar model with an air-cooled engine, and no rear chain guards or footboards. Both types are fitted with large diameter band brakes on the rear wheel.

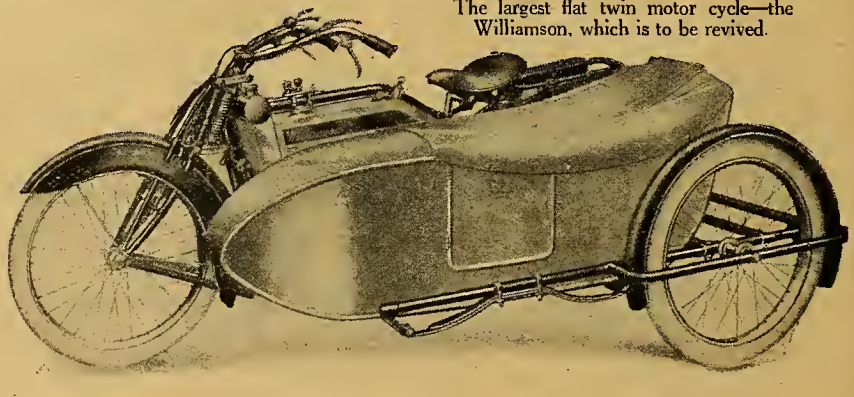
A new model, which is bound to create interest at Olympia, will be a 6 h.p. V twin machine. This model has a J.A.P. engine fitted in the unconventional Williamson duplex frame. Long spring footboards will be fitted.

The Williamson Motor Co. were the orginators of the motor cycle cab—a luxuriously appointed sidecar with a D-fronted landaulet body. The Victoria is a lighter form of sidecar in which the passenger can be totally enclosed, and two-seated sidecars with both side-by-side and tandem seating accommodation are listed by the firm.

Naturally a sidecar chassis to carry such bodies has to be stoutly constructed, and this point has received much attention, the side-members being trussed and staged, and no less than five cross-members being utilised. The bodies are carried on leaf springs throughout.

ENFIELD.

If any special proof had been needed (which was not the case) of the excellence of the Enfield 6 and 8 h.p. sidecar outfits, it would have been provided by the A.C.U. Trials, in which the Enfield team took first place among the passenger-



The largest flat twin motor cycle—the Williamson, which is to be revived.

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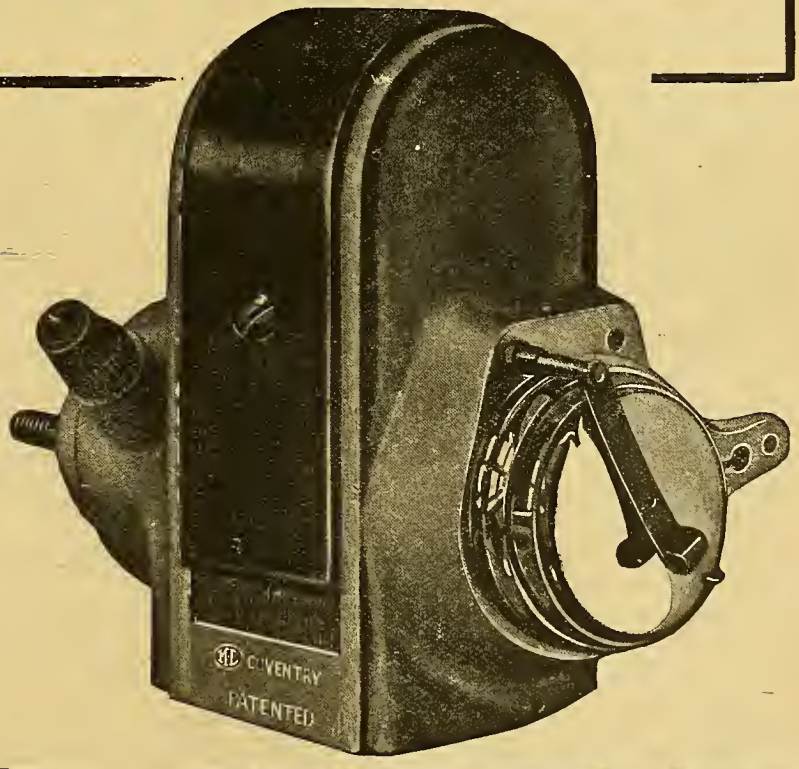
THE M-L MAGNETOS—of which 50,000 have been supplied to H.M. Government — embody a number of special features, each of which makes a distinct advance on all previous practice, and goes to establish the efficiency and superiority of the M-L.

Among them may be mentioned laminated pole shoes, easily accessible terminals, very light weight, watertightness, new patent distributer, and high-tension brushes, which can be detached without disturbing the magnetos.



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All enquiries and correspondence relating to overseas trade and to retail and trade business in this country to be addressed to S. SMITH & SONS (M.A.), Ltd., 179-185, Great Portland Street London, W.1. Sole Makers: THE M-L MAGNETO SYND., LTD., COVENTRY to whom all enquiries from manufacturers should be sent.

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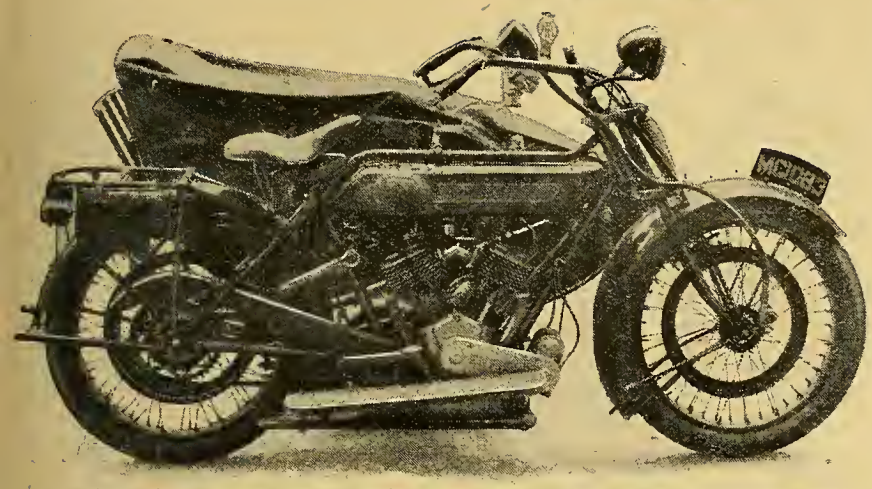


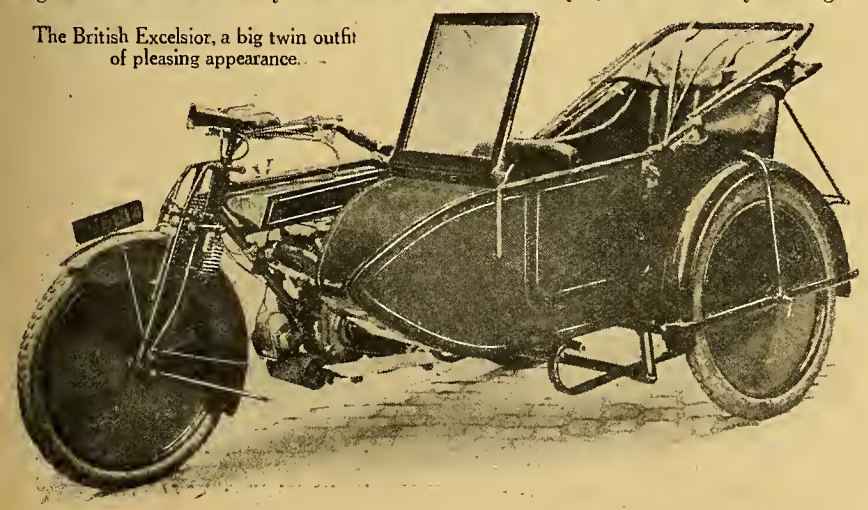
A popular outfit, the two-speed Enfield sidecar, which is supplied with either 6 or 8 h.p. engine.

carrying machines. The Enfield is sold always as a complete outfit, and not as a motor cycle to which a sidecar can be attached. J.A.P. twin engines are fitted generally to the 6 h.p. (76×85 mm.=770 c.c.), but sometimes to the 8 h.p. model (85.5×85 mm.=976 c.c.). The Enfield selective clutch gear is, of course, embodied, combined with a starting handle attached to the rear down tube. Lubrication is by Enots sight drip-feed circulated in the engine on the J.A.P. principle. A hand pump is also fitted with leads both to engine and gears. The front mudguard is domed and wide enough to extend beyond the forks—an Enfield feature which has been copied by others. Transmission is by chain throughout, and both speeds are direct. The sidecar is an excellent example of the coachbuilders' art, and is provided with a luggage grid.

THE BRITISH EXCELSIOR.

Manufactured with either a 6 h.p. or an 8 h.p. engine, the sidecar outfit which will be offered by the Excelsior Motor Co. (or Messrs. Bayliss, Thomas and Co., as they are better known) is quite an attractive proposition, designed and produced by practical riders. It is a large machine with 28 × 3in. detachable wheels fitted with discs, totally enclosed chains, internal expanding brakes, and a J.A.P. engine. The sidecar may be obtained with an additional seat for a child, from which one may gather that the body is exceptionally large. Attached to the sidecar body is a grid, so that any luggage carrier is insulated from road shocks, and provision is also made for carrying the spare wheel. The price quoted is £162 10s.; £8 extra is charged for spare wheel and tyre, and £25 for dynamo lighting and electric horn. The Excelsior Co. has recently moved from Coventry into large and convenient works at Tyseley, near Birmingham, where it is expected the firm will be able better to cope with the demand for their products.

The British Excelsior, a big twin outfit of pleasing appearance.

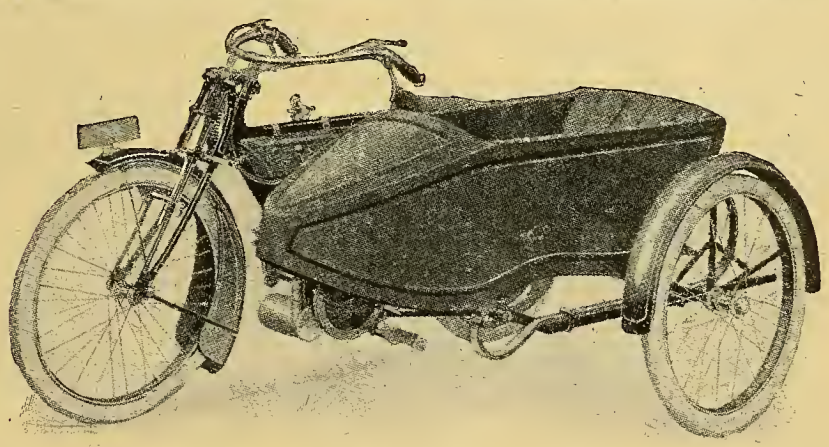


THE 1920 HUMBER.

The 1920 flat twin Humber, which is fully described in this issue, is likely to be a popular sidecar machine in 1920. During the past year, the 3½ h.p. model has met with very marked success, and the larger machine removes the impression we often experience in driving a 500 c.c. twin as a sidecar mount that a little more power is desirable, if not really necessary. The average 500 c.c. machine will easily propel a sidecar over any main road hill, but sometimes high average speeds are not possible, though, with an engine very little larger, the speed range is considerably increased.

THE IXION SIDECARETTE.

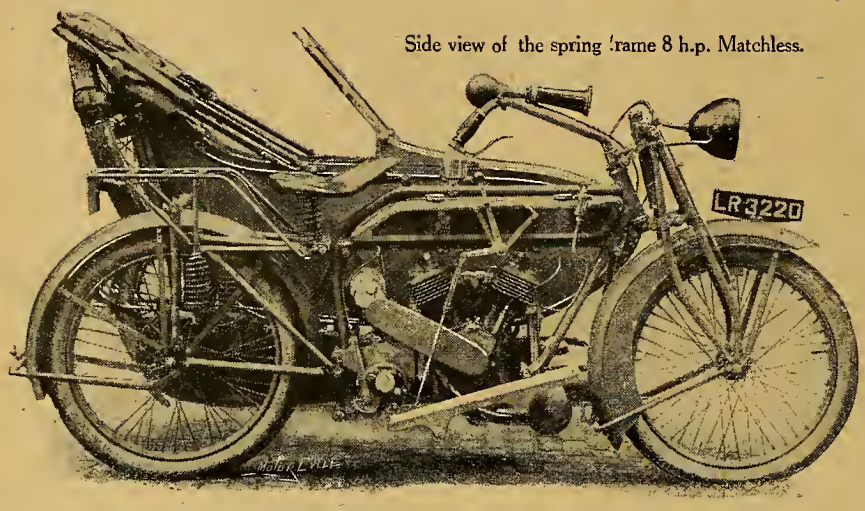
Although light sidecars are frequently attached to lightweight motor cycles not designed for passenger work, the number of makers actually producing lightweight sidecar outfits is not large. The Ixion sidecarette, however, is designed as a light runabout passenger machine, and as such it stands almost alone. The engine fitted in the 1920 model is a 350 c.c. Precision two-stroke, which has been proved very satisfactory for this service, with a Sturmey-Archer three-speed countershaft gear. The sidecar is particularly light and readily detachable. Machines of this type have been manufactured by the Ixion Co. for several years, and the inclusion of a sidecarette in the 1920 range is proof that there is a demand for a little passenger machine of this type.



A miniature sidecar outfit, the 350 c.c. two-stroke Ixion.

MATCHLESS.

There was a time when Messrs. Collier and Sons were known principally for the speed of their racing models, and for the doings of the Collier brothers in the Isle of Man and elsewhere; but, of recent years, they have turned their attention to the powerful sidecar machine, with what success many of our readers are aware. The outstanding novelty of Model H lies in the spring frame, which embodies a system of coil springs, so designed as to give an exceptionally large



Side view of the spring frame 8 h.p. Matchless.

movement to the rear wheel. The wheel fork is pivoted at its inner end, and a loop having lugs at its lower ends for carrying the springs passes over the wheel. This aids in giving lateral rigidity. The sidecar wheel is sprung in a somewhat similar manner, and the two are linked together. An 8 h.p. J.A.P. engine (85.5 × 85 mm., 976 c.c.) supplies the power, and enclosed all-chain transmission is used, passing through a three-speed gear box. A spare wheel is carried on the back of the sidecar. The method of mounting the saddle by pivoting the front on the top tube and supporting the rear on springs gives a low position.

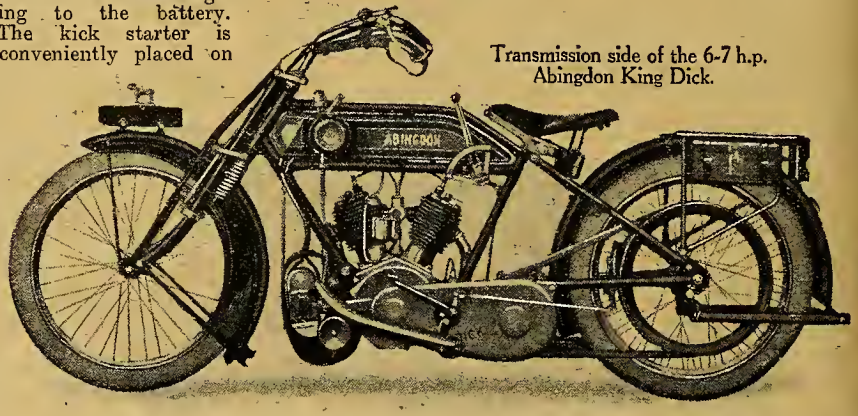
INDIAN POWERPLUS.

America has for many years been famous for big twins (largely due to the Indian) which, while often used for solo riding, are pre-eminently suitable for passenger work. The engine of the Powerplus Indian has a bore and stroke of 79.3 × 100.8 mm. (997.6 c.c.), and has been improved by the fitting of larger valves. The mainshaft and big end are equipped with roller bearings. The Indian spring frame, which has been in successful use for seven years, is retained, as is the twist grip control so popular on the other side of the Atlantic. In common with other American models the Indian has the advantage of large wheels and tyres. This model is electrically equipped, and is provided with an ammeter on the top tube (where the speedometer also is situated), which indicates the amount of current going to the battery. The kick starter is conveniently placed on the right side of the machine. For the coming year the sidecar has been redesigned; it is roomy and comfortable, and has, moreover, in the rear a large receptacle capable of carrying petrol and oil, and a considerable amount of luggage. All the sidecar connections are attached to the rigid members of the cycle frame, so that the springing is in no way rendered inoperative by the fitting of a passenger attachment.

Before the war, the 5 h.p. Indian was quite a favourite machine among British sidecar drivers, and no doubt the new Scout model, although designed for solo use, will find favour among those who prefer an engine of comparatively low capacity for sidecar work. The new model has a twin engine of 574 c.c., and the primary drive is by a train of gears to a three-speed gear box, the final drive being by chain. Unlike the majority of American machines, 26in. wheels are fitted, and the complete machine weighs 260 lb.

ABINGDON KING DICK.

Despite the somewhat restricted output of the Abingdon King Dick, owing to the demand upon the works of Messrs. Abingdon-Ecco, Ltd., for their other specialities, this machine has a standing reputation as a reliable and efficient mount, suitable for sidecar work. The engine fitted is of 6-7 h.p., the bore and stroke of 73 and 95 mm. respectively. A substantial three-speed gear box is fitted, and the frame used is of graceful design. The same quality which has characterised King Dick spanners for so many years is evident throughout the construction of this machine.

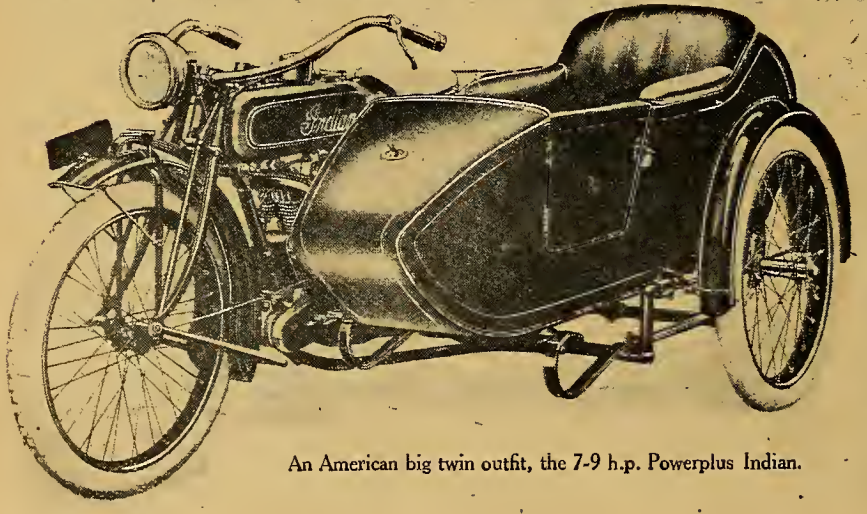


Transmission side of the 6-7 h.p. Abingdon King Dick.

Ease of operation has been constantly kept in view in the design of this machine. A comfortable riding position is assured by keeping the saddle well within the wheelbase. Beside the tank is a long gear control lever, which makes for easy changing, while enormous leverage is provided by the conveniently placed pedal of the rear brake. An all-chain model also will be marketed.

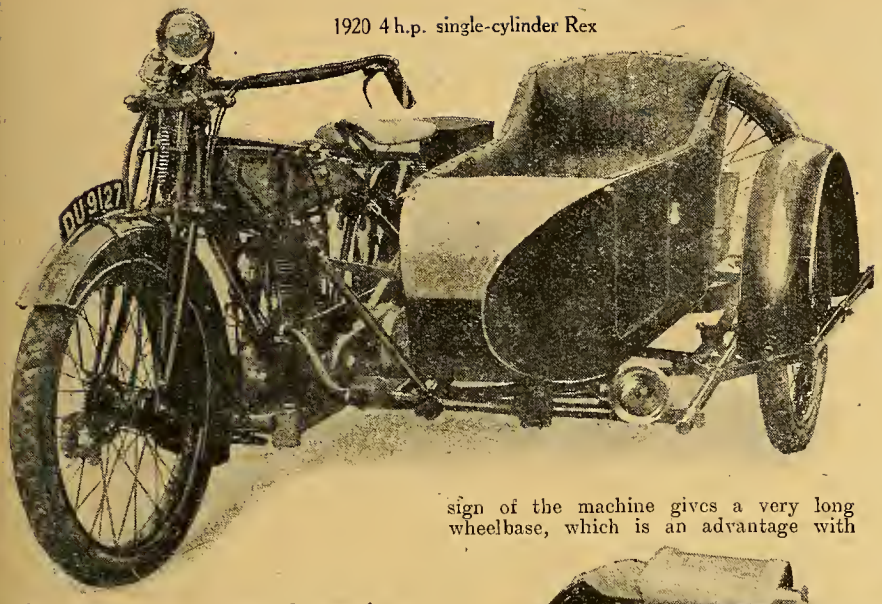
LEA-FRANCIS.

The Lea-Francis is not fitted with a large engine, and yet it is frequently used as a sidecar machine with much satisfaction; moreover, it is one of those machines which took a high place from the start. The engine is a J.A.P. 3½ h.p. twin (70×64.5 mm.=496 c.c.) The transmission is by enclosed chains, through a two-speed gear box, the chain guards being well carried out, and the machine is remarkable for its quiet running among



An American big twin outfit, the 7-9 h.p. Powerplus Indian.

1920 4 h.p. single-cylinder Rex

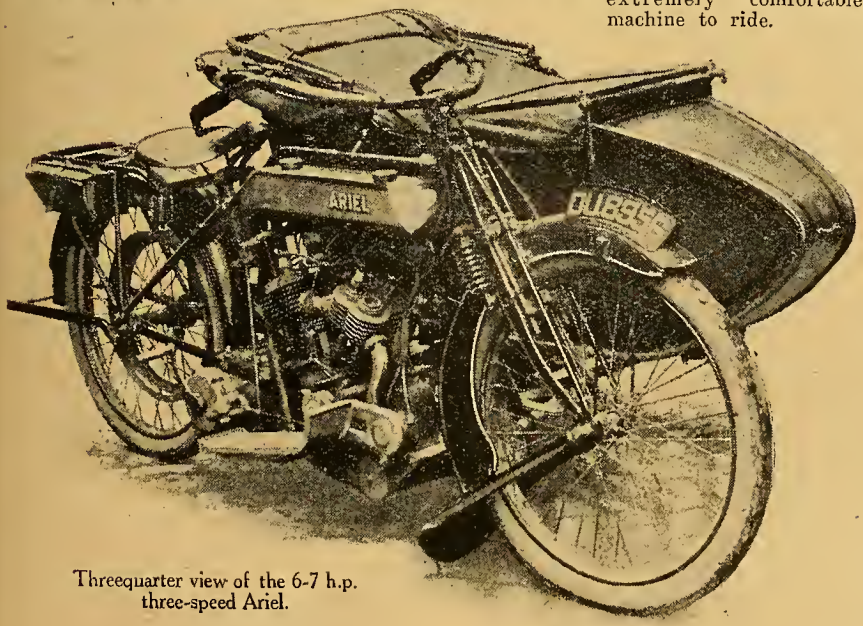


sign of the machine gives a very long wheelbase, which is an advantage with a sidecar machine, and, with the cantilever saddle suspension, the Rex is an extremely comfortable machine to ride.

other good points. The brakes work on the inside of the V on dummy brake rims. Messrs. Lea-Francis were, we believe, the first to use this type of brake on a front wheel. Another excellent feature is the quickly detachable wheel; the rear wheel can be removed for tyre repairs in a few seconds, leaving the transmission and brake work untouched. The hub design, both in front and rear, has much to recommend it, and the general finish of these machines is proverbial.

THE REX SIDECAR SINGLE.

One of the new single-cylinder sidecar machines produced since the Armistice is the Model 77 Rex, which has a 550 c.c. mechanically lubricated 84 × 98 mm. engine. Having 28 × 2½in. tyres and a large ground clearance, this model once more illustrates that all designers, in producing new models, have the requirements of the overseas buyer in mind. The design of the machine gives a very long wheelbase, which is an advantage with a sidecar machine, and, with the cantilever saddle suspension, the Rex is an extremely comfortable machine to ride.



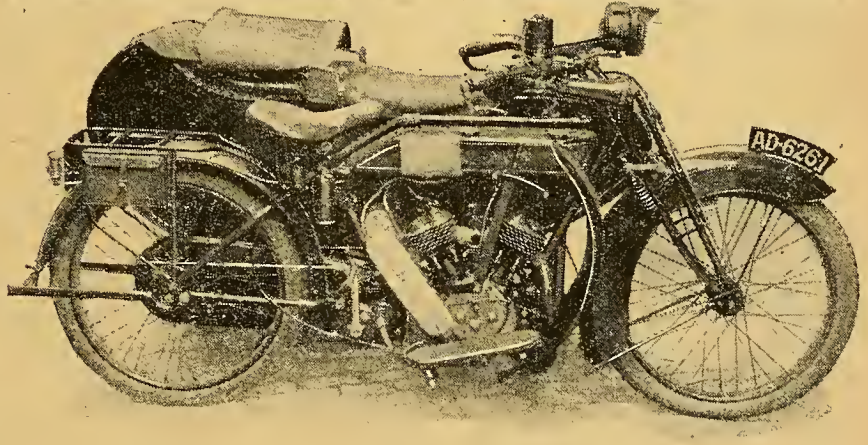
Threequarter view of the 6-7 h.p. three-speed Ariel.

Interchangeable wheels are fitted, and the equipment includes a spare wheel carried at the rear of the sidecar. There are several features which reveal a close attention to detail; for example, the brake pedal bearing is fitted with a large lubricator, as is the bearing supporting the belt wheel. The rear brake has a parallel motion, and the handle-bars are adjustable.

The engine is replete with novel points, as, indeed, anything may be expected to be which emanates from a firm who performed so much experimental work in the early days; in consequence those who favour such things as mechanical oiling and aluminium pistons will here find the incorporation of the latest practice.

THE JAMES PROGRAMME.

In the passenger machine class there will be two James models for 1920—a 5-6 h.p. twin and a 4¼ h.p. single. Both these machines are modified 1919 models, improved in detail and fitted with larger tyres. The bore and stroke of the twin

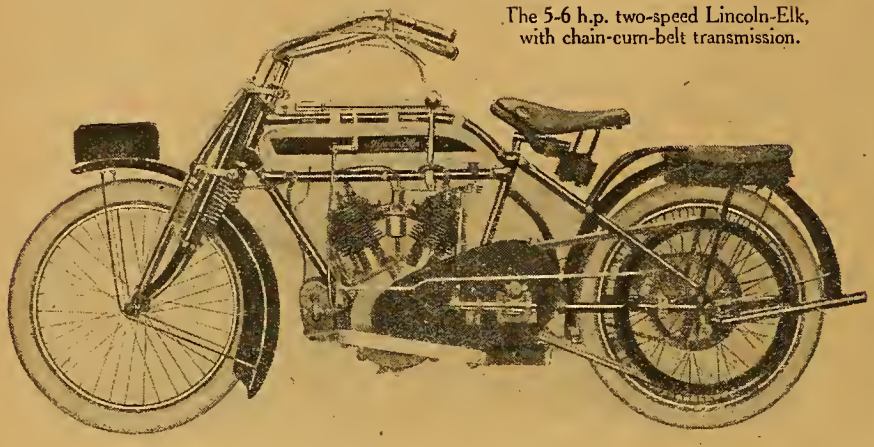


The 5-6 h.p. James sidecar outfit.

are 70 × 86 mm.—the capacity being 662 c.c.—which, in conjunction with the James three-speed gear box and all-chain transmission, makes a serviceable and economical sidecar machine considerably faster than may be supposed by its comparatively small engine capacity. The 4¼ h.p. model is a good representative of the big single class, which is so popular on account of its power and ability to maintain good average speeds with a sidecar load, and, at the same time, it is reasonably cheap to buy and maintain. This model has been a consistently good performer in the passenger machine classes in the 1919 trials.

THE ARIEL 6-7.

Engined with a long-stroke twin of 795 c.c. (73 × 95 mm.), the Ariel 6-7 is one which has become very popular as a passenger machine, on account of the remarkable staying powers of the engine. Various modifications in details will be made in the 1920 design, including all-chain drive with shock-absorber in the rear wheel. We have ourselves used one of these machines during the present year, and can testify as to its power, all-round reliability, and the exceptional comfort of the roomy sidecar. In addition, the well-known single-cylinder machine will also be marketed with a slightly larger engine.



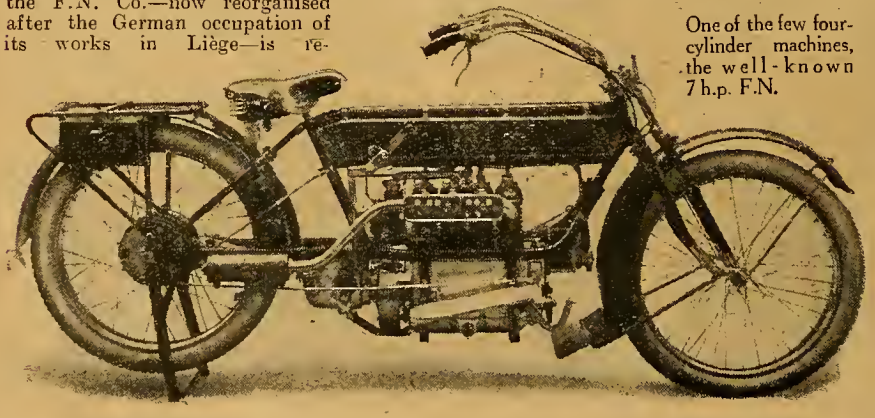
The 5-6 h.p. two-speed Lincoln-Elk, with chain-cum-belt transmission.

LINCOLN-ELK MOTOR CYCLES.

It is not usual for the motor cycle manufacturer to carry out all the various processes in the completion of his machines under his own control, but this is done by the makers of the Lincoln-Elk motor cycles. With the exception of such proprietary fittings as magnetos, carburetters, and saddles, everything, including the engine, is made in the one factory. Previous models having proved satisfactory, there is very little change to be made, a 5-6 h.p. V twin being specially made for sidecar work; 4½ h.p. single-cylinder models are also made. The power units are of the plain bearing type and drive through a unique form of two-speed gear, which consists of a countershaft connected to the engine by chain. On this shaft are two expanding rings controlled by a lever beside the tank, and these clutch either a large pulley or sprocket, which transmit the power to the rear wheel by belt on high gear and chain on low. The rear belt drum and chain sprocket are on either side of the back wheel. A kick-starter is fitted on the countershaft.

THE FOUR-CYLINDER F.N.

The influence of the F.N. four-cylinder machine upon ultimate design will only be fully appreciated by those who know the number of firms experimenting with four-cylinder motor cycles at the present time. There have been many four-cylinder machines, but of the many pioneer designs, only the F.N. has survived. It is a matter of great interest to learn that the F.N. Co.—now reorganised after the German occupation of its works in Liège—is re-introducing the 7 h.p. model, which promised to be such a popular machine when war broke out. Having cylinders of 52×88 mm., the capacity of the engine is 748 c.c.; it has a three-throw crankshaft and mechanical lubrication. Of T head design, the valves are arranged on each side of the cylinders and actuated by two camshafts driven by gears at the fore end of the crank case. The transmission is by shaft through a three-speed gear box placed immediately behind the engine flywheel, in which is incorporated a multi-disc clutch. The rear wheel is easily detachable.



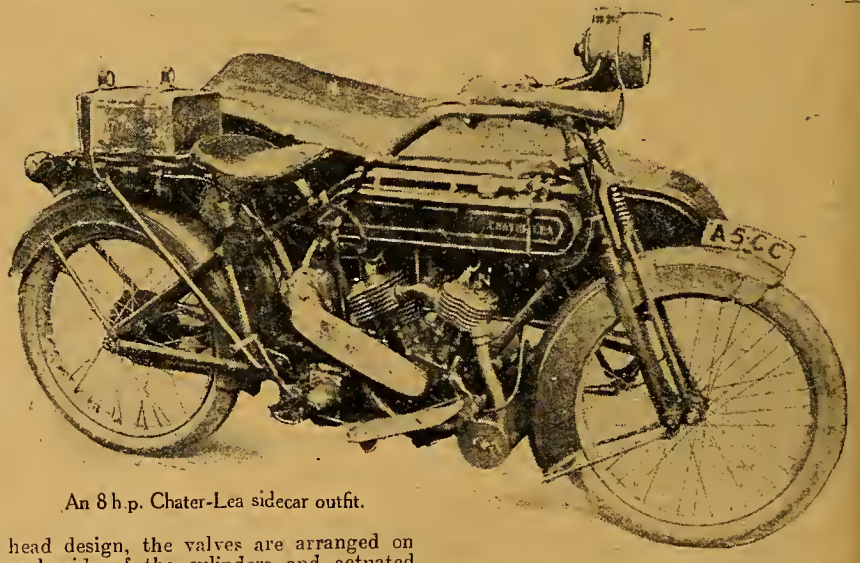
One of the few four-cylinder machines, the well-known 7 h.p. F.N.

COVENTRY VICTOR.

A flat twin engine unit of 5-7 h.p., which may be introduced by its makers in a complete machine, is the Coventry Victor. The bore and stroke are 75 and 78 mm. respectively, the capacity being 688 c.c. The experimental machine has every promise of success, and its appearance in the market largely depends upon the ability of the Coventry Victor works to produce it in addition to the engine unit, which is sold to assembling firms.

CHATER-LEA.

Amongst sidecarists the Chater-Lea (No. 7) has always possessed a well-deserved reputation for soundness and reliability. An 8-h.p. engine, of which the bore and stroke are both 85 mm. (964 c.c.), is fitted; from this the power is taken by a chain to the three-speed gear box (the firm has always been noted for the large size and consequent efficiency of its clutch), and a second chain to the rear wheel completes the transmission. Chater-Lea spring forks are standard, and strongly stayed 5in. mudguards, with side wings, are fitted. The Chater-Lea was one of the first machines to be fitted with an internal expanding brake, and this feature is retained in the latest Model No. 7. Journal ball bearings are used in the hubs, and the wheels are quickly detachable, leaving the transmission undisturbed.

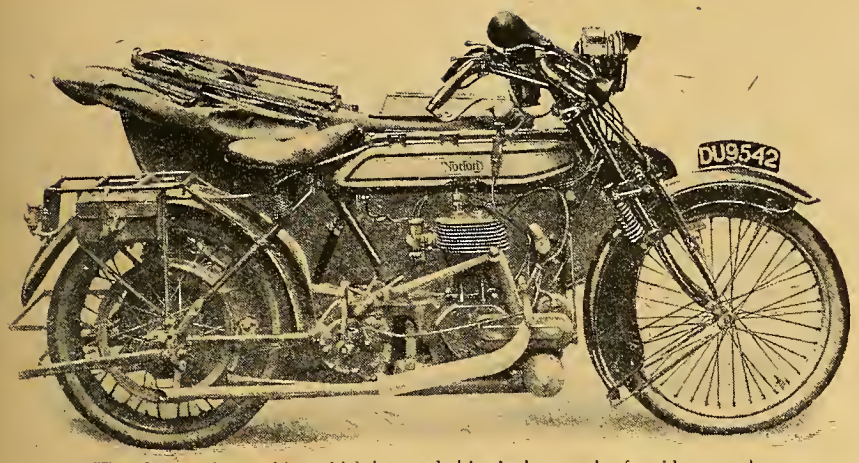


An 8 h.p. Chater-Lea sidecar outfit.

The Chater-Lea No. 7 is known among sidecar owners as a "hefty twin," which has been very successful in competitions, and that it is included in the 1920 range of models will give satisfaction to many past and present owners of the model.

"BIG FOUR" UTILITY NORTON.

Whilst not primarily designed for speed, like its 500 c.c. sisters, the "Big Four" Norton is one of the fastest sidecar machines on the road. The capacity of the engine is 633 c.c., the bore and stroke being 82 and 120 mm. respectively. 650 × 65 · tyres, Sturmey-Archer gear, hand-controlled clutch, enclosed all-chain drive, and a tank holding two gallons of petrol, form part of the equipment.



The Norton, the machine which has made big singles popular for sidecar work.

The standard Norton sidecar is of pleasing design, embodying a large rear locker which, to order, is utilised to accommodate a child's dickey seat.

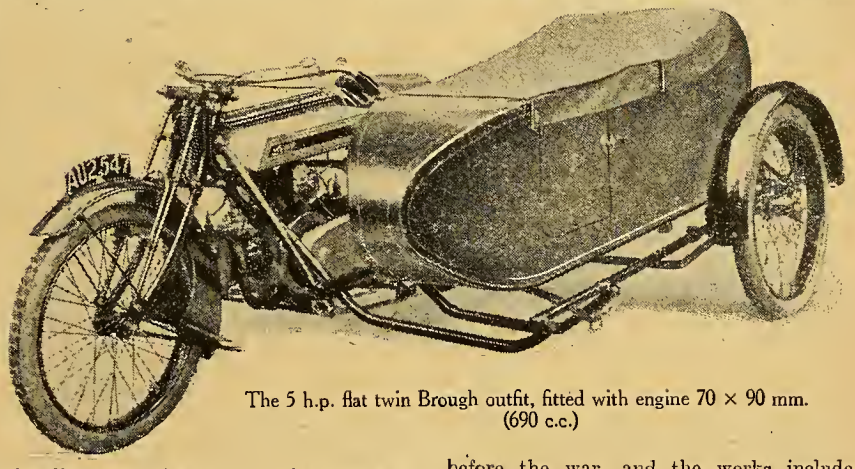
We have had one of these machines in constant use during the whole of this year, and on long journeys we have been surprised at the high average speeds possible with a heavy sidecar. Its high ground clearance and sturdy construction make it particularly suitable for use in the roughest country, and its economy in running will appeal to all.

THE CAMPION.

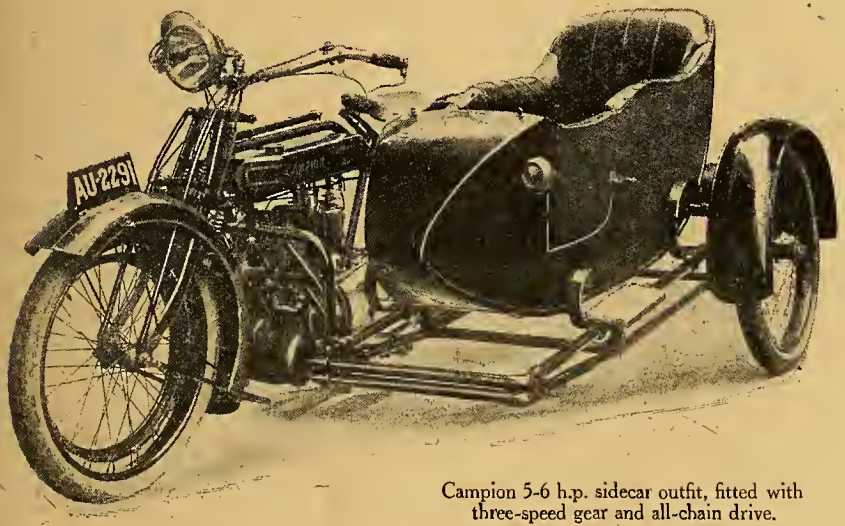
The Campion is one of those machines which would be better known if the output of its manufacturers were larger. Wherever it is known, however, it is appreciated because of its all-round commonsense design, which reveals that those responsible are keen road men. Engined with a twin J.A.P. unit, and built up of other standard components, the main distinctive features of the machine are its wide mudguards, large capacity tank, and comfortable riding position. The sidecar embodies what is practically a rectangular duplex frame, and is of particularly robust construction, the body is large, and, for the convenience of the passenger, a step is fitted.

THE BROUGH 690 C.C. FLAT TWIN.

In the recent Liverpool M.C. trial, the judges made a special point of engine cleanliness at the end of the gruelling day's run, and special mention was made by them regarding the qualities of the new Brough engines in this direction. The latest 5 h.p. model has a bore and stroke of 70 and 90 mm. respectively—one of the only long-stroke flat twins on the market. It has been designed by an engineer, who is also one of the best known riders in this country, Mr. Geo. Brough, and much is expected of it on this account. Undoubtedly it is a very fine piece of work, and one which will be much sought during 1920. The crank case is cast in one piece, and has a cover, over the timing gear, which embodies the main parts of the induction pipes. A solid crankshaft is used which runs on long plain bearings. The induction pipe is heated, and altogether the Brough should give a good account of itself in next year's motor cycle market. The gear box fitted is the Sturmey-Archer, and all-chain transmission forms part of the specification. Manufactured by the Brough firm, the sidecar is particularly attractive on account of its size and the quality of its upholstery and general finish. A capacious locker at the rear accommodates two suit cases, or petrol tins. Leaf springs are used for the suspension and the design embodies a spring wheel. Messrs. Brough and Co. are now in a much better position to produce motor cycles in quantities than was the case before the war, and the works include a foundry and well-equipped machine shops, so that almost every component part of the Brough machine is produced under one roof. The 5 h.p. Brough is also obtainable as a solo machine with higher gear ratios.



The 5 h.p. flat twin Brough outfit, fitted with engine 70 × 90 mm. (690 c.c.)

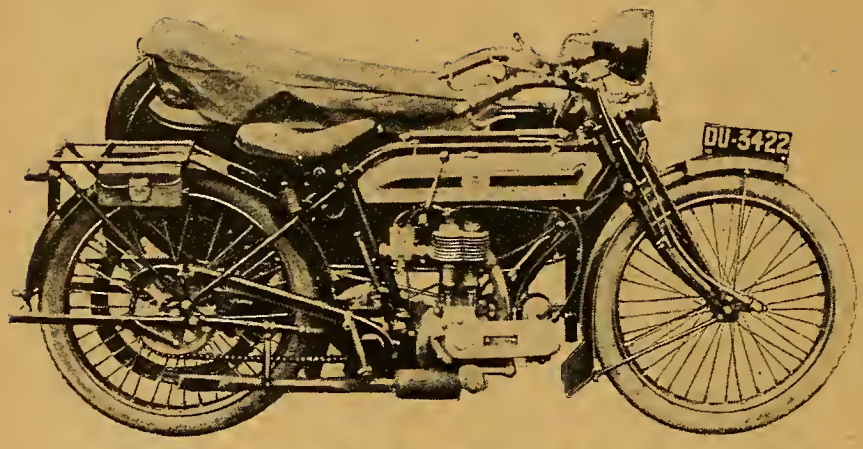


Campion 5-6 h.p. sidecar outfit, fitted with three-speed gear and all-chain drive.

THE MILITOR.

This American machine at present is not marketed in this country, but, owing to the interest created by its description given in *The Motor Cycle* on October 9th, there is every possibility that a number will be imported at a very early date, as its manufacturers make a speciality of export trade.

It will be recalled that the Militor is a four-cylinder motor cycle, built on the lines of a car, having a press steel frame and shaft drive. The springing, too, is on car lines, and another point where car practice is followed is the artillery wheels. The engine has cylinders 63 × 89 mm., and embodies overhead valves. A three-speed and reverse gear box is built integral with the crank case, the gear change being by a swivelling lever, as on many American cars. In America, the price of the machine with sidecar, which is also fitted with an artillery wheel, is £120.



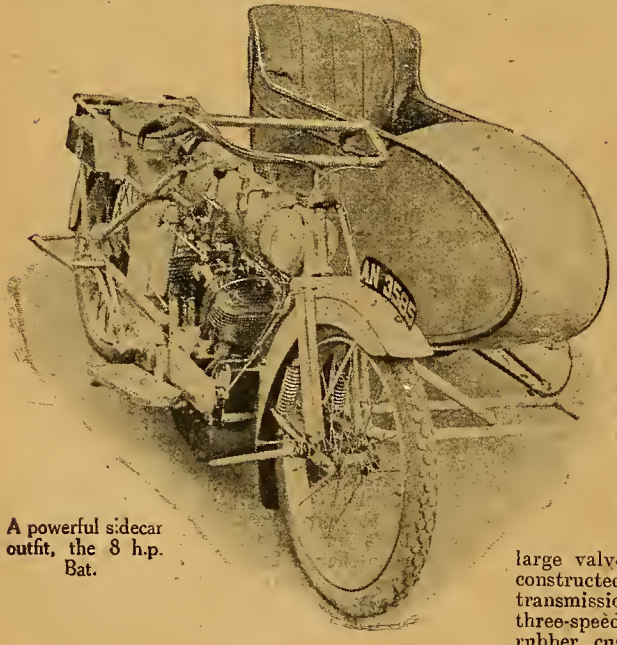
The Triumph 1920 chain drive machine used in the Six Days Trials.

THE TRIUMPH "FOUR."

The performance of the 4 h.p. chain drive Triumph with sidecar in the A.C.U. Six Days Trial was one of the outstanding successes of the year, and from our own experience with this model, we anticipate that it will be one of the most popular machines on the 1920 market. Elsewhere in this issue will be found a full and illustrated description of the new model.

THE BAT.

In the early days of motor cycling the Bat earned a high reputation which has been retained up to the present time. Sturdy construction and J.A.P. engines have always been features of these machines. Either the 6 h.p. (770 c.c.) or 8 h.p. (976 c.c.) engine can be fitted. The gear box rests upon a platform below the chain stays, which is supported at the rear of the crank case, and by the lower members of the frame. This method of attachment renders chain adjustment very easy. The kick starter has a partially enclosed pinion and ample leverage. The change speed lever is conveniently placed on the right-hand side of the tank, which, like all Bat tanks of recent years, is cylindrical with a tapered rear. The Bat method of springing which insulates the rider has been retained. The saddle and footboards are connected and supported by a strong spring and suitable links. This gives very comfortable riding and no lack of lateral rigidity, and has, moreover, stood the test of time.



A powerful sidecar outfit, the 8 h.p. Bat.

READING STANDARD.

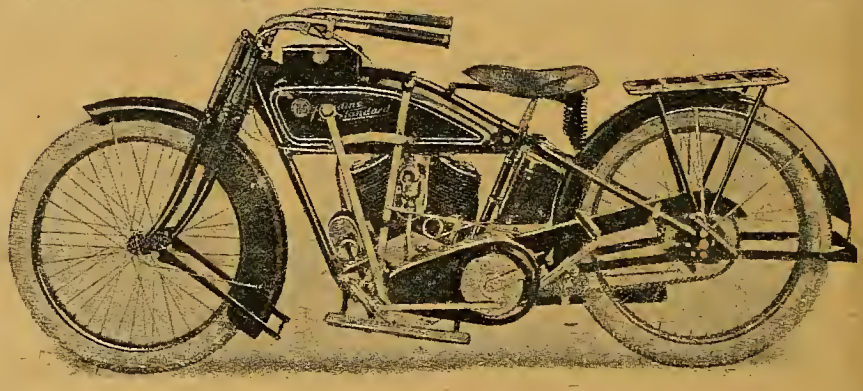
The Reading Standard has not hitherto been so common in this country as several other American makes, but it is likely to be seen much more frequently in the near future. The engine is one of the largest found on a motor cycle, the bore and stroke being 85.7 and 101.6 mm. respectively; this gives a capacity of 1,170 c.c., and the motor has shown 16 h.p. on the brake. The engine has large valve ports and a specially constructed exhaust valve. The transmission is by chains *via* a three-speed gear box, and a rubber cushion drive such as is used on the Enfield. Only one model is marketed, but this can be purchased with or without electrical equipment. The forks differ from those used on many American machines, and resemble the Chater-Lea in principle.

THE WILKIN "4."

Wilkin Motors of Sheffield is another new firm which will have a sidecar machine to offer in 1920. It will be engined with a 4 h.p. Blackburne unit, and the specification will include Sturmey-Archer gear, all-chain transmission, patent cush drive, and a two-gallon tank. The sidecar lugs will be cast integral with the frame.

A SIDECAR COULSON B.

One of this year's newcomers to the motor cycle manufacturing world is the F. Aslett Coulson Engineering Co., whose Coulson B lightweight has quite caught the public fancy. A sidecar model by this firm will be introduced early next year, in which the power unit will be the well-known Blackburne 4 h.p. engine.



An American big twin of 10 h.p.—the Reading Standard.

The experimental machine has several features of interest, not the least among them being the spring frame, which is similar to that used for the lightweights. The system embodies quarter-elliptic leaf springs supported on the side of the rear stays, the wheels being carried on short levers pivoting at the ends of the stays.

OTHER PASSENGER MACHINES.

There are sidecar machines, other than those reviewed in the preceding pages, of which particulars are not yet available. Most of these, however, will not appear on the market until early next year. Among these are several which will be produced by large firms at present unknown in the motor cycle field, but who, in changing over from munition work, have decided to devote extensive manufacturing facilities to the production of motor cycles.

One of these will probably take the form of a single-cylinder machine on more or less standard lines, designed to be produced in large quantities at a comparatively low price. Another will be an 8 h.p. twin with several distinctive features. A third will be an exceptionally large and interesting twin with outside flywheel and two overhead exhaust valves per cylinder.

There are also several four-cylinder machines which have been held up only on account of manufacturing difficulties occasioned by the several strikes.

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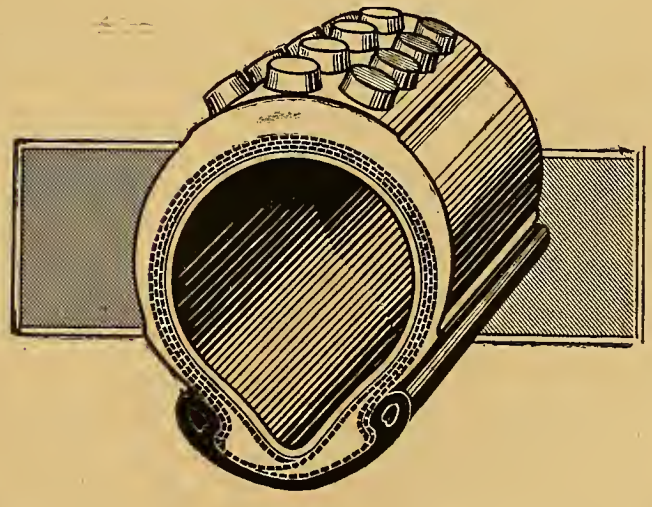

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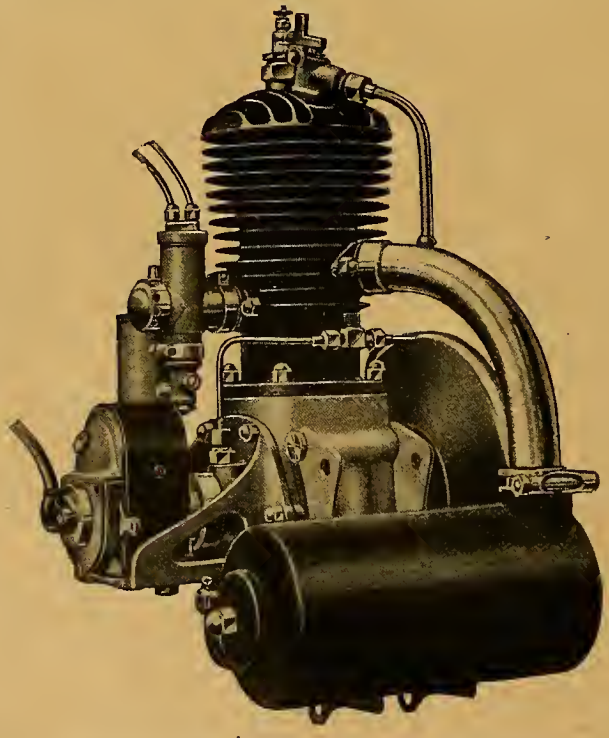

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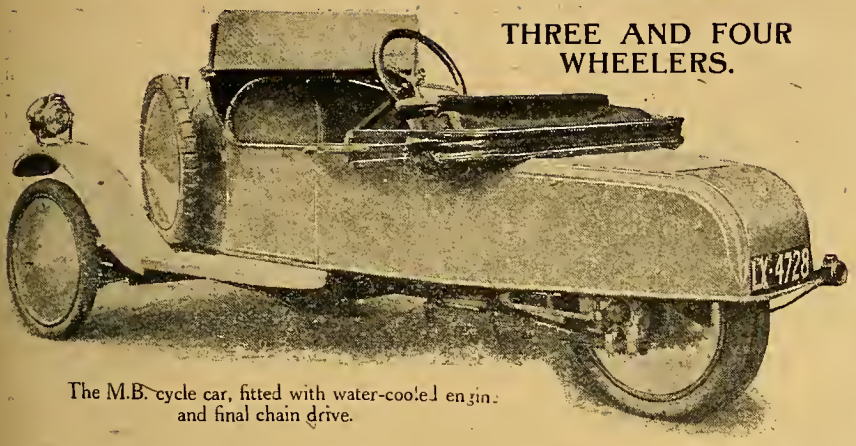
THREE AND FOUR WHEELERS.



The M.B. cycle car, fitted with water-cooled engine and final chain drive.

THE MERRALL-BROWN THREE-WHEELER.

Made by the Premier Motor Co. of Bolton, the Merrall-Brown runabout is a most distinctive machine, embodying many refinements in finish and equipment. The engine fitted is a water-cooled 10 h.p. four-cylinder, driving a two-speed and reverse gear box by shaft, the final transmission being by a single chain. The rear wheel is of the twin type, sprung by underslung quarter-elliptic springs, while semi-elliptic springs are used at the front axle. Chain tension is adjusted by radius rods controlling the movement of the back wheel. Wheels of the standard Dunlop detachable variety are fitted with discs. On each side of the back wheel are hand and foot brake drums, but the detachability of the wheel in no way interferes with the adjustment of these. Quite a pleasing design of body has been adopted, a streamline effect being obtained with approximately upright sides. In addition to the bonnet, the wings and wheel discs are of polished aluminium. A door is fitted in each side.

THE PREMIER RUNABOUT.

This three-wheeler, introduced by the Coventry Premier Co., who, before the war, made Premier motor cycles, was fully described in *The Motor Cycle* of October 30th. Its features include a three-speed and reverse gear box; shaft and chain drive, the latter by a duplex chain enclosed in a quickly detachable case; quickly detachable rear wheel, with spare wheel carried on the tail of the body; quarter-elliptic springing front and rear, the latter being in an inclined position; rack and pinion steering; foot acceleration; and a mechanically lubricated water-cooled V twin engine, with a bore and stroke of 80 × 105 mm. respectively (1,055 c.c. capacity). Fitted with hood, screen, and lamps, the provisional price of the Super Runabout, as it is called, is £210, at which price it is a most attractive proposition.

MORGAN.

Up to the present date, no three-track machine has earned such popularity as the Morgan, and it is not without good reason that one sees so many of these handy little runabouts on the road, for they have thoroughly proved their reliability. Only one chassis is made, and this is so straightforward that it would be difficult to suggest any part which could reasonably be lightened or rendered more perfectly simple. The engine, which may be either a water or air-cooled J.A.P. or M.A.C. or air-cooled Precision, is carried at the front of the chassis, and drives through a clutch to a propeller-shaft enclosed in one of the three main frame tubes. To the rear of this tube is attached a box containing a pair of bevels. The cross-shaft carries a sprocket on either side, each of which is connected by chains to the rear wheel. By simply "dogging up" one or other of these sprockets, two different gear ratios are obtained.

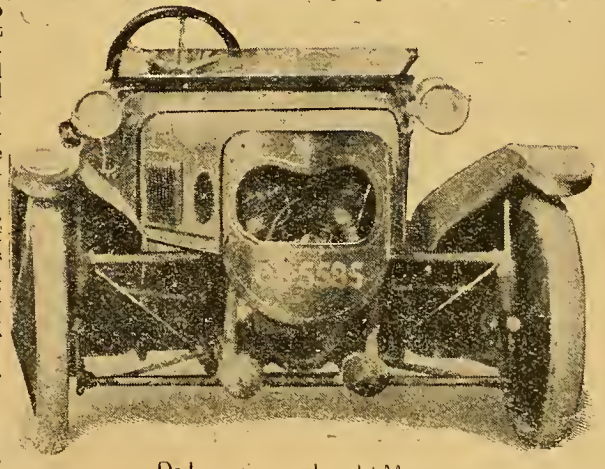
The bodywork for air and water-cooled models forms units with or without the radiator, according to the type of engine used. Three main models are provided, the Grand Prix—a sporting water-cooled vehicle with racy lines—the standard touring model with air or water-cooled engine, and the family machine, which is provided with accommodation for children behind the usual seats. In the latest models a ball thrust has been added to the clutch withdrawal mechanism, longer bearings are fitted to the front wheel steering heads, and much stronger bevels with a different tooth formation are employed.

THE 1920 TAMPLIN.

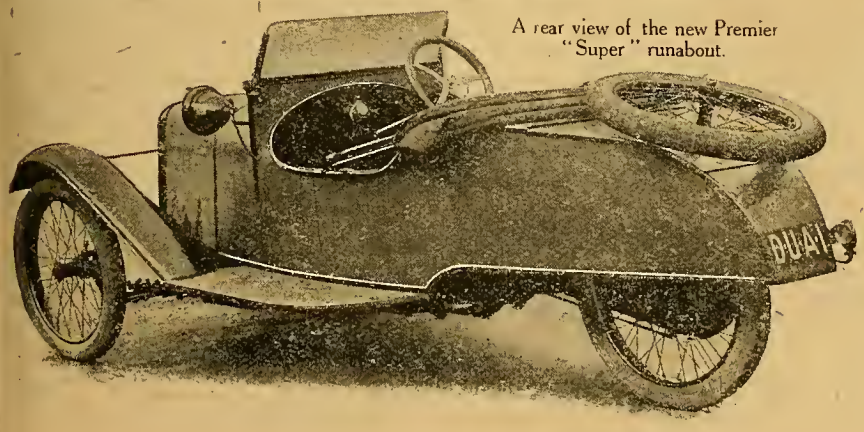
The well known Carden runabout will in future be known as the Tamplin, and a tandem-seated model has been introduced for 1920. The power is provided by an 8 h.p. twin air-cooled engine, the final transmission being by a long belt on either side of the body. It has a very sporting appearance, and should appeal to many.

THE A.V. RUNABOUT.

Closely resembling the pre-war Carden monocar, the A.V. two-seater models come into the category of passenger machines. The engine is located at the rear of the seating accommodation, and the design is probably the simplest form of runabout yet produced. One model is fitted with an 8 h.p. water-cooled twin engine, the other being equipped with an air-cooled engine of a similar size.



De Luxe air-cooled model Morgan.

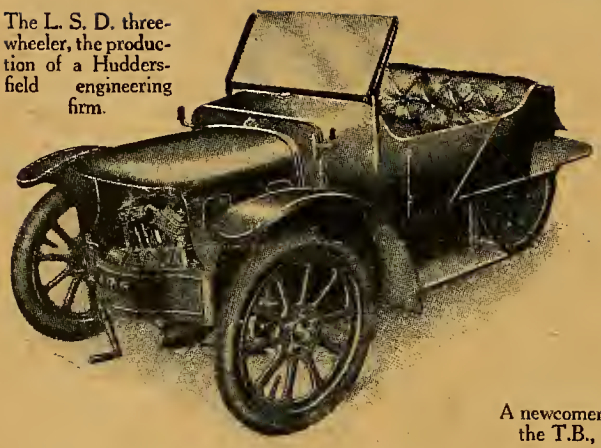


A rear view of the new Premier "Super" runabout.

A NORTH OF ENGLAND THREE-WHEELER.

A new three-wheel proposition will make its *début* to the public at Olympia. This is the L.S.D. cycle car, produced by Messrs. Sykes and Sugden, Ltd., engineers and ironfounders, of Huddersfield—another of those established engineering firms at last turning their attention to the automobile industry.

The engine fitted is an 85.5 × 85 mm. J.A.P. air-cooled twin, placed in front of the axle member and driven by shaft, through a leather-faced cone clutch, to



The L. S. D. three-wheeler, the production of a Huddersfield engineering firm.

a two-speed and reverse gear box located at the rear of the frame.

Quarter-elliptic springs are used at the rear wheel, and a patented system of enclosed coil springs at the front. Dunlop 700 × 80 mm. tyres are fitted on Sankey pressed steel wheels, the rear wheel being readily detachable without disturbing the single chain final drive.

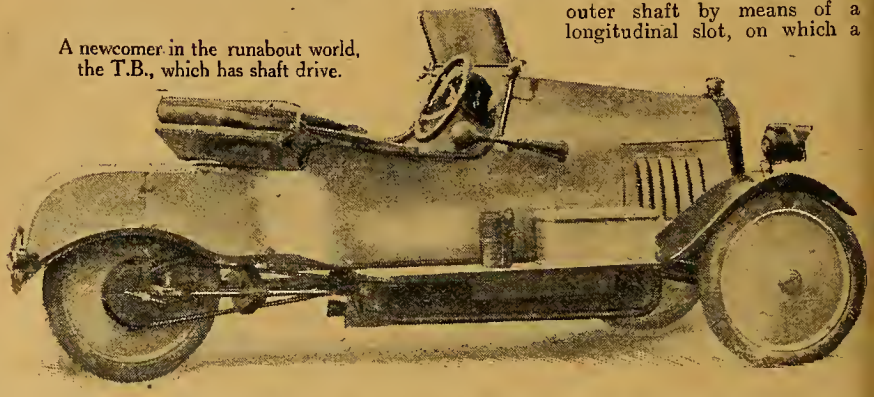
Direct steering by a large diameter wheel, brakes of the external contracting type, and a roomy two-seater body with doors on both sides, are included in the specification. The dimensions are : wheelbase 6ft. 6in., track 4ft., overall length 9ft., width 4ft. 7in., and the price, complete with hood and screen, is 185 guineas.

A NEW THREE-WHEELER—THE T.B.

Several large munition firms have devoted their peace time energies to the motor manufacturing field, and one of these—Messrs. Thompson Bros. (Bilston), Ltd.—is producing a very pleasing little three-wheeler with all-shaft transmission. The T.B., as it is called, has an 8 b.p. engine integral with a two-speed and reverse gear box.

THE BLERIOT WHIPPET.

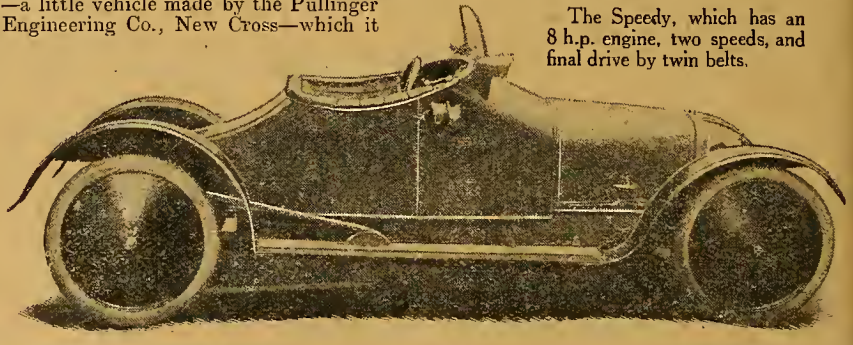
A light and low-priced runabout, produced by a large firm of aircraft engineers, the Blériot Whippet is another small four-wheeler which is in direct competition with the sidecar outfit. The power unit is a Blackburne 8 h.p. twin with outside flywheel and detachable heads. A Ferodo-lined clutch is fitted on the left-hand extension of the crankshaft, and a mechanical starter, by which the driver may start the engine from the seat, is included in the specification. The transmission is by chain to a countershaft, thence by belt to the live axle. Variation in gear ratio is obtained by means of a large variable pulley on the countershaft—an ingenious device which permits the tension of the belt to be kept constant. 700 × 80 mm. tyres and hammock seats form part of the equipment.



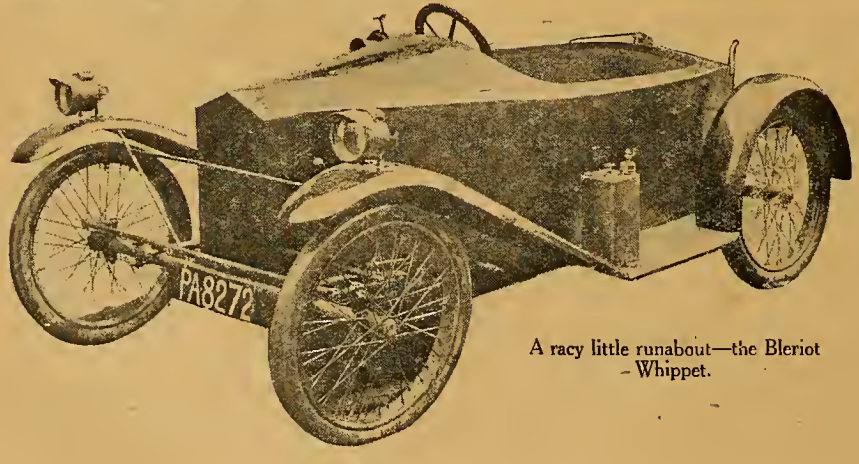
A newcomer in the runabout world, the T.B., which has shaft drive.

THE SPEEDY CYCLE CAR.

One of the few new cycle cars embodying final drive by twin belts is the Speedy—a little vehicle made by the Pullinger Engineering Co., New Cross—which it is proposed to market at a price considerably below that of the average sidecar outfit. It has a simple specification, direct steering being employed, and provision made for an adjustable rake of the steering column. The gear box provides two forward speeds and reverse, the gear change lever being situated in the centre of the floor. The countershaft, driven by chain from the gear box, consists of two separate shafts, one sliding within the other. The outer one, to which is attached the inner flanges of the belt pulleys, rotates on two plain bearings bolted to the longitudinal chassis members. The inner one, however, which carries the outer flanges of the pulleys, is allowed to slide within the outer shaft by means of a longitudinal slot, on which a key on the outer sleeve is fitted. By these means a differential action is obtained automatically on the countershaft by the different speeds of the road wheels on turning a corner. The engine is an 8 h.p. Chater-Lea, having a bore and stroke of 85 mm. = 964 c.c.



The Speedy, which has an 8 h.p. engine, two speeds, and final drive by twin belts.



A racy little runabout—the Bleriot Whippet.

THE L.J. FOUR-WHEELER.

The L.J. cycle car, which was illustrated and described in last week's issue of *The Motor Cycle*, is another of the several little four-wheelers which embody motor cycle practice at several points and sell at a figure approximating to that of the sidecar outfit. The engine is an 8 h.p. J.A.P., which will be offered both in the water-cooled and air-cooled types. The specification includes a pressed steel frame, quarter-elliptic springs, duplex chain transmission, friction disc change-speed, Lynton steel disc wheels, internal expanding brakes, and 700 × 80 mm. tyres. The body is somewhat higher than is usual with cycle cars, and the passengers are thus well protected. The whole car is particularly handsome and will be sold at a figure in the neighbourhood of £200.

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Olympia Motor Cycle Show.

ON Monday next, November 24th, there will open at Olympia the most important motor cycle show ever held. There will be more exhibitors and more spectators than ever before, and, in addition, the interest of the individual exhibits will be greater. What shall we see at the Show? This is the question of the moment amongst thousands of ardent motor cyclists, and to some the answer will be disappointing, for, though there are many new firms exhibiting motor cycles for the first time, and though there are a certain number of totally new designs, there is but little alteration in the general run of machines. Some of the more eager spirits have hoped to see a general adoption of aircraft engine practice applied to motor cycles, yet superficially, at any rate, this has not occurred, except in isolated cases. At the same time, more and greater improvements have taken place than meet the eye of a casual observer. A little difference in the design of valve ports and cooling fins is almost indistinguishable externally, but may make a world of difference to the pulling and staying powers of an engine. Lubrication is beginning to take its proper place in the list of important features of design, and several new forms of mechanical or automatic lubrication will be seen.

The size of tyres fitted to all types is on the increase, and, though there are not a great many new converts to the 28in. wheel, it will be found that the sectional diameter of the tyre has increased in a very large number of cases.

Perhaps the most noticeable feature, especially to the keen solo rider, is the fact that, generally speaking, the exhibits can be divided into two main classes: passenger machines and (so-called) lightweights. Many firms will stage machines suitable for solo or sidecar work, but the light solo machine of about 500 c.c. has almost ceased to exist. The reason for this is not far to seek, and blame must be attributed to the public rather than to the manufacturer, for countless people have in the past acquired solo machines to which they have fitted passenger attachments, and then, when troubles have occurred, have blamed the manufacturer for weakness or lack of power.

In spite of (or because of) much criticism in the past, the two-stroke has come to stay, and its exponents are increasing to an enormous extent. It is probably true that the majority of new firms are making small two-strokes, and the success of this type has led one firm to market a 500 c.c. air-cooled two-stroke for sidecar purposes. As price is one of the governing factors in motor cycle sales, and two-stroke engines are cheaper to build than four-strokes, this increase is likely to continue.

Prices.

THE prices of motor cycles have been steadily rising, and grumbles are heard on all sides, yet the grumblers are unjust, for few articles, either manufactured or in the raw state, have risen in price so little as a motor cycle. Anyone who considers for a moment the rise in wages, material, fuel, etc., will immediately realise that the price of motor cycles is justified, and is even likely to rise again in the near future, and those who are unwise enough to delay purchase till prices drop are likely to be without a mount for several seasons.

On the other hand, the money spent on a motor cycle at the present moment is a good investment, for the buyer may be reasonably certain of a good return when selling his machine when the time comes to dispose of it.

Prospective car purchasers were surprised by a sudden jump in prices during the recent Olympia Car Show. Is this to be repeated in the motor cycle world? The question is a difficult one, but though we consider that there will be a steady increase in prices to at least 100% on pre-war prices, it is doubtful whether there is at present any excuse for a considerable rise above this figure.

An Index to the advertisements in this issue will be found on the page facing the back cover.

Ancient and Modern Lightweights.

A LONG letter from a Buxton reader has reminded me of a fundamental difference between the type of lightweight which figures in a modern Six Days and those which some of us used to ride a dozen years ago. The lightest machine in the A.C.U. week was a 2¼ h.p. Radco, scaling 170 lb. In 1905 my correspondent built a 3½ h.p. machine with a Peugeot twin engine, and the outfit weighed no more than 150 lb. exclusive of fuel and lamps. About the same date I possessed a 7-9 h.p. Peugeot-engined 'bus, which with empty tanks weighed no more than the 1919 Radco; and, unless I am much mistaken, Mr. E. Kickham, of Bristol, owned an even lighter sample. In other words, specifications have become so complex that a 1919 2¼ h.p. machine is heavier than the high-powered sporting 'buses of twelve or fifteen years ago. If the much-talked-of "Single Gear Club" ever materialises, we may evolve one or two skilful assemblers, who will revive really light one-speeders for enthusiasts. Those makers who still list a single-geared machine naturally employ most of the parts which figure in their heavy three-speed sidecar pullers, and the consequence is we cannot buy single-speeders of the old type.

A Man of Ideas.

THE correspondent referred to is certainly a man of ideas. Some ten years ago he helped to build a machine with a very curious frame, consisting principally of six small diameter tubes running from the steering head to the back hub. The two lower tubes dipped to carry the engine, whilst the remaining four ran straight. He claims that owing to vertical "give," coupled with lateral rigidity, this frame was as comfortable as any spring system ever devised, whilst it was immune from side-slip. Some day he hopes to construct a drive consisting of a Whittle belt running over four pulleys, viz., two engine-shaft pulleys, one countershaft jockey pulley near the bottom bracket, and one belt rim. The belt runs over one engine pulley, back to the jockey pulley, and then forward to the other engine pulley, and so to the belt rim. This drive has been tried out, and is alleged to be non-slipping under any load; the fact that the run is out of alignment does not appear to matter. The next paragraph details yet another idea of his with which readers may care to experiment.

More Weight on the Front Wheel?

VERY few of us have ever investigated the percentages of the total weight which are carried on the front and rear wheels respectively. The engine is usually carried pretty well forward; but it must just about be balanced by the preponderance of other dead loads further aft—gear box, kick-starter, carrier, tool bags, etc.; and the rider, who scales far more than a couple of ordinary engines would weigh, is seated well astern, and generally uses a type of riding position which throws his weight well back. My correspondent is a heretic in these matters. He prefers to stack his tools and luggage over the *front* wheel, and says that when this is done a vast improvement in comfort usually results. He doubts whether a spring frame is a necessity if the weight be apportioned as he recommends. I hesitate to print this theory, for fear some of the pillion enthusiasts should take to carrying their flappers on front wheel tan-sads.

Maintenance of Tune.

IN ninety-nine cases out of a hundred, if a machine performs better at the end of a Six Days Trial than at the beginning, it is an excellent 'bus. Here is the exception which proves the rule. Many years ago I entered for a Six Days. The previous week I met the works manager at a hill-climb. "Let me take your 'bus back to the works to-night. We'll see she is all right, and rail her up to you at X——." I agreed. When I recovered the machine at X—— on the eve of the trial, it would hardly move. The fools had rebushed everything, and it was very tight. The engine seized twice during the trial, but I accomplished prodigies of speed repairs and endurance, and got my gold. By the end of the trial, the machine was very appreciably faster: some 15 m.p.h. faster on the flat, and under any conceivable "maintenance of tune" test I should have scored a lot of marks. But it took me all my time to get it back to the works by road. Sloppy would be a mild description of the principal bushes: in particular, I remember that, in unseizing against time on the road, I had sheared the tips off the teeth of a timing pinion, and the bits of metal had ground a lovely pattern on the flywheels. This reminiscence indicates that even a flying mile at Brooklands on the first and sixth days of a trial is not a sure test, unless a standard minimum speed is imposed in each class. The pitfalls of competition organisation are innumerable.

Sidecar Golds in the Six Days.

THE firms and individuals who are justly proud of the gold medals gained by their sidecar outfits in the 1919 Six Days Trials have forgotten a little ancient history. As long ago as 1912 a 499 c.c. Triumph outfit won a gold medal in the Scottish Trials, and a magnificent performance it was. The rules may not have been as stringent as they are nowadays, and it was not essential for every hill to be climbed with the crew on board. On the other hand, the course was longer and more exacting than the Llandrindod Wells route, and included the terrific ascent of Amulree from the Kenmore side. The pilot of the outfit in question was a well-known sporting parson, the Rev. P. W. Bischoff, who has been lost to motor cycling circles for the past year or two, owing to his duties on board H.M.S. *Glorious*—one of the famous "hush-hush" cruisers. His passenger

easional Comments.—

as a lady, who has since become Mrs. Bischoff, and ho, under her maiden name of Miss Beatrice Lang- on, was not without a motor cycling reputation of er own. I hear rumours that an interesting announce- ient about the Rev. P. W. Bischoff's motor cycling ctivities may be expected shortly. In the meantime, ironiclers should note that Mr. Bischoff won the first old awarded to a single-cylinder sidecar outfit in a ix Days Trials, and that he won it with a 499 c.c. ngine, and not with a "big four."

Speedman's Wobble.

FRANKLY, I am not impressed by the explanations of speedman's wobble which various correspondents have sent in, and my personal opinion that both the cause and the remedy are still to be iggested. Gyroscopic action, wheels out of track, idden closing of the throttle, unbalanced wheels, and olding the handle-bars too tightly, have all been put orward as probable causes. I can provoke it on ertain machines with the wheels in track and balanced, uring acceleration, and whether I hold the bars ghtly or loosely. Not being a No. 8 hat, I am illing to sit at anybody's feet when gyroscopes are eing discussed, but I note that the gyroscopic mer- iant goes out of his way to say that a speed-wobble iachine will speed-wobble at full r.p.m. on low gear. am afraid this is not true. Not many moons since tested the point on a single. I got a wobble full revolutions on top gear which cured me of any esire to try another wobble for weeks, but the machine as easily steerable when all out on its intermediate ears. I am as far from understanding the phenome- on as ever I was, but all my observation leads me to ncy that three factors are present in each case, viz.:

(1.) A very high road speed.

(2.) An extraneous fac- r to start the wobble ossibly a small pot-hole). achines which are apt wobble do not always obble.

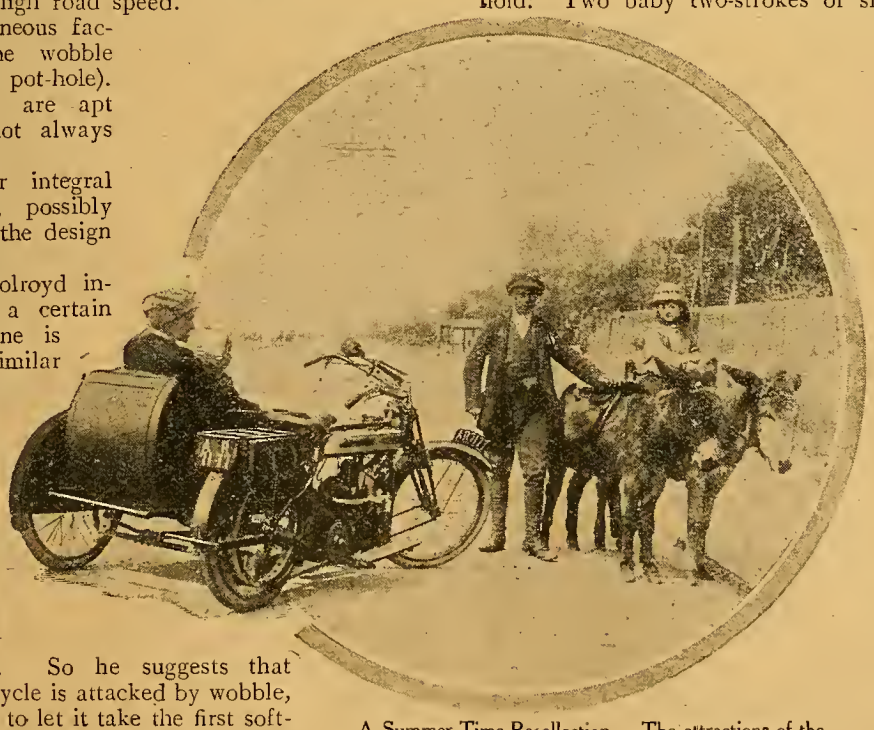
(3.) A factor integral the machine, possibly me element in the design the steering.

Mr. Victor Holroyd in- rms me that a certain pe of aeroplane is bject to a similar henomenon. he only thing do when it ays this trick to let it de- ribe its radius; the pilot ttempts to raighten the achine, his te is a fore- one conclusion. So he suggests that hen a motor bicycle is attacked by wobble, may be as well to let it take the first soft- oking bit of roadside that comes along, lest orse should happen later, when the machine gets absolutely and entirely beyond the control of the rider.

I have emerged scathless from these wobbles (with a greatly accelerated pulse) on perhaps a score of occasions; and I should only take Mr. Holroyd's heroic advice under sheer compulsion. But here is a chance for the A.C.U. Let them get a variety of speed-irons; a cylinder of compressed air; an inflatable rubber suit; a stretch of wide seashore; and one of their crack henchmen. Station Professor Boys or Dr. Low handy with cinematographs, and record exactly what does happen. Such an experiment would be more valuable and far more interesting than the C.D.T. What does Mr. Loughborough say?

Guaranteed Maximum Weight.

I AM rather surprised that no firm has yet started guaranteeing the maximum weight of its stock machines. This stunt would be of great advertising value, provided that the maximum weight was moderate. In the old days people were less particular. But nowadays motor cycling has acquired the dignity of a history: and a history implies that there are veterans amongst us. Lots of living men have ridden for ten or fifteen years, and they not all amassed fortunes and bought cars. They are still faithful to the humble two or three-wheeler, and are less nimble than they used to be. *Ergo*, they dislike unnecessary weight, especially on solo machines. Of course, when our ideas of "production" were limited to bending up two machines per week by hand, the individual weights of machines which were nominally duplicates might and did vary by as much as 10 lb. When scientific production crept into a few factories, there was not much weight difference between two rival machines of the same size and type. These conditions no longer hold. Two baby two-strokes of similar specification may differ in weight by 50 lb. In the bigger classes the discrepancies are still more marked. Writing without a scales test, I fancy that the limits of variation in the three-speeded $3\frac{1}{2}$ h.p. class exceed a hundredweight—that the lightest example of the type is barely over 200 lb., while the most weighty approach 3 cwt. This being so, would it not pay the makers of the less heavy motor cycles to print guaranteed catalogue weights for their stock machines?



A Summer Time Recollection. The attractions of the most elaborate sidecar outfit pale before the fascination of the humble seaside donkey.

AN OPEN LETTER TO THE TRADE.

By B. H. DAVIES.

GENTLEMEN, I am credibly informed that an ancient book exists in which there occurs a curious maxim that the poor are blessed. If I were offered wealth in a portable form, such as a sack of diamonds, this passage might puzzle me. But when I regard your wealth under present conditions, I rejoice that I am a pauper. To have £500,000 sunk in land, buildings, plant, and raw material; to be repeatedly held up by strikes, faulty stuff, shortage of some essential component and the like; to be paying out thousands per week in wages, whilst next to nothing is coming in; to be browbeaten by your agents and customers, all of whom want instant deliveries; to be bombarded with requests for spare parts dating back to 1906, all of which were mislaid when you switched over to bombs or shells, or aero engines in 1915—well, despite your war profits, my heart bleeds for you. I am half afraid of meeting you at Olympia. I shall still no doubt see the fur coat and the big cigar (yes, I still smoke, thank you), but I shall note grey patches on your temples and a few reefs in your waistbands. In all seriousness, gentlemen, you have had a very mouldy time during the last twelve months; most of us understand, and are doing our best to be patient.

Prices.

I dare not omit the thorny subject of prices, because motor cyclists are so excited about it. May I advise you to address riders after the time-honoured fashion of paterfamilias when sonny is flat across his knee and the strap is getting up its revs.—"it hurts me more than it does you"? When I enter your showroom and buy a motor cycle, you tell me I may get it in March, but I may not get it till September; that the catalogue price of, say, £125, is what Parliament calls a token estimate—when the invoice comes along, it may be £150, but should prices fall, of course . . . (well, they never fall, do they?) This is very trying for us buyers; why don't you use your double-page advertisements to win our sympathy, for you are buying land, labour, tools, and material on the very same system: the worry of my petty little £125 transaction is a fleabite compared to your big deals for unknown delivery at an unknown price. Under the circumstances you have done well in keeping your prices where they are. No motor bicycle has yet gone up 100%; there is hardly another commodity on the market which has not risen at least 125%. Your foes say you have made absurd profits before the war; I prefer to believe that you have intensified the efficiency of your works and cut your manufacturing costs a little. I do not believe we have any cause to grumble.

In this connection, is it impertinent to remind you that the days when any old thing on two wheels can be sold for upwards of £60 will not last for ever? Before we are much older, supply will overtake demand. Then there will not be room for all of you. The survivors will be those, and only those, who turn out really good machines by first-class "production" methods. The trade will tend to become concentrated in a few hands; we shall hear of combines and amalgamations. Most of the small makers will disappear. 1922 at the latest will hear several swansongs, I fancy.

Comfort.

The war seems to have put the strong, simple machine on a pedestal. Nothing did better than our old friend the single-cylinder, in its choicest forms. The D.R. experience only confirms what every provincial agent could have told us. For sheer, hard utilitarian work, the man who knows selects a heavy single-cylinder of the best class. Believe me, gentlemen, this is only a phase. For many years the car owner who wanted a 'bus for prolonged hard work bought a single-cylinder De Dion chassis, not because that tough little animal was the ideal of refinement, but because it was a lot better than the average multi-cylinder. But you cannot sell single-cylinder cars now; and sooner or later the day must come when a more refined type of motor bicycle will be as economical and trustworthy as the bulldog singles have proved in the war. It is easy to smile at the ambitions of young engineers who outrage every convention, and try to breed motor bicycles by crossing a Sopwith one-and-a-half strutter with a Dursley-Pedersen push bicycle, or some such novel pedigree. But straws show which way the wind is blowing. There was a time when the single-cylinder ideal absolutely dominated the British market. Then various unconventional machines came along and stole a slice of your monopoly: the Douglas took the first bite: then the Scott had a mouthful: presently the big American twins started to nibble: and now the scooter is making a bid for popular favour. Each of these little invasions is a writing upon the wall. We need to appreciate their separate significances. We must never forget that despatch riding in Flanders has few affinities with joy riding in Shakespeare's country. Reliability and economy are the foundations of the motor cycle market; but to-day sees an almost equal emphasis laid upon *comfort*. Different riders place various interpretations upon that word comfort. But its importance is growing daily, as your original supporters grow elderly, as the sport ropes in so many ladies. We shall not go far wrong if we admit that the modern demand is for a quiet, vibrationless

An Open Letter to the Trade.—

machine, which affords its driver ample protection from dirt and weather, and is easily cleaned. In this direction we have still a long furrow to hoe.

Transmission.

It would be grossly unfair not to emphasise the fact that you are making vast progress. Your engines keep quite astoundingly cool; time was when a hill which kept us on a low gear of 7 to 1 for half a mile was worrying; to-day a sidecar man has no qualms in racing his engine on a gear of 16 to 1 for a mile or more. Your gear boxes hardly ever give any trouble. Your chain drives have parted with their old harshness, even on high compression singles: I am even now riding a T.T. chain-driver, capable of over a mile a minute, and I have *never* "felt" its drive. The new dynamo lighting has robbed the darkness of its terrors; honestly, I believe night riding is now safer than daylight work; the chiaroscuro of the brilliant beam against the black night gives superb vision, and the beam clears the road even at a blind corner better than any nightingale whistle or Klaxon. You have begun to sympathise with the duffer who found hand lubrication a bore. Several of you have incorporated an oil sump on car lines in your 1920 models. Their success remains to be demonstrated, but I have no reason to mistrust this departure. The old system was really rather absurd. On our tiny engines with their small loads we have contentedly used a quart of oil every 100 miles for twenty years. We buy a good car, scaling maybe a ton, and we find that a quart of oil will last from 250 to 750 miles. So we naturally welcome this departure, and the redesigned bearings and cylinders and pistons which promise to eliminate the need for "oil-cooling."

Spring Frames.

Makers as a class are rather slow to adopt the spring frame. One of your brightest personalities tells me that the spring frame is the hardest technical nut to crack in the whole of your job. I can quite believe him; and the subject is pretty well hedged in with patents nowadays. But, gentlemen, it is a thousand times worth doing. Let me frame you a parable. Do you think a Rolls-Royce car would be cheap to run or reliable if it were restricted to solid tyres? If Napier, Daimler, and Vauxhall cars were sold with cushion tyres, and Renault, Fiat, and Delage with pneumatics, which trio would be in more demand? There are bad spring frames in existence—expensive to make, weighty to an absurdity, and deficient in the purpose of their being. But there are spring frames which cause a rigid frame—aye, the best rigid frame—to remind one of the old solid tyre; and roads are not good—may never be good again, for we are now too poor to reconstruct roads on the grand scale, and the era of motor lorries has opened.

Sidecars.

Perhaps the sidecar is the brightest star in the trade crown. Fundamentally unmechanical, it confronts the designer with a thousand snags. Its origin and its survival are alike due to the immortal demand for something which will transport two people as cheaply as possible. You choked down your engineering conscience, you accepted the commercial situation, and you have deified this monstrous abortion. In the Llandrindod Trials we saw your latest combinations soaring easily where no self-respecting car would desire to go. In the teeth of a most unholy alliance of cross stresses and illegitimate vibrations you have endued these misbegotten three-wheelers with a staunchness and tenacity which a first-class car at ten times their price might envy. Although the available chassis accommodation is so small, and the design creates unparalleled problems in accessibility and the like, you have managed to cram in every luxury for which a fastidious rider can ask, and the result is a model of convenience. I do not think the engineering world can produce an example of greater efficiency evolved under equal handicaps. Just now there are

Competitors in the brake test during the South Birmingham Club's trial for the Sangster Cup

An Open Letter to the Trade.—

signs that mass production air-cooled cars may react on the sidecar in the near future; the prices of the two types of vehicle are narrowing towards each other. I suppose you will retort with mass production likewise; we have never yet had it either in sidecars or in three-wheeled runabouts. I fancy the latter lends itself best to the process—anyhow, at current prices that fourth tyre and wheel represent a notable economy, and give you your chance.

I had almost forgotten the dear little scooters. It is too early for me to dogmatise about them: some of their designers are Cassandras in trousers. One thing is evident. The scooter has caught the fancy of a stratum of the population which regards all other motor bicycles with a cold, fishy stare. If, as is quite possible, some of the pioneer scooters do not wholly fill the bill, it should not be difficult to evolve a specification which will please the new public. You have secured the attention of thousands of new customers; grapple them to your souls with hooks of steel. The existing scooters may be all that is wanted; if not, 1921 must bring along the super-scooter. The scooter's attraction lies in its cheapness and low weight. We will not deny that the great foolish B.P. imagines that a scooter is simpler than, *e.g.*, a Triumph touring machine. Of course, it is not really. It naturally has no clutch or gear box, but those items do not give trouble. It tickles the ignoramus because it is not a mass of naked machinery, as most motor bicycles are, and reminds him of a car in that it conceals its works. Take the tip, gentlemen, and give us tourist machines, with all their works out of sight; they will appeal to the unmechanical amateur and to the fair ladies.

Cleanliness.

That brings me to a detail upon which I regret to state you are excessively obstinate. Very little has been done as yet either to assist a motor bicycle to keep itself clean or to facilitate cleaning it when it has got into the unholy mess to which usage always reduces it. I have not had time to clean my own machine for a week or two. It is caked with filth from end to end, and I estimate that, if I wanted to cut a decent figure on it to-morrow, or to make a convert with its aid, or to unload it on a buyer, three hours of excessively hard and begriming labour would be necessary. Have you despaired of "clean" sport? Twenty years ago it was unthinkable that car driving could ever be a clean job. An old friend of mine used to carry an enamel wash-basin, a scrubbing brush, and a tin of soft soap inside the bustle of his 3½ h.p. Benz. We used to furbish up before we rang the bell at our destination, and our hosts would say, "Why, you do not look as if you'd been *motoring!*" To-day I slip a dustcoat over my evening dress, put on washleather gloves, and drive out to dinner in an open car, arriving at my destination spotless. Some day, perhaps, you will give the motor cyclist similar facilities. As a stepping-stone on the road, why not give us machines which can be swabbed down with a hose and a lump of waste?

So much for ideals. I am asked to press upon you one very humdrum detail—the standardisation of controls. You know all about it. There is no reason why you should not establish this change by the 1920 Olympia. The need is serious. Your failure to accomplish this necessity kills a few people every year.

The "Ford."

In conclusion, may I commend to your notice the "Ford" motor bicycle which is the pet craze of one of my colleagues? It is not for us to say that it is possible—that rests with you. But, to quote pre-war price standards, we feel humiliated to think that Henry Ford could sell a 20 h.p. four-seated car at £77 f.o.r. Detroit, and that our own industry has never turned out a medium roadster motor bicycle at less than £50. We notice that you got down the price of a popular push bicycle to eight guineas by the equivalent of mass production, and we know that no firm in the industry has ever turned out more than some 6,000 machines a year. It looks as though a simple roadster motor bicycle could be produced in vast quantities at a considerable reduction on present figures. If so, it ought to be done at once. The hours of labour are shortening. The wages of labour are rising. Thousands of artisans have no real out-of-door hobby. There comes an age at which footer and cricket cease to satisfy. Watching games is not particularly wholesome. Gardening does not appeal to everybody. The open road is the best cure for the maladies of Bolshevism.

Its Political Aspect.

If you made it possible, as you could do, for every steady and efficient artisan to renew his wasted tissues on the road at week-ends and in summer evenings, you would find labour much easier to handle. In your business relationships you occasionally have to deal with men who work hard and have no healthful hobby. They are not the easiest fellows in the world to deal with, and you know why. "The colonel's lady and Judy O'Grady are sisters under their skins." If your sandblastman got the three rounds of golf which keep you sane every week, he would not savour of the I.W.W. heresies, as he now does. He would recognise you as a man and a brother. Well, golf is not in his line; but you could make it possible for him to take the wife and the twins down towards Wales every sunny week-end if you turned out a simple 4 h.p. at the rock-bottom commercial price which scientific production makes possible. He will not work. He has got the curtailed output maggot in his brain. Was it not Lowe who said when the Reform Bill passed, "We must educate our masters"? He has been largely educated by a propaganda which contains not a little rubbish. It is up to men who know facts and have been blessed by a costly education, to organise a counter-propaganda based on facts.

Wishing you a very prosperous winter, with a swift return to happier conditions in every respect,

Yours very faithfully,

B. H. DAVIES.

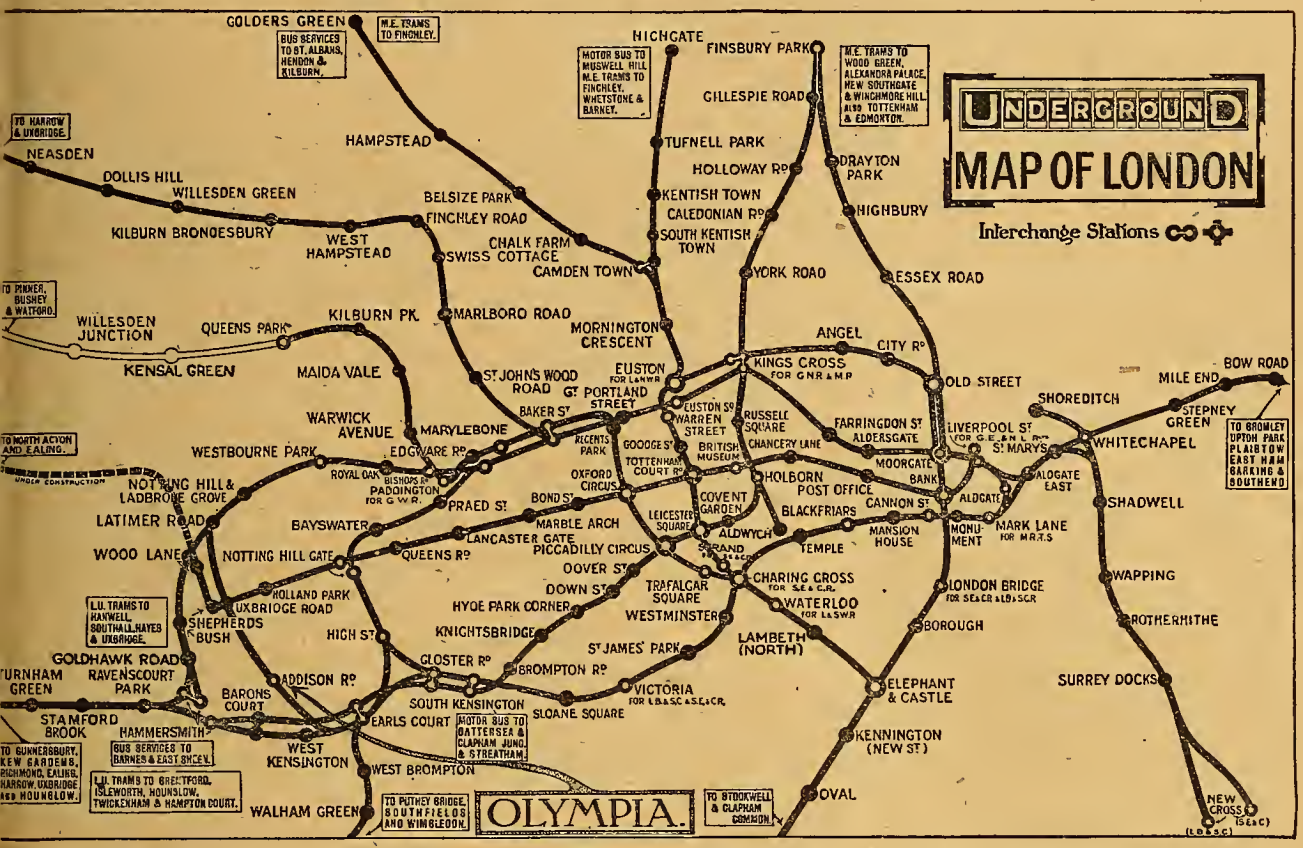
THE MOTOR CYCLE SPECIAL NUMBERS.

NOV. 27th — This issue will contain a detailed and fully illustrated stand-to-stand report of the Olympia Show, and will be on sale at the Exhibition.

DEC. 4th. — Review of Sidecars, Accessories, and Tyres. Impressions of the Show.

HOW TO GET TO OLYMPIA.

Details of Tube and 'Bus Routes to Olympia.



FOR the benefit of our readers who are complete strangers to the Metropolis we have prepared the following table, showing how Olympia may best be reached by Underground from the London main line termini.

By Underground from the Main Line Termini.

BAKER STREET (Metropolitan Ry.). By Bakerloo line to Charing Cross; thence by District Railway to Addison Road, changing at Earl's Court.

BROAD STREET (L. & N.W. Ry.). By Central London Railway to Addison Road, changing at Shepherd's Bush; or by motor 'bus—Nos. 49 and 49a—from Shepherd's Bush station.

CANNON STREET (S.E. & C. Ry.). By District Railway to Addison Road, changing at Earl's Court.

CHARING CROSS (S.E. & C. Ry.). By Hampstead line to Charing Cross; thence by District Railway to Addison Road, changing at Earl's Court.

EUSTON (L. & N.W. Ry.). By Hampstead line to Charing Cross; thence by District Railway to Addison Road, changing at Earl's Court; or by L. & N.W. Ry., changing at Willesden.

FENCHURCH STREET (L.T. & S. & G.E. Rys.). By District Railway from Mark Lane Station (3 minutes' walk) to Addison Road, changing at Earl's Court.

KING'S CROSS (G.N. Ry.). By Piccadilly line to Addison Road, changing at Earl's Court.

LIVERPOOL STREET (G.E. Ry.). By Central London Railway to Addison Road, changing at Shepherd's Bush; or by motor 'bus—Nos. 49 and 49a—from Shepherd's Bush station.

LONDON BRIDGE (L.B. & S.C. & S.E. & C. Rys.). By City and South London Railway to Addison Rd., changing at Elephant and Castle, Charing Cross, and Earl's Court.

MARYLEBONE (G.C. Ry.). By Bakerloo line to Addison Road, changing at Charing Cross.

PADDINGTON (G.W. Ry.). By Bakerloo line to Addison Road, changing at Charing Cross.

ST. PANCRAS (M. Ry.). By Piccadilly line to Addison Road, changing at Earl's Court.

ST. PAUL'S (S.E. & C. Ry.). By District Railway to Addison Road, change at Earl's Court.

VICTORIA (L.B. & S.C. & S.E. & C. Rys.). By District Railway to Addison Road, changing at Earl's Court.

WATERLOO (L. & S.W. Ry.). By Bakerloo line to Charing Cross; thence by District Railway to Addison Road, changing at Earl's Court.

By Motor 'Bus from the Main Line Termini.

For the benefit of visitors who desire to take a 'bus to Olympia, a list of the 'bus services from the main line stations has been prepared as follows:

BAKER STREET (Metropolitan Ry.). 'Bus service No. 27—Highgate to Twickenham.

BROAD STREET (L. & N.W. Ry.). No. 33a—Liverpool Street and Hounslow, No. 9—Liverpool Street and Barnes.

CANNON STREET (S.E. & C. Ry.). No. 13—London Bridge and Hendon to Piccadilly Circus; thence by No. 9—Liverpool Street and Barnes, or No. 33—Charing Cross and Richmond.

CHARING CROSS (S.E. & C. Ry.). No. 33—Charing Cross and Richmond, No. 9—Liverpool Street and Barnes.

EUSTON (L. & N.W. Ry.). No. 73—Stoke Newington and Richmond.

FENCHURCH STREET (L.T. & S. & G.E. Rys.). No 23—Leadenhall Street to Oxford Circus; thence by No. 73.

KING'S CROSS (G.N. Ry.). No. 73—Stoke Newington and Richmond.

LIVERPOOL STREET (G.E. Ry.). No. 9—Liverpool Street and Barnes, No. 33a—Liverpool Street and Hounslow.

LONDON BRIDGE (L.B. & S.C. & S.E. & C. Rys.). No. 13—London Bridge and Hendon, or No. 13a—London Bridge and South Hampstead to Piccadilly Circus; thence by No. 9—Liverpool Street and Barnes, or No. 33—Charing Cross and Richmond, or No. 33a—Liverpool Street and Hounslow.

MARYLEBONE (G.C. Ry.). No. 27—Highgate and Twickenham.

PADDINGTON (G.W. Ry.). No. 27—Highgate and Twickenham.

ST. PANCRAS (M. Ry.). No. 73—Stoke Newington and Richmond.

ST. PAUL'S (S.E. & C. Ry.). No. 9—Liverpool Street and Barnes from New Bridge Street, or No. 33a—Liverpool Street and Hounslow.

VICTORIA (L.B. & S.C. & S.E. & C. Rys.). No. 16—Victoria and Cricklewood, or No. 25—Victoria and Seven Kings, or No. 38—Victoria and Walthamstow, to Hyde Park Corner; thence by No. 9—Liverpool Street and Barnes, or No. 33—Charing Cross and Richmond.

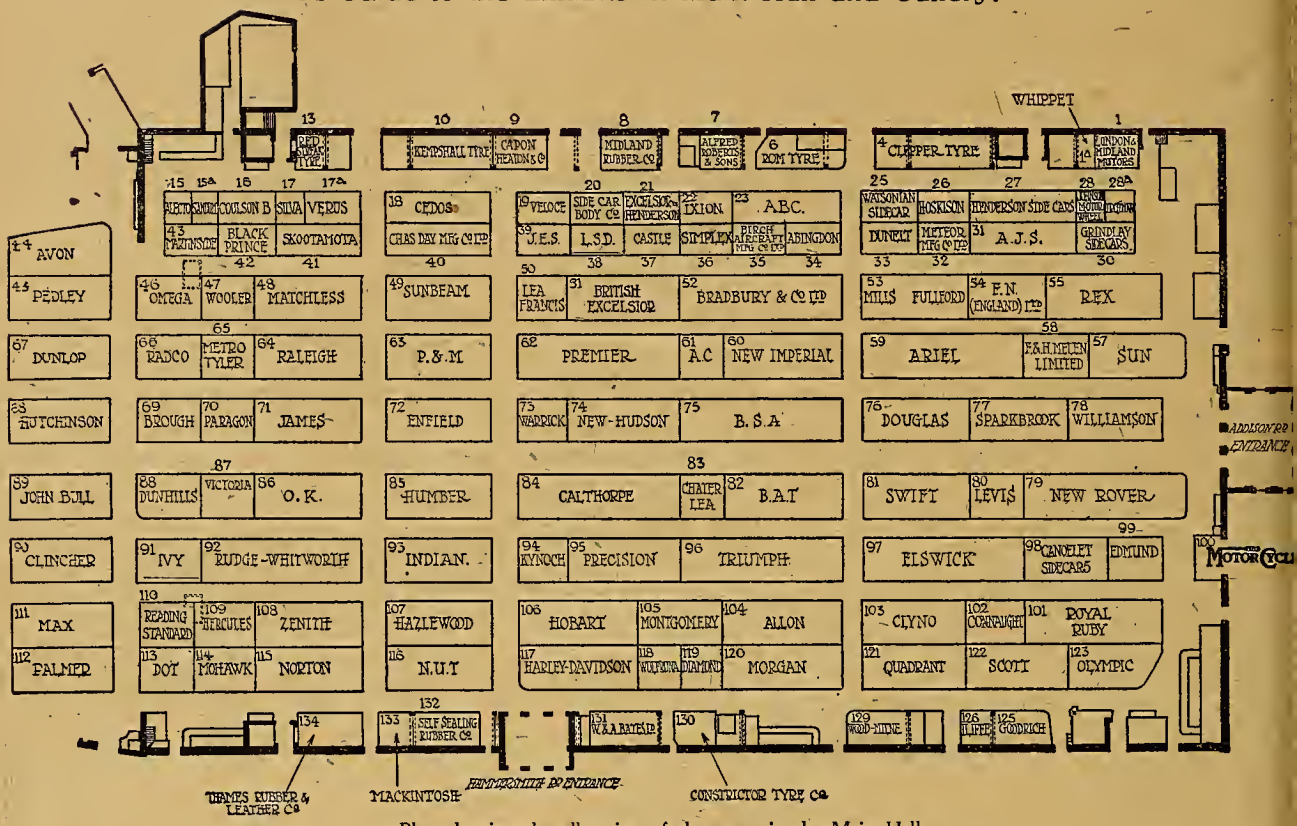
WATERLOO (L. & S.W. Ry.). No 1—Tower Bridge and Kilburn, No. 1a—Tower Bridge and Hendon, or No. 63—Chalk Farm and Tulse Hill, to Strand; thence by No. 33a—Liverpool Street and Hounslow, or No. 9—Liverpool Street and Barnes.

NO. 33a—HOUNSLOW AND LIVERPOOL STREET. *From Hounslow via London Road:* Richmond Road, Isleworth, St. Margaret's Road, Richmond, Sheen Road, Upper Richmond Road, Castelnau, Hammersmith, Olympia. *From Liverpool Street via Bank:* Cannon Street, Ludgate Circus, Strand, Charing Cross, Piccadilly High Street (Kensington), Olympia.

NO. 49—SHEPHERD'S BUSH AND STREATHAM COMMON.—*From Shepherd's Bush via Holland Road:* Olympia. *From Streatham Common via Tooting Bec Road:* Trinity Road, Northcote Road, Falcon Road, Battersea Bridge, Sydney Street, Gloucester Road, High Street (Kensington), Olympia.

Plans of the Stands at Olympia.

A Guide to the Exhibits in Main Hall and Gallery.



Plan showing the allocation of the space in the Main Hall.

An Alphabetical List of Exhibitors at the 1919 Show.

Exhibitor.	Stand.
Abingdon-Ecco, Ltd.	140
Accles and Pollock, Ltd.	153
Adler, M. (England), Ltd.	139
Alldays and Onions, Ltd.	104
Alfred Appleby Chain Co., Ltd.	155
Amac, Ltd.	152
Ariel Works, Ltd.	59
Ashby, Frank, and Co.	232
Association of British Driving Chain Manufacturers	179
Atkey, A. R., and Co., Ltd.	177
Auto-Carriers (1911), Ltd.	61
Auto-Cycle Union	2
Automobile Association and Motor Union	15
Avon India Rubber Co., Ltd.	44
Baker, F. E., Ltd.	95
Bat Motor Mfg. Co. (1918), Ltd.	82
Bates, W. and A., Ltd.	131
Bayliss, Wiley and Co., Ltd.	197
Bayliss, Thomas and Co.	51
Benton and Stone, Ltd.	168
Best and Lloyd	203
Binks, C., Ltd.	220
Birch Aircraft Manufacturing Co., Ltd.	35
Birmingham Small Arms Co., Ltd.	75
Black Prince Motors, Ltd.	42
Bluemel Bros., Ltd.	161
Bordesley Engineering Co., Ltd.	102
Bowden Brake Co., Ltd.	201
Bowden Wire, Ltd.	218
Bradbury and Co., Ltd.	52
Brampton Bros., Ltd.	190
British Hub Co., Ltd.	159
British Lighting and Ignition Co., Ltd.	228
Brooks, J. B., and Co., Ltd.	236
Brough, W. E., and Co.	69
Brown Bros., Ltd.	164
Brown and Barlow, Ltd.	209
Butterfields, Ltd.	80
Cake, Arthur and Co.	169
Calthorpe Motor Cycle Co.	84
Campling, Gilbert, Ltd.	41
Canning, W., and Co.	224
Capon, Heaton and Co., Ltd.	9
Cashmore Bros.	15
Castle Motor Co., Ltd.	37
Challenge Oil Co., Ltd.	181
Chater-Lea, Ltd.	83
Clipper Tyre Co., Ltd.	4
Clyno Engineering Co., Ltd.	103
Collier, H., and Sons	48
Components, Ltd.	130
Constrictor Tyre Co.	130
Cooke, Howard S., and Co.	212
Cooper-Stewart Engineering Co., Ltd.	215
County Chemical Co., Ltd.	216
Coventry Chain Co., Ltd.	165
Coventry Movement Co., Ltd.	149
Coventry Plating and Presswork Co., Ltd.	170
Coventry Premier, Ltd.	62
Coventry Victor Motor, Co., Ltd.	145
Cowey Engineering Co., Ltd.	196
Cuthbe, Chas. L., and Co.	111
Cycle Trade Publishing Co.	29
Cyclists' Touring Club	11
Davenport, G., and Co., Ltd.	158
Day, Chas., Manufacturing Co., Ltd.	40
Dingley Bros.	150
D.F. and M. Manufacturing Co., Ltd.	119
Dot Motors	113
Douglas Motors, Ltd.	76
Dover, Ltd.	225
Dunford and Elliott (Sheffield), Ltd.	33
Dunhills, Ltd.	88
Dunlop Rubber Co., Ltd.	6
East London Rubber Co., Ltd.	23
Edmund, C., and Co., Ltd.	9
E.I.C. Magnetos, Ltd.	20
Elephant Chemical Co., Ltd.	19
Elswick Hopper Cycle and Motor Co., Ltd.	9
Enfield Cycle Co., Ltd.	7
F.N. (England), Ltd.	5
Geodrich, B. F., and Co., Ltd.	12
Gough and Co., Ltd.	20
Greeu, W. J., Ltd.	4
Grindlay (Coventry), Ltd.	3
Hanwell and Sons (Components), Ltd.	1
Harley-Davidson Motor Co., Ltd.	11
Hazlewoods, Ltd.	10
Hendee Manufacturing Co., Ltd.	9
Henderson Sidecars, Ltd.	2
Hercules Cycle and Moter Co., Ltd.	10
Heyst, J. B., and Sons	18
Hill, Ernest H., Ltd.	20
Hobart Cycle Co., Ltd.	10
Hobday Bros., Ltd.	17
Heffmann Manufacturing Co., Ltd.	23
Hoskison Manufacturing Co., Ltd.	2
Humber, Ltd.	8
Humphries and Dawes, Ltd.	8
Hunt, A. H.	17
Hutchinson, Etablissements	6
Iliffe and Sons Ltd.	12
Ixion Motor Manufacturing Co., Ltd.	2
James Cycle Co., Ltd.	7
Kempshall Tyre Co. (of Europe), Ltd.	1
Kerslake, Ltd.	14
Kynoch, Ltd.	9
Lake and Elliot, Ltd.	14
Lamplugh, S. A., Ltd.	17

LIST OF EXHIBITORS (continued).

Exhibitor.	Stand.
ea and Francis, Ltd.	50
eatheries, Ltd.	229
eicester Rubber Co., Ltd.	89
odge Sparking Plug Co., Ltd.	191
ombard Rim and Tube Co.	176
ondon and Midland Motors, Ltd.	1
neas Electrical Co., Ltd.	217
ucas, Joseph, Ltd.	189
ycett Saddle and Motor Accessories Co., Ltd.	183
acintosh, Chas., and Co., Ltd.	133
.A.G. Engine Co., Ltd.	202
anufacturers' Accessories Co., Ltd.	221
arkt and Co. (London), Ltd.	175
arston, John, Ltd.	49
artinsyde, Ltd.	43
ead and Deakin, Ltd.	98
echanical Products Co.	223
elchior, Armstrong and Dessau, Ltd.	21
elen, F. and H., Ltd.	58
eteor Manufacturing Co.	32
icrometer Engineering Co., Ltd.	226
iddlemore and Lamplugh, Ltd.	138
idland Gear Case Co., Ltd.	230
idland Rubber Co., Ltd.	8
iller, H., and Co., Ltd.	193
ills-Fulford, Ltd.	53
-L Magneto Syndicate, Ltd	213
ohawk Cycle Co., Ltd.	227
ontgomery Co., Ltd.	105
organ Motor Co., Ltd.	120
osely, David, and Sons, Ltd.	137
ewcastle-upon-Tyne Motor Co. Ltd.	116
ew Hudson Cycle Co., Ltd.	74
ew Imperial Cycles, Ltd	60
ewman, S. A., Ltd.	91
ew Rover Cycle Co., Ltd.	79
orth and Sons, Ltd.	210

Exhibitor.	Stand.
North British Rubber Co., Ltd.	90
Norton Motor, Ltd.	115
Olympic Motor and Cycle Co., Ltd.	123
Palmer Tyre, Ltd.	112
Paragon Motor Manufacturing Co.	70
Patchquicks Patents, Ltd.	182
Patrick Engineering Co., Ltd.	36
Pedley, J., and Son, Ltd.	45
Perry, A. T., Cycle Co., Ltd.	222
Perry and Co., Ltd.	174
Phelon and Moore, Ltd.	63
Phillips, J. A., and Co. (1916), Ltd.	162
Powell and Hanmer, Ltd.	187
Price's Co., Ltd.	171
Pugh, Chas. H., Ltd.	154
Quadrant Motor Co.	121
Radnall, E. A., and Co., Ltd.	66
Ralcigh Cycle Co., Ltd.	64
Red Streak Tyre Co., Ltd.	13
Renold Hans, Ltd.	192
Rex Motor Manufacturing Co., Ltd.	55
Ripault, Leo, and Co.	214
Roberts, Alfred, and Sons, Ltd.	7
R.O.M. Tyre and Rubber Co. (1909), Ltd.	6
Rotherham and Sons, Ltd.	184
Ruby Cycle Co., Ltd.	101
Rudge-Whitworth, Ltd.	92
Ryley, J. A.	147
Sandham Engineering Co.	15a
Scott Motor Cycle Co., Ltd.	122
Self-sealing Rubber Co., Ltd.	132
Sidecar Body Co.	20
Smith, Alfred	143
Smith, J. E., Ltd.	39
Smith and Sons (M.A.), Ltd.	200
Sopwith Aviation and Engineering Co.	23
Sparkbrook Manufacturing Co., Ltd.	77

Exhibitor.	Stand.
Sphinx Manufacturing Co., Ltd.	151
Stelastic Tyres, Ltd.	1
Stevens, A. J., and Co. (1914), Ltd.	31
Stonehouse Works Co.	146
Stourbridge Rolling Mills, Ltd.	157
Sturmey-Archer Gears, Ltd.	163
Sumner Vaughan and Co.	1a
Sun Cycle and Fittings Co., Ltd.	57
Surridge, R.	160
Swift of Coventry, Ltd.	81
Sykes and Sugden, Ltd.	38
Tan-Sad Works	211
Terry, Herbert, Ltd.	185
Thames Rubber and Leather Co., Ltd.	134
Thomson-Bennett Magnetos, Ltd.	217
Timperley, Chas. B., Ltd.	148
Triumph Cycle Co., Ltd.	96
Trotman Patent Dandy Co., Ltd.	28a
Tyler Apparatus Co., Ltd.	65
T. and T. Motors, Ltd.	17
Vacuum Oil Co., Ltd.	141
Vandervell, C. A., and Co., Ltd.	166
Veloce, Ltd.	19
Victoria Motor and Cycle Co., Ltd.	87
Villiers Engineering Co., Ltd.	234
Wakefield, C. C., and Co., Ltd.	73
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Wilby, A. E., Ltd.	156
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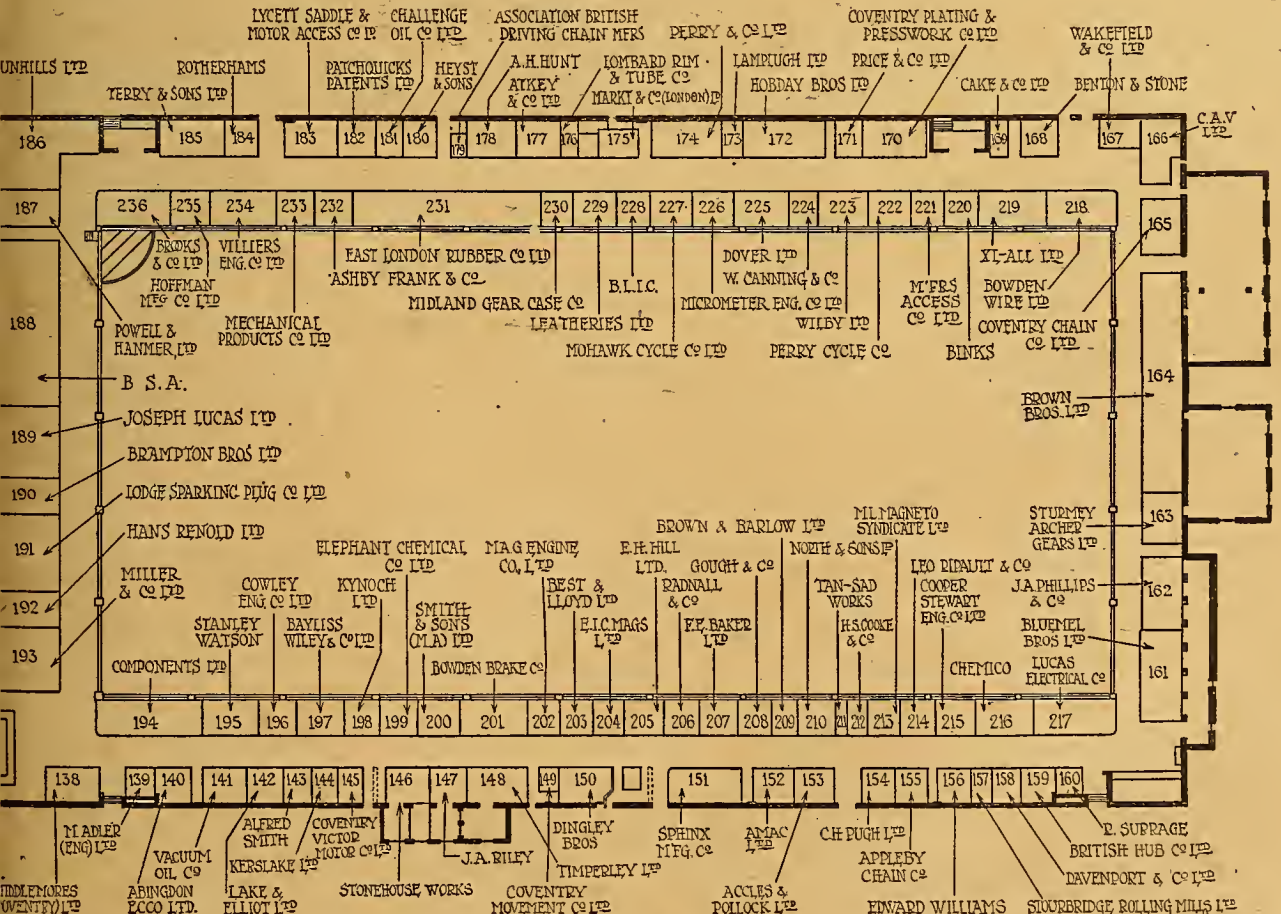
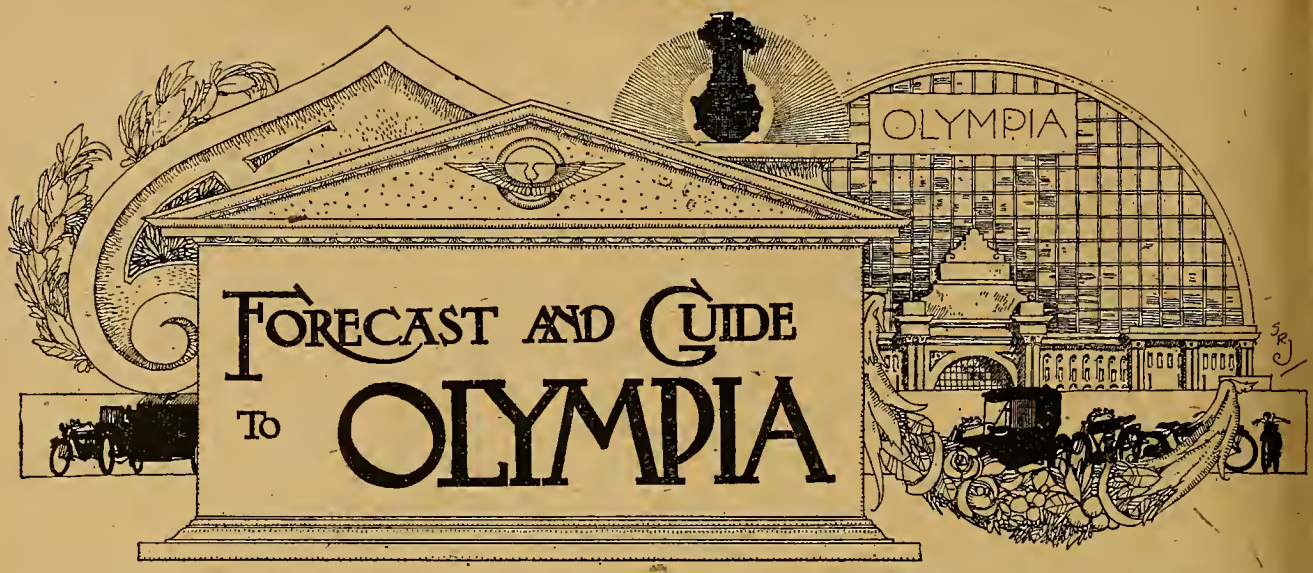
Wood-Milne, Ltd.	47
Wooler Engineering Co., Ltd.	118
W.T.T. Engineering Co.	28
XL-All, Ltd.	219
Zenith Motors, Ltd.	108



Plan of Gallery, where all the accessory and equipment exhibits will be found.



FORECAST AND GUIDE TO OLYMPIA

In last week's issue we gave particulars and illustrations of 70 passenger machines which will be marketed next year, most of which will be exhibited at the Cycle and Motor Cycle Exhibition at Olympia next week. The following pages contain a stand-to-stand forecast of the exhibits. Plans showing the positions of exhibitors are also contained in this issue, and in "The Motor Cycle" dated November 27th a full description of the motor cycle exhibits will be published. Sidecars and Accessories will be dealt with in detail in the issue for December 4th.

Stand **WHIPPET SCOOTER.**

1a. Many designs of scooters have been produced during the present year, but few are fitted with engines specially designed for them. The Whippet is one, however, the power unit being an exceptionally neat "job." Of 1½ h.p., it is of the four-stroke type, having overhead valves, an aluminium cylinder with a steel liner, an outside flywheel, and a detachable head. The last mentioned is held in position by four long bolts. An aluminium piston of unusual design, and having two rings, is used. Lubrication is by splash feed from a hand-pump on the tank, which, in addition to oil, contains one and a quarter gallons of petrol. The frame is of duplex construction throughout, and is fitted with domed guards. External contracting brakes are fitted to both wheels, one being operated by a pedal.

Stand **ALECTO.**

15. The Alecto motor cycle is one of the new propositions introduced by newcomers to the motor cycle industry, Messrs. Cashmore Bros., of Balham, and is a two-stroke of 350 c.c. capacity nominally rated at 3½ h.p. The engine has a bore and stroke of 76 mm. and is of the three-port type, but possesses several features of interest. In the transfer passage there is a plug 1¼in. in diameter, by the removal of which easy access to the ports is obtained for cleaning purposes. The exhaust has twin outlets, each pipe being 1¼in. in diameter and leading to a large silencer of the barrel type, from which the exhaust gases pass through a long tail pipe 1½in. in diameter. A release valve of the mushroom type is located immediately above the twin exhaust flange into which the released gas passes by way of a small tube.

An aluminium alloy piston is used in a cast iron cylinder which has deep fins; the crankshaft and connecting rods are made of stampings of high tensile steel, the flywheel being a mild steel stamping.

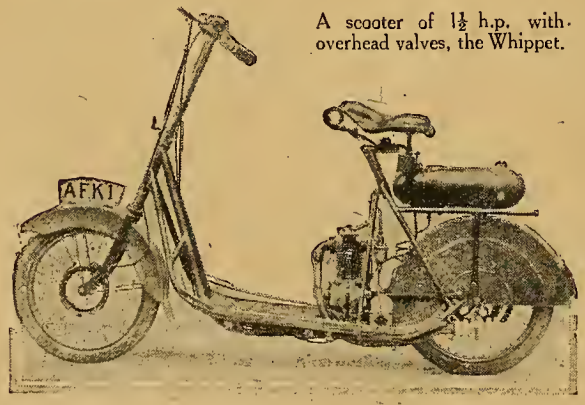
Large double-row Skefko ball bearings support the crankshaft in the crank case in addition to long white metal bearings of the plain type. The connecting rod big end is of the split variety and is white metal lined.

A noteworthy feature of the machine is the method of supporting the power unit in the frame. This is by means of a substantial cradle upon which are carried the complete unit, including silencer and also the footboards and brake pedal.

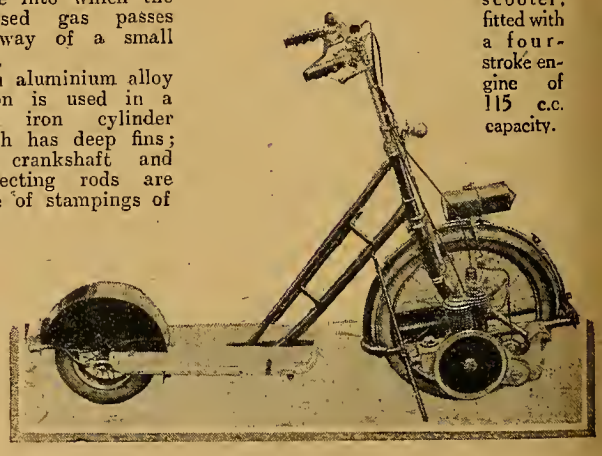
Stand **SANDUM SIDECARS.**

15a. Many new sidecar designs, the products of the Sandham Engineering Co., were described in a recent issue of *The Motor Cycle*, amongst them being two models which are capable of being converted to accommodate two persons. Important developments in these models, however, have followed, and a much improved pattern will be exhibited.

The chief feature of the latest two-seater model is that, although similar in shape and only a few inches longer than the single-seater, ample leg room, com-



A scooter of 1½ h.p. with overhead valves, the Whippet.



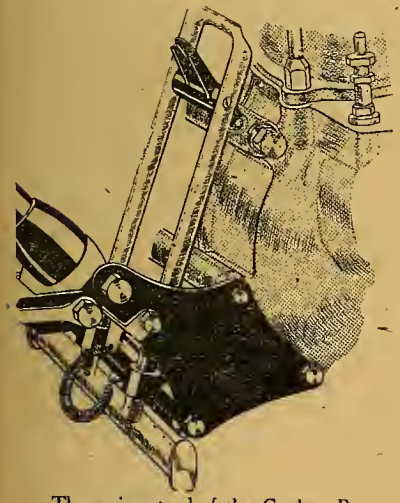
The Silva, scooter, fitted with a four-stroke engine of 115 c.c. capacity.

Forecast and Guide to Olympia.—

bined with the maximum of comfort for two persons, can be provided in a few seconds. The additional seat has a collapsible backrest, which, when not required, is folded over the seat, and, by passing the strap provided around both these components, the seat is inverted and the flange screwed thereto allows the complete fitting to be housed in the front of the body. The bottom of the seat, being flush with the top of the body, completely conceals its location. When it is required to take two passengers, the seat is withdrawn, and, by engaging the studs on the underside of it with holes in a wooden ledge screwed to the sides of the body, the seat can be adjusted to suit the passenger. Foot room is provided for the foremost passenger by dropping the hinged nose of the body, and for the rear passenger by the well sunk in the floor of the sidecar.

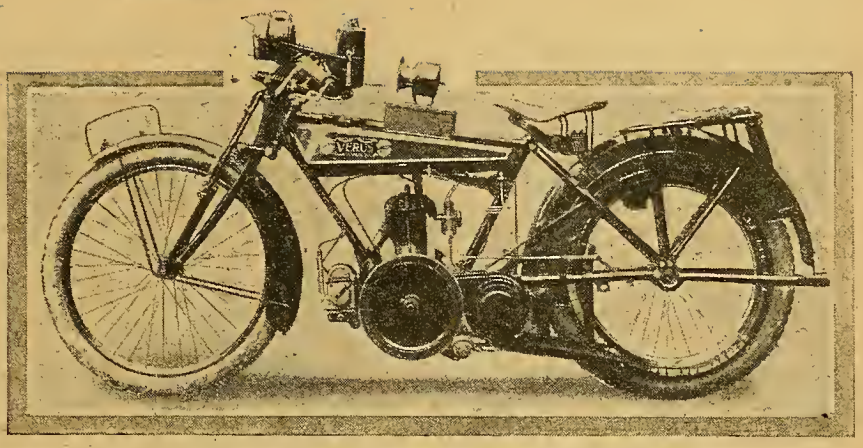
Stand **COULSON.**

16. Three models of Coulson motor bicycles will be exhibited by the F. Aslett Coulson Engineering Co. One of them is a 4 h.p. sporting model fitted with a 4



The spring stand of the Coulson B. motor cycle.

h.p. Blackburne engine, single geared, and equipped with the excellent spring frame which has proved so successful during the present year. It is an attractive mount, which should appeal to those who prefer a simple solo single.

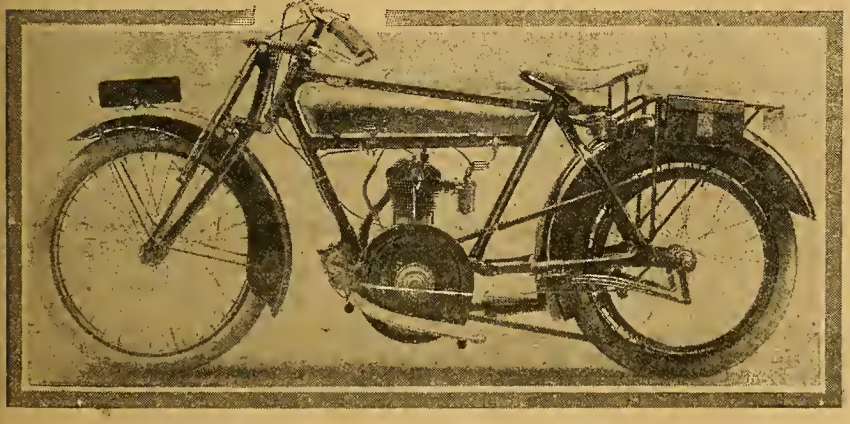


Flywheel side of the Verus Blackburne-engined lightweight.

Another new model is a 2¾ h.p. two-stroke fitted with a Union engine and single geared. Like its larger sister, it is fitted with the Coulson spring frame, and is provided with a double silencer, a large expansion chamber being located below the crank case and a cone-shaped expansion chamber at the end of the exhaust pipe.

The Coulson B, fitted with the 2¾ h.p. Blackburne engine and Albion two-speed gear, has undergone one or two improvements for 1920. Instead of fitting a belt rim brake, a neat type of band brake is now supplied, which is controlled by means of a pedal on the offside of the footboard.

Yet another innovation is the Coulson stand. When jacked up, the top of the stand rests on the bottom bracket, and, owing to its position, the machine is perfectly balanced on it, so that it may be used to raise up either the front or back wheel. Normally, when on the stand, the front wheel remains on the ground, but only the slightest effort is required to raise it, thus allowing the front wheel to be taken out without difficulty. When this has been removed the rear wheel will remain on the ground, owing to the absence of the weight of the front wheel. To place the machine on the ground the back portion is lifted and slightly moved forward, the stand is then pulled up clear by means of a spring, and is finally secured by a clip attached to the top of the crank case.



The 4 h.p. Blackburne-engined single-geared Coulson B. sporting model.

All models of Coulsons to which we have referred are fitted with Capac carburetters, which give eminently good results on these motor cycles.

Stand **SILVA SCOOTER.**

17. Although offered to the public with a seat as an optional fitment, the Silva scooter has been designed primarily as a machine of the "stand-up" type. It is a neat little machine, having a 20in. diameter front wheel, fitted with a 1¾in. tyre, and a 12in. rear wheel shod with a 300×60 tyre. The power unit, in fact the whole of the front wheel, is reminiscent of the Auto-wheel, carried in front forks of the conventional bicycle type.

Of the four-stroke type, the engine has a bore and stroke of 52½ and 54 mm. respectively, and has an automatic inlet valve. The transmission is by chain direct from the camshaft to the wheel.

The frame construction is simple, and includes a rubber-faced platform, which is mounted on springs. A single rod stand is used to hold the machine upright when not in use.

Stand **VERUS.**

17a. Manufactured by a large firm of Midland engineers who hitherto have not been directly in the motor cycle industry, Verus motor cycles bid fair to take a prominent place in the world of wheels next year, and the models to be exhibited at Olympia will show their all-round good quality. These machines do not depart from the conventional, but are good examples of clean design and high-class finish.

Four models will be exhibited, including a new 2¼ h.p. two-stroke with an engine 62×70 mm., Brampton forks, Amac carburetter, E.I.C. magneto, and 24×2in. Dunlop tyres, catalogued at £50. A second two-stroke machine has a 70×70 mm. two-stroke engine (manufactured by the firm as is the smaller engine), Burman two-speed gear, clutch and kick-starter, and 26×2½in. tyres. This type will sell at £75.

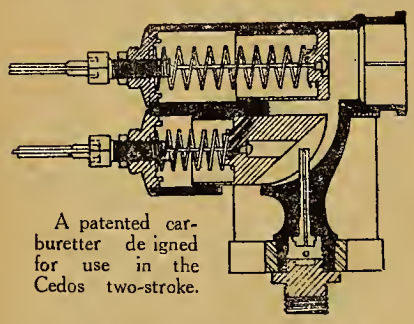
The Verus new four-stroke engine will not have a place in the exhibit, as its manufacture is held up indefinitely, owing to a disastrous fire which destroyed the whole works in which it was being produced, so for the coming year the makers will fit Blackburne engines to the two other models, a 350 c.c. machine selling at £95 and a 4 h.p. dual purpose mount at £105.

Forecast and Guide to the Olympia.—

Stand **CEDOS.**

18. Yet another new firm in the motor cycle industry is responsible for the Cedos two-stroke lightweight—one of the cleanest designed machines which has appeared on the British market. It was fully described in *The Motor Cycle* for October 9th, and the details revealed one of the most carefully thought out lightweights that we have been privileged to examine. One of its chief features is that there are no loose clips or fittings of any description, every detail being so designed that it is brazed or welded directly to the particular part of the frame to which it belongs.

The engine is of the three-port type, having a bore and stroke of 62 and 70 mm. respectively, and a flywheel of comparatively small diameter. The gear box is enclosed in a circular case which, in turn, is fitted in to a circular lug forming the bottom bracket of the frame. While not departing drastically from conventional design, the machine has several distinctive features. Among these may be mentioned the rear guard, undershield, and footboard in one piece; a handsome large capacity tank, embodying a metal tool box in the top; a parallel link type of spring fork, with a single coil spring; and the two brakes on the rear wheel. An open frame ladies' model also will be staged.



A patented carburetter designed for use in the Cedos two-stroke.

Stand **VELOCETTE.**

19. A newly redesigned two-stroke of the smaller class which performed very creditably in the recent Six Days Trials, is the 1920 Velocette, which promises to enhance the already high reputation its predecessors have created in the world of lightweights.

Of a slightly more ambitious type than the conventional three-port pattern two-stroke, the Velocette engine embodies an ingenious system of mechanical lubrication, in the form of a vertical pump, which, operated by a worm gear, has a variable stroke. The crank case is of unique construction, the single web crank being accessible by removing a large circular plate, which practically forms one side of the crank case. The magneto is mounted at an angle on the crank case behind the cylinder. The capacity of the engine is 275 c.c., the bore and stroke being 67 and 78 mm. respectively. Very narrow piston rings are used.

With a sloping top tube, duplex front tubes, black finished tank and gold lines, the whole machine presents a very neat appearance, besides having several little features distinctly its own. We refer to such things as the internal expanding brake—a rarity on small lightweights—the provision made for lubricating the head through a screw cap at the top of the steering tube, and the spring-up rear stand.

Stand **U.S. EXCELSIOR AND HENDERSON.**

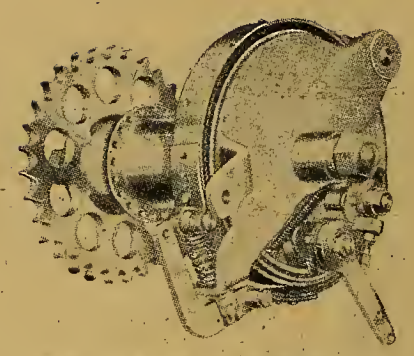
21. Two well-known American machines will be shown on this stand—the twin Excelsior and the four-cylinder Henderson—both of which are coming into favour for sidecar use. Both makes will be exhibited completely equipped with electrical installation, and, in addition, standard models will be shown fitted to sidecars of various types.

Perhaps the greatest interest will be shown in the Henderson machine, if only on account of its four-cylinder engine and combined gear unit. Probably this machine will share with the F.N. the distinction of being types in which most motor cyclists and manufacturers are interested, as the ultimate development of the sidecar *de luxe* machine. Its details are good, and, for a big machine, the outlines are most pleasing.

The cylinders are 70×76 mm., the total capacity being 1,168 c.c., and a four-throw crankshaft is used in conjunction with three large phosphor bronze bearings. The inlet valves are overhead with the exhausts immediately below them, both operated from the same camshaft alongside the cylinders.

Stand **IXION.**

22. A full range of the 1920 Ixion two-strokes will be exhibited by the Ixion Motor Manufacturing Co., who for several years have specialised on the lightweight machine both for solo and light sidecar work. The main models will be of 2½ h.p. with single and two-speed gears; an entirely new model will also be shown which is fitted with a 350 c.c. Precision two-stroke engine. This machine, fitted with a Sturmey-Archer gear box, will be marketed as a sidecarette with a light, quickly detachable sidecar of the firm's own design. An illustration of this machine appeared in the last issue.



The contracting band expanding ring brake on the American Excelsior.

Stand **A.B.C.**

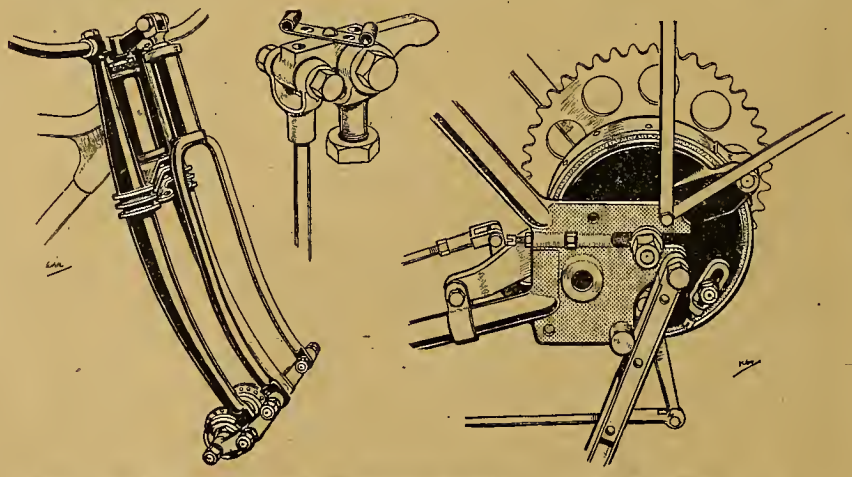
23. As may be imagined, the alterations in the production model A.B.C. are only in detail, and we understand that, by the time the Show opens, the Sopwith Co. will be in a position to deliver a certain quantity of these machines to their agents.

So far as the engine is concerned, which, we may remind our readers, has a bore and stroke respectively of 69×54 mm. (400 c.c.), the chief alterations have been the fitting of larger diameter tappet rods and of altering the design of the tappet adjusters. The tappet adjusters now consist of hardened steel screws with hollow cone ends screwing into the tappet heads themselves and secured by lock nuts.

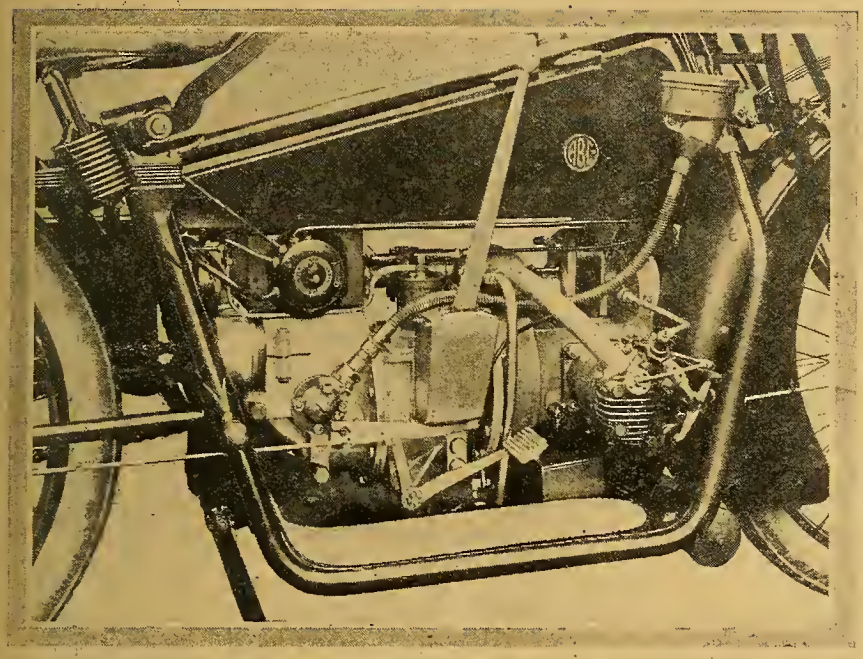
Tapered coil springs are now used for the valves instead of the volute variety which were fitted to the experimental model.

The lubrication has been considerably simplified, as the mechanical oil pump has been abandoned, and, instead, oil is fed from an automatic adjustable sight feed mounted on the tank, the oil being induced by suction from the crank case. In addition, an auxiliary hand-pump is also provided.

An innovation has been introduced in the shape of adopting the single-lever



Some details of the new model four-cylinder Henderson which will be exhibited on Stand 21. (Left) The front forks, showing the triple plate construction of the main fork crown. (Centre) Pivoted spring clip for protection of oil holes in bearings of overhead inlet rockers. (Right) Details of expanding and external rear brakes and position of sidecar connection.



The enclosed gate change, Lucas switchboard, and the enclosed speedometer drive of the A.B.C.

Claudel-Hobson carburetter which is coupled up to an exhaust heated induction pipe.

The 1920 models are equipped with a rear stand so placed that the machine can be jacked up with one hand, and a front stand is also fitted.

Improvements have been made to the clutch by the addition of a very strong central spring, and four auxiliary springs placed at equal intervals round the clutch face.

Throughout the whole design, parts have been strengthened and improved in detail. One point we may mention is the fixing of the chain sprocket to the transverse gearshaft. The sprocket has a threaded boss and is keyed on to the shaft, the end of which is also threaded. A large nut is threaded on to the boss, and inside it is a flanged castellated nut screwed on to the shaft. Both are screwed on together and locked up tightly. When it is desired to withdraw the sprocket, the large nut is loosened and then the castellated flanged nut, and, if the latter is unscrewed, the sprocket is drawn off. This overcomes the difficulty which is often encountered by many motor cyclists who wish to dismantle their chain sprockets, since with this simple self-contained device no special tool such as is ordinarily used for this operation is necessary for the purpose.

It is interesting to note that the following gear ratios have been adopted for the solo A.B.C.: top 5.5 to 1, third 7.31 to 1, second 9.75 to 1, first 13.16 to 1, while the top gear ratio for sidecar outfits is 6 to 1.

A special housing cast on the top of the bevel casing accommodates a Lucas dynamo, which is driven by a spur wheel from the mainshaft in the gear box. A switchbox is carried on a metal case fixed on the top of the dynamo housing, while the accumulator is accommodated on the left-hand side of the frame behind the saddle tube. A Smith speedometer is also fitted.

The finish is particularly good, a gunmetal effect being obtained by a special process, which includes stove enamelling. There are very few plated parts, and parts which are plated are heavily coppered before they receive the deposit of nickel.

Five-point connection is used to fix the sidecar to the motor bicycle, the sidecar axle being attached to the rear chain stay by means of a spherical joint. The springing of the sidecar has been carefully thought out; quarter-elliptic laminated springs serve to suspend the axle in harmony with the springing of the motor bicycle, while the quarter-elliptic springs form a continuation of the C springs of the sidecar body.

Stand **WATSONIAN SIDECARS.**

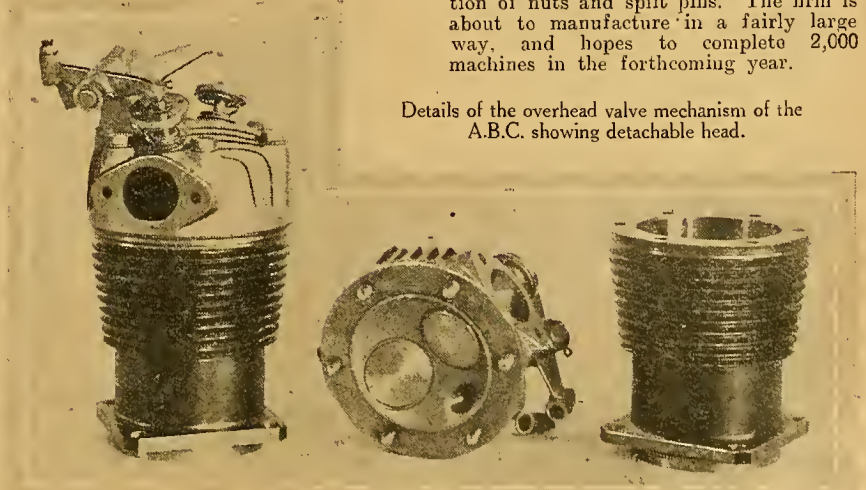
25. Several new and interesting sidecar designs will be exhibited by this well-known sidecar firm, the chief among which will be the "Supreme" and "Zeppelin" models, both of which embody coil spring suspension on a light, but sturdily constructed chassis. The "Zeppelin" is a particularly good-looking body of the sporting type, and is torpedo in shape. Behind the seat there is a roomy compartment for the accommodation of petrol and luggage. While the body is of the type designed to reduce head resistance to a minimum, the passengers' comfort has not been sacrificed to bring this about.

The "Supreme" model is of the touring type, and has an unusually large locker at the rear, in which a petrol can and a suit case can easily be accommodated in addition to small packages.

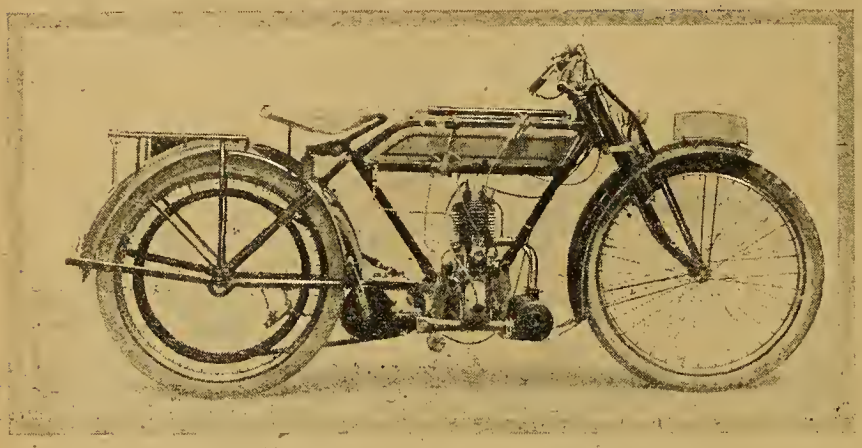
Stand **HOSKISON.**

26. The Hoskison Manufacturing Co., Ltd., are newcomers to the motor cycle world who have caught the trend of modern thought in an admirable manner. The two-stroke lightweight which they will exhibit is described elsewhere in this issue. Fitted with a "Union" engine of 70×76 mm. bore and stroke, the frame is strong, and gives a low riding position. A Brown and Barlow carburetter supplies gas, and the charge is fired by a Runbaken magneto, controlled from the handle-bar. Chain and belt drive is employed, a Burman two-speed gear being used to provide suitable ratios, this gear is fitted with a kick starter and handle-bar controlled clutch. The rider's comfort has been carefully studied, and in addition to Saxon forks Terry spring links are a standard fitting.

Seven-inch valanced guards are used over both wheels, and the specification includes Lycett pan seat, extra large tool bags, and 26×2½in. heavy Kempshall tyres. The tank holds 1¾ gallons of petrol and three pints of oil. The work is very complete, and includes petrol filter, Best and Lloyd sight feed lubrication, and a large aluminium silencer. Special mention is deserved by the very complete kit, which contains, in addition to all necessary tools, a sparking plug, chain links, belt fasteners, tyre repair outfit, and a selection of nuts and split pins. The firm is about to manufacture in a fairly large way, and hopes to complete 2,000 machines in the forthcoming year.



Details of the overhead valve mechanism of the A.B.C. showing detachable head.



A newcomer in the motor cycle world—the Hoskison two-stroke.

The attractive appearance of the machine, which is finished in black with French grey tank lined in black and gold, should help to dispose of the output of this workmanlike little mount.

Stand **JOHNSON MOTOR WHEEL. AUTOPED SCOOTER.**

28. Elsewhere in this issue will be found a detailed description of the auxiliary attachment known as the Johnson motor wheel, which will be exhibited on this stand. Its especial interest lies in the engine, which is of the flat twin two-stroke type embodying a combined lighting and ignition unit in the flywheel.

On this stand also will be shown the American Autoped scooter, which was one of the first machines of this type to be introduced into this country. It has a small four-stroke engine with a flywheel type magneto, which also supplies current for lighting.

Stand **STANGER.**

28a. The exhibit on this stand is a V twin two-stroke engine, particulars of which will be found elsewhere in this issue.

Stand **GRINDLAY SIDECARS.**

30. A new sidecar, introduced in 1919—the Grindlay—is already popular on almost every type of machine. It has several features exclusively its own, not the least among them being the spring wheel, which is suspended on two semi-elliptic springs, and the cantilever springing of the body. In subsequent issues, we shall deal more fully with this and other sidecars.

Also exhibited will be the new Grindlay sidecar screen, which has an adjustable fixing of an ingenious character.

Stand **A.J.S.**

31. A.J.S. motor cycles and sidecar outfits have earned such a reputation for reliability and quiet running that there is no need for us to go into details of these well-known machines. It is sufficient to state that the firm will exhibit their well-known 6 h.p. sidecar combination, which has a twin-cylinder engine of 74×87 mm. bore and stroke.

Two new features to be fitted on future models are a spring saddle pillar and the lever stand—a device which enables the machine to be raised on to its stand with the minimum exertion.

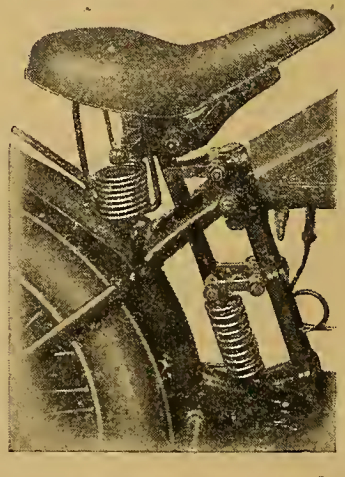
For the benefit of such as have only recently become interested in motor cycle matters, it should be stated that the all-chain transmission is very thoroughly enclosed, and that a three-speed gear box is carried behind the engine; an excellent clutch and kick-starter are employed, and the cylinders have easily detachable combustion heads. 700×80 mm. tyres are fitted to detachable and interchangeable wheels, and the finish is in black relieved by a broad gold line on the tank. A frame, built entirely of straight tubes, is one of the features of modern A.J.S. motor cycles, the top tube being covered by the duplex tank—a form of construction which considerably simplifies cleaning.

The sidecar is fully equipped with screen and sprung luggage carrier, and is finished in black to match the machine.

Stand **CORONA JUNIOR.**

32. Despite the trend of design, which leads to a more general adoption of multi-cylinder engines and the two-stroke principle, interest and experiment in the 500 c.c. class of four-stroke single are by no means on the wane.

A newcomer to the Show is the Corona Junior, manufactured by the Meteor Manufacturing Co., Ltd., and this machine is equipped with a long-stroke outside flywheel engine of very attractive pattern. Elimination of redundant parts has been consistently aimed at by the designer of the power unit, the idea being to attain simplicity of construction and reliability in running. Mechanical pump lubrication is adopted.

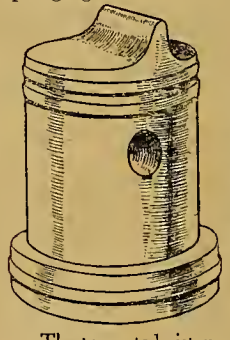


A spring seat-pillar on the 1920 A.J.S. model, now a standard feature.

The cycle parts have all been designed with an eye to the practical rider's requirements, and all types of users will be catered for in a range which includes fixed gear and light two-speed solo models and a heavier mount with three speeds, suitable for passenger work.

Stand **DUNELT.**

33. A large air-cooled two-stroke is a novelty which is bound to attract attention. Not long ago the achievement of such an engine would have been deemed unlikely, but so great has been the advance in knowledge with regard to cooling in recent years that Messrs. Dunford and Elliot are proposing to exhibit their 500 c.c. single-cylinder two-stroke, which has performed so satisfactorily on test. The Dunelt motor cycle was described in *The Motor Cycle* of November 6th, and our readers will remember that one of the most interesting features of the engine is its truncated piston, by means of which better scavenging and a full charge are procured. A two-speed expanding clutch gear is fitted in the countershaft, the final drive being by belt. Several features of interest present themselves to a student of design, notably the leaf springing of the front fork, the interchangeable wheels, and the loop frame, with two sloping tank tubes.

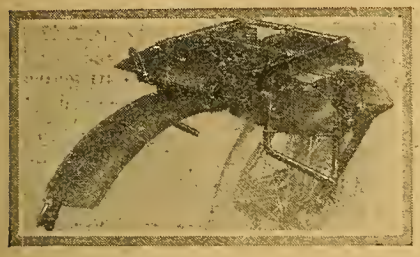


The truncated piston of the 4 h.p. two-stroke Dunelt.

Not the least attractive feature is the selling price, which, it is hoped, will be in the region of £70. This, taken in conjunction with the fact that the machine will pull a sidecar satisfactorily—it has, in fact, been designed with this end in view—is a surprising figure, and will do much to attract public attention.

Stand **ABINGDON.**

34. In addition to the several popular Abingdon King Dick models known to most of our readers, *i.e.*, the 3½ h.p. T.T. solo machine, 3½ h.p. countershaft model, and the three-speed chain-cum-belt 6 h.p. twin, a new King Dick will be shown at Olympia, which embodies several important features. This machine is fitted with the King Dick twin engine, which has a bore and stroke of 73 and 95 mm., and has 28×3in. detachable and interchangeable wheels with round base rims. The rear brake is of the internal expanding type, the transmission all-chain, and a Lucas Magdyno combined ignition and lighting set, which, with the Canoelet sidecar, will make it a *de luxe* model in every way.



The lift-up rear mudguard of the Abingdon, showing semi-concealed valises.

Stand **BAMCO SIDECARS.**

35. A sidecar chassis with all joints welded instead of embodying brazed lugs, and also having a spring wheel, is the speciality of the Birch Manufacturing Co., who are exhibiting their models at this stand. The sidecar was dealt with at length in our issue for October 23rd.

The chief feature of the design is the unique method of springing the wheel, which is contained in a rectangular frame, the rear end of which is pivoted to the rear cross-member of the chassis. At the forward end the wheel frame is attached to the chassis by two links, with two coil springs to control its movement.

Stand **SIMPLEX AUXILIARY ATTACHMENT.**

36. The Simplex auxiliary motor attachment for pedal cycles is not a new proposition, but so far it has not been manufactured in the quantities which its makers are preparing to market next year. The 1920 model is practically the same as the 1919 type for the very good reason that the latter has been the sample models of the former.

An extremely neat and well-designed two-stroke engine of 1 h.p. is fitted horizontally in an aluminium base, which forms a carrier for the bicycle. In this is also located the countershaft clutch, magneto, and petrol tank. The whole outfit is self-contained except for the large chain wheel, which is fitted on the wheel of any ordinary bicycle, and the controls carried on the handle-bar.

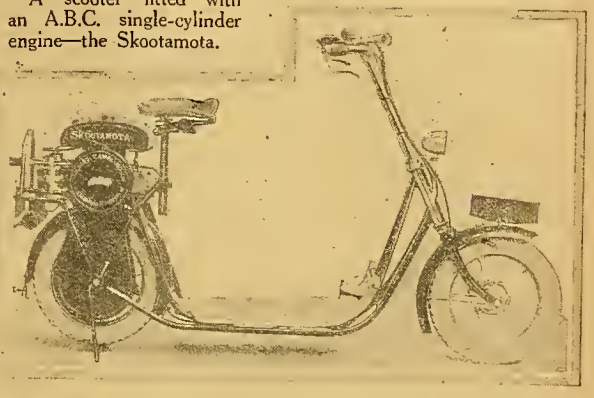
Stand **CASTLE THREE-WHEELER.**

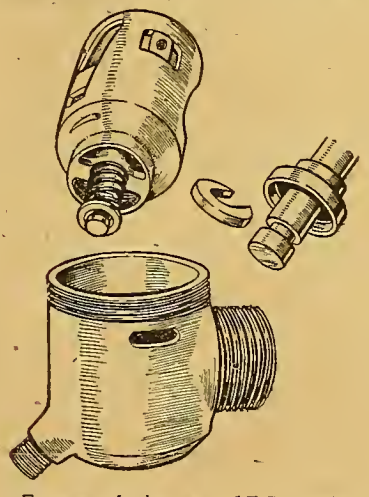
37. A light car in all but the number of wheels, the Castle three-wheeler is interesting as a type which embodies everything usually found in a conventional four-wheeler, excepting the rear axle and two rear wheels. Its specification includes four-cylinder water-cooled engine, shaft drive, and artillery wheels.

Stand **L.S.D. RUN-ABOUT.**

38. Another three-wheeler is the L.S.D., which follows the conventional practice of the runabout type. This machine includes an air-cooled J.A.P. engine, and shaft and chain transmission, with a two-speed and reverse gear box. Quarter-elliptic springs are used at the rear, and a patented system of springing by enclosed coiled springs at the front. 700×80 mm. tyres, on Sankey steel wheels, form part of the equipment of the machine, which has a wheelbase of 6ft. 6in. and a track of 4ft.

A scooter fitted with an A.B.C. single-cylinder engine—the Skootamota.





Features of the new J.E.S. auxiliary motor—the floatless carburetter and the valve fixing.

Stand **J.E.S. AUXILIARY ENGINE.**

39. By no means the least interesting of the auxiliary motors which will be offered to the public at Olympia will be the J.E.S. It is, in fact, one of the best designed engines we have examined, and embodies a mechanical oiling system by a pump submerged in the oil sump.

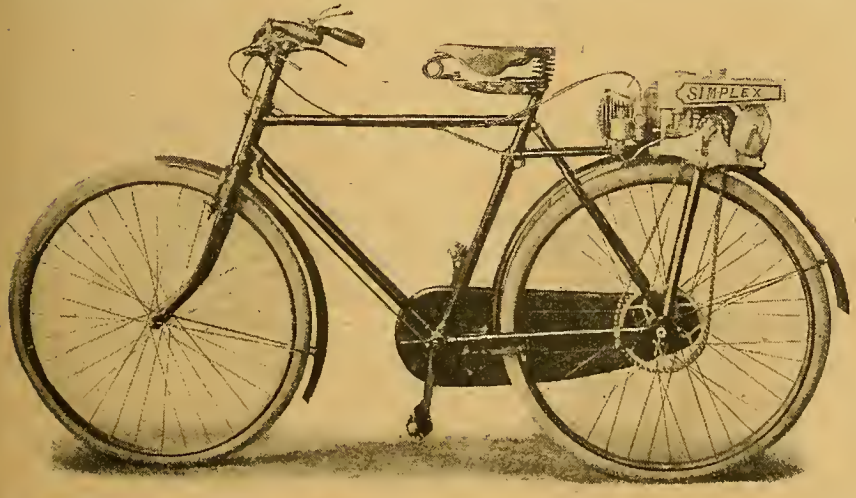
Before the war the J.E.S. had built for its manufacturers a good reputation among riders of auxiliary attachments, but the 1920 model has many improvements and innovations which the fully fledged motor cyclist will wish were embodied in larger engines.

Both valves are now mechanically-operated, and the carburetter fitted is of a new patented type having no float. It is a single-lever instrument.

The bore and stroke are $2\frac{3}{16}$in. (55.5 mm.) and $2\frac{3}{8}$in. (60.3 mm.) respectively, and an aluminium piston is used which has a floating gudgeon pin.

In addition to the auxiliary motor, on this stand will be exhibited the J.E.S. ultra-lightweight, which is engined with the power unit referred to, and is fitted with a specially designed diamond frame, and spring forks.

The price of the lightweight is 36 gns.—for the motor attachment, 20 gns.

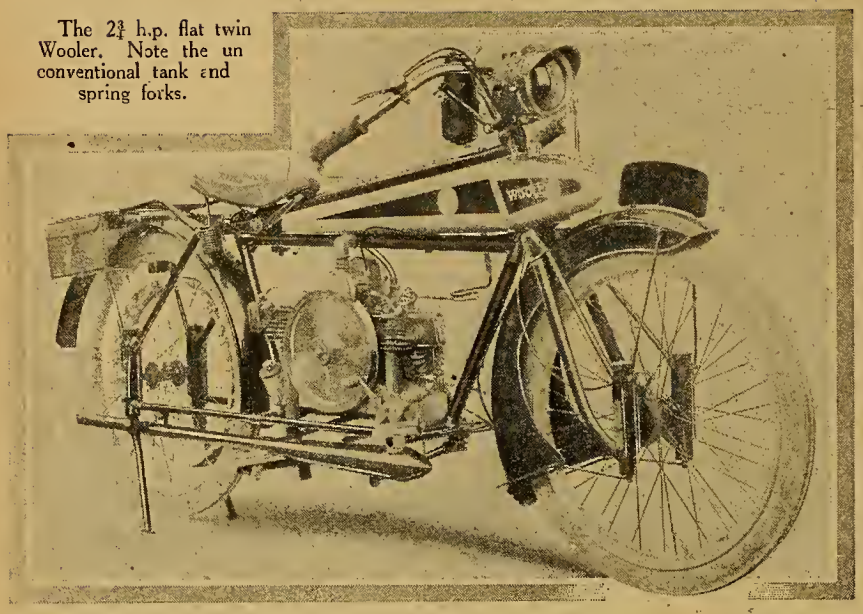


A motorised bicycle. The compact power unit on the carrier is the Simplex

Stand **SKOOTAMOTA.**

41. There is no gainsaying the fact that the A.B.C. Skootamota has created a tremendous amount of interest on the part of the general public, and Messrs. Gilbert Campling's exhibit of these interesting miniature motor cycles no doubt will attract its full share of attention. In addition to the standard models, two new machines, intended for commercial purposes, will be exhibited. On these large boxes for parcels are fitted, and form the support for the spring seat for the operator. There will also be a "tropical" model, finished in light colours and complete with a canopy which will appeal to those who live in a climate where such equipment is necessary, while for those Eastern potentates who, years ago, used nickel-plated bicycles, a standard model will also be shown finished in this way.

It will be recalled that the Skootamota is to all intents and purposes a miniature motor cycle fitted with an



The 2¾ h.p. flat twin Wooler. Note the unconventional tank and spring forks.

open frame and pan seat saddle. The engine is a 1½ h.p. four-stroke, placed horizontally over the rear wheel, which it drives by means of an enclosed chain. 16in. diameter wheels are used with 2¾in. tyres. The equipment embraces horn, pump, tools, and, for 49 gns., the price includes the registration fee.

Stand **BLACK PRINCE.**

42. If only because it is one of the most unconventional machines yet produced as a serious proposition to be offered to the public, the Black Prince will create a large amount of interest at Olympia next week. In several ways its construction is a considerable advance on present practice, and in the opinion of many, is a representative of a system which designers will more carefully study in the near future.

Pressed steel is used practically throughout the construction of the frame, which is sprung at the rear on volute springs. Apart from the manufacturing conveniences which such construction is said to possess, the Black Prince design entirely encloses the mechanical elements of the machine, and, in addition, provides protection for the rider against mud thrown off the front wheel.

The engine of one model is particularly interesting, and is of the flat twin two-stroke type, having a cast member connecting the two combustion heads. By this means a single plug only is necessary simultaneously to fire both charges, and as the new gas enters the cylinders by way of this common combustion head, the spark takes place in gas which must be entirely unpolluted by burnt gases. Altogether the Black Prince is a remarkable machine, and probably will be one of the most discussed models in the Show.

Stand **MARTINSYDE.**

43. Made by an aviation concern known to all who followed the evolution of the aeroplane during the war, the Martinsyde motor cycle is another newcomer to the industry, and this time a passenger machine of more than ordinary interest. Of 6 h.p., the machine has been designed by Mr. H. C. Newman, the Ivy-Precision exponent, and has a twin-cylinder engine with a bore and stroke of 70 and 88 mm. (678 c.c. capacity). The exhaust valves are overhead, and the inlets at the side.

Roller bearings are used at the big ends, and large size ball bearings support the crankshaft. Lubrication is by an automatic system embodying a sump in the timing case.

The three-speed gear box is of the A.J.S. design, made under licence, and the all-chain transmission is enclosed in oil-retaining cases.

The machine generally follows conventional practice and embodies a Brampton Biflex spring fork, large capacity tank, and 650×65 mm. wheels, while the finish will be in the now popular black and gold.

A specially designed sidecar with a large locker at the rear and fitted with an Auster patent windscreen will be sold with the machine, which will be known as the Martinsyde-Newman. It is stated that deliveries will commence in January.

Stand **OMEGA.**

46. Omega motor cycles, during 1919, have considerably enhanced the pre-war reputation of their makers by their sturdy construction and general appearance, and, while not differing to a large extent, the 1920 machines have been improved in details. A new model will be introduced which, like its predecessors, will be fitted with the well-known J.A.P. 2¾ h.p. engine, but will have a gear box with clutch and kick-starter.

Various types of these machines are made, including semi-T.T. and touring models, the former differing from the general specification in several details, such as the substitution of footrests for footboards and the adoption of low, wide handle-bars.

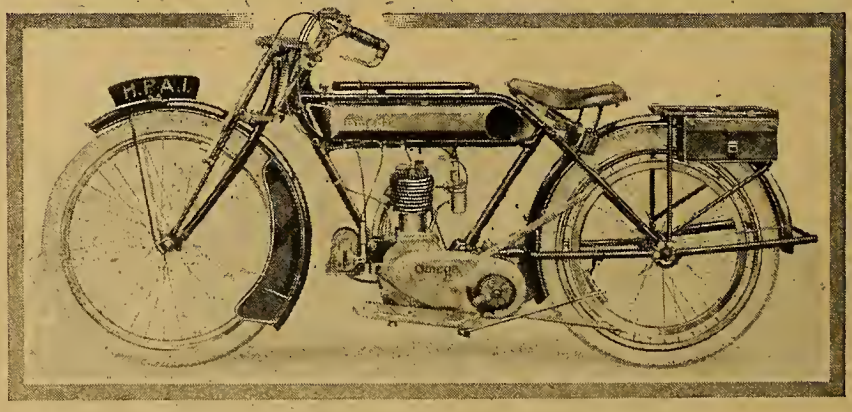
Stand **WOOLER.**

47. As one of the new post-war flat twins of 2¾ h.p., the new Wooler has several features not at all usual in a machine of its type. The peculiar tank, with its forward extension beyond the steering head, and the system of springing both wheels are all points which render the machine distinctive, but probably the most interesting item in its specification is the variable gear and long belt drive.

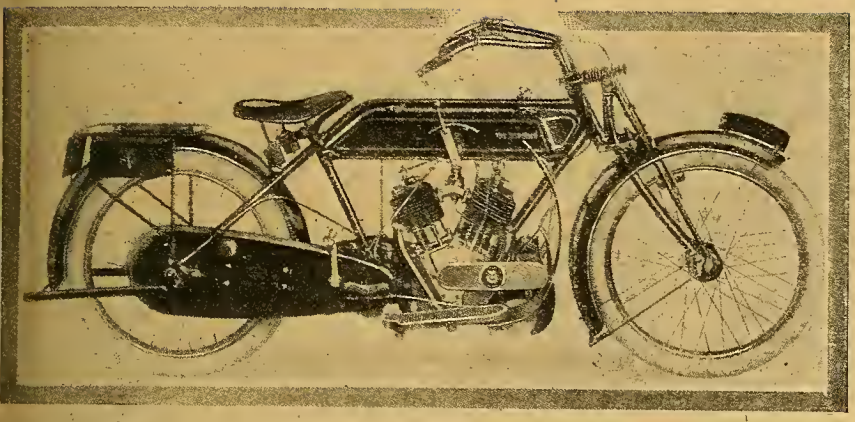
This gear is a modification of that fitted to the pre-war two-stroke model, and consists of a variable pulley which, in expanding or contracting, maintains a constant tension on the belt. The engine, too, is unusual, and has overhead inlet valves with automatically lubricated rocker arms. The cylinder heads are detachable, and mechanical lubrication by a chain elevator is embodied.

Stand **MATCHLESS.**

48. The 1920 Matchless needs no introduction to the majority of readers of *The Motor Cycle*, for during the past year it has undergone strenuous road tests in view of the public. It is a spring frame model, in which coil springs are used throughout, and the movement of the sidecar wheel is made to synchronise with that of the driving wheel. The engine fitted is an 8 h.p. twin J.A.P., driving a three-speed gear box of Matchless manufacture, which is fitted close up to the engine, from which it is driven by silent chain. The wheels are 28×3in., and are interchangeable, a spare being carried on the sidecar. Stands are fitted to all wheels, and the



A 1920 Omega model, engined with a J.A.P. power unit of 2¾ h.p.



The 8 h.p. Sunbeam, primarily designed for sidecar use. The engine is 85.5 × 85 mm. = 976 c.c.

equipment throughout is of the most complete character. The price of the standard model is £170, with windscreen and grid, while at £200 the machine is catalogued equipped with Lucas Magdyno, lamps, horn, hood, and pillion seat.

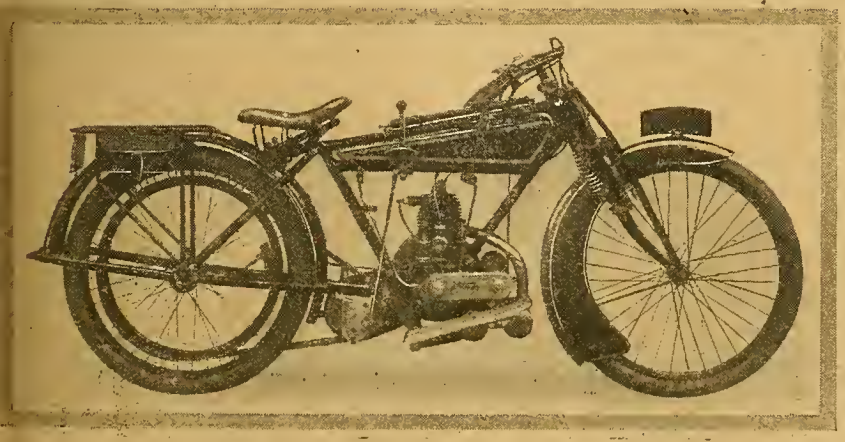
Stand **SUNBEAM.**

49. The 8 h.p. Sunbeam which will be exhibited will differ very little from the model which has been produced during 1919. As before, the striking black and gold finish will be standard, and the well-known Sunbeam oil bath part of the equipment. Unlike many similar motor cycles, the chain case of the final transmission is on the right side of the machine. The J.A.P. 8 h.p. engine will be retained.

Chief among the modifications of the 3½ h.p. model will be the new Sunbeam spring fork, which has been undergoing exhaustive tests during the past twelve months. This embodies a single leaf spring extending forward, and is quite pleasing to the eye. Another feature will be that, for 1920, this model will be marketed as a passenger machine, with a sidecar of Sunbeam design, and having a chassis of unique construction. Detachable wheels will be fitted, and no doubt the 3½ h.p. Sunbeam sidecar outfit will take a leading place among single-cylinder passenger machines as it has among solo mounts.

Stand **LEA-FRANCIS.**

50. Before the war, there were several twin solo machines of 3½ h.p. and under, but few have been re-introduced. The 3½ h.p. twin Lea-Francis was always regarded as a solo machine *de luxe*, and, although the makers announce that their 1920 output is booked up, the exhibition of this machine will be appreciated by all who take an interest in the high-class motor cycle. The Lea-Francis set the fashion in more than one direction, including V rim brakes on the front wheel. A J.A.P. engine having a bore and stroke of 70 mm. and 64.5 mm. (494 c.c.) respectively is fitted, with the magneto snugly placed at the rear; the gear box is of the two-speed type, and the all-chain transmission is entirely enclosed. Quickly detachable wheels are fitted. An alternative model will be marketed, which will be fitted with a M.A.G. engine.



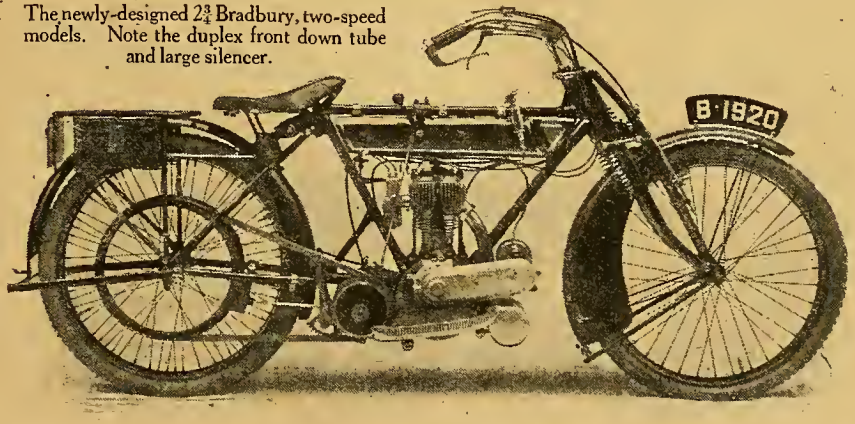
One of the Excelsior range for 1920, the 2¼ h.p. two-stroke model.

Stand **BRITISH EXCELSIOR.**

51. With the 1920 models, Messrs. Bayliss, Thomas Co., the proprietors of the Excelsior Motor Co., enter upon what promises to be a period of largely increased outputs, as their recent move to a larger factory in Birmingham now places the concern in a very much more favourable position than hitherto has been the case. The models which they will exhibit at Olympia all reveal the beneficial results of the increased manufacturing facilities, and will no doubt meet with favour from buyers of lightweights and heavy sidecar machines.

The five new models include four lightweights which have frames with sloping top tubes. The first is fitted with a Villiers engine, countershaft two-speed gear, 26in. × 2¼in. tyres, Druid forks, Amac carburetter, and pan saddle, and is catalogued at £58 16s. An alternative model is fitted with a two-speed gear having a clutch and kick-starter at £64 17s. 6d.

The newly-designed 2¾ Bradbury, two-speed models. Note the duplex front down tube and large silencer.



In the passenger machine class, the 8 h.p. Excelsior is also a new model with many points to interest the buyer of a big twin sidecar. It has 28 × 3in. wheels, detachable and interchangeable wheels, all-chain drive entirely enclosed, internal expanding rear brake, and large capacity tank.

The sidecar is exceptionally roomy, and is carried on an underslung chassis with the luggage grid sprung with the body. Provision is made for carrying a spare wheel on the sidecar. The price of this machine with 6 or 8 h.p. engine is £162 10s.; spare wheel and tyre £8, Lucas dynamo lighting set with electric horn £25.

Stand **BRADBURY.**

52. This exhibit will without doubt attract many of those who are interested in the light single-cylinder, since a new 2¾ h.p. model is to be staged. The

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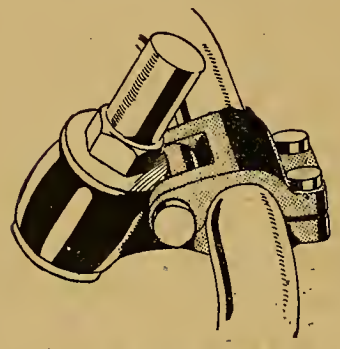
Bradbury firm is therefore one of the few large firms at present making a motor cycle of this type throughout as distinct from those which are assembled from proprietary units.

Following the practice adopted many years ago, the crank case is incorporated in the frame, the main tubes being brazed into it. A detachable cylinder head is fitted, and a two-speed gear,



How the Rex adjustable handle-bar is secured.

with the clutch rather unusually placed in the final driving pulley, is employed in conjunction with chain and belt transmission.

Other Bradbury models are the well-known "square" engine 4 h.p. single, with all-chain drive, three speeds and handle-bar controlled clutch, and the 6 h.p. twin, with detachable head cylinders, chain transmission, and a similar gear box to that on the 4 h.p. single-cylinder machine. The clutch control on the twin is operated by either pedal or handle-bar lever.

Duplex front frame tubes are being adopted on the Bradbury models, and sidecar lugs are incorporated in the big twin. Grindlay sidecars are fitted as standard.

Stand **MILLFORD SIDECARS.**

53. Owing to difficulties of manufacture the range of Millford sidecars will not be so extensive as at previous shows. The Millford "Corvette" will be shown, however, together with a new "De Luxe" model, which will be found very suitable for use with the high-powered motor cycles now being manufactured. Possibly the feature which will appeal most will be the extremely neat luggage carrier with which the body is fitted. When required the back of the body falls down to a parallel position, being supported on either side by strong straps, capable of carrying a good-sized portmanteau. This back, when not in use, folds into the body itself, and is therefore concealed in the neatest manner possible.

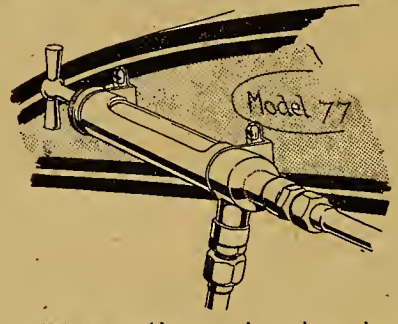
Users of lightweights are catered for in the "Skiff" model; whilst the family man's wants are also anticipated in the Millford "Family" car. This has an extra long body, and is fitted with a small seat in the front portion for a child. An efficient and neat screen of the firm's own manufacture is placed immediately in front of the little seat so as to offer the fullest protection for both passengers.

Stand **F.N.**

54. The F.N. exhibit will consist of four four-cylinder motor bicycles and four lightweights, both models following the 1914 lines with slight improvements. An additional girder now extends from the fork crown to the top of the head, and a slight alteration has been made to the lubrication system, oil to the tank running straight through to the pump.

To the 1920 model an Amac carburetter will be fitted and a Fellows magneto. The 2½ h.p. remains unaltered, except that an Amac carburetter replaces the F.N.

It will be remembered that when hostilities broke out the firm were just beginning to deliver the new 7 h.p. four-cylinder, a thoroughly up-to-date motor cycle, fitted with three-speed gear and mechanical inlet valves to the engine. It is really wonderful that the firm is able to exhibit motor bicycles at all, when it is borne in mind how severely the Herstal factory suffered during the



A large outside pump is used on the Rex sidecar single in addition to the mechanical lubricating device.

war. The Germans destroyed the laboratory, and out of 4,000 machine tools only 300 were left behind, while out of 4,000 workmen only 1,500 can now be employed. Fortunately, a number of partly machined parts were left, and with these the firm has been able to make up a certain number of machines.

Stand **REX.**

55. Manufacturing difficulties have held up the production of the Peace model Rex single, or it would have figured more prominently on the market during the present year. Designed essentially as a sidecar machine, it is characterised by its exceptionally large frame and long wheelbase—points in its favour for passenger work. The engine, too, departs from the general run of single-cylinder power units, having a mechanical oiling system. The bore and stroke are 84 and 98 mm. respectively, the capacity being 543 c.c.

28×2½in. tyres are fitted on detachable and interchangeable wheels, and a spare wheel is carried at the rear of the sidecar body. The transmission is by chain and belt through a Sturmey-Archer gear box.

Stand **SUN.**

57. One model only will be marketed and shown by the Sun Cycle and Fittings Co., and this will be a neat little machine of very distinctive design, embodying many features of interest. The two-stroke engine is placed in the loop frame in a position inclining forward, and is fixed directly to lugs on the tubes instead of the more usual method of using engine plates, and the magneto inclines to the rear. The power unit thus fits snugly between the two diagonal tubes of the frame.

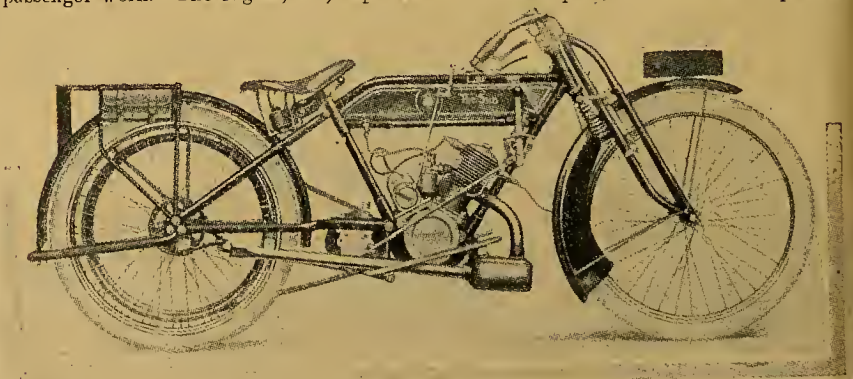
The adjustable tappet on the Ariel, which can be operated without the use of tools

Several noteworthy points are embodied in the engine in which, in the first place, a single web crank is used in conjunction with a long plain bearing to support it. The crank case is a one-piece aluminium casting having a circular cover plate on one side. When this is removed and the cylinder lifted, the shaft, big end, connecting rod, and piston can be dismantled, leaving the crank case in the frame.

Stand **ARIEL.**

59. The Ariel exhibit will include the four models which will be offered for 1920. Two of these are entirely new. The 3½ h.p. single-cylinder and the 6-7 h.p. twin, with combined chain and belt drive, will still be catalogued as solo mounts, or with the Ariel coachbuilt sidecar as a complete combination. A number of improvements have been made in the specifications, including larger and wider mudguards, and new pattern hubs.

Rated at 4½ h.p., the new single-cylinder Ariel has a bore of 86.4 mm. and stroke of 100 mm., giving a capacity of 586 c.c. Both valves are very large and wide apart, and the valve pockets



The Sun two-stroke, one of the few single-cylinder lightweights with inclined engine.

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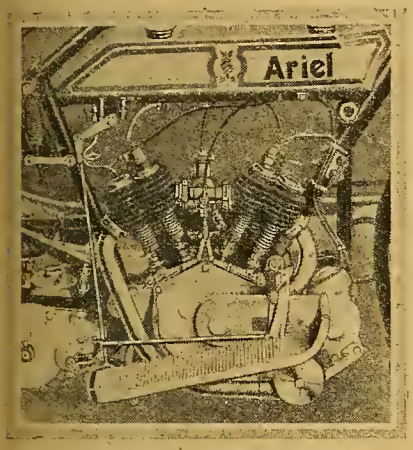
have large air spaces completely surrounding them. Lubrication is by means of suction from a pump, with an improved system of oilways to all the wearing parts. The patent Ariel decompressor is fitted, which ensures easy starting. The power is transmitted from the engine through the Ariel countershaft three-speed gear box to the rear wheel, and the rear transmission is



Power unit of the 6-7 h.p. Ariel.

by chain. The frame is exceptionally strong, having been specially redesigned with a long wheelbase, long head, and duplex front tubes. It gives a low saddle position and 6in. ground clearance, which will be much appreciated by Colonial riders. The front forks are considerably improved, being much wider and stronger. The wheels have Dunlop studded tyres, 28×3in., with flat base rims, and improved hubs are fitted with a special greasing arrangement. The Ariel spring seat-pillar will be retained, and an internal expanding brake will be fitted to the rear wheel, foot-applied, and a band-applied front rim brake. The tank will carry approximately two and a half gallons of petrol and five pints of oil.

The 6-7 h.p. model will combine the aforementioned improvements, and the prices of the four models will be as follow: 3½ h.p. solo £100, sidecar £135; 6-7 h.p. chain-cum-belt solo £120, sidecar £155; 4½ h.p. chain drive solo £115, sidecar £150; and 6-7 h.p. chain drive £130, sidecar £165.

Stand **NEW IMPERIAL.**

60. Two models only will again be the New Imperial programme, and the examples of these machines which will be on view at Olympia will embody only minor improvements. The light tourist model, however, will be obtainable with two-speed gear, or with a two-speed gear combined with clutch and kick-starter. One of the most popular machines in the lightweight class, the New Imperial Jap-engined solo mount, will be fitted with 26×2½in. tyres and a pan seat saddle. The tank has been enlarged, and now holds one and a half gallons of petrol and one quart of oil. A 5½in. rear mudguard is a feature worthy of mention, as is the way in which belt is made to pass through it instead of at the side of a "trapped" out indentation. The upper portion of the passage way has a gutter, which is carried right round to the bottom portion. Therefore mud and water are carried away clear of the belt.

The New Imperial 8 h.p. sidecar is fitted with an 8 h.p. J.A.P. engine, with a capacity of 964 c.c. and 28×3in. Dunlop tyres, and the ground clearance is six inches. Transmission is by two Hans Renold chains. The rear brake is actuated by the right foot from a large adjustable footboard in aluminium. This is effected by a straight rod to the inside of a special pulley attached to the back wheel. The brake block is of Ferodo, and has a large circular bearing surface.

Special attention has been paid to the frame, the two-way webbed head lug being so designed as to take the top tube, middle tube, and the bottom tube in one lug, and thus ample strength is secured at the most vulnerable point of a heavyweight motor cycle frame. The gear box has three speeds. Direct drive is on top, and the main shaft runs in a journal ball bearing, the layshaft running in phosphor bronze bushes. Improvements have recently been made in the shaping of the sliding gear pinions, which add to the silence of an admittedly first-class piece of workmanship. Ample mudguards are provided, together with a shield to the magneto, which also has the effect of protecting the engine and rider from mud and wet. The tank is of large capacity, and has sight feed, and Best and Lloyd pump.

An extremely well sprung sidecar, with a well-upholstered body, is fitted, and has a cupboard at the back, which is capable of holding two tins of petrol and other accessories, whilst there is ample room for holding other luggage in front of the sidecar body.

The prices of the New Imperial motor cycles are as follow: Model 1, light tourist, with two-speed, 58 gns.; Model 2, light tourist, with two-speed clutch and kick-starter, 65 gns.; and 8 h.p. sidecar, 138 gns.

Stand **A.C.**

61. Messrs. Auto-Carriers, Ltd., are not exhibiting any model which will interest the motor cyclist, unless he happens to be a tradesman requiring a means of quick and economical delivery. The well-known A.C. commercial three-wheeler will be on this stand, and has a single-cylinder air-cooled engine located under the driver's seat, and driving directly to an epicyclic two-speed gear in the hub.

Stand **PREMIER.**

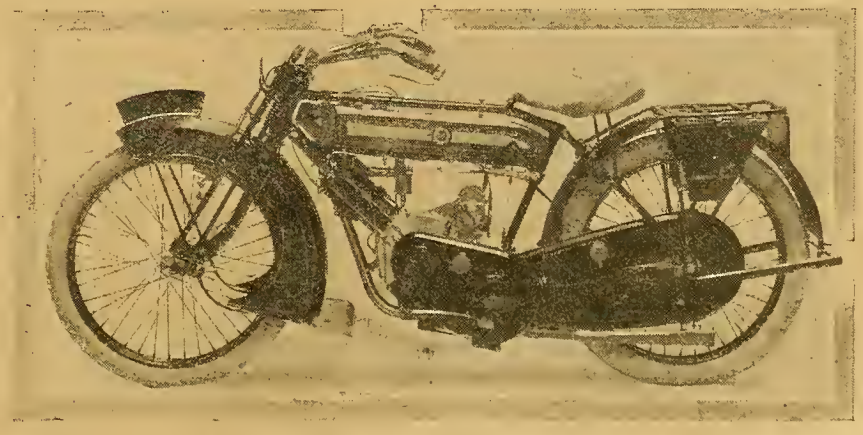
62. Undoubtedly much is expected by the public of the new Coventry Premier runabout, which will be exhibited on this stand. We described the machine in detail in our issue of October 30th, and it was again illustrated in last week's issue, among the many 1920 passenger machines then described. It is of a type which may be said to mark the top class in three-wheelers before they became over-developed into light cars on three wheels. It is fitted with a newly designed twin engine of 80×105 mm. and a three-speed gear box which has a reverse. There are several refinements not usually found on a vehicle of the runabout type, and visitors to Olympia should particularly note the single-chain adjustment and the manner in which the chain case may be opened or removed in a few seconds.

Stand **P. AND M.**

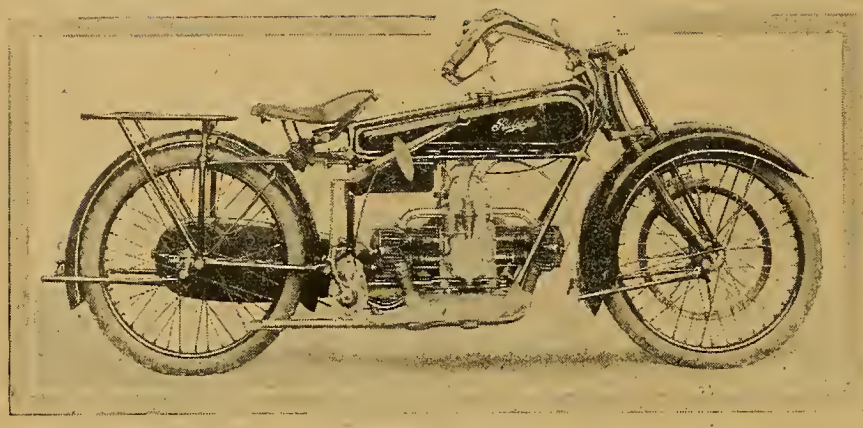
63. The Yorkshire firm of Phelon and Moore, Ltd., have always been noted for excellence of finish, crank case design especially being carried out with a view to oil retention. The normal polish on the aluminium parts also tends to make every standard machine into a "show model," and lovers of detail refinement will therefore not fail to visit this stand. One feature of special interest on the P. and M. is the ratchet lever of the rear brake, a detail often demanded by experienced sidecarists, but so far peculiar to this machine. Elsewhere in this issue will be found a report of the new mechanical details to be incorporated in the next year's programme.

Stand **RALEIGH.**

64. A slightly enlarged engine has been decided upon for the production model Raleigh which will be exhibited at Olympia. The bore and stroke are now 77 mm. and 75 mm. respectively, the total capacity being 698 c.c. The duplex spring frame is retained, as are most of the other features which charac-



Transmission side of the 1920 P. and M. Note the ratchet lever for the rear brake. An extension pipe is now fitted to the silencer.



The 1920 flat twin Raleigh fitted with spring frame and totally enclosed chain.

terised this peace model flat twin with which the old-established Raleigh Co. will re-enter the motor cycle field. A complete and illustrated description of the machine appears elsewhere in this issue.

Stand **METRO-TYLER.**

65. A most distinctive design has been produced by the makers of the Metro-Tyler for 1920. This machine is described and details illustrated in this issue.

Stand **RADCO.**

66. Alike noted for their excellent quality and reasonable price, a full range of 2¼ h.p. Radco two-strokes should attract the attention of all who are interested in a light and handy machine made on approved lines of design.

Stand **BROUGH.**

69. Owing to various manufacturing difficulties which have arisen during the year, the makers of the Brough will not be able to stage the 3½ h.p. solo model. This is to be regretted, as it is one of the few mediumweight flat twins which have been before the public for any length of time.

The 5 h.p. twin with horizontally-opposed cylinders is an ideal double-purpose mount, and several examples may be seen both with and without sidecars.

A somewhat long stroke is favoured, which is rather unusual in this type of engine, the dimensions being 70×90 mm.; the transmission is by chain throughout, a Sturmey-Archer gear box being used. Although experimental springing devices have been tried on the Brough, the makers will still adhere to the rigid frame on their 1920 models.

Stand **PARAGON.**

70. Immediately before the war the Paragon Motor Manufacturing Co., of Manningtree, Essex, was attracting some attention because of its experimental work on the two-stroke lightweight. Eschewing the usual proprietary engines, this firm decided on following its own ideas, and in the new model to be seen at Olympia many radical departures from standard practice will be noted.

Most obvious is the incorporation of the gear box in the crank case, with the magneto neatly secured behind the cylinder, thus forming a complete unit. Two speeds are used, and the control lever is mounted directly on the crank case. The flywheel is on the left side, and the transmission, contact breaker, and carburetter are all on the right, everything being readily accessible.

A small atmospheric valve in the transfer port is used to assist scavenging, and four-stroking is said to be entirely eliminated. Frame springing, on very neat and simples lines, is included, and the whole will be sold at a very moderate figure.

Stand **JAMES.**

71. Few alterations have been deemed necessary in the four models which will be retained for 1920 by the James Cycle Co. The solo machines are the 3½ h.p. V twin of 500 c.c. capacity and the popular two-stroke. The former has been exceedingly popular, and is a good representative of a type of which few are available. It is essentially a solo mount, embodying 64×77 mm. engine, three-speed countershaft gear, and all-chain transmission. The magneto is placed at the rear and well up on the frame, thus reducing the likelihood of water reaching it, should the owner elect to ride through a ford, or be compelled to ride all day in a torrential downpour of rain.

The lightweight is a distinctive little mount, having a three-port two-stroke engine of 226 c.c. capacity, which drives the countershaft by an enclosed chain on either side of the crank case. The gear is of the sliding dog-clutch type fitted close up to the engine, with which it forms a compact unit carried inside the loop frame. 24in. wheels are fitted, and the equipment generally is of first-class order.

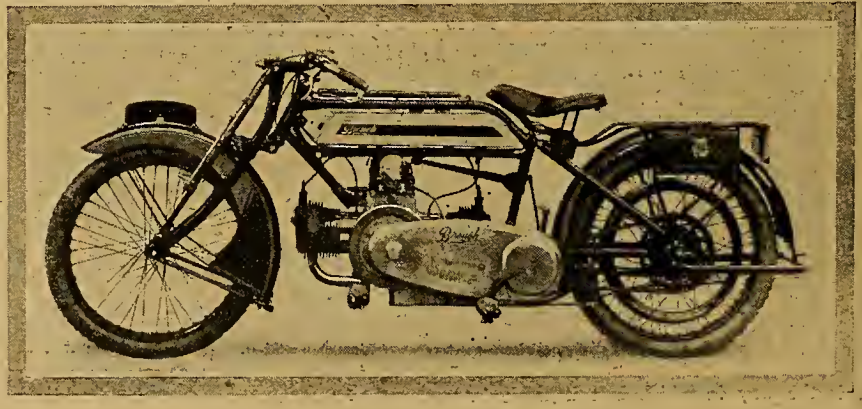
Probably the James 4¼ h.p. single requires no introduction—it is a well-known model, having an 86×103 mm. engine, with the gear-driven magneto at the rear of the cylinder. It is a sidecar machine, and, therefore, the new model appears with larger wheels and improved brakes, points tested out in the recent Six Days Trials. The countershaft gear box is of the sliding gear type, and the transmission is by enclosed chain.

The last model is the 5-6 h.p. twin outfit, which has a bore and stroke of 70 mm. and 86 mm. respectively, the total capacity being 662 c.c. This is a type of machine catering for the twin enthusiast who does not desire the great reserve of power present with the 8 h.p. twins. The sidecar fitted to this model is the James de Luxe, while to the 4¼ h.p. model a James Canoelet is standard.

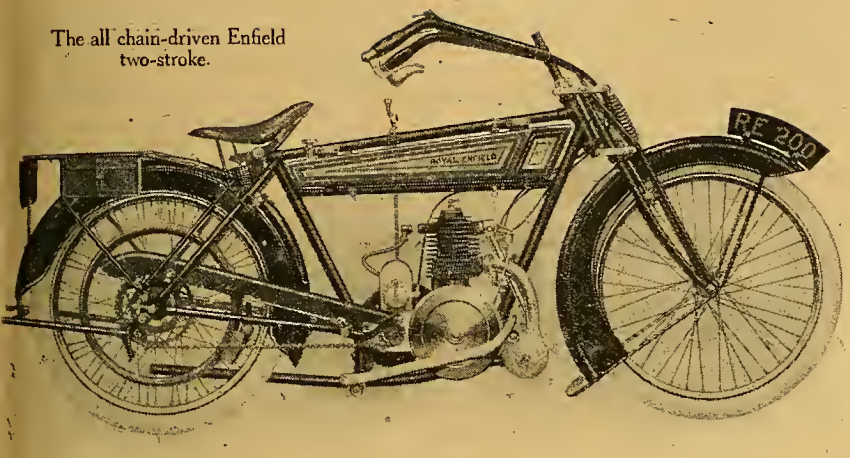
Stand **ENFIELD.**

72. Four Royal Enfield sidecar combinations will form the principal exhibit. Two of these will be fitted with the Lucas Magdyno lighting set, one of which will be equipped with the Enfield hood and screen; the third will be a standard model, and the fourth will have a tradesman's carrier attached, comprising a large coachbuilt box. J.A.P. engines, 6 or 8 h.p., are employed on these machines, and all the motor cycles on the stand will have the Enfield two-speed gear embodied in their construction. The hood shown on one of the combinations affords complete protection to the passenger, and when not in use folds back into the rear of the sidecar. The windscreen is adjustable to any angle, and secured by wing nuts.

Another feature will be the employment of the new Amac single-lever carburetter. This has been found to give excellent acceleration combined with good consumption; moreover, it simplifies control. Several two-stroke lightweights will also find a place, similarly equipped with regard to variable gear and carburetter. The engine has a bore and stroke of



The latest model 5 h.p. Brough.



The all chain-driven Enfield two-stroke.

4×75 mm. (225 c.c.). All Enfield machines are finished in black with green tanks, and have the control wires enclosed in the handle-bars. Chain transmission is also standard on these machines.

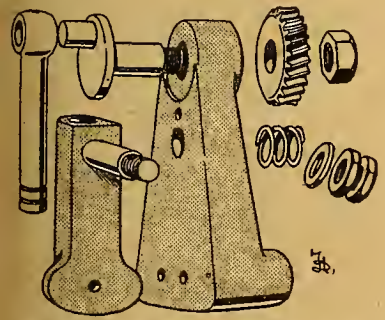
Stand **NEW HUDSON.**

74. The makers of the New Hudson motor cycles have decided on a policy of concentration for next year, and, in consequence, the 6 h.p. sidecar outfits will be abandoned for the time being. The models staged, therefore, will be entirely of the 2¼ h.p. two-stroke type, and there are two varieties, one of sporting specification fitted with footrests, T.T. bars, and all-black finish, the other having a full touring equipment, comprising valanced mudguards, aluminium footboards, leg guards, and raised handle-bars.

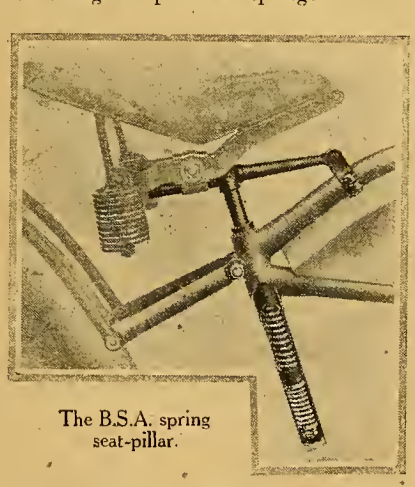
External finish on the New Hudson machines is extremely good, and many small mechanical details and refinements exclusive to this make are worthy of attention. Black and brown with gold lining is employed on the touring model, this giving an extremely handsome appearance.

Stand **B.S.A.**

75. The most interesting part of the B.S.A. exhibit, from a motor cyclist's point of view, will doubtless be the 6 h.p.


The B.S.A. oscillating pump dismantled.

twin-cylinder machine, described recently in our columns. The engine has a bore and stroke of 76×85 mm. (770 c.c.). The valves are composed of a special nickel steel, and placed side-by-side and operated by easily adjustable tappets. The pistons are strong and light, they have two rings at the top and oil retaining grooves at the bottom of the skirt. Attached to the engine-shaft is a cush drive containing six powerful springs.


The B.S.A. spring seat-pillar.

Lubrication is by means of a mechanical pump situated in the timing gear case. Transmission is by roller chain through the B.S.A. three-speed gear box, in which all the gears are constantly in mesh and changes very easily effected. The wheels are detachable and interchangeable. Ignition is by the E.I.C. waterproof magneto, which recently came triumphantly through a very severe test, and the carburetter is an Amac. The finish is in black enamel over a rustproof foundation, and Dunlop extra heavy or Palmer Cord light car tyres (28×3in.) are fitted.

The 4¼ h.p. machine, of the type which won the team prize in the recent A.C.U. trials, will also be on view. This is fitted with the B.S.A. variable jet carburetter, and has an engine of 85×98 mm. bore and stroke, 557 c.c. (a 3½ h.p. 85×88 mm. engine is also supplied on a T.T. model).

Stand **DOUGLAS.**

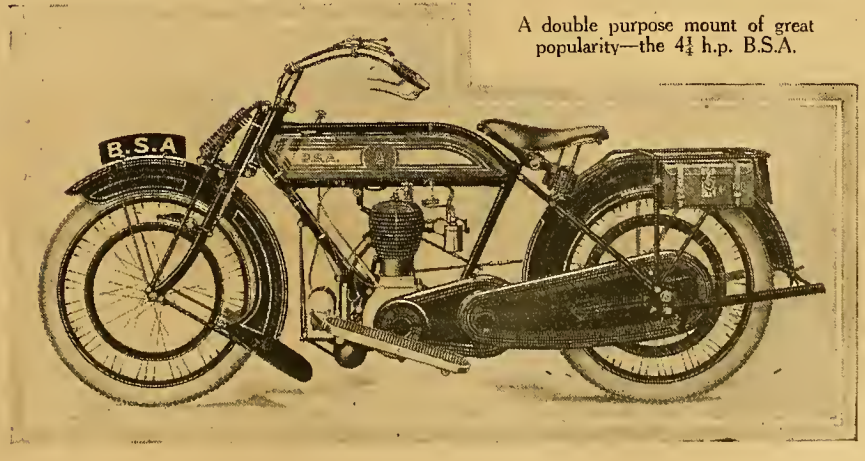
76. No doubt the greatest attraction at the Douglas stand will be the new 3½ h.p. spring frame model which, although it has been on the road and in competitions during the present year, has not formed part of the Douglas range offered to the public.

It is an entirely new model, having an opposed engine 68×68 mm. (494 c.c.) with mechanical lubrication. The specification includes a three-speed gear and enclosed kick starter, and chain-cum-belt transmission. The Amac single-lever carburetter, new type of Douglas fork, 26×2⅜in. tyres, and the Douglas spring frame, which, incidentally, has a spring system so neat that it is not immediately apparent that the rear wheel is sprung. In this system enclosed coil springs are used, which lie in a horizontal position under the tank.

The other models which will be exhibited are the 2¾ h.p. three-speed Model W and the 4 h.p. sidecar machine, both of which are well-known to the majority of motor cyclists. £90 is the price of the three-speed lightweight, and £110 for the 4 h.p. machine, £35 being charged for the sidecar. The price of the 3½ h.p. model has not yet been fixed.

Stand **SPARKBROOK.**

77. Fewer models in order better to produce good outputs is the general rule with the 1920 programmes of British motor cycle manufacturers. The Sparkbrook Manufacturing Co. is another firm which has decided to concentrate upon one model, whereas, before the war, it produced several. The single model for 1920 is a two-stroke fitted with a countershaft two-speed gear of the conventional type, but, as an alternative, the machine may be obtained as a single gear mount.



A double purpose mount of great popularity—the 4¼ h.p. B.S.A.

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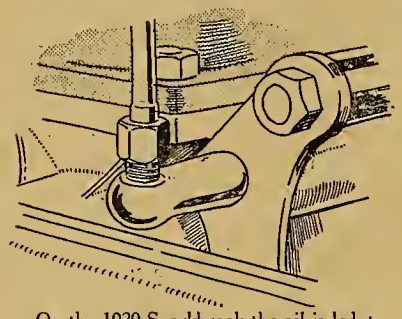
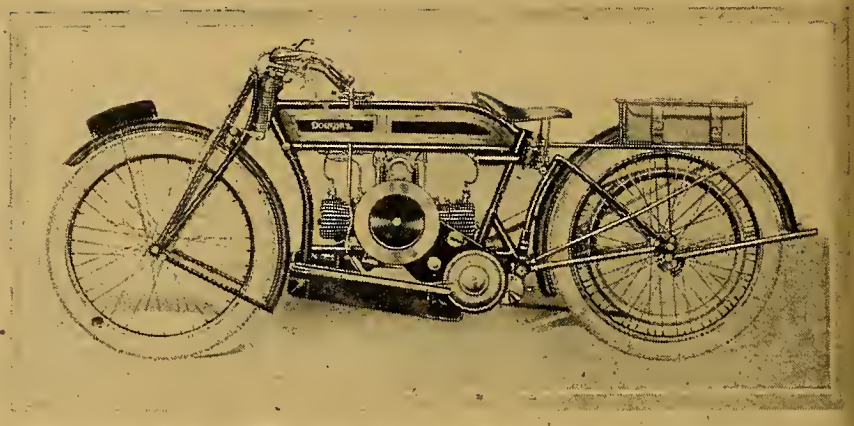
This latter machine differs in one respect from the average single gear lightweight, having chain-cum-belt transmission by the use of a countershaft. Manufactured by the Sparkbrook Co., the two-speed gear is a fine piece of work; both main and layshafts are mounted on journal ball bearings. The engine fitted is a Villiers, with a B. and B. carburetter, and the improvements over the 1919 model include a new brake pedal and stand.



On the 1920 Sparkbrook the oil is led to the engine through a hollow engine bolt and a duct in the crank case casting.

Stand **WILLIAMSON.**

78. As the sole example of 1,000 c.c. flat twin design, the 8 h.p. Williamson is noteworthy. To those who like the "top gear" type of engine, which, for sidecar work, must essentially possess the qualities of smooth running, flexibility, even torque, and good acceleration, the horizontal twin can be entirely recommended The even firing intervals give a smooth torque particularly kind to transmission and tyres, the outside flywheel assisting materially in giving ease of starting, smooth pick up, and gentle running in neutral, while such a cylinder capacity enables the engine to work well within its power and always have a reserve for smart acceleration. Air and water-cooled models are made, and chain drive is standard. A further type, embodying the 6 h.p. V twin J.A.P. engine in a similar duplex frame to the one which carries the flat twin, will also be shown.



A newly-designed Douglas model, the 3½ h.p. with an engine 68 × 68 mm. (494 c.c.)

Stand **ROVER.**

79. The chief alteration on the 3½ h.p. Rover is the all-chain transmission instead of the chain and belt drive. The primary drive is by silent chain, and the secondary chain is of the spring link type, which has been thoroughly tested out during the past year, and formed part of the specification of the 5 h.p. Rover in the recent Six Days Trials.

The spring chain is efficiently covered by a very neat guard, which protects it from mud and wet. A newly designed front fork is fitted, which is very much wider, and accommodates large section mudguards, and prevents side play developing in the fork; the front brake is also new, and acts upon a V rim. Another important departure for 1920 is that the 3½ h.p. Rover engine is now fitted with roller big ends instead of the ordinary bushes.

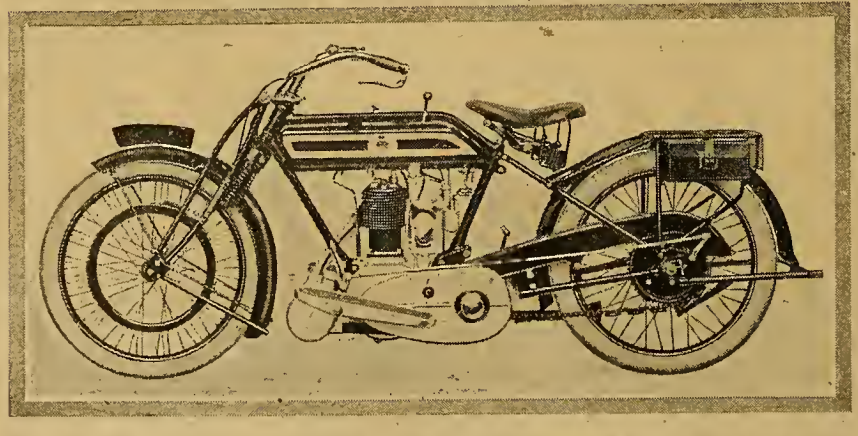
T.T. model Rovers are very much the same as they have been for the last few years, with the exception that they carry the improved front fork and front brake, and the roller big end to the connecting rod.

The 5-6 h.p. Rover motor cycle is still fitted with a J.A.P. twin engine. This model was introduced by the New Rover Cycle Co., Ltd., during the period of the war. It is fitted with the new pattern front fork, the redesigned front rim brake as described above, also the new and improved wide mudguards, while instead of the chain cases hitherto forming part of the equipment, a chain cover over the spring chain is used, giving easy accessibility for cleaning, etc.

The gear box fitted to both models is still of the previous design and principle; it has been improved, and is now fitted with a fibre ring clutch instead of the cork insets.

The chief alteration in the sidecar is the lowering of the main framework, which allows a body to be fitted which is designed on more up-to-date and roomy lines. The body is longer and wider, and has a large locker built in at the rear, which will contain a tin of petrol as well as small packages. It is upholstered in leather and painted grey, picked out in black.

The prices of the new models are as follow: 3½ h.p., with chain drive, £115, with sidecar £153; 3½ h.p. T.T., £90; 3½ h.p. T.T., with Philipson pulley, £93; 5-6 h.p., £150, with sidecar £188.

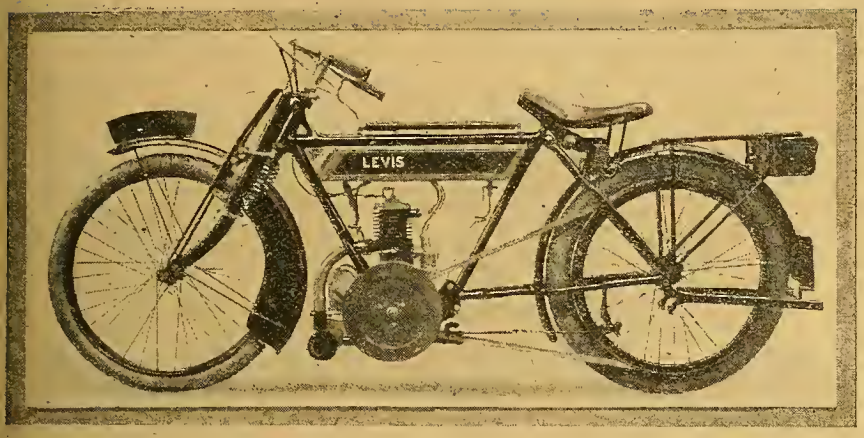


The new all chain-driven 3½ h.p. Rover. The rear chains, both in the 5 h.p. and the 3½ h.p. models, are protected with guards only.

Stand **LEVIS.**

80. Two models of the Levis two-stroke will be exhibited by Messrs. Butterfields, Ltd., one of which, however, is not likely to be marketed until towards the end of next summer, and for which orders will not be accepted. This is the new Baby model, a little 2¼ h.p. machine with an engine of 211 c.c., the bore and stroke of which are 62×70 mm.: it will interest students of small engine design. It will be observed that the magneto is at the rear of the cylinder. The frame has a sloping top tube, and, despite the fact that 26in. wheels are fitted, an exceptionally low saddle position is obtained.

Several machines of the Popular type will be on view with various patterns of handle-bars. The tank has been altered slightly, the most apparent alteration being the colour, which is now a grey with black panels and gold lines. In other details the machine has been improved. A Brooks saddle and toolbag and Dunlop tyres are now fitted. All Levis machines are now equipped with sight-feed lubricators. The price of the Popular model is £50, and deliveries will commence immediately.



Popular model of the Levis, a 2½ h.p. two-stroke.

Stand **BAT.**

82. In the distant days of motor cycle history, the name Bat was synonymous with outstanding performance in the tests of that period; at the same time, the designers of the early machines were amongst the first to study the comfort of the rider and endeavour to protect him from the effects of road vibration.

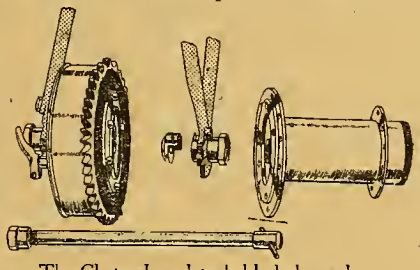
After some vicissitudes, owing to the deflection of the firm's interests from the motor cycle field during the war period, the Bat machines will be again before us—6 and 8 h.p. J.A.P.-engined models being made. They have many points of interest, the outstanding features being the fitting of the clutch to the rear hub instead of on the three-speed gear box, and the interconnection of saddle and footboards, which, by the well-known Bat system of suspension, are insulated from the rest of the machine.

A well-designed sidecar is also made to accompany these machines, which are pre-eminently suitable for heavy passenger work.

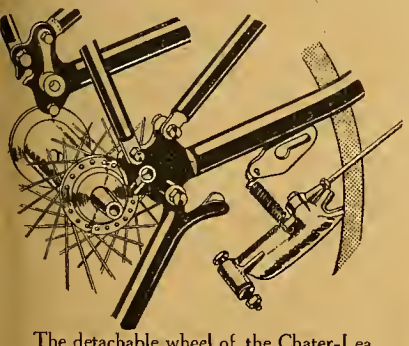
Stand **CHATER-LEA.**

83. There are no startling innovations so far as the 1920 Chater-Lea is concerned; but, contrary to reports which were current a few weeks ago, the well-known No. 7 sidecar model will be retained. Fitted with an 8 h.p. V type air-cooled engine, with chain transmission, Chater-Lea three-speed gear box and clutch, the model has proved popular, and has established for itself an enviable reputation for reliability. An important innovation, however, is the adaptation of a detachable rear wheel carried out on accepted lines, the drive being taken by means of rounded studs engaging with holes in the driven portion of the mechanism.

A new model lightweight fitted with a 2½ h.p. Villiers engine, will also be shown at Olympia. This machine also is fitted with a quickly detachable rear wheel. Immediately the spindle has been withdrawn two distance pieces riveted on to the frame are lifted up. This latter is quite an excellent feature, as it prevents the distance pieces from being lost, and also saves considerable time in either withdrawing or reinstating the wheel. Before the wheel can be finally removed it is necessary to undo the rear brake, which is accomplished by unscrewing the nut on the brake spindle and sliding the brake back in its slot as far as it will go. At the rearmost end of the hub is a hole big enough for the nut to pass through. The whole operation takes only a few seconds. This lightweight model is an attractive little mount, with a sloping top tube and comfortable aluminium footboards inclined to the correct angle.



The Chater-Lea detachable hub used on No. 7 model.

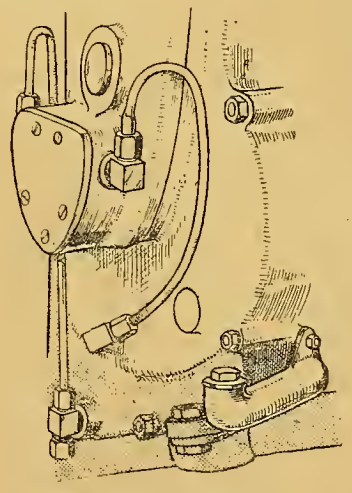


The detachable wheel of the Chater-Lea lightweight.

Stand **CALTHORPE.**

84. Two models of the well-known Calthorpe motor cycles will be exhibited on this stand—the Calthorpe-Jap, a 2¾ h.p. four-stroke with Enfield two-speed gear, and the Calthorpe two-stroke, a similar machine with the company's 75×79 mm. two-stroke (350 c.c.) engine, a feature of which is that the ports are cut into the cylinder instead of the more usual practice of casting them only. Hoffmann roller bearings are used for the mainshaft and crank pins.

The equipment of both machines includes the Enfield two-speed gear, Amac carburetter, 26×2in. Dunlop tyres, ⅞in. Dunlop belt, and patent pan seat saddle. The prices are fifty-seven and fifty-five guineas respectively for the four and two-stroke models.

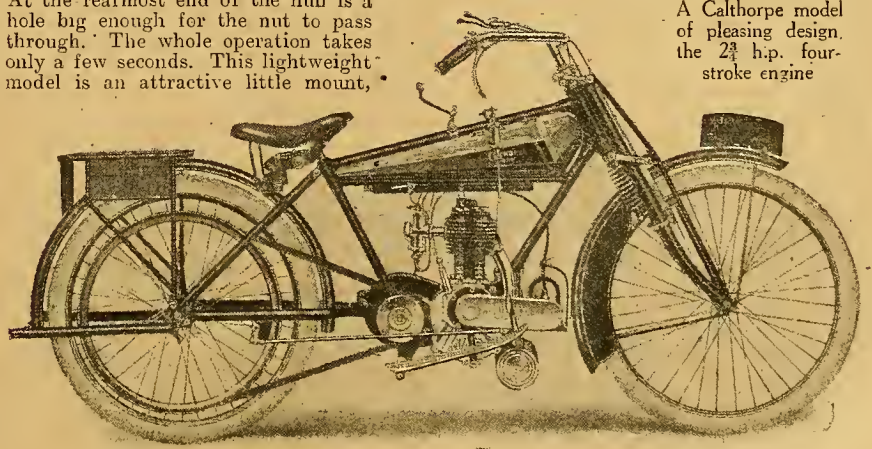


The oil pipe connections of the new 4½ h.p. Humber.

Stand **HUMBER.**

85. Many years ago the Humber was one of the first motor cycles fitted with chain drive, but lack of clutches and shock absorbers was not conducive to success. With the successful advent of magneto ignition the Humber again came to the fore, for the second time the single-cylinder holding sway, and this type preserved its ascendancy until the flat twin

A Calthorpe model of pleasing design, the 2¾ h.p. four-stroke engine



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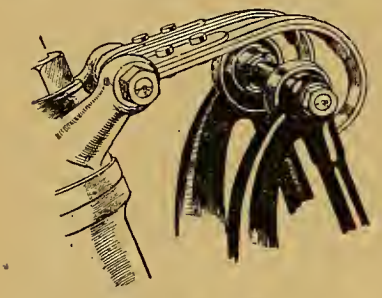
made its claims to prominence. It is significant, therefore, that the Humber exhibit will be entirely specialised, the flat twin being the only type of engine to be shown.

The 4½ h.p. machine is essentially a double purpose mount, not too heavy for solo work, but amply powerful for hauling a sidecar; it follows the general lines of the well-known 3½ h.p. flat twin, which has given great satisfaction.

A detailed description of the new model appeared in last week's issue of *The Motor Cycle*.

Stand **O.K.**

86. Messrs. Humphries and Dawes will have two motor cycle models for 1920; examples of both will be staged on their stand. The first is the new single-geared two-stroke lightweight, which has been introduced to sell at 38 gns., with first-class equipment. This machine is engined with a 2¾ h.p. Union two-stroke, a sloping top tube frame, and the O.K. spring fork, which em-



A new type of fork springing employed on the O.K.

bodies two scroll laminated springs. There are several neat fitments on the machine, and loose clips will be eliminated as far as possible.

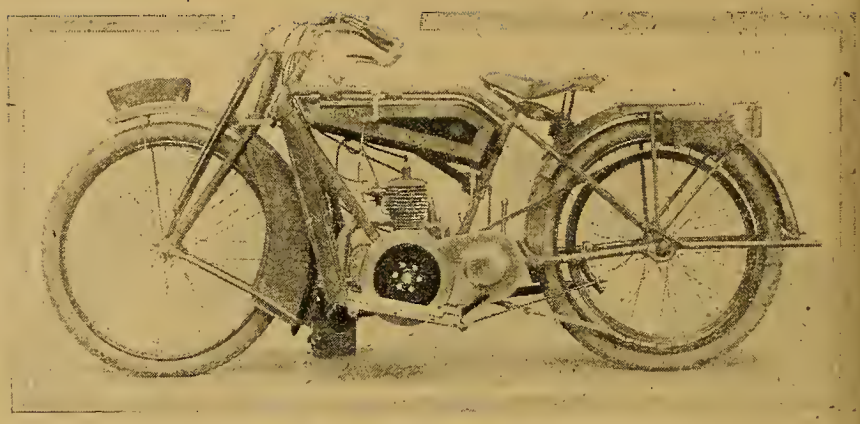
The second model is the 2¾ h.p. flat twin, which has a bore and stroke of 60 and 60 mm. respectively. Overhead inlet valves are a prominent feature, and are operated by enclosed rods and rockers from a large disc, upon which the cams are formed at the periphery.

A rather unusual design of frame is used, the tube under the tank sloping to the rear instead of being horizontal, as is the case with the majority of frames. The mudguards are wide, and the general details of the machine good.

Stand **VICTORIA.**

87. One of the few makes of British motor cycles manufactured out of England is to be seen here. The Victoria is found in two models—a 2½ h.p. two-stroke fitted with a Villiers engine, which can be purchased as a fixed gear model or is supplied with a two-speed countershaft gear with or without a clutch and kick-starter. The second model is more powerful, the power unit consisting of a 5-7 h.p. flat twin Victor engine made in Coventry. A Sturmey-Archer three-speed countershaft gear is employed, and both are fitted with Brooks saddles and Dunlop tyres.

The detail work on these machines is quite good, and no doubt Scottish riders will be especially interested in them.



The 1920 Ivy, which is fitted with neat leg guards as standard.

Stand **IVY.**

91. For 1920, Messrs. S. A. Newman, Ltd., are re-introducing the 1919 model Ivy two-stroke, with several improvements and modifications. The khaki finish, with black and gold lines, is to be retained, and the machine is rendered even more distinctive than hitherto by the addition of neat leg guards, which will be fitted as standard equipment. The footboards are of an improved pattern, and are of aluminium with a sheet rubber face, and a neat cast aluminium chain case is also fitted.

An addition to the frame is a strip steel stay under the tank, which is supported therefrom, so that there are no clips on the top tube, which gives this part of the machine a very clean appearance. As before, the duplex front is retained on the frame, and the silencer is of the spring-up type.

The silencer is of new design, and consists of a round-ended barrel built up from two steel cups which are fitted on to a central malleable portion and welded. The equipment includes Brooks B 150 saddle, Amac carburetter, E.I.C. magneto, 26×2½in. tyres, Sturmey-Archer gear with handle-bar controlled clutch, and kick starter.

Perhaps one of the most pleasing features of the Ivy is its easy starting propensities, it requiring no undue effort and scarcely any weight to start the engine by means of the kick-starter; in fact, we started it ourselves by means of the kick-start pedal by pressure of the hand. This feature makes the machine particularly suitable for ladies and elderly riders.

Stand **RUDGE.**

92. To those who aver that belt drive is moribund, the continued popularity of the Rudge at once comes as a negation. For solo work, at high speed, the smooth transmission and extreme ratios obtained with the Multi gear are a continual delight.

Several models will be staged, including the 3½ h.p., which, as a T.T. solo mount, is thoroughly popular, the 5-6 h.p. long stroke single, noted as a great sidecar puller, and the new 7-9 h.p. Multwin, which will undoubtedly attract the eye, not only of those who desire to possess the complete sidecar outfit, but of those who yearn for maximum engine capacity without excessive weight. The same characteristics, such as the well-known overhead inlet valve, multi gear, drop-pedal starter, and separate oil tanks with foot-operated pumps, are common to all the Rudge models, and are almost too well known to call for comment.

The Rudge sidecar is of very striking design, and will be available for all three Multi models.

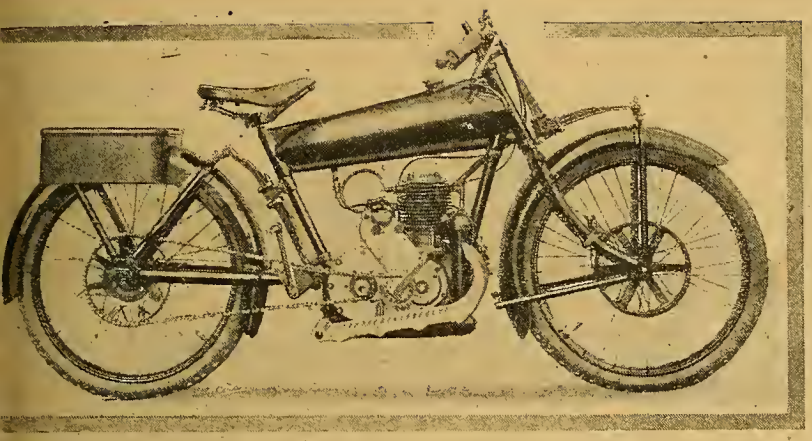
Stand **INDIAN.**

93. As in former years, the principal model marketed by the Hendee Manufacturing Co. will be the Powerplus, which is just under 1,000 c.c. and generally used with a sidecar, though some riders consider it unapproached as a "solo 'bus." The transmission is all-chain through a three-speed gear box having an excellent clutch and enclosed kick-starter. The Indian spring frame has stood the test of time, and is naturally retained. The machine is electrically equipped. The latest model destined to become very popular is the 5 h.p. Scout, which has a twin engine, 70×78 mm. bore and stroke (596 c.c.). The transmission to the gear box is by wide-faced spiral gears running in oil; thence a chain carries the power to the rear wheel, which follows English practice in its size of 26in. This machine has a duplex lower frame and is about 100 lb. lighter than the Powerplus.

Stand **PRECISION.**

95. Having specialised on engine construction since its inception, the firm of F. E. Baker, Ltd., has at last decided to market a motor cycle. Entering thus late in the arena, the 350 c.c. two-stroke Precision motor cycle at once steps into the forefront of public interest by reason of its entire independence of standard practice and conventional methods of construction.

A pressed steel tank embodies the recesses for the ends of the frame tubes commonly fitted into head and seat lugs. Except for the carburetter, flexible wire controls are eliminated, the chief operations being performed by roller levers. Gear-changing is also accomplished from the handle-bar. The two-stroke engine, which is lubricated by distribution of oil carried on the magneto chain from a reservoir in the base, has an extended

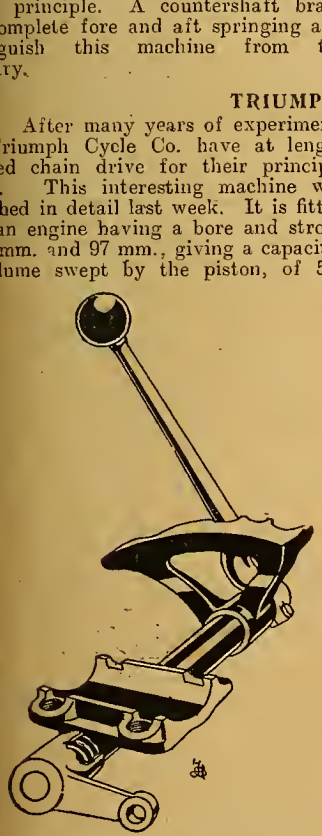


The new Precision two-stroke One of the most unconventional designs of the year

, which houses the two-speed gear. s device is on the two-chain selective ch principle. A countershaft brake complete fore and aft springing also inguish this machine from the nary.

Stand **TRIUMPH.**

i. After many years of experiment, Triumph Cycle Co. have at length ıted chain drive for their principal el. This interesting machine was ribed in detail last week. It is fitted ı an engine having a bore and stroke 5 mm. and 97 mm., giving a capacity, olume swept by the piston, of 550



The gear control of the new chain-driven Triumph.

A new gear box of Triumph design tted; this is moved, for the purpose chain adjustment, by a rack and on, and locked to the frame by four . The clutch is operated from the dle-bar, and is very smooth in action. engine is fitted with a half-com-sion lever, which is very useful for ting purposes.

he shock absorber is very ingeniously gned, consisting of a quick thread ce controlled by a spring.

The chain and belt model and the Junior Triumph, with its two-stroke engine and handle-bar controlled two-speed gear, remain unaltered.

Stand **CANOELET SIDECARS.**

98. Among sidecars the Canoelet has a name second to none, and the new models are bound to create their full share of interest, if only on this count alone. Particulars of these will appear in subsequent issues.

Stand **EDMUND.**

99. Three types of motor cycles will be staged by Messrs. C. Edmund and Co., the patentees of the well-known Edmund spring frame. It will be recalled that this system of springing embodies a separate frame for the rider, who is insulated from road shock by long laminated leaf springs, the device also including the springing of the footboards. A means of adjusting the springs is available, and improvements for 1920 include more efficient mudguarding. The three models to be exhibited will be a 2¾ h.p. four-stroke engine with a J.A.P. unit, and having an Enfield two-speed gear, and all-chain drive; a similar model with a Burman two-speed gear box, with clutch, and kick-starter, and chain-cum-belt transmission; and finally, a 2¾ h.p. Union-engined machine, similar to the first-mentioned model.

Stand **ROYAL RUBY.**

101. Several examples of the two new models will form the Royal Ruby motor cycle exhibit. The solo machine is entirely a Royal Ruby production, having a 3 h.p. single-cylinder engine. The transmission is by a chain to the two-speed gear in the countershaft, thence by belt to the rear wheel, which is fitted with 26×2½in. heavy Dunlop tyres. A kick-starter and clutch is provided.

The sidecar combination is driven by an 8 h.p. J.A.P. engine through a Sturmey-Archer three-speed countershaft gear. On the engine-shaft is placed a shock absorber of special design. The wheels are quickly detachable, interchangeable, and shod with 28×3in. extra heavy Dunlop tyres on round base rims. The rear brake is internal-expanding and the transmission by chain. The sidecar is provided with a spring wheel as well as a hood and screen, and the body can be easily removed and replaced by a tradesman's carrier in a few minutes.

Stand **CONNAUGHT.**

102. The Bordesley Engineering Co. will show four models of Connaught motor cycles, the miniature two-stroke single-speed, or two-speed with clutch and kick starter. This model has been known in the past for its excellent petrol consumption and reliability. The standard model is similarly fitted. The Connaught engine has a bore and stroke of 73×70 mm., and the capacity is 293 c.c.

Stand **CLYNO.**

103. Although the majority of motor cyclists have heard of the new spring frame Clyno big twin, few have seen it, and no doubt when it is staged on Stand 103, it will attract more than the usual crowds of sightseers. It is one of the post-war designs, and in it has been embodied many of the items of specification which have from time to time been suggested by experienced riders all over the world. It may be recalled that when the result of *The Motor Cycle* "Which type?" census was made known, it was found that the composite machine suggested by the votes of several thousands of readers was practically identical with the specification of the new Clyno

The machine has 76×102 mm. cylinders with detachable heads, 28×3in. wheels, and high ground clearance. All these wheels are sprung, and are interchangeable.

Riders of lightweights will be interested in the Clyno lightweight, which is just as distinctive as the sidecar model. For 1920 several detail improvements have been made, chief among which may be mentioned the stiffening of the frame, the fitting of Brampton forks, and the widening of the handlebars.

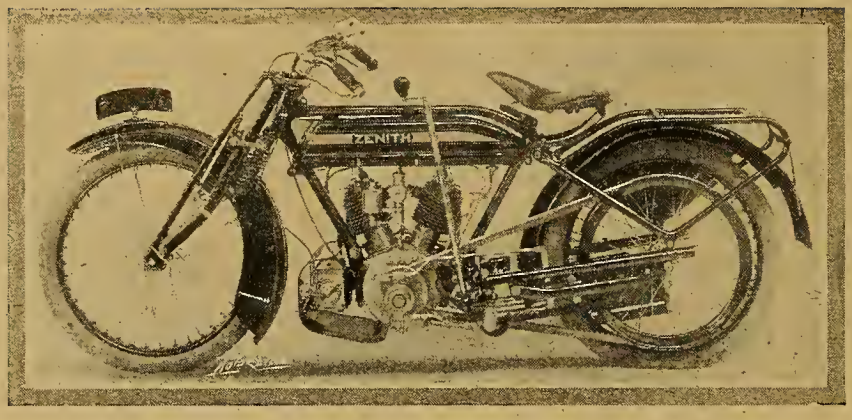
On this machine the engine is placed in an inclined position, and embodies a two-speed gear as part of the crank case. The cylinder is 70×70 mm., and the wheels are 26×2in.

Stand **ALLDAYS ALLON.**

104. This machine has a two-stroke engine of special design; the crank case is divided horizontally through its centre, and this feature enables the crank axle, connecting rod, and piston to be withdrawn in a very simple manner. A two-speed gear, combined with a clutch operated from the handle-bar, and a kick-starter are included in the specification. The transmission is chain-cum-belt.

Stand **MONTGOMERY SIDECARS.**

105. The Montgomery programme for 1920 consists of four models of sidecars of improved design. The first of these is an attractive design of coachbuilt vehicle, embodying a dash covering the body forward of the seat, and carrying a windscreen; a hood is also fitted. Several other models will be exhibited, including the tandem model which retails at the moderate price of £26 10s. Altogether, the Montgomery range should interest many buyers of motor cycles with which sidecars are not supplied, and those who prefer something different from the standard sidecars supplied by the makers who catalogue complete outfits.



Standard model of the 5 h.p. Zenith, embodying the Gradua gear driving directly to the rear wheel.

Stand **HOBART.**

136. The 1920 Hobart lightweight is one of the several new machines which will appear at Olympia fitted with a spring frame. This device is quite a neat fitment located behind the seat tube, and is the result of several years' experiment and test. The engine fitted is a Villiers two-stroke. The spring frame model is fitted with a two-speed countershaft gear, kick starter, and a handlebar controlled clutch. Single gear and two-speed models will be shown without the spring frame, and a new model with 2¾ h.p. J.A.P. engine and two-speed gear will be exhibited.

Stand **HAZLEWOOD.**

107. A new Hazlewood sidecar machine will be welcomed by those of our readers who rode Hazlewoods before the war. The 1920 model is a 6 h.p. twin, with cylinders 70×85 mm.

It is similar in nearly all respects to the pre-war model, having a chain and belt drive and a three-speed countershaft gear. Quite an unusual feature is incorporated in the fixing of the belt rim, which is spoked to a separate hub and bolted to the main wheel hub. A powerful head lug includes provision for two sidecar attachments, and a stout additional stay serves to relieve the lug of unnecessary strains.

Stand **ZENITH.**

108. Long famous for the Gradua gear, the Zenith motor cycles hold the goodwill of a large section of keen motor cyclists. Since the specification of these machines has not varied from the main characteristics of the design for many seasons, it follows that the demand for the type of transmission employed has in no way diminished. Given a powerful engine and a gear infinitely variable between its limits, no more delightful mount can be made; its appeal is without doubt essentially to the man who desires speed. A new model will be keenly inspected; as recently described in *The Motor Cycle*, it is a 2¾ h.p. horizontal twin, and, although a chain-driven countershaft is embodied in the transmission, the Gradua gear is fitted. 5 h.p. solo and 8 h.p. sidecar models will be made during 1920, both of them incorporating the V twin J.A.P. engines.

Stand **READING STANDARD.**

110. As an American machine which has long conformed more closely to English ideals than most of those coming from beyond the Atlantic, it is with considerable interest that we anticipate its importation during 1920. While the general details follow conventional American practice, the side-by-side valve arrangement, right-hand kick starter, and general cleanliness of outline, should appeal particularly to the rider who favours the average British layout.

Interconnected clutch and gear control, dynamo lighting, twist-grip operation of throttle and ignition, and mechanical lubrication are features of this machine, which, incidentally, has one of the largest engines in the Show, this being rated at 10 h.p. on a capacity of 1,170 c.c., the bore and stroke being 85.7×101.6 mm. respectively.

Stand **DOT.**

113. Assembled with J.A.P. engines and standard components of sound design, the Dot machines will be presented in both lightweight solo single, and high-powered twin passenger models. The smaller machine, which has a 2¾ h.p. engine, is a taking little mount on standard lines, with chain and belt transmission.

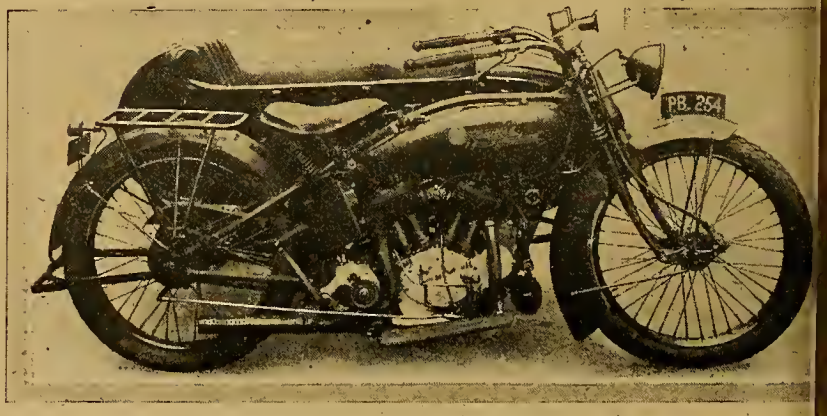
The passenger machines, with the larger V twin J.A.P. engine, are equipped with handsome sidecars on graceful underslu chassis. On these models the transmissi is by semi-enclosed chains, through Sturmey-Archer three-speed gear box a hand-controlled clutch. A rich dark r enamel is used in the finish of th machines, which present an extrem smart appearance.

Stand **NORTO**

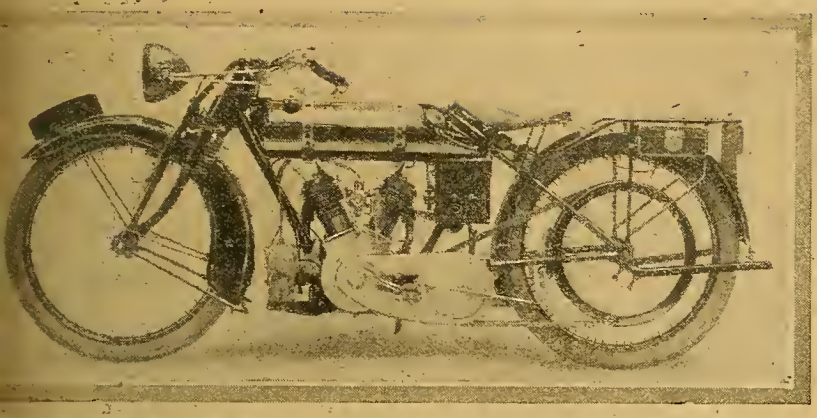
115. Advocates of the long str engine will make a point of visiting t stand, which will contain the most nota examples of this type of constructi The 3½ h.p. Norton has a bore and str of 79×100 mm. (490 c.c.), and it is nowned for its wonderful turn of spe The Brooklands Special and Brookla Road Special are both timed at Bro lands, and every individual engine certified to have exceeded 75 and 70 m.p respectively. The above models, toget with the T.T. Norton, are sing geared and belt-driven. The Spo model is chain-driven through a thr speed countershaft gear, provided w a hand-controlled clutch. The Nor Big Four (82×120 mm. bore and stro 633 c.c.) is a fine sidecar machine hav great power, and while it is not desig for very high speed, can comforta exceed 40 m.p.h. with a sidecar. T Norton engine is very economical in f consumption, extraordinary results this line having been obtained.

Stand **N.U**

116. The long looked for post-w N.U.T. will be a great attraction on stand of the Newcastle-upon-Tyne Mc Co., as it is one of the *de luxe* s machines for 1920. The policy of the f is to offer a solo machine which sh be complete in every way, with th many refinements usually purchased the keenest riders as separate items added to their mounts. This equipm includes a Magdyno combined light and ignition set. The engine fitted a 500 c.c. twin made specially for N.U.T. Co. by Messrs. J. A. Pr wich, and has a bore and stroke of (and 76 mm. A plain bearing is u on the timing side and ball beari on the driving side. Automatic pressi feed lubrication from a sump in crank case is a feature of the eng which has side-by-side valves and justable tappets. An exceptionally la aluminium silencer is fitted below engine, from which the exhaust g



Compactness of design is a noticeable feature of the 10 h.p. Reading Standard.



Transmission side of the new N.U.T.-J.A.P.—a solo machine *de luxe*, fitted with electric lighting set and Lucas Magdyno.

s to the atmosphere by a long flat
e. The former has a front plate,
ch, by unscrewing eight screws, can
removed for cleaning the expansion
mber.

Sturmey-Archer gear box, giving
os of 4, 6.5, and 10.7 to 1, is driven
chain enclosed in an aluminium case,
front cover of which is easily de-
iable for inspection purposes. The
l drive is by a one-inch belt. A hand-
rolled clutch is fitted.

n oval tank, with extra large filler
s, and held by two nickel-plated steel
ps, greatly enhances the appearance
he machine, and that two and a half
ons of petrol can be carried at one
ng will be a point appreciated by
e who make long journeys.

ark II. Druid forks, Palmer cord
2½in. tyres, Brooks saddle and pan-
bags form part of the equipment,
the price will be 120 gns.

ıd **HARLEY-DAVIDSON.**

7. Few alterations are to be noted
he new Harley-Davidson model. The
will be showing their powerful twin-
nder, which is so popular among users
idecars, and their sports model, which
described recently in *The Motor*
le.

o far as the larger type of Harley-
idson is concerned, more substantial
ns, chain guards, and sprockets will
fitted for 1920. The silencer is of
ter dimensions and has been slightly
red in design, so as to give greater
ıce and higher efficiency. The firm
still adopting the Remy system of
ting and ignition.

sers of Harley-Davidsons will remem-
that in previous years there has
ays been a danger of running down
accumulator by leaving the switch in
on and the contact-breaker points
hing. This may be avoided by con-
ing up the horn, so that, unless
act is broken, the horn will sound.

feature of the exhibit will be the
fortable English-made sidecar bodies
which the twin-cylinder machines are
d. They are provided with a
er in front and pockets on both sides.
tops of the bodies are of polished
d and look extremely handsome. In
tion to the electrical model, the
neto model Harley-Davidson will also
hown.

Stand **WOLF.**

118. Four Wolf motor cycles will be staged by the Wulfruna Co., who, for several years, have specialised in light-weights. Two of these machines will be fitted with Villiers engines and two with the 2¾ h.p. J.A.P. unit. The two-strokes are fitted with Albion two-speed gear, and with a two-speed gear embodying clutch and kick starter, the J.A.P.-engined models having a two-speed gear and a Sturmey-Archer unit with clutch and kick-starter.

Stand **DIAMOND.**

119. Diamond 1920 models, which will be exhibited at Olympia, depart very little from the standard models of 1919. They will be shown fitted with J.A.P. and Villiers engines, and Enfield and Sturmey-Archer gears. The re-introduction of the pre-war shaft and chain-driven model is held up for the time being, as is also an interesting type of machine embodying a pressed steel frame.

Stand **MORGAN.**

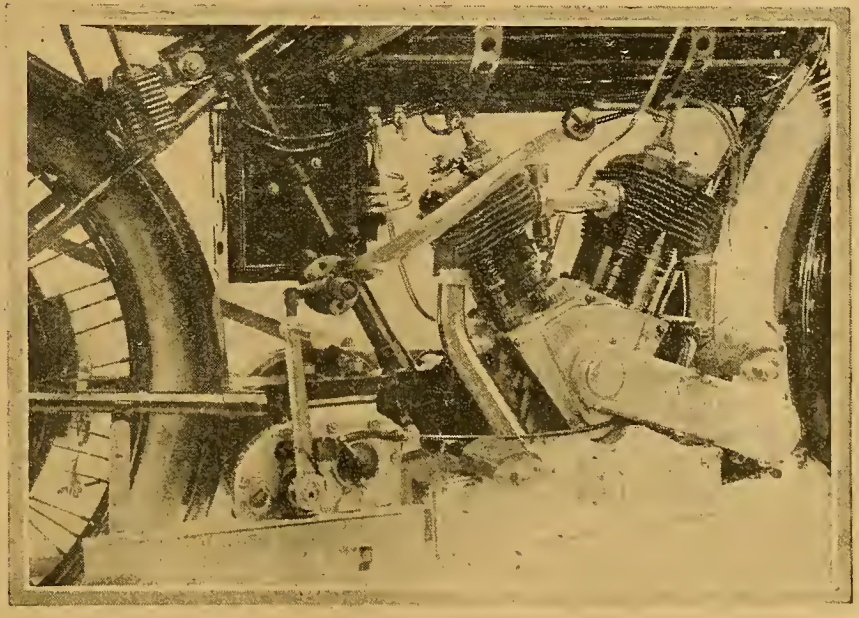
120. Only one Morgan chassis is made by the Morgan Company, the variation in the different models being in the make of engines fitted and the types of body-work. Three main models will be provided for 1920, the Grand Prix—a water-cooled model on more or less sporting lines—the standard touring machine, with air or water-cooled engine; and the family runabout, which is fitted with two extra seats for children. There are several improvements in details, including the fitting of a ball thrust in the clutch withdrawal mechanism, longer bearings in the steering heads, and stronger bevels in the gear box.

Stand **QUADRANT.**

121. Two single-cylinder sidecar machines will form the chief items of the Quadrant Co. for 1920. These machines were fully described in our issue for October 30th. The first has a bore and stroke of 87×110 mm. (654 c.c.), and embodies a Sturmey-Archer gear and all-chain drive; and the second has a 95×110 mm. (780 c.c.) engine with which the three-speed gear box is built integral. Sloping top tube frames and saddle tanks form part of the specification.

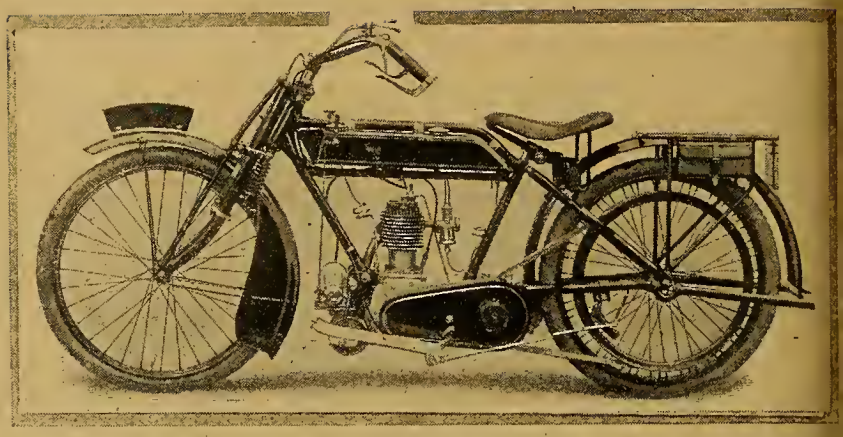
Stand **SCOTT.**

122. On the Scott exhibit will be shown four complete motor cycles, two being standard machines, one sports model, and a sidecar outfit. This well-known two-cylinder water-cooled two-stroke is too well-known to need description, but the exhibit nevertheless will not fail to interest every visitor to Olympia. To satisfy the curiosity of the vast number of motor cyclists who have not closely examined the working parts of the Scott engine, a complete set of parts will be exhibited, which will reveal the automatic oil system, the special fixing of the gudgeon pins, and method of securing cranks and flywheel. Sectional engines and gears will also be exhibited.



Valve side of the new N.U.T. power unit. Note the unconventional design of the silencer.

How the 1920 Scott front forks are lubricated.



2¾ h.p. J.A.P.-engined Wolf, fitted with two-speed gear.

Stand **OLYMPIC.**

123. Although the name Olympic is not so well known as perhaps are the majority, the men behind the Olympic Co. have old connections with the trade, and more will be heard of it in the future than has been the case in the past. The old-established Olympic concern has recently been acquired by Mr. W. J. Clarke, who for many years was manager of the Wulfruna Engineering Co., and also of the Wearwell Cycle Co. One of the two motor cycles included in the exhibit is fitted with a Villiers two-stroke engine, Brampton forks, and Burman two-speed gear, with clutch and kick starter, while the second is a four-stroke of 2¾ h.p., with outside flywheel.

Stand **VINDEC.**

164. In addition to a large range of accessories of every sort and description, Messrs. Brown Brothers, Ltd., will be showing the Vindec two-stroke motor bicycle, fitted with two-speed gear and chain-cum-belt drive. This is a well-equipped and well-tried little mount which cannot fail to be popular. The enclosed chains and the well valanced front mudguards are features which will be appreciated by our readers. Another excellent point about this machine is the spacious toolbag fitted to the side of the carrier.

Dinner to the Imperial Motor Transport Council.

H.R.H. Prince Arthur of Connaught and Officials and Members entertained by the Association of British and Allied Motor Manufacturers.

ON Wednesday of last week the Association of British and Allied Motor Manufacturers entertained H.R.H. Prince Arthur of Connaught and officials and members of the Imperial Motor Transport Council.

Mr. H. C. B. Underdown was in the chair, and there were approximately 150 guests.

After the toast of "The King" had been honoured, the CHAIRMAN proposed "The Guests," and referred to the fact that the Imperial Motor Transport Council was first founded in 1913, and at the first meeting 200 delegates took part. On that occasion the subject of fuel supplies and transport for military purposes was discussed.

He wished to assure the members of the Imperial Council that the interests of the British motor manufacturers in Overseas trade was unabated, and that they intended to do all they could to recapture the goodwill largely lost owing to the war. They were also very glad to have present Sir Hamar Greenwood, head of the Department of Overseas Trade—a Department which stood out as a striking proof of the wish of the Government to assist our export trade.

The Work of the A.B.M.A.M.

He would like to explain that the Association of British Motor and Allied Manufacturers worked with the Society of Motor Manufacturers and Traders in the very friendliest manner, and would very soon be probably a part of it.

Among the many tasks which the Association had undertaken was the standardisation of parts, which ought to be common on different types of vehicles, and it undertook the discussion and distribution of the products of its members in a manner fair to the markets, fair to the manufacturer, and fair to the distributer. Furthermore, it had succeeded in founding a Research Association, with the assistance of the Government, and it could claim to be the first engineering association to have done so. It had also made arrangements with the Department of Overseas Trade for an investigation as regards their interests abroad.

Costs and Prices.

Among other matters mentioned in the course of a long speech, the Chairman touched upon the question of prices and costs—which, incidentally, apply equally to the motor cycle industry. This was a question about which there had been many criticisms, he said. They were accused of overcharging. The Association had, however, been at considerable pains, assisted by expert advice, to ascertain how the rise in the cost of production compared with the rise in prices, and after an examination of the figures it was found that present prices far from counterbalanced the increased cost of production. Steel of all kinds was nearly three times as much as in 1914, aluminium more than twice, timber three and a half times, and labour had more than doubled in cost; also, a further 5s. had been granted recently to workmen. Further, they were at the moment at a standstill, owing to the lamentable moulders' strike, which must necessarily upset a great many plans and programme for 1920. Management and distribution expenses had increased proportionately with the increase in the cost of material and labour, but prices had barely doubled. Had they been doubled, they would have been fully justifiable.

H.R.H. PRINCE ARTHUR OF CONNAUGHT, K.G., K.T., paid tribute to the quality of British cars. Without the motor transport he did not believe the war could have been carried on to a successful conclusion.

War history revealed in a very large measure the success of our lorries in supplying rations and ammunition to our troops in the field, and to enable our Commanders to bring up reinforcements to a threatened point in the shortest possible time on many eventful occasions.

MR. EDWARD MANVILLE, M.P., remarked that there never was a time when the prospects of those who manufactured material for transport were as good as they are to-day. There were perhaps one fly in the ointment, and that was the attitude labour may take towards the industry in general. Employers and employed must work for the mutual benefits of both.

SIR HAMAR GREENWOOD, BART, M.P. and the HON. SIR ARTHUR STANLEY, G.B.E., C.B., also spoke.

NEW MODELS.

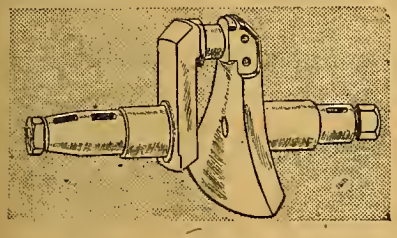
THE 1920 METRO-TYLER.

A Newly-designed 270 c.c. Two-stroke with Unit Assembly of Engine, Gear Box, and Magneto.

THE 2½ h.p. Metro-Tyler two-stroke has been completely redesigned for 1920, and but few of the original details, which made the early machines of the same make so successful in such a short period, have been retained.

It will be manufactured in one standard model only, and this has a surprisingly neat and compact appearance, since the engine, gear box, and magneto are in one complete unit, which is mounted between two steel plates forming a housing.

Of the three-port two-stroke type, and having a bore and stroke of 70×70 mm. (270 c.c.), the engine has a cast iron cylinder fitted with an inspection port over the transfer passage. Special attention has been paid to ensure the adequate cooling of the combustion head, insomuch that the three top cooling fins are of aluminium, which rapidly disperses the heat generated. The cylinder head is machined both on the inside and outside.



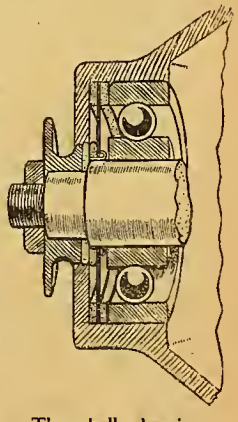
The one-piece crankshaft, showing the housing for the plate which secures the rollers in the big end bearing.

The crank case is ingeniously constructed, the design having been carefully considered in order to provide and maintain a high initial compression. The use of large diameter Skefko ball bearings necessitates some device to maintain compression within the crank case, and in this case the one evolved consists of spring diaphragms with bronze faces in contact with floating steel washers, which latter are held in position on either side of the crank case by the magneto and chain sprockets respectively. The diaphragms are held between two fibre washers, the outer one being of greater width than the inner one, thus distorting the diaphragm, and holding it tightly against the floating washer. Should wear take place, the washers may be changed over, and will effectively take up the play. The crankshaft is a one-piece steel stamping, and is provided with an integral balance weight. By accurately grinding the bevelled edges of the crankshaft webs and the rounded edges of the big end, the connecting rod may be passed over the shaft and placed in position to accommodate the rollers of the bearing. The big end of the connecting rod embodies the outer ring for the rollers, whilst the crank forms the inner member. This bearing has no cheek plates or rivets. The retention of the rollers in position is effected by means of a plate which is screwed to the corresponding area cut out of the crankshaft stamping.

Piston and connecting rod of the new Metro-Tyler engine

The connecting rod is bushed at the small end, and the gudgeon pin is secured to the cast iron piston by means of a set screw and locking pin.

New ideas are noticeable in the design of the decompressor, which is housed in the front of the cylinder, and directly opposite the sparking plug. By removing these two parts a clear way is made across the top of the piston, which allows the removal of carbon deposit without dismantling the cylinder.

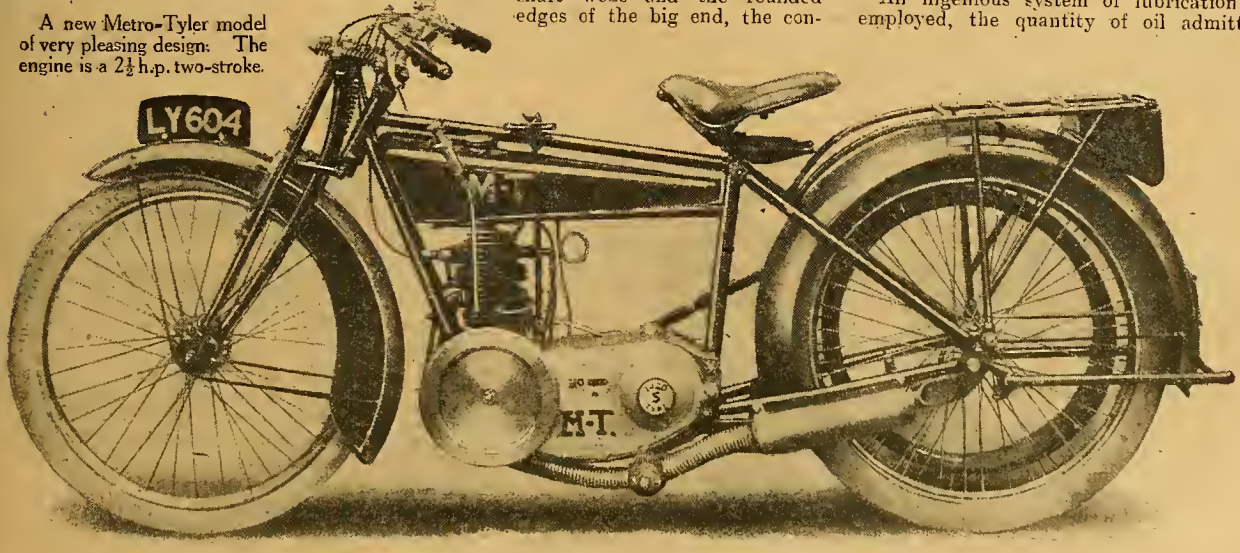


The ball bearing supporting the main shaft.

The construction of the decompressor, which releases directly into the exhaust pipe, is clearly shown in the illustration.

An ingenious system of lubrication is employed, the quantity of oil admitted

A new Metro-Tyler model of very pleasing design. The engine is a 2½ h.p. two-stroke.



New Models.

to the engine being regulated by the adjustable drip on the Enots lubricator, whilst the supply is maintained by suction from the induction pipe.

A spiral oil groove is cut in the cylinder wall, one end of which is connected to the induction pipe, and the other to an oil lead from the lubricator.

The cone compression release valve.

A proportion of the oil which is sucked into the spiral groove lubricates the piston and gudgeon pin, which latter is drilled and grooved, and eventually passes through the induction port in the cylinder into the crank chamber; the remainder of the oil, however, is drawn into the crank case, and there lubricates the crankshaft ball and roller bearings. Should it be found necessary, an auxiliary hand pump is provided, whereby the supply of oil may be augmented. The two-speed gear box, which is completely concealed by and housed in the side plates, follows standard practice. Special attention, however, has been paid to lubrication and the method of engaging the dogs employed. The same oil as is used for engine lubrication is employed in the gear box, a large filler cap being located on top of the casting.

Efficient Gear Box Lubrication.

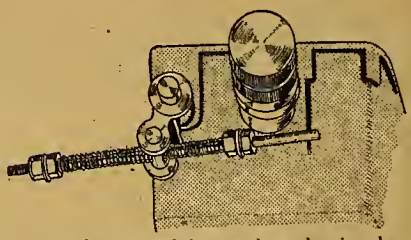
In addition to the oil holes drilled between the constant mesh gear teeth for lubrication of the bushes, the splined shaft has a left-hand spiral cut in the bearing end which leads to the straight oil channel cut in the splined portion.

The two gear ratios employed are 9.84 to 1 low gear, and 5.25 to 1 high gear.

In order that the dogs may be gently engaged, a control lever embodying a spring device is employed, which, regardless of the dog's position, may be moved around the quadrant fitted above the petrol tank.

The gear box may be moved along slotted holes drilled in the side plates for chain adjustment, whilst the C.A.V. magneto, which is secured to an aluminium bracket between the engine and gear box, may be adjusted in a similar manner.

Accessibility forms one of the most prominent features of this new machine, the complete power unit may be removed from the main frame in a few minutes, the chain cases are detachable for chain adjustment, and an inspection cover is provided for magneto adjustments.



A plan view of the gear box, showing the large filler cap and the spring gear lever control.

The petrol tank, which is of very pleasing appearance, has a capacity of one and a half gallons, whilst the small oil compartment contains one quart.

The price of the machine, deliveries of which will commence early in February next, is not definitely fixed. It will, however, be somewhere in the vicinity of sixty-seven guineas.

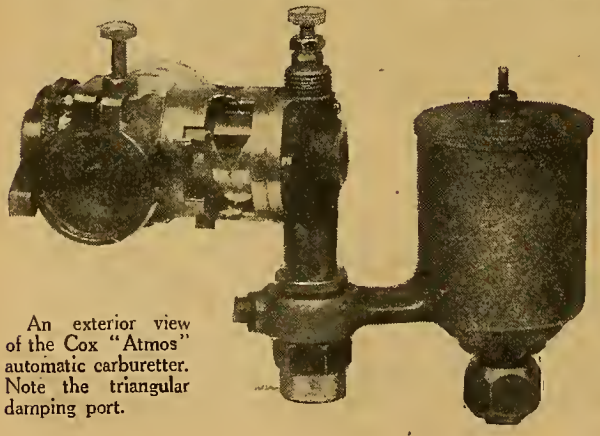
The Cox "Atmos" Carburetter.

A Scientifically Designed Instrument giving Maximum Power, Speed, and Economy, with One-lever Control.

CARBURATION is a subject of perennial interest, and experimentalists in its field are innumerable; all claim to have the perfect instrument, but in one direction or another a weakness is usually to be found—high petrol consumption, a flat spot, bad slow running, or starting singly or collectively appearing.

The inventor of the Atmos carburetter has approached the question from a deductive standpoint, and, basing his experiments on past experience with carburetters more or less conforming to standard practice, he determined to branch entirely away from the lines on which he had worked hitherto.

Regarding first the failure of most automatic carburetters to register good consumption, except at one speed, deduction led to the belief that the placing of the jet in the main air stream was wrong, since in this position it is subject to widely varying conditions.



An exterior view of the Cox "Atmos" automatic carburetter. Note the triangular damping port.

The reason for the disproportionate supply of petrol at high speeds in the average carburetter is, of course, due to the fact that sufficient air is unable to pass through the choke in a given time, consequently the depression in the induction pipe increases, and too much petrol issues from the jet.

If, instead of placing the jet in the main air stream, we could place in the narrowest part thereof the orifice of a tube conveying gas, the latter would be drawn along at a rate proportional to the speed of the main air. This arrangement is achieved in the Atmos carburetter by placing the jet in a small venturi tube, which opens into the narrowest part of the main choke, at the centre of the rotating throttle barrel.

Operation of the engine causes a depression in the induction pipe, and, according to the intensity of this, air passes at greater or less speed through the main choke. The speed of this air flow determines the speed at which air shall be induced through the subsidiary venturi. A second depression is here caused, but this is not proportional so much to the depression in the induction pipe as to the speed of the air flowing through the main choke, consequently petrol is sucked from the jet in proportion to the amount of air passing through the carburetter. The above reasoning applies chiefly to the case in which the throttle is fully open, and to obtain perfect results at all speeds further experimenting was involved.

Since the jet is not directly subject to the main depression created in the induction pipe, but delivers petrol in proportion to the depression in the smaller venturi, and as this depends in turn on the velocity of the main air stream, it follows that if the speed of the air flow through the former can be controlled, the fuel flow could likewise be determined.

At small throttle openings the tendency for the main depression to extend towards the second venturi, and act directly on the jet, is counteracted by an annular ring of triangular ports surrounding the smaller choke. These ports register with ports in the throttle, of such a shape that, as the throttle opening widens, the ports close. By this device the speed of air flow through the smaller venturi,

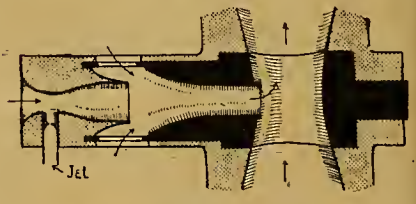


Diagram of the air passages. The shaded portion is the stationary part of the body, and the throttle with its extension, which contains the air regulating ports, is shown in solid black.

and with it the flow of petrol to the engine, is gradually increased to a maximum as the throttle reaches the fully opened position.

New Models.

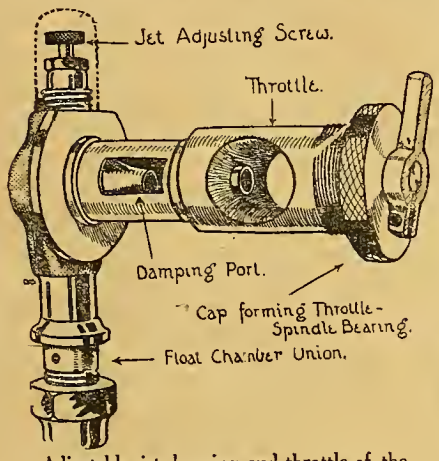
Externally the Atmos carburetter has a somewhat complicated appearance, but in actual construction it is exceedingly simple. The inventor has exhaustively studied the subject of carburation, and, in consequence, has evolved an instrument in which the supply of petrol is controlled by air velocities through the internal passages; this fact enables a single jet or fuel orifice to be used. The main air flow through the carburetter being controlled by the throttle, no air valves are necessary, and the throttle is the only moving part.

A float chamber of conventional pattern is used, communicating with an adjustable jet. The latter is never varied under running conditions, and once set to give best maximum all out power is locked; this setting depends upon the size of the main choke and *not* upon the size or type of engine. Once the carburetter is set, no alteration can be made advantageously, whatever the variety of engine to which it is applied. A small shutter is fitted to cover the damping ports surrounding the smaller venturi; this is only used for starting purposes and eliminates the necessity for flooding.

Some Comparative Tests.

The inventor's claim that a perfectly automatic carburetter can be regulated by air velocity only without the use of mechanical devices like dash-pots, suction valves, or variable jets, is borne out by the actual performance of the Atmos. It is further argued that the carburetter which is once set, if truly automatic in action, should function perfectly within its range on an engine of any type or size, and not show an excessive consumption if used on engines of much larger dimensions than the one to which it would normally be fitted.

We witnessed the following test. A small untested carburetter was taken and the jet adjusted to the position known to be most suitable to the bore of the main choke. This was fitted to a V twin engine of 85×95 mm. bore and stroke and the engine started up. This was effected with one or two turns of the crank, and the following points were noted. Starting was easy and certain, slow-running exceptionally good, pick-up running light and also, when heavily loaded by a rope brake on the flywheel, instantaneous, "hunting" being entirely absent. Consumption indicated by flowmeter was proportionate throughout the speed range.



Adjustable jet, housing and throttle of the Cox "Atmos" carburetter. The throttle is the only moving part.

Meanwhile, a four-cylinder lorry engine of 105×140 mm. bore and stroke was being warmed up on a large Atmos, and the same characteristics were observed; the fuel consumption was also noted at a given load and engine speed.

An Amazing Result.

Both engines were then stopped and the small carburetter was taken from the twin and fitted (without any alteration) to the big four-cylinder. The latter instantly started with a turn of the handle and showed the same results as those obtained from the correct size of carburetter, except that the maximum speed was limited.

In this case the engine was loaded to the same degree and speeded up to the rate of revolutions at which the consumption had been noted with the large carburetter, and it was interesting to see that the flowmeter reading was almost identical with the one previously obtained.

No more conclusive proof could be given of the inventor's contention that a carburetter could be set within itself to give a perfect mixture at all speeds and loads, irrespective of the engine to which it is to be fitted.

The motor cycle models of this instrument are not yet available, but, meanwhile, we hope extensively to test one on a machine well known as a difficult proposition from the carburetter maker's point of view. We shall give our readers the result of our further experience with this interesting instrument in due course.

The T.B. Three-wheeler.

A Shaft-driven Runabout by an Aircraft Engineering Firm.

THERE are several new three-wheelers of which the public has not yet been advised, some of which are the products of large engineering firms with excellent facilities to manufacture a first-class article at a reasonable price.

The T.B. three-wheeler is a proposition now offered by one of these firms—Messrs. Thompson Bros. (Bilston), Ltd.—who, during the war created a large aircraft department, which, now released for civil work, will be devoted to the three-wheeler illustrated.

Experimental work has been in progress for the past twelve months, and the production model evolved has completed a strenuous road test of several thousand miles, during which, we are told, no adjustments or alterations were made to the car.

Shaft Drive.

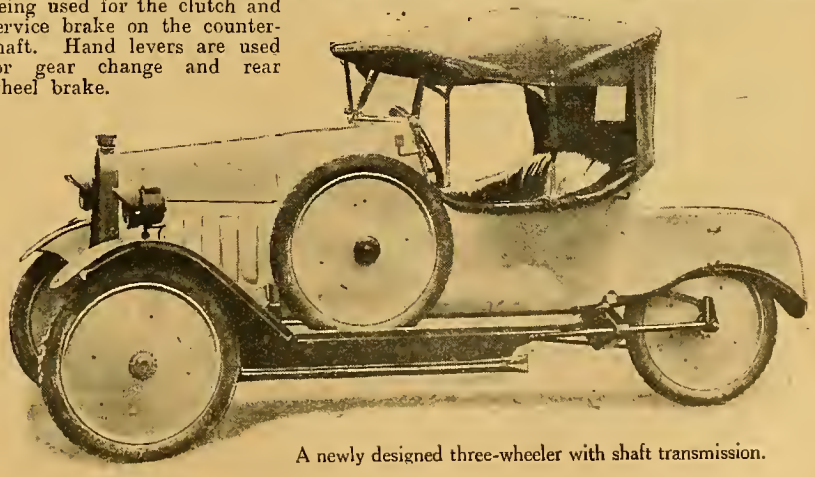
Probably the transmission is the most interesting feature of the vehicle, as shaft drive is used throughout. The engine—an 8 h.p. J.A.P. or a 10 h.p. Precision twin—is built up integral with a two-speed and reverse gear box of the company's own design. This embodies a large diameter leather-to-metal clutch, incorporating a patent spring drive. The unit is easily accessible, and can be detached quite readily from the chassis. Universals of the disc type are placed at either end of the propeller-shaft.

The frame is of tubular construction, and is fitted with quarter-elliptic springs at the front axle and long cantilevers at the rear. Metal is used practically throughout the body construction, which is quite pleasing in design, and has a hinged tail-piece to facilitate the removal of the rear wheel.

Steering is direct, and the carburetter and ignition control is carried to the steering wheel by Bowden wire—pedals being used for the clutch and service brake on the countershaft. Hand levers are used for gear change and rear wheel brake.

The engine is started by a handle at the front of the machine, and the equipment includes Amac carburetter, M-L magneto, Best and Lloyd semi-automatic drip feed lubrication system, spare wheel, hood, screen, lamps, and pump.

At a later date we intend to deal more fully with this interesting machine. In the meantime, it suffices to say that the makers contemplate starting deliveries in January, and that the price will be £200.

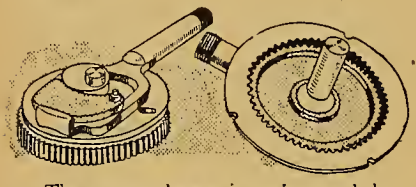


A newly designed three-wheeler with shaft transmission.

The "Best" Mechanical Lubricator.

Slow-speed Pump: Minimum Number of Working Parts: Interconnected with Hand Pump and Visible Drip-feed.

ALREADY some of our leading machines are being fitted with oil-circulating systems driven by the engine, while innumerable devices calculated to perform the same duties are being designed or are in the experimental state. Among these is a simple device which will shortly be placed on the market by Best and Lloyd, Ltd., of Handsworth, Birmingham.



The pump plunger is reciprocated by the eccentric which revolves in enlarged eye of the connecting rod. The wedge (shaded) is used to vary the stroke. Great speed reduction is obtained with this form of gearing.

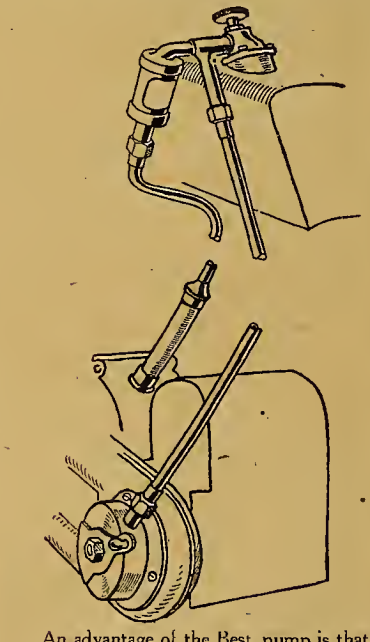
The Best mechanical oil pump has the great merit of simplicity, for it consists of but ten parts, which are readily dismantled or assembled, since there are no screws or valves in the construction. It is designed to work in conjunction with either the existing type of drip-feed oil pump or one of a simplified pattern specially made for the purpose; in either case the suction and delivery valves in the drip-feed are utilised for the mechanical pump. With this system the hand-pump is always available for the delivery of a full charge, while, as the whole of the oil passes through the drip-feed sight glass, in the unlikely event of a failure of the pump, the cessation of the oil flow would be readily discernible.

Most engine-operated oil pumps suffer from the fact that they work at too great a speed, and, in consequence, the bore and stroke are so small that the action may be easily deranged in cold weather owing to the viscosity of the thick oil necessary in air-cooled engines. In order to overcome this defect, a special reduction gear has been incorporated in the Best pump, which enables the pump to work very slowly and so permits the employment of a large bore and stroke.

A neat sight feed lubricator designed to work in conjunction with the Best mechanical pump.

Simplicity, compactness, and great speed reduction are the essential characteristics of this gear, which operates in the following manner. A spindle, suitably driven from one of the engine timing wheel shafts, rotates within the case of the pump driving gear. On this spindle is an eccentric which fits in the central hole of a bronze wheel having fifty-nine teeth on its periphery, and this wheel meshes with a ring fixed on the back plate of the case and having sixty internally-cut teeth. Rotation of the eccentric causes the bronze wheel to roll round inside the ring, making one revolution to sixty of the spindle. From the wheel a steel peg projects, and this drives a brass disc having another eccentric integral with it and moving within the enlarged end of the pump connecting rod.

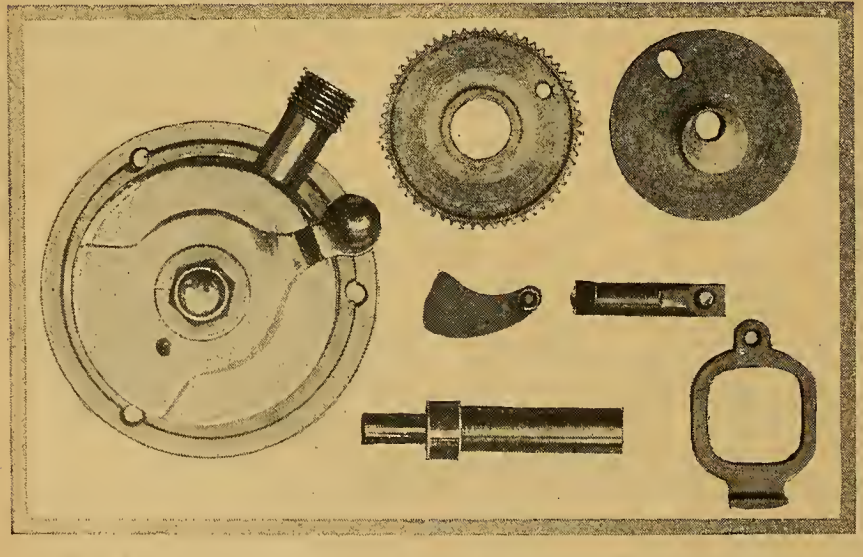
On the outer cover of the case is a movable plate carrying a wedge which can be moved in between the eccentric and a turned-up lip on the connecting rod; in this position a full stroke of the pump is obtained at each revolution of the eccentric, but, if the wedge is moved to the "minimum" position, the eccentric rotates idly and no motion is imparted.



An advantage of the Best pump is that it can be easily fitted to any machine equipped with a Best and Lloyd semi-automatic drip feed. The diagram shows the manner of application to a 1913 Triumph.

It will be seen that by this device the pump makes one stroke to every 120 engine revolutions, so that all the objections which can be raised to the small high-speed pump are eliminated.

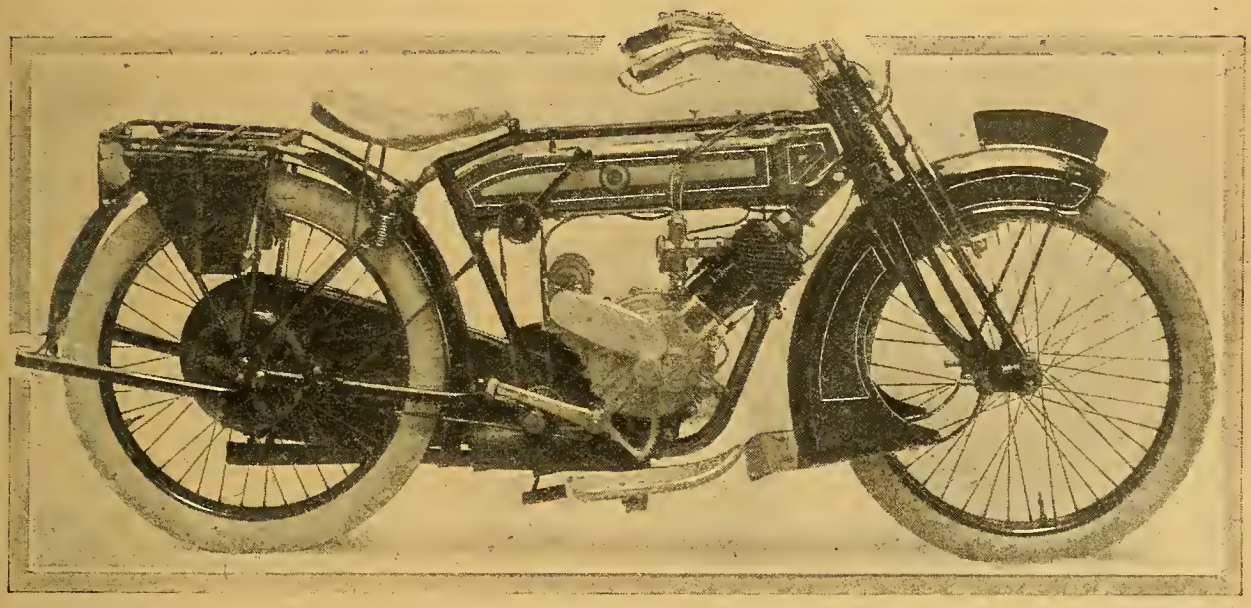
In the case of machines already fitted with the Best and Lloyd semi-automatic drip-feed, the mechanical oil pump may be fitted with a minimum of trouble, the work being quite within the powers of any good cycle mechanic. We inspected one fitted to an early pattern Triumph, and this was driven from the magneto sprocket nut, which had a square hole at its outer end, engaging with a square spigot on the driving spindle of the pump. The case was fitted to the magneto chain cover by three small screws.



(Left) The Best oil pump complete. (Right) The internal parts, which are few and simple.

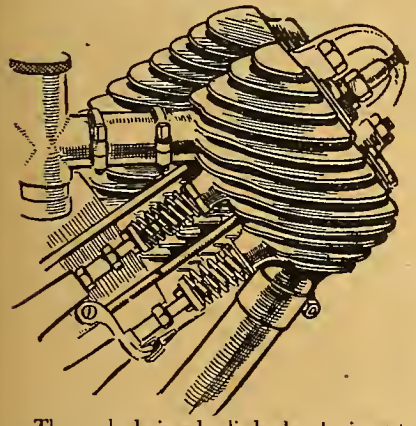
The 1920 3½ h.p. P. and M.

Improved Cylinder Design, Mechanical Lubrication, Hand and Foot Control to Rear Brake, Strengthened Starter Mechanism.



Mechanical oil pump driven from timing gear, a redesigned cylinder with cooling flanges parallel with ground line, and an improved kick-starter are obvious improvements noticeable in this model.

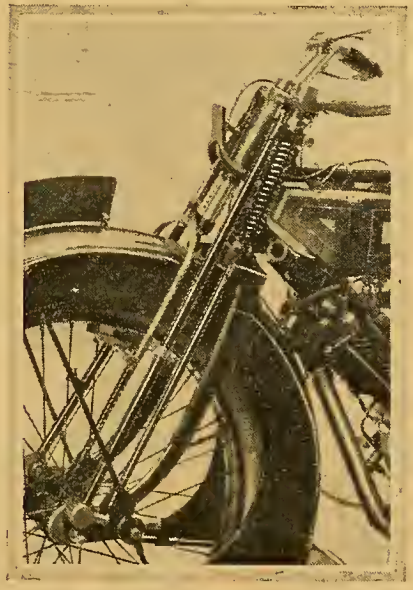
SOME important alterations have been made in the popular P. and M. since we last saw the Six Days Trial model in the company's showrooms at Berners Street, London, W.1, some few weeks ago. The most conspicuous improvement has been in the engine. The bore and stroke remain the same, namely 84.5×88.9 mm. (498 c.c.), but the cylinder has been completely redesigned. It



The newly designed cylinder has horizontal radiating flanges.

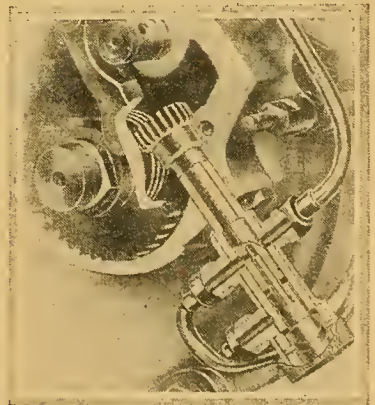
is a very fine casting, and the fins are now parallel with the ground, and there is a large air space between the valve chamber and cylinder; the ports have now a streamline form, and the valves have been enlarged.

The lubrication is effected by means of a mechanical pump, driven at low speed by a worm on the exhaust cam wheel, and oil is delivered alternately to the big end and to the cylinder. The



P. & M. front forks which have been greatly strengthened. Large screw-down greasers are fitted to all bearings.

rotating portion of the pump is in two parts, and, of these, the one to which the pinion is attached has a spigot at its further end; it is also drilled to form the bore in which the plunger works; connecting with the central hole is a smaller one at right-angles, which registers with the various suction and delivery passages as it rotates. The spigot referred to engages with a slot in the upper portion of the pump, which also carries the plunger; and the upper portion is encircled by two annular cams, form-



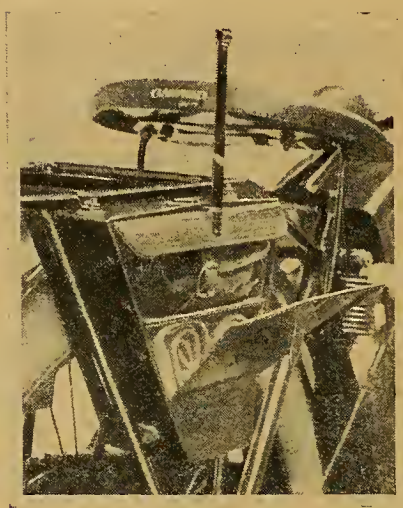
The mechanical oil pump of the 1920 P. & M.

ing a groove into which two pins protrude. These pins are held diametrically opposite to one another in a fixed cap at the head of the pump. The rotary motion conveyed by the spigoted section results in a reciprocating motion being given to the plunger-carrying portion through the agency of the groove in the head as the cams ride on the fixed pins. The pump

is driven at one-fortieth of the engine speed, and, on removing the cap at the head, a small screw is revealed above the cams, by means of which the throw of the plunger may be altered if desired. According as the hole at right angles to the pump bore registers with the outlets, oil is either drawn in or expelled. In the position shown in the photograph the plunger is at the bottom of its stroke, and the oil is being expelled into the lower of the two outlets, which leads to the big end. A further movement will bring the hole into a horizontal position. In this position it communicates with one of two channels diametrically opposite to each other in the outer casing. At this moment the plunger is at the top of its stroke, and oil is drawn in from the inlet and through one of the channels, and on the down stroke is expelled into the upper of the two outlets as soon as the hole registers with it. A further movement brings the hole opposite the other groove in the pump casing, a further charge of oil is drawn in, and thus the cycle of operation is continued.

The oil lead to the big end passes through the crankshaft boss, and almost touches the flywheel, on which a scroll is cut, and the end of this terminates in a hole leading to the hollow crankshaft. The stream of oil impinging on the flywheel is led by centrifugal force along the scroll right into the big end bearing. A hand-controlled oil pump is connected directly to the crank chamber.

Another important feature is the kick starter, which has been somewhat simplified in design. It works directly on the crankshaft, and its pinion is neatly enclosed by a cover forming part of the magneto chain case casting.



Spacious tool-bags are a commendable feature on the new P. & M.

We have already referred in these pages to the ratchet brake with which the latest model P. and M. is fitted. This is now interconnected with the band brake on the rear wheel, so that this brake may be actuated either by the hand or the foot. A movement of the pedal does not alter the hand lever in the slightest degree, owing to the ingenious arrangement of the control rods. A rim brake is fitted to the front wheel.

The remainder of the machine does not show any startling features in design, and the improvements are chiefly in detail. A larger transmission shock absorber is now fitted, and the design of the spring forks has been considerably simplified. The excellent carrier now has welded joints, and on each side of it are spacious tool bags, which are securely closed by a strip steel bolt in place of the usual leather straps.

We have an interesting announcement to make concerning Messrs. Phelon and Moore, Ltd. Hitherto the firm have adhered strictly to reliability trials, since their machine, while capable of maintaining a good average, was noted rather for its excellent finish, its unimpeachable reliability, and its steady going, than for its achievements as a speed mount. However, this state of affairs is now ended, and next year the firm intend to have a sporting try at the 1920 Tourist Trophy Race, and, in consequence, we hasten to wish them the success they most thoroughly deserve.

A New Long-stroke Single.

The Corona Junior Motor Cycle with 4 h.p. Engine of 448 c.c.

AN interesting new machine which will be exhibited at Olympia is the Corona Junior, which has been but recently designed and is now being manufactured in large quantities by the Meteor Manufacturing Co., Ltd., of Tollington Park, London, N.

One of the principal features of this machine is that the number of parts employed is claimed to be less than on any other machine.

The 4 h.p. four-stroke engine, which has a bore and stroke of 72×110 mm., has its cylinder cast integral with the crank case, and has a detachable combustion head. This is constructed of a special alloy which has a high conductivity, and permits the decarbonisation of the piston and cylinder head whilst the engine is in the frame. The crankshaft is a one-piece steel stamping and is offset from the centre line of the cylinder, which, the makers claim, reduces wear and side strain on the cylinder walls.

Totally enclosed valves, fitted with adjustable tappets, are employed, and are operated directly from the cams machined integral with the timing wheel and magneto chain sprocket, thereby dispensing with the use of rocker arms, and self-aligning ball bearings are used for the main bearings. Automatic lubrication has been incorporated, a constant level of oil being maintained by means of a mechanical pump. A single-lever carburetter is provided, and a welded steel silencer of novel design, which can be rapidly dismantled by removing one bolt.

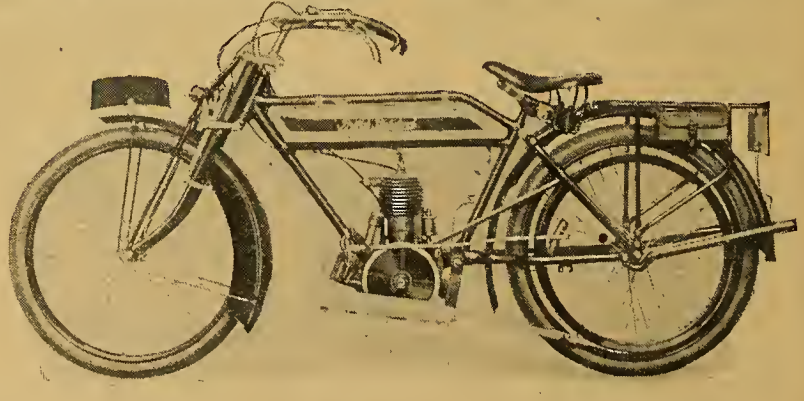
Knock-out spindles are fitted to both wheels, the rear one of which carries the totally enclosed internal expanding brake. A noteworthy feature of the Corona Junior is the method of springing the front wheel, the mechanism being enclosed.

Three models will be standardised, a light solo mount with fixed belt drive, a similar machine fitted with a two-speed countershaft gear box, and a third model, designed for sidecar work, which will be equipped with a three-speed gear and an enclosed clutch and kick-starter.

It is extremely illuminating to note the interest being taken in the single-cylinder; would-be prophets would have us believe that the end of the single-cylinder is in sight, but still it holds a high position as the most economical machine at a moderate price, in spite of the desirability of multi-cylinder engines for luxurious mounts.

Direct to the Public.

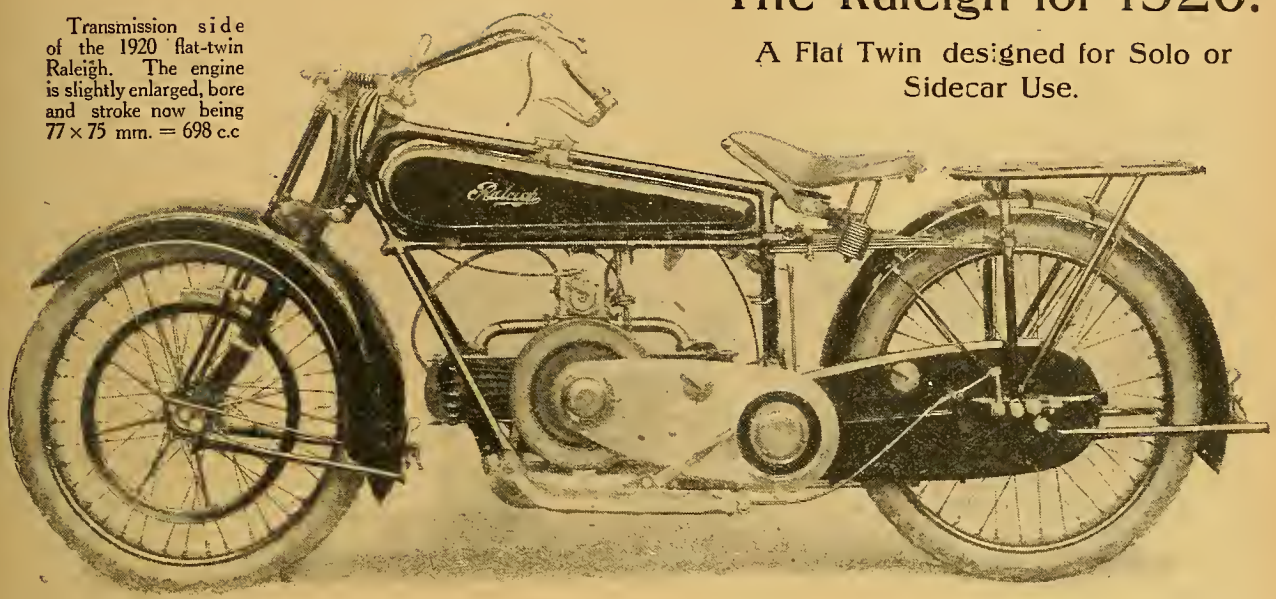
A lightweight which is to be marketed direct to the public is illustrated. The engine is a 2¾ h.p. two-stroke, and the equipment includes Saxon or Brampton forks, 26×2in. Palmer tyres, and aluminium footboards. The price, £43, includes lamps and generator. The makers are British Standard Motors, 145, Lichfield Road, Aston, Birmingham.



The British Standard, a new lightweight which will be sold direct to the public.

The Raleigh for 1920.

A Flat Twin designed for Solo or Sidecar Use.

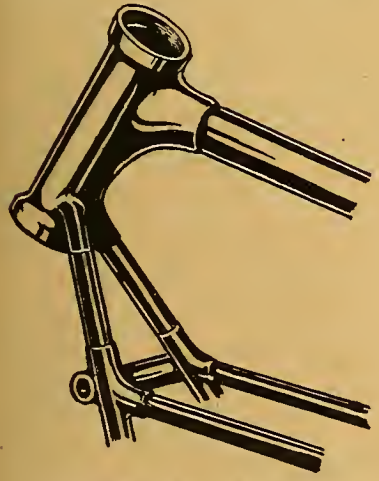


Transmission side of the 1920 flat-twin Raleigh. The engine is slightly enlarged, bore and stroke now being 77 × 75 mm. = 698 c.c

SINCE we first described the flat twin Raleigh in May, 1918, there have been many detail improvements. Every little point has been carefully considered until the machine is well-nigh perfect.

The engine remains much as before, but the dimensions have been increased from 77×70 mm. to 77×75 mm. bore and stroke, giving a capacity of close on 700 c.c., which means a little more power for sidecar work.

Roller bearings are used throughout, and a specially built-up crankshaft



The Raleigh head lug and sidecar connections.

enables the cylinders to be very nearly in line without off-setting the connecting rods; moreover, the balance weights provided, combined with the very small offset of the cylinders, have the effect of practically banishing the small horizontal couple, which can only be entirely removed by making a three-throw crankshaft and using two light connecting rods to one cylinder, balanced by a heavier one to the other; this method does not wear well, and, where tried, has been abandoned.

Detachable cylinder heads are fitted, and these can be very quickly removed, for, on loosening a gland nut, the inlet pipe comes away with the head, and the exhaust pipe is so fitted that when its union nut is removed it does not impede the removal of the head; also it is gas-tight in any position which the union nut allows it to take up.

A very effective shock-absorber is fitted to the engine-shaft, consisting of rounded projections on one part resting in depressions of a greater radius in the other. This gives an easy movement at first with a greatly increasing resistance as the spring is compressed. It is entirely automatic in action and cannot slip. The flywheel is loaded with lead.

The silencer, which also forms the underscreen, is provided with internal passages from each cylinder meeting in the centre and giving an inductor effect, the flow in each pipe being aided by that in its fellow.

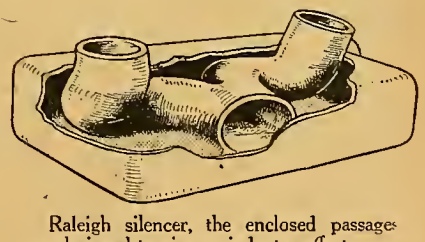
As before, each valve is provided with two springs, whose period of vibration differs, the object of this being to stop bouncing.

Warming the Gas.

The induction of the charge still takes place through the timing case, a Raleigh feature which has been much copied, and a space is left below the magneto platform and above the crank case. This has the effect of improving the cooling of the front cylinder by allowing the stream of air, which is closing in after being disturbed by the front mudguard, a free passage over the cylinder, not interrupted by a solid erection on the crank case. An Amac carburetter (with either one or two levers) is bolted by means of a flange on the cover of the timing case, and is quite out of the way of the rider's foot or leg, which is not always the case on a flat twin.

Lubrication.

Oil is fed by a suction drip feed to a point in the crank case above the front connecting rod; this ensures the front cylinder getting its full supply of oil. The suction in the crank case is made very effective by the rotary release valve, which consists of ports cut in the shaft driving the magneto. Consequently, there is no possibility of a failure in the oil supply. This also has the advantage of allowing the warm air from the crank case to circulate around the inlet passage through the timing case, and warm the gas as soon as it reaches the engine.



Raleigh silencer, the enclosed passages are designed to give an inductor effect.

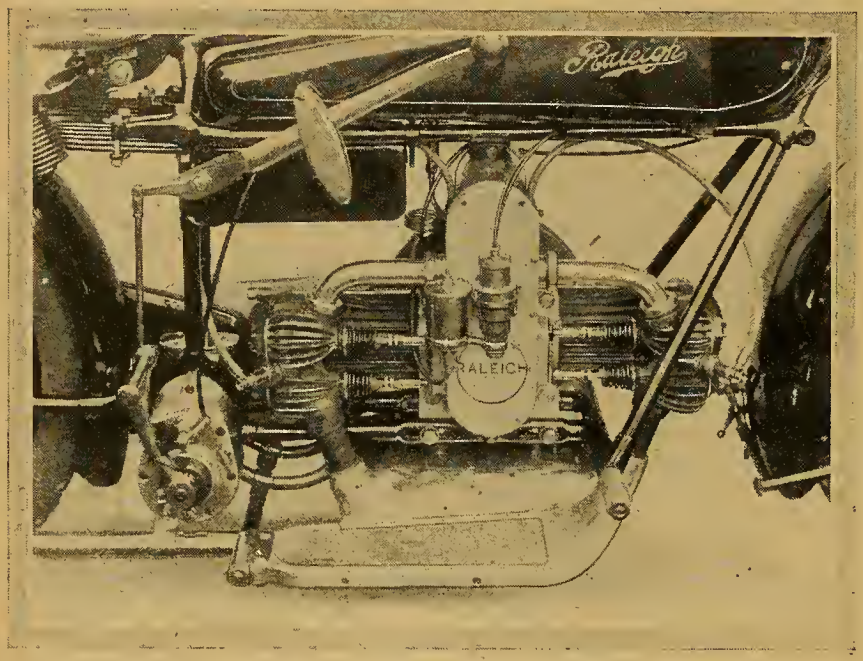
A hand pump is also provided, by which an extra supply of oil may be given as occasion requires—for instance, in stiff climbing with a sidecar attached.

Gear Box and Chain Adjustment.

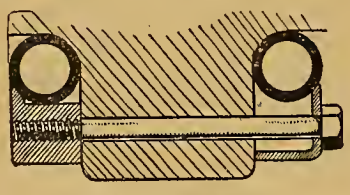
A new gear box has been specially designed for this model; it is housed in a casing which is built up in the frame—consequently, it is absolutely rigid, and cannot get out of line. These are very great advantages, but they necessitate shifting the engine in the frame for chain adjustment purposes. This is, however, accomplished in a very simple and satisfactory manner. An extension of the crank case projects downwards between the twin tubes below the engine; on each side of this are

New Models.—

placed angle pieces, about six inches in length, and two bolts secure the whole. As the bolts are screwed home, the angle pieces meeting the curved sides of the tubes pull the engine downwards and hold it tightly. There is, moreover, a third attachment below the tank. The rear chain is adjusted as usual at the rear hub, and this can be done without disturbing or affecting the operation of the brake, which is of the internal expanding type, working within the rear sprocket. The clutch contains two plates, having cork inserts gripped between three plain plates, and the plate containing the driven sprocket is mounted on ball bearings. Both the main and layshafts of the gear are short, and of ample diameter, and, in consequence, are very stiff; the layshaft is geared down, and runs at low speed; this has the effect of reducing the loss of efficiency due to oil churning. Another point is that the sleeve carrying the driving sprocket is longer than usual, and takes a bearing on the main shaft at each end, with an oil chamber between. An enclosed kick-starter is provided.



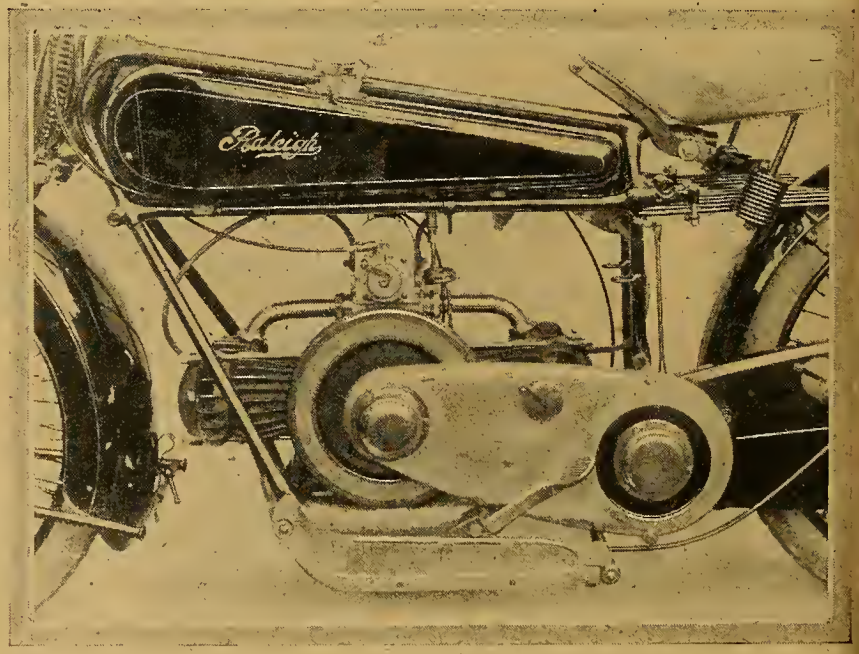
Valve side of the Raleigh flat-twin. Note that the gear box is built into the frame, and that the silencer forms an underscreen.



Method of securing engine to the lower twin tubes

The spring frame has been found to be so satisfactory that no alterations have been necessary. The construction of the gear box enables the joint of the sprung rear portion to be very close to the centre of the drive. The lower joints work on hardened steel bushes, those at the end of the springs on phosphor bronze.

With the exception of the top tube and head, the whole frame is duplex; this gives great strength and light



Transmission side of the Raleigh power unit. The light portion of the flywheel is a lead insertion weight, the actual weight of the complete machine is 280 lb.

Both chains are enclosed; the inside part of the front case is of cast aluminium, and is provided with a groove around the countershaft opening, in which the rear case (sheet steel) can rock as the spring frame comes into operation. This is made oiltight by means of a felt washer. Both mudguards are of ample dimensions, that in front being extra wide and, extending beyond the forks, is packed where the forks pass through to prevent mud from this point spattering the machine and rider. The footboards are of wood, mounted in aluminium frames and rubber-covered. The rear brake is operated by the left heel, the front by the usual handle-bar lever. The brake rim in which the front brake acts is spoked, and attached to the hub in the same manner as the rear sprocket; thus, the wheels, as well as being quickly detachable, are interchangeable.

Detail Refinements.

Another important point, often neglected, is that an oiler is fitted through which lubrication can be supplied to the head bearings, both top and bottom.

The toolbox is situated below the tank in rear of the magneto, and is thus on the sprung part of the machine.

Other refinements consist of taking the operating wires partly through the handle-bars, handle-bar operation for the clutch, and an extension of the handle-bar stem to carry the head light. The stands are secured by spring washers to prevent rattling.

The Raleigh is designed both for solo and sidecar use, and should be most satisfactory for either. The riding position is delightfully comfortable and the saddle low. The sidecar is attached at four points to the main frame; in addition, a triangular member carrying the side-car wheel, which is sprung in the same manner as the bicycle, is attached at the top and bottom of the loop over the rear wheel.

The Stanger V Twin Two-stroke.

A New Engine Unit which will be Exhibited at the Olympia Show.

THERE have been several V twin two-strokes designed and made, but, for reasons known only to their sponsors, they have not been placed upon the market. Among the exhibits at Olympia, however, a new 5 h.p. two-stroke engine will be staged by the Trotman Patent Dandy Co., a firm of paper makers' engineers at Wood Green, London.

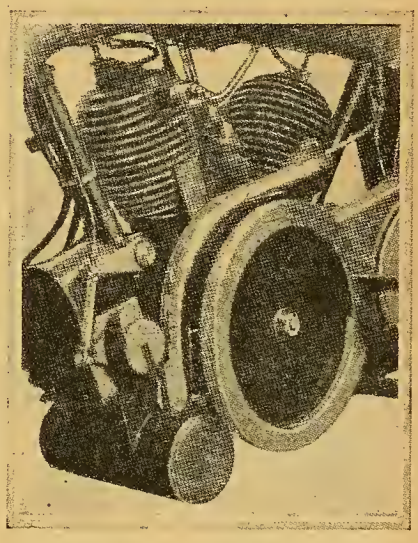
Designed by an engineer, whose experience with motor cycle engines goes back to the year 1897, when he designed and constructed the 2¾ h.p. Stanger quad, the engine under review is of the conventional three-port type, and can be fitted in any motor cycle frame which accommodates present-day engines. It consists of two cast iron cylinders with large radiating fins. Mounted in a staggered position on an aluminium crank case, and set at an angle of 45°, compression relief valves are situated in the usual hexagon housings and recessed and drilled from all sides of the hexagon, thus affording a very quick relief of compression. The entire interiors of the cylinders are machined, leaving the heads perfectly smooth, and tending to keep them free from carbon deposit. Cast iron pistons, of the deflector type, are used, and are fitted with three rings—two in the top and one in the skirt.

The gudgeon pins (which are hollow) are a light driving fit in the piston, and are fixed in a rather novel manner. One end has a fixed pin projecting about ⅛in. on either side of its diameter. When the pin is driven home a split pin is pushed through a hole and opened in the bore of the gudgeon pin.

A one-piece two-throw crankshaft of 50 ton steel (case hardened) is employed, set at 180°, and is very short and stiff between the throws.

The crank case, which is of aluminium, is divided laterally, and by a dividing wall, which forms two separate chambers. The centre bosses are machined to take a large compression retaining bush. The outer bosses are fitted with self-aligning double ball bearings, and also compression retaining bushes, so it will be seen that each throw revolves in a complete crank chamber of its own.

Steel connecting rods, with a phosphor-bronze small end bush, are fitted, the large end being case hardened and ground, and so shaped as to thread over the solid crankshaft. The rollers are slipped through a small groove at the highest point of the crank web, two halves of a hardened steel washer having first been placed in the connecting rod. When the full number of rollers are in position the other split washer is fixed with the two split pins. Hardened washers assist to keep the roller in a true path on the crank pin.



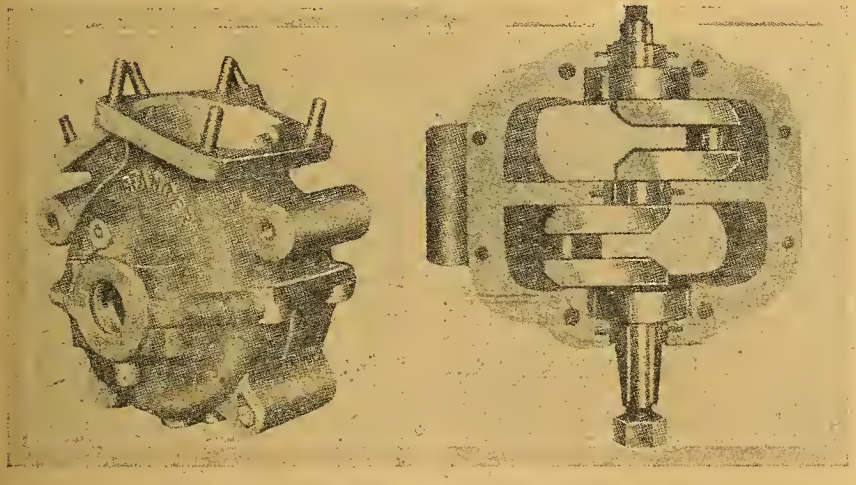
Flywheel side of the Stanger two-stroke engine, a twin of 5 h.p., having five working parts.

Lubrication is effected by means of a twin drip feed, which is carried to the lowest point of the inlet ports. Although drip feed is fitted, the designers advise the use of the petroil system.

The magneto is situated on a platform in front of the engine, and is driven by a chain encased in a complete dustproof aluminium case.

A very large flywheel is employed, to which is keyed the driving sprocket.

A feature of this engine is that it may be adapted to almost any type of motor cycle frame.



Exterior and internal views of the Stanger twin two-stroke engine.

The Olympia Car Show.

Many Exhibits of Interest to Motor Cyclists.

ONE of the effects of including the lighter four-wheelers in the Olympia Automobile Show was that quite large numbers of motor cyclists attended the exhibition. A quantity of motor cycles were to be seen in the immediate precincts, the owners obviously being intent on the examination of little cars. It is difficult to draw the line between four-wheeled motor cycles and cars, but such machines as the G.N., which, though a smart miniature car in appearance, has a distinctive transmission of its own, and sells at a price competing with high-class sidecars, is obviously of interest. The C.A.R., with its three-cylinder air-cooled radial engine, is perhaps rather a large proposition to be included in the list, but its low price makes it well worthy of mention. The Little Midland, Grahame-White Buckboard, Tamplin (on view outside the Show), and a few others are well in the motor cycle class, and attracted much attention. Many of the accessory exhibits contained much of interest to motor cyclists, and the number of well-known carburetter manufacturers, who are specialising in single-lever instruments for use on motor cycles, throws an interesting light on the trend of events. These descriptions of the various exhibits will be found in *The Autocar* issues of November 8th and 15th, and the enormous crowds of spectators were sufficient evidence of public interest. It is often hardly possible to get a clear view of the most attractive vehicles, and it takes a very appreciable time to walk down the busy aisles, even if none of the stands are examined *en route*. From these facts a happy augury may be drawn for the success of the Motor Cycle Show.

The 1920 Senspray Carburetter.

Sensitive or Automatic at will; Two Lever Control; Cast Aluminium Body; Greater Accessibility.

LATTERLY the name Senspray has been rather less to the fore than it was wont to be, for in pre-war competition circles it was almost impossible to witness an event in which this famous carburetter was not fitted to some of the most successful machines.

The makers, Charles H. Pugh, Ltd., of Tilton Road, Birmingham, have not been idle, however, and a tour of their works at once indicates the reason for their absence from the motor cycle world during the past season. On every hand, in their extensive shops, one sees huge stores of giant aeroplane carburetters, and it is owing to the Government's requirements in this direction not yet being filled that the manufacture of motor cycle instrnments still remains in abeyance.

A new type has been evolved, however, and early in 1920 it is expected that it will be placed upon the market, and a short test on a machine fitted with one of the first examples demonstrated the fact that it has many desirable features.

The general principle is the same as that formerly employed, but the body is now an aluminium die casting, and has end-plates of the same material. These are held on by flat springs of the same type as those used on magneto contact-breaker covers, and they contain bronze bushes for the throttle spindle.

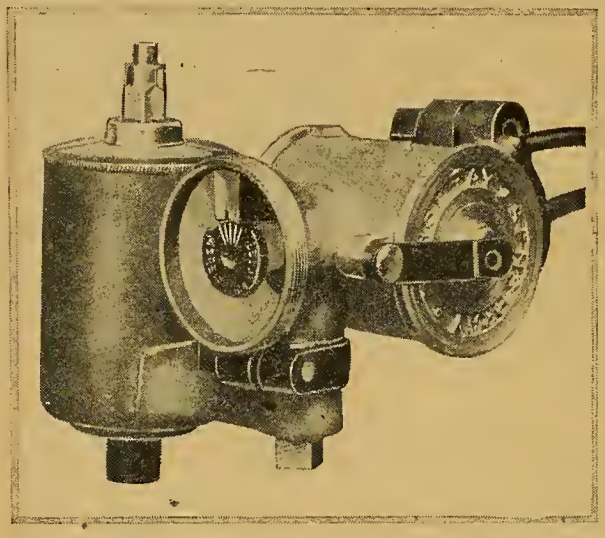
In the old Senspray carburetters, the action was practically automatic, and, if tuned for maximum power and speed, the petrol consumption was rather high at low speeds. The present type, by a very ingenious modification, can be made sensitive, semi or fully-automatic at will, accordingly as the rider prefers full automaticity (one lever control) or maximum fuel economy (involving use of extra air lever when picking up or climbing).

This result is achieved by mounting the small vaporising cone so as to be rotatable in its housing and by drilling a hole in it, corresponding with one in the carburetter body, and communicating with the outer air; the hole is on the engine side of the jet. By rotating the vaporiser, the hole is brought more or less into register with the one in the housing so that the depression (so-called "vacuum") may be varied at will, and with it the suction on the jet.

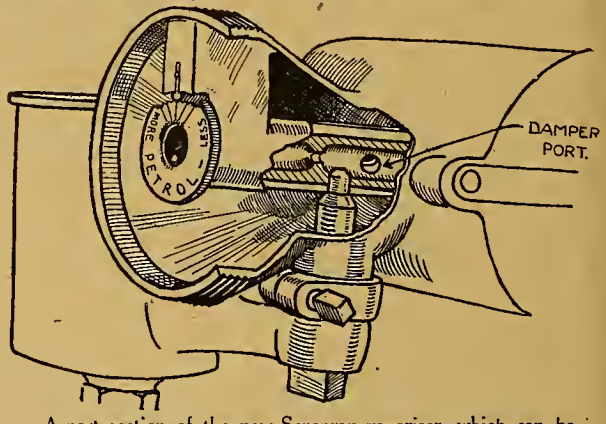
A diagram, which illustrates these notes, clearly shows the manner in which the vaporiser is operated. We were informed that, between the extreme settings, when used on a standard 85×88 mm. engine, the consumption varied from about 90 m.p.g. to 107 m.p.g.

In practice, we found that with the vaporiser damping ports fully open the setting was not so sensitive as to render the machine likely to conk out if the mixture were bungled; but a judicious manipulation of the air lever was needed when ascending hills or picking up at low speeds; with the vaporiser turned to the extreme "more petrol" position, the action was fully automatic, the air lever being only used when starting up.

A detail improvement which prevents incorrect assembly is the turning of a groove round the jet carrying portion projecting from the float chamber; the carburetter body clip bolt fits into this.



The new Senspray carburetter, which has a cast aluminium body with readily detachable end caps. A vertical model is made to suit certain V and horizontal twins.

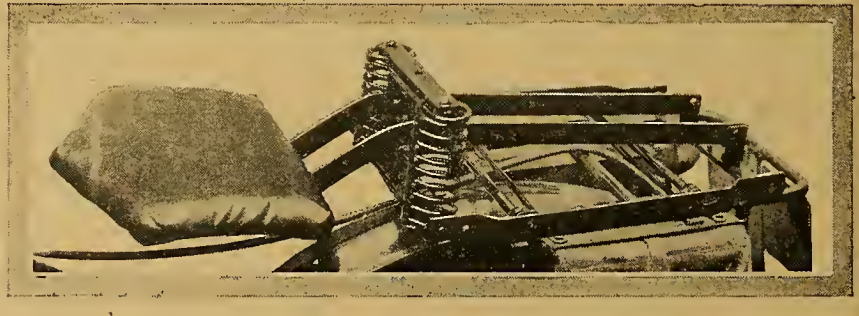


A part section of the new Senspray vaporiser, which can be rotated, thus opening a damper port which decreases the suction on the jet, and makes the carburetter sensitive to the air control

A Tan Sad Seat for the Driver.

A Sprung Seat for Motor Cycles combined with a Pillion

THAT over 15,000 Tan Sad pillion seats have been sold during the present year is sufficient proof of their popularity, and, *apropos* the discussion regarding the danger of pillion riding, the principals of the Tan Sad works advise us that they have yet to hear of the first accident where one of their sprung seats has been used. Fifteen thousand private buyers of an auxiliary fitment in less than a year probably constitutes a record, and, to those who know the rapid growth of the Tan Sad Works, their success appears as quite a romance.



A novel form of saddle springing introduced by the Tan Sad Works

New Models.

Up to the present Tan Sad specialities have consisted of a main unit—the pillion seat—to which other units may be fixed without trouble in order to render it suitable for various purposes, and the 1919 model completely covered the requirements of the motor cyclist who needed a sprung platform on the carrier for carrying a passenger, a parcel, a tin of petrol, etc. For 1920, the pillion seat has undergone several improvements, including an upholstered top in place of the loose cushion, and the springs are shorter, which makes the seat much neater, and a combined rear lamp and rear number-plate have been added to the range. This is referred to elsewhere in this issue. Detail improvements will be found in most of the units.

Probably the most interesting addition, however, is the new spring seat for the driver. This is illustrated on the previous page, and it will be seen that it attacks the proposition from a new point, a seat being carried on the forward ends of two levers which are anchored to the rear part of the carrier and are supported by coil springs about midway, *i.e.*, to the rear of the seat, which follows the lines of a chair seat rather than a saddle. The photograph reproduced shows one of the several forms of seat with which experiments have been made, but in all probability a different shape will be adopted in the final model shown at Olympia.

A Comfort Giving Device.

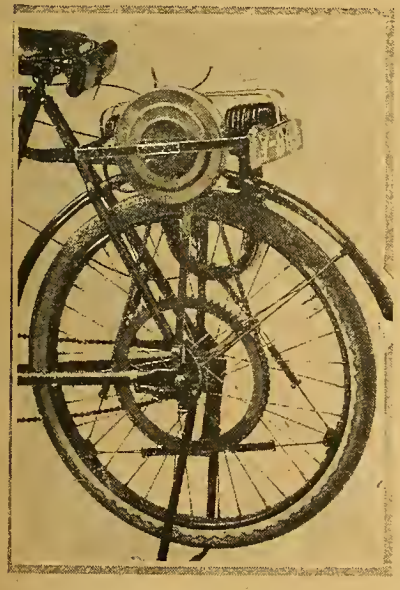
The principle of the springing needs no explanation, this point being sufficiently clear in the illustration, but it is necessary to point out that a second unit can be fitted to the seat, in the form of a pillion seat, which utilises the same springs at the front as support the driver's seat, and has springs of its own at the rear. If the space at the rear is to be used as a carrier, then an alternative unit is provided, thus giving the motor cyclist a sprung platform. As this fitment is a seat instead of a saddle, Mr. F. H. Headley, the designer and principal of the firm, affirms that greater comfort is provided. Apparently he has made a close study of the question of riding comfort from an anatomical standpoint, and disagrees with the conventional form of saddle, which, he claims, is but a development of the horse saddle, which was originally designed primarily to fit the anatomy of the horse, that of the rider being a secondary matter, and, at best, only a compromise.

From a short road test on a solo machine over terribly pot-holed roads, we formed the opinion that the new driver's seat would become as popular as the 1919 Tan Sad pillion. It was extremely comfortable, and created a new sensation unlike that associated with a spring frame or an ordinary saddle. We hope shortly to fit one of these seats to a motor cycle in daily use, and in due course we shall record our impressions.

The Motorised Bicycle.

The Johnson Motor Wheel. A Horizontally-opposed Two-stroke Attachment for Pedal Cycles.

THE Johnson motor wheel is another of the many ingenious attachments which have been brought out to motorise the pedal cycle, and is one of the most practical we have seen. The



Flywheel side of the Johnson motor wheel The loose wire above the flywheel leads the current to the lamps.

outfit consists of a special wheel, a stand, and a motor unit with tank and controls. To fit a pedal cycle with this device merely necessitates the removal of the existing wheel, the insertion of the special wheel, and the attachment of the stand and power unit. The wheel is rather stronger in construction than the ordinary one, and is provided with a sprocket loosely mounted on to the hub, the drive being taken through springs anchored to brackets riveted on the wheel rim. The whole outfit, it is claimed, can be fitted to a pedal cycle in the space of one hour.

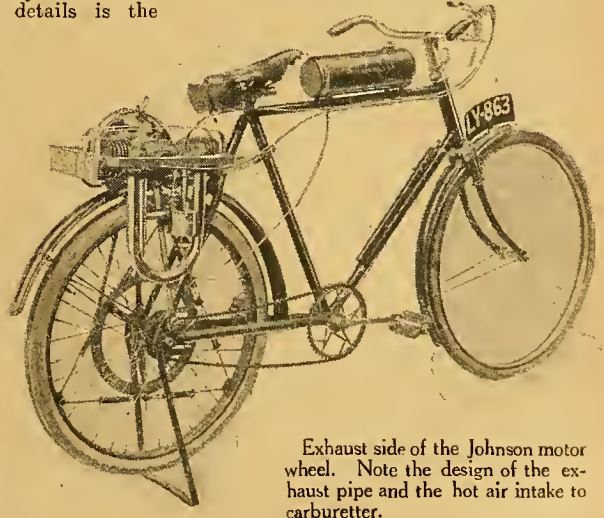
Fixed above the rear mudguard, the engine unit is quite central and equally balanced; that is to say, the engine is not on one side. It is mounted on its own frame or carrier, which is clipped round the saddle tube and supported by stays running from each side of the motor carrier to the plate carrying the stand and the special wheel.

Easily Fitted.

The only alteration necessary to the cycle is the cutting of a piece out of the mudguard so as to allow sufficient clearance for the transmission chain.

A two-stroke flat twin is the power unit, lubricated on the petroil system. One of the most interesting details is the magneto, which is built into the flywheel and works on practically the same principle as the Ford magneto. The flywheel contains the magneto pole pieces and cam, while the stationary portion, which is called the armature plate, holds a large ignition coil and armature, a smaller lighting coil and armature, the condenser in a metal tube, and the contact-breaker. From the magneto there run two wires to the plugs and a thinner wire for illuminating the head and tail lamps. The current is obtained for both ignition and lighting by rotating the magnets round the coils and their armatures; at the moment of maximum intensity, the cam in the flywheel opens the points of the contact breaker, causing a strong ignition spark at the plugs. Variable ignition is obtained by moving the stationary part of the magneto.

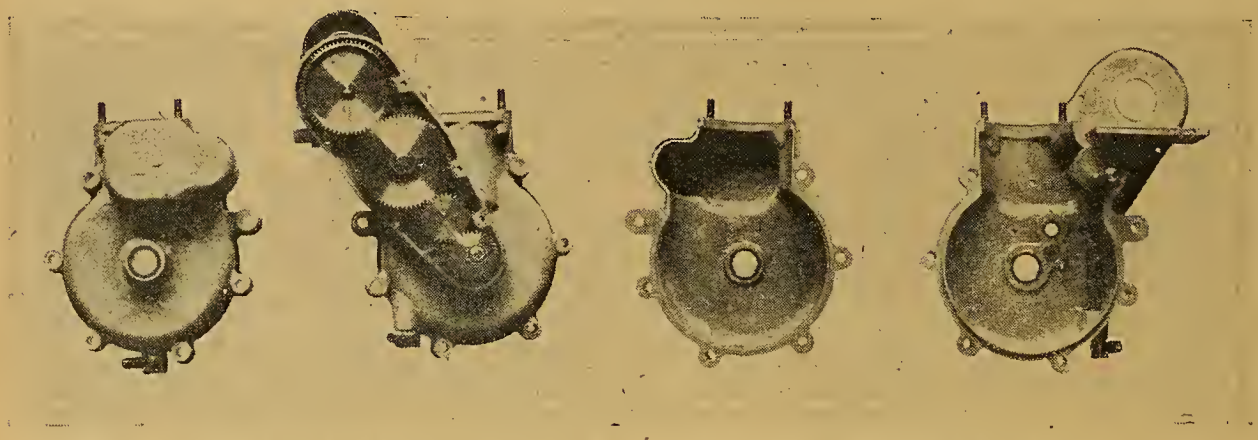
A simple form of automatic carburetter is fitted, which is provided with an exhaust muff so that sufficient heat is obtained to vaporise the fuel in the coldest weather. The throttle lever controls not only the throttle and air, but also opens the compression relief valve in the engine. Since the Johnson motor wheel has a coaster brake of its own, together with the existing brake on the bicycle, it conforms with British regulations. We have not yet had an opportunity of trying the outfit, but hope to do so shortly. It is handled in this country by the British Johnson Motor Wheel, Ltd., 127, Oxford Street, London, W.1.



Exhaust side of the Johnson motor wheel. Note the design of the exhaust pipe and the hot air intake to carburetter.

A Sleeve Valve Motor Cycle Engine.

A Four-stroke from which the Poppet Valve is Eliminated, produced by Messrs. Barr and Stroud.



The two halves of the crank case, showing interior and exterior. Note the train of wheels for sleeve and magneto drive.

IT has long been a source of wonder to motor cyclists that the sleeve valve engine has not been adapted to motor bicycles. In the motor car world, the Daimler, Panhard, and Minerva cars are fitted with sleeve valve engines made under the Knight patents, their licences to manufacture dating from ten years back, while the famous car of Swiss make, the Piccard Pictet, has a somewhat similar engine made under a British patent. Yet up to the present time little has been heard of an engine of this pattern being made of a size and type suitable for the popular little vehicle in which this journal is especially interested. It may be argued that the poppet valve engine universally fitted to motor cycles is so satisfactory that nothing better is required. That it possesses reliability, keeps cool, maintains and gives off its power, is an argument which may be put forward by many. Yet there *is* something wanting, something we have advocated for years, and that is silence. To silence the exhaust is not difficult, but to render innocuous the rattle and din proceeding from valves, cams, and timing wheels is not easy without interfering with the efficiency of the engine. We want rapid valve opening, rapid closing, large valves, and a fairly high lift so as to get the utmost out of our small engines, and to get all these we have to put up with a certain amount of noise. Such noises are more wearing to the nerves on a long run than the regular patter of the exhaust. The solo rider suffers from the complaint, and the passenger in the sidecar fares worse, as the sidecar body acts as a sounding board.

Advantages of the Sleeve Valve.

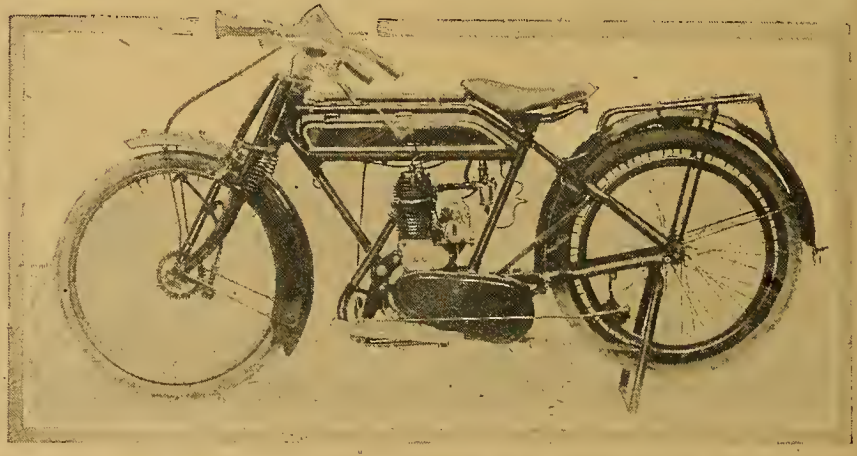
Now the sleeve valve engine has no valve noises. It can equal the poppet engine as regards power, it needs less attention as there are no seatings to be ground, and if it be proved that the moving parts wear well and that the sleeves do not seize it has a future before it which is full of promise.

It is most gratifying to be able to make the first announcement that Messrs. Barr and Stroud, Anniesland, Glasgow, have turned their attention to an engine of this type, which is already emerging from the experimental stage. This firm is, of course, well known to those of our readers who have served, or are serving, with the Navy, the Army, and the R.A.F., as it is world famous for the production of instruments demanding such accuracy of manufacture as range finders for all three arms of the Service, and fire control apparatus for His Majesty's ships.

Inlet and Exhaust.

The Barr and Stroud engine is the first air-cooled, single sleeve valve motor the making of which is to be taken up seriously. It is made under the Burt and McCollum patents, which cover the engines formerly fitted to the Argyll car, and now used on the Piccard Pictet. The bore and stroke respectively are 70 × 75 mm. (290 c.c.), and the engine is rated at 2¾ h.p. Its cylinder is of aluminium, blacked so as to aid radiation, and near the top is cast an annular induction space, in which there are four inlet ports admitting explosive mixture *via* an inlet pipe set at 45° to the fore and aft line of the engine, so that the mixture is equally distributed to each pair of ports. The fact of the induction space being so near the top of the cylinders helps to keep the detachable head cool. In its present form the two pairs of exhaust ports are connected by two aluminium castings on each side of the cylinder, which, in turn, are connected by a Y shaped exhaust pipe, the stem of the Y being below the down tube of the motor bicycle frame. Both inlet and exhaust ports, which are of peculiar shape, are covered and uncovered by means of a single sleeve, having a dual function, as it serves to do the work of both inlet and exhaust valves, and also acts as a cast iron liner for the aluminium cylinder. So far as the distribution gear is concerned, this is of more or less standard pattern, consisting of the usual train of wheels, but the engine shaft is so splined that the pinion can be fitted only in the correct position.

What would be the camshaft on an ordinary engine is a short shaft carrying two eccentrics, of which that nearest the timing wheel imparts an oscillating motion to the oil pump, while that on the further end of the shaft may be more correctly designated as a crank disc; the crank pin passes through one end of a link, the other end being



The Burt engine fitted to a motor cycle. The engine does not appear extremely unconventional.

The Barr and Stroud Sleeve Valve Engine.—attached to the sleeve by means of lugs at the top and bottom. The rotary motion imparted by this crank disc causes the sleeve to rise, and at the same time the link is forced outwards along the crank pin. Thus the sleeve is

The sleeve showing the peculiar shape of the ports.

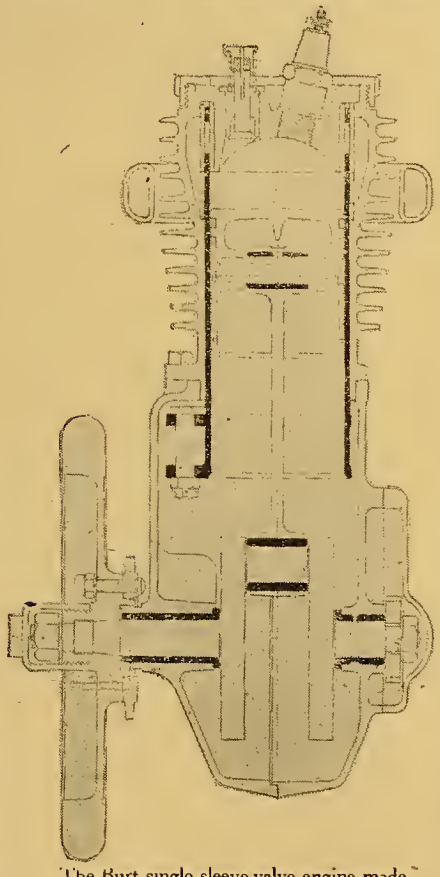
lifted about one inch and simultaneously turned about forty-five degrees. This action causes a very rapid opening and closing of the ports, as it happens when the speed of the sleeve is at its highest point. Consequently, the maximum efficiency should be obtained.

Inside the sleeve works the aluminium alloy piston, possessing two rings at the top and a drilled groove at the base so as to allow any excess of oil to escape. There is nothing very special in its design, except that inside in the centre of the head a small pyramidical point is cast dead over the oil hole in the connecting rod small end, so that oil drips exactly in the place where it is most wanted, and this device, we are told, is most effective. Aeroplane engine practice is adopted so far as the gudgeon pin fastening is concerned, as this is secured by means of a split wire ring sprung into a groove. The connecting rod is of high quality steel, and is provided with a split big end, while the crankshaft is of the solid variety of special steel provided with balance weights and drilled for lubrication.

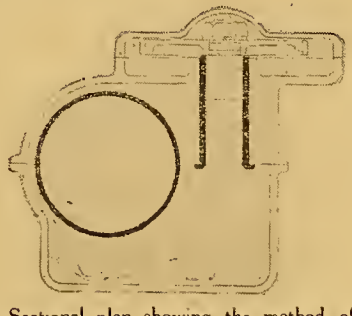
Lubrication.

We now come to the oiling system. Reference has already been made to an eccentric on the sleeve-operating shaft driving the oil pump. This latter is of the plunger type, of which the plunger works in a vertical brass barrel with a ball non-return valve at its base secured inside the crank case. The function of the pump is to deliver oil from a reservoir under pressure to the off side main bearing. Leakage from this bearing supplies oil to the timing gear, lubricant being carried up the train of wheels, and any excess being drawn off by suction on the up-stroke of the piston, through a non-return valve in the crank case. After being forced through the off side main bearing, the oil passes through the hollow crankshaft and issues through a hole in the crank pin lubricating the big end, it being flung therefrom on to the walls of the sleeve. The oil then passes to the near side main bearing, and any excess in the crank case is forced through a non-return valve at its base by the descending piston back to the reservoir.

The detachable cylinder head is of aluminium, hemispherical in shape, having a cast iron bearing for the sleeve, and carries the sparking plug and a mushroom relief valve, as no exhaust valve lifter is, of course, possible in an engine



The Burt single sleeve valve engine made by Barr and Stroud, Glasgow. Sectional elevation showing the arrangement of sleeve, ports, and cylinder head.



Sectional plan showing the method of operating the sleeve, which reciprocates and oscillates.

of this kind. This release valve is to be connected to the exhaust port, so that no noise occurs when it is brought into operation. The head is held in the cylinder by means of a castellated ring.

In outward appearance the engine strongly resembles a two-stroke, chiefly owing to the absence of valves and to the position of the exhaust port castings, while the illusion is still further aided by the fact that it has an outside flywheel, which in future models will be on the transmission side of the engine.

On the Road.

After a careful examination of the engine and its parts, we were privileged to make our first trial trip on an air-cooled sleeve valve engined motor bicycle. The bicycle to which the engine was fitted was of well-known make, fitted with chain-cum-belt transmission and a two-speed gear. In cold and damp weather, a run of about fourteen miles was made over fair roads of an undulating nature, including one fairly steep hill. An Amac carburetter was fitted, which was provided with so small a jet that the air lever could not be used, and it was therefore, to all intents and purposes, of the single lever variety. An attempt to start by paddling off on a slight up grade presented no difficulty, as the engine fired at once. With a view to testing the engine severely, and owing to the greasy nature of the road, no attempt was made to change into high gear for some time. Once clear of the bad road, the speed was increased, and no incident occurred until one of the firm's experimental staff who accompanied us led the way up a steep hill which could not be rushed. This was taken on low gear and with the throttle fully opened, but on reaching the summit the high gear was engaged without a falter, and throughout the run not a sign of a "konk" could be detected, and the engine kept remarkably cool. The next rise the engine took on top gear in excellent style, and thereafter followed a certain amount of straight road, on which a good pace was obtained. Although the makers admitted that the balance could be improved, we noticed very little to complain of in this respect, but we were truly sorry that the exhaust silencing arrangements were somewhat crude. This fact prevented us from appreciating that the engine, apart from exhaust explosions, was really quiet, and only when throttled right down could the silence of the engine be adequately realised. There was no silencer proper, merely a long exhaust pipe with a flattened end, but when throttled right down or descending a hill nothing but a muffled swish could be noticed.

The engine may be said to have emerged from its experimental stage, but at the present moment its makers are not prepared to make any statement either as regards its delivery or its production, nor are they prepared to answer any correspondence concerning it. We hope, however, to be able to make further announcements at an early date. In our opinion, the engine shows great promise. We tried hard to seize it up, but it refused to oblige us, and we believe that in its present form as a small single-cylinder, as a large V twin, or as a moderate power flat twin, it has great possibilities.

The Royal Ruby Spring Frame Solo Machine.

349 c.c. Four-stroke Engine. Two-speed Gear. Adjustable Springs.

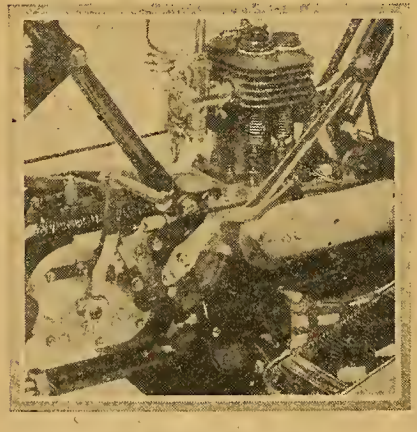
FOR some time past potential buyers of solo motor cycles have awaited with interest the advent of the new 3 h.p. Royal Ruby, which, manufactured throughout in the Ruby Cycle Co.'s own works (now very much more extensive than before the war), embodies many features of more than usual interest.

The frame is sprung front and rear by laminated leaf springs, the system of springing being somewhat unique. It is the result of several years' experiment on the part of the Royal Ruby designers. No doubt readers will recall the many references to Royal Ruby patents in this connection in *The Motor Cycle* reviews of inventions which have appeared during the past few years. The system which has been finally adopted embodies springs which are centrally disposed, and can be adjusted to the weight of the rider.

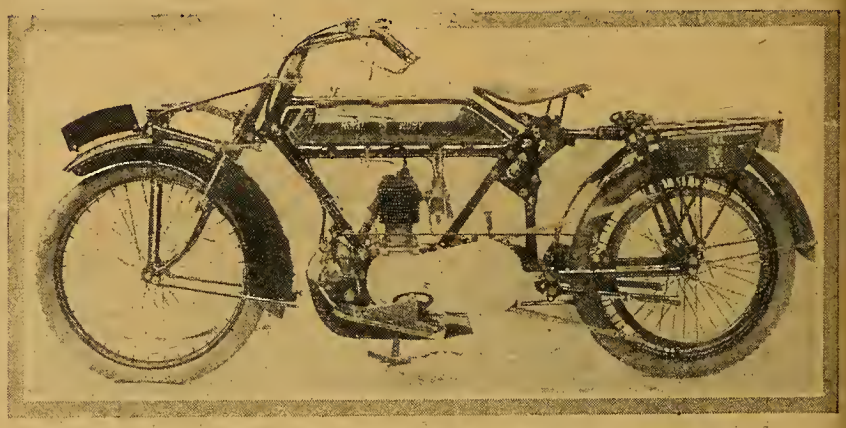
In the eyes of the springs a roller is fitted instead of the more usual practice of using shackles. This construction considerably reduces the possibility of lateral play.

Another feature of the spring frame is that it can be converted in a few seconds into rigid construction by a patented locking device, although we do not think that this option will be used very considerably, as we cannot imagine any rider who has a really efficient spring frame wishing to revert to the rigid type.

At its inner end the rear spring is carried on a saddle, which is fixed to the frame with two substantial bolts by means of a duplex structure formed of two steel pressings, which in turn are secured to the main framework by long bolts passing through lugs. At the upper end of this structure is a bearing supporting a duplex frame in which the spring is disposed. The outer end of this member contains the slides in which is the patented roller in the eye of the spring. Behind the bearing is linked an approximately vertical fork, which connects with the wheel fork near the wheel spindle.



Engine and gear box of the new 3 h.p. Royal Ruby.



The 3 h.p. spring frame Royal Ruby, which has a 349 c.c. engine, chain and belt drive, and two-speed countershaft gear.

The engine fitted is a single-cylinder four-stroke, having a bore and stroke of 74.5 and 80 mm. respectively, the capacity being 349 c.c. Side-by-side valves are fitted, and generally the unit follows more or less conventional lines. It forms a neat assembly with its silencer, magneto, and adjustable footboards. The

The laminated leaf spring fork.

exhaust pipe passes behind the magneto chain case, and the silencer is fitted directly beneath the magneto, and is supported on a platform, which is integral with the back portion of the magneto chain case. A large shield protects the magneto from mud, and is built in one with an undershield, having valances on each side of the engine.

A countershaft two-speed gear (another Royal Ruby patent), with handle-bar control, clutch, and kick starter, follows well-tried lines. This is located behind the engine, and is carried on a bracket which forms one side of a triangle in the frame construction. Immediately behind the gear box is the pivoting point of the rear wheel fork, which is supported on a long bearing, below which are the pivoting ends of the stand.

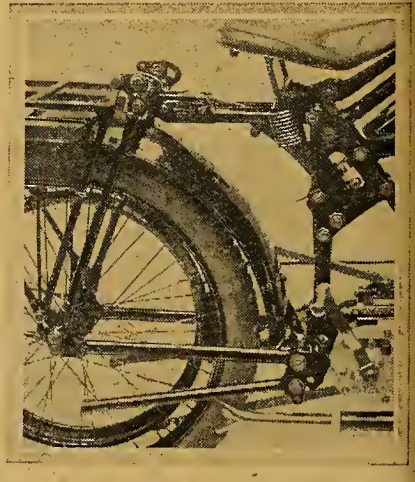
The front fork is apparently very light in construction, the frame of which consists roughly of two triangulated members connected at three points with the wheel pin to make a fourth. The motion is that of the parallel link type, and the tension of the long laminated spring is adjustable.

The transmission is by chain and belt, the wheels are 26in. × 2½in., and detachable mudguards are fitted which are 4½in. front and 6½in. rear in section.

A long stirrup is used for the front wheel brake, in the ends of which the usual type of rim brake shoes are carried, and the rear brake is of the segment type, working inside the V belt rim.

The front member of the frame is of the Triplex construction, which is a feature of the 8 h.p. Royal Ruby.

The equipment of the machine includes British-made magneto, Amac carburetter, and Brooks saddle.



The rear wheel is sprung through a leaf spring under the saddle.

Prospects for the Motor Cycle Show.

An Interview with the Management. A Bright Outlook.

TRADE and public alike have viewed with mixed feelings the advent of the first post-war Motor Cycle and Cycle Show, to be held at Olympia from the 24th to the 29th of the present month.

On the one hand, the manufacturer has been handicapped by innumerable troubles in his past season's productive programme to such an extent, indeed, that experimental work has often had to remain in abeyance, while, on the other, the potential motor cyclist has clamoured lustily for anything on wheels, adding thereto an undercurrent of demand for ideal advancement in design.

In view of this state of affairs, when most of the established firms are in arrears with their 1919 output, and the new firms are still unable to cope with their production problems, it is a moot point whether the Show is not premature. The works which cannot keep pace with the order book are surely in no need of an exhibition which will bring about an influx of orders and an impatient *clientèle* during the next year.

On the surface, this argument against the present Show would appear sound, but there are wider considerations. Those firms with fat waiting lists are tempted to carry on with their usual models: a policy invariably leading to stagnation of design. The firms newly entering the motor cycle field, many of them of long experience in other branches of engineering, bring untrammelled minds to bear on the mechanical problems involved, hence we may expect to see exhibits of new design, and suffering from no enslavement of convention. All this is to the good of the motor cyclist, who demands the best, and ultimately it is to the good of the manufacturer, who might otherwise succumb to easy practice of trading on past reputation rather than on the merits of advancing design.

In this respect, the Show is a healthy stimulus, where the ambitious designer may submit his creations to the approval of the public and the criticism of his rivals. Everyone who enters with an open mind may learn something of the trend of design, and notice, by virtue of detail improvements here and new designs there, that the trade is not standing still, but constantly endeavouring to better the goods it offers.

A further reason why the Show should be more than ordinarily popular this year is the human side. Motor cyclists, as well as workers in the industry, have been dispersed throughout the four corners of the earth during the past five years, and even those who stayed behind have largely been turned from their beaten paths. Manufacturers, their agents, and the buying public, met annually at the Show, if nowhere else. This year it will be a reunion in every sense of the term, and to many the glory and glitter of the stands will be final proof that we are again gathering up the threads of the life that were dropped in 1914.

Major H. R. Watling, General Manager of the Manufacturers and Traders' Union

From an interview with Major H. R. Watling, the general manager of the Cycle and Motor Cycle Manufacturers' and Traders' Union, which we sought, with a view to learning the feelings of the trade generally with regard to the present Show, we learned that the prospects of its success are indeed rosy. While no one, it is true, can state the definite amount of public support, he instanced the enormous growth of interest in automobilism, more particularly in the motor cycle, which has resulted from the experience of the past five years.

In its technical aspects, too, the 1919 Show will be unique; many old-established engineering firms have entered the motor cycle trade, bringing unbiassed minds to the subject. Their products are sure to be characterised by novelty.

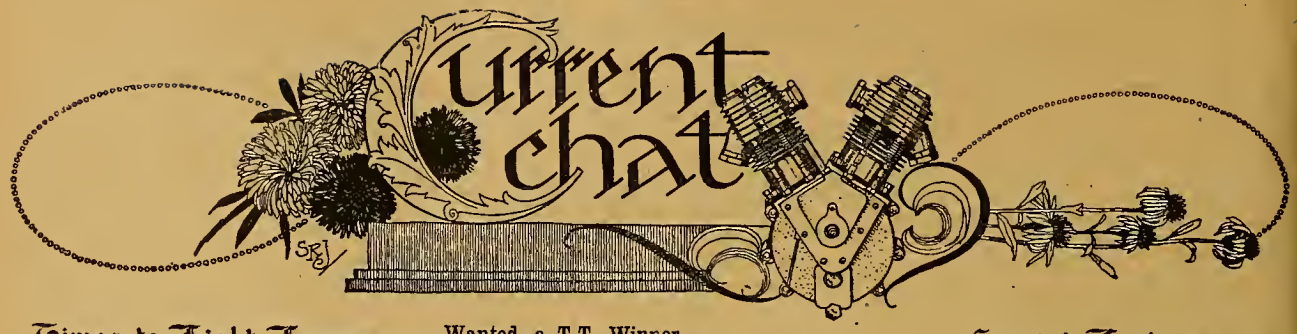
Numerically, we were told, the total number of exhibitors exceeds the number represented in 1913, when the last Show was held, and, furthermore, the tendency is for the motor cycle exhibits to increase in quantity at the expense of the pedal cycles which will be staged.

A new phase of the Show is the scooter development, public interest in which has grown from the smallest possible beginning in the present year to such a degree that many motor cycle manufacturers have felt impelled to experiment in this direction. Our question as to the feeling of the trade, as regards the scooter and its ultimate development, was met by the answer that at present it is too early to speak of a settled attitude, since the whole matter is in a state of flux; much will be learned at the Show by the amount of attention paid to the exhibits of those firms who stage scooters exclusively.

Finally, touching the question of prices, Major Watling assured us that no likelihood of a fall was imminent, since it must be remembered that alone amongst engineering products the average price of motor cycles had not, as a whole, attained the 100% increase.

Taken altogether, the 1919 Show promises to be an exceptionally successful one, and every effort is being made to render it popular in every sense of the term—the charge for admission will be two shillings each day, from 10 a.m. to 10 p.m., and there will be no "special" days and correspondingly higher prices as in the case of the car show.

The enormous detail work involved in show organisation, which has fully occupied the attention of Major Watling and his staff for some time past, and which grows momentarily as the time for opening the doors to the public approaches, has been well handled, in spite of more than ordinary difficulties, and the motor-cycling public is assured of an exhibition in every way as successful and technically interesting as any of its predecessors.



Times to Light Lamps.

GREENWICH TIME.

Nov.	20th	4.34 p.m.
,,	22nd	4.31 p.m.
,,	24th	4.29 p.m.
,,	26th	4.27 p.m.

Benzole.

In view of the recently completed benzole test, a rider of a 3½ h.p. Ariel writes that he has ridden upwards of 8,000 miles, using benzole throughout, and yet his engine is as good as new. This does not in any way surprise us.

Expert Motor Cyclists.

The following names have been added by the Auto Cycle Union to the official expert competitors' class: J. A. Newman, T. C. de la Hay, H. S. Noakes, R. F. Pugh, A. Butterfield, and F. W. Applebee.

A Six Days Trial Award.

In the course of the final examination of the competing motor cycles at the conclusion of the recent Auto Cycle Union Six Days Reliability Trial, the judges considered that a brazed joint on one of the Matchless sidecar chassis showed signs of movement, and marks were provisionally deducted for this defect. Having submitted the joint to miscroscopical examination, which showed the brazing to be sound, C. R. Collier, the entrant of the machine in question, has therefore had the marks deducted for this defect to him restored, and is in consequence awarded a gold medal.

Imports and Exports.

There is a curious discrepancy in the average prices of motor cycles imported in September with the imports of October. The Board of Trade returns say that in September the value of the 188 motor cycles brought in was £11,713, an average of a little over £62. Whereas last month the number was 142 valued at £4,313, an average of just over £30.

We have not heard of a big influx of lightweights at competitive prices reaching this country, but probably a fairly heavy importation of motor wheels or motor attachments accounts for the low average price.

EXPORTS.

The value of exported motor cycles, parts, and accessories for October shows a slight decline of £5,000 on the previous month's figures, chiefly made up in a decline of accessory exports.

EXPORTS FOR OCTOBER.

	1917	1918.	1919.
Value of motor cycles, parts and accessories	£268,269	£65,628	£103,343

Wanted, a T.T. Winner.

Owing to the large number of letters which we received in reply to the paragraph recently inserted asking for a potential T.T. winner, it is impossible to reply to all individually. All who sent their names are cordially thanked by the firm interested in the matter, which is having consideration.

The Paris-Nice Trial.

We hear that there will be quite a large entry for the Paris-Nice Trial. From Belgium, several Brussels riders have sent in their entries, while entries have also been received from Geneva and Milan. There are reported to be twenty-three Harley-Davidson entries.

Grove Park Workhouse.

This week Grove Park Workhouse will be handed back to the Grove Park Guardians after being used as a M.T. depot for five years. Hundreds of A.S.C.M.T. motor cyclists passed the tests at Grove Park, and thousands of motor cycles received treatment in the workhouse shops. A litter of derelict petrol cans is all that remains.

An Invitation to Motor Cyclists.

The Auto Cycle Union hopes that all motor cyclists visiting the Olympia Show will, in the event of their requiring advice or information, pay a visit to Stand No. 2, where officials of the Union will be ready to render whatever assistance is possible. This invitation is extended to all riders, whether they are members of the A.C.U. or not. Members will probably find the writing and waiting room, which has been set apart for them, of great value in view of the enormous crowds which are likely to visit the exhibition.

A Meeting at Olympia.

A meeting of delegates from each of the territorial districts in which the motor cycling clubs have been grouped by the Auto Cycle Union will be held at Olympia at 5.30 p.m. on Thursday, November 27th, during the motor cycle exhibition. Delegates are asked to accept this notice as a summons to attend. The meeting is for the purpose of arranging dates for the more important motor cycling competitions in 1920.

Members of the A.C.U. will have the exclusive use of the Princes' Rooms, where a lounge and facilities for correspondence and refreshments will be available. Officials of the Union will be ready to give information and advice to all motor cyclists on any subject connected with the movement, and to explain the advantages of membership of the Union.

Special Features.

SHOW FORECAST.
HOW TO REACH OLYMPIA.
1920 MODELS.

Looking Ahead.

The Marseilles Motor Club will hold the Marseilles-Monte Carlo trial on April 4th, 1920, and the Mont Ventoux hill-climb on August 8th, 1920.

The Metropolitan Police and Lighting.

The police are very active in the neighbourhood of Hampton Court, stopping any motorists whose rear lights have gone out. As the road from Hampton Court to Staines is in vile condition, it is very difficult to keep rear lamps alight.

A Meeting of the I.A.E. at Olympia.

A meeting of the Institution of Automobile Engineers will be held at Olympia on Thursday, November 27th, at 2.30. All those who are interested will be cordially welcome, whether they are members of the Institution or not, as the Council is most anxious to afford every opportunity for the discussion of motor cycle design, with a view of evolving the best possible type of motor cycle.

South Birmingham M.C.C. Palmer Cup Open Trial Awards.

Owing to the general severity of the course, no marks were deducted for variations at time checks.

The winner of the Palmer Cup proved to be G. Kuhn, riding a 293 c.c. Levis; he also takes the Cameta Service Cup, his total marks being 239. B. L. Bird (4¼ B.S.A.) secured the Upton Cup with 232 marks, J. H. Walker (4 Triumph) gaining 228 marks and the Cooper Cup, while the only other award was obtained by A. Milner (2¾ Diamond), who qualified for a silver medal with 215 marks.

It will be remembered that Kuhn also secured the Victory Cup in the first post-war open trial held in the Midlands.

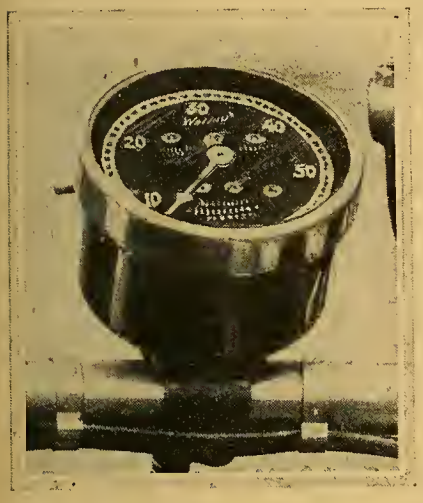
A Trial for Scooters.

The Auto Cycle Union has received several letters from motor scooter manufacturers promising support for the suggested trial next spring. The manufacturers have indicated their appreciation of the various tests to which the A.C.U. proposes to put the scooters entered in the competition. These include general reliability, petrol and oil consumption, steering, flexibility, and all the essentials of this type of vehicle. There is no doubt that very wide interest will be evoked by the trial, and it is being keenly anticipated by many prospective scooter users.

ACCESSORIES FOR 1920.

A Few of the Large Number of Equipment Details which will be offered Next Year.

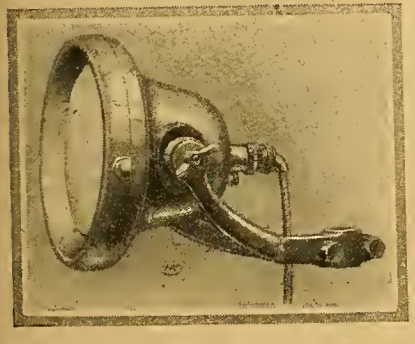
S. North and Sons, Ltd. (Stand 210).—The chief item of interest to motor cyclists exhibited by this firm will be the Watford speedometer. Black dials are among the chief innovations in the latest model. The fingers are white, and the contrast renders the instrument very easy to read. Rear drive is now becoming



The new Watford speedometer, which has a black dial.

very popular among motor cyclists; it is superior in many ways to front drive, as the cable does not have to withstand the vibration of the sprung front forks. The new Watford drive is very cleverly carried out, and when once the driving sprocket has been centred on the wheel, the adjustment of the driving sprocket is quite a simple matter, owing to the numerous adjustments which may be made on the bracket which holds it. The speedometer itself works on the centrifugal principle.

C. A. Vandervell and Co., Ltd. (Stand 166).—Messrs. C. A. Vandervell and Co., Ltd., will be exhibiting C.A.V. magnetos, which were amongst the first motor cycle magnetos to be made in England. One of the most popular models is the K.U.T. for twin-cylinder engines, rated up to 3 h.p. and firing at 180°.

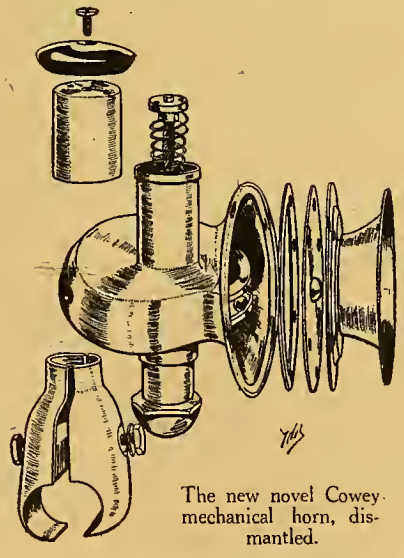


A neat electric head light, by C. A. Vandervell and Co.

There are two important features in the C.A.V. magneto: the excellent high-tension terminal, which is quite water-tight, and the C.A.V. contact breaker, which is actuated by a fibre roller, and contains no rocker arm with its troublesome fibre bush, which is apt to stick in damp weather.

A speciality is also made of electric lighting by accumulators for motor cycles and sidecars. Special sets are made up for passenger outfits, which are designed so as to take up very little room in the locker of the sidecar. The question of lamps has long been studied, and C.A.V. lamps are particularly efficient, giving a powerful beam ahead. Head lamps, tail, and side lamps are provided, and a neat and compact switchboard.

The Cowey Engineering Company, Ltd. (Stand 196).—The chief feature of the exhibits of the Cowey Engineering Company, Ltd., will be the attractive Cowey horn, designed to be fitted either to the handle-bar or the top tube of a motor bicycle. It is noteworthy for its smooth exterior and attractive appearance. This is a very handsome and ingenious contrivance, and will naturally be seen on many motor bicycles during the coming season. It consists mainly of a highly polished and well-finished aluminium



The new novel Cowey mechanical horn, dismantled.

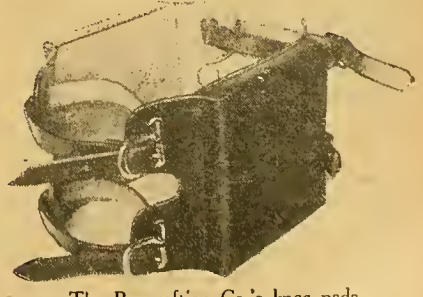
body, and is fitted with a plated bell mouth, the general effect being excellent. The interior construction is not without interest. The depression of the black knob at the top of the horn causes a threaded rod to give a rotary motion, on the principle of the Archimedean drill, to a horizontal disc in which balls are loosely held at intervals. These balls are secured in a cage, and, while capable of movement, are prevented from leaving the cage altogether. The action of rotating the disc is to cause the balls to fly outwards through centrifugal force, and as they do so they hit the pin in the centre of the diaphragm, thus giving an excellent warning note, which may be varied from a medium noise to one loud enough to satisfy the most fastidious motor cyclist. The Cowey speedometer, which has been so long popular among motor cyclists will also be shown. It is to be had either with or without trip, and may be finished in either bright nickel or plated and black. A cycle car model will also be exhibited, of lacquered brass, bright nickel, or black nickel, with a bracket or flush fittings, and with front wheel or cardan-shaft drive. The speedometers just mentioned are calibrated up to 65 m.p.h., but at a slightly extra cost may be calibrated up to 90 m.p.h.

Dover, Ltd. (Stand 225).—In view of the large amount of correspondence in *The Motor Cycle* respecting "Roadside Courtesy," the new Dover signal, no doubt, will create a certain amount of interest among those motor cyclists who

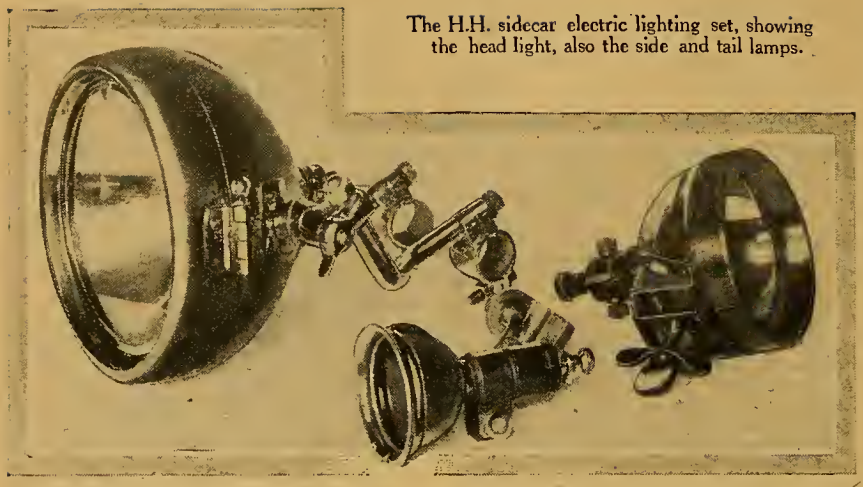
The Dover signal device.

wish to display a sign, when resting, that they are not in need of assistance, or *vice versa*. The signal consists of two triangles, of white and red respectively, on swivelling arms which, under normal conditions, are intended to be carried alongside the front mudguard extension.

The Bancroftian Co.—Although not being exhibited at Olympia, this firm's accessories will be on view at its city showrooms, 64, Bishopsgate, London, E.C.2. While visiting the depot recently we were enabled to see for the first time the new Cowey mechanical horn. The Bancroftian Co. has lately placed on the market some moderately-priced goggles, made of mica and with green tops, which should be very useful in counteracting the glare of the sun during the summer weather. This firm is one of the few that, at the present time, can give delivery of Cowey, Watford, and Stewart speedometers from stock, with or without trip. It is also in the fortunate position of being able to supply chains, which are exceedingly hard to obtain just now. Yet another of its specialities is sidecar bodies, which are both well upholstered and well finished.



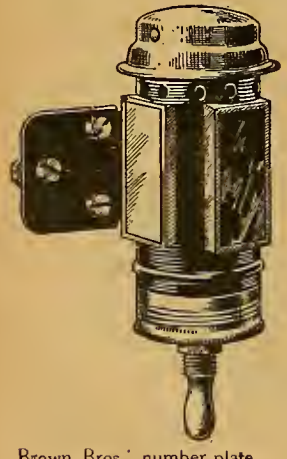
The Bancroftian Co.'s knee pads.



The H.H. sidecar electric lighting set, showing the head light, also the side and tail lamps.

A. H. Hunt (Stand 178).—For many years the firm of A. H. Hnnt has been famous for the production of beautifully-finished and powerful electric lamps to suit not only the large sidecar ontfit, bnt lightweight meter bicycles as well. The current is derived from either the well-known Hellesen dry batteries or from accumulators. Hellesen dry batteries are among the most efficient on the market, and their recnperative powers and lasting properties, especially if they are used for short distances, are extraordinary. A very useful accessory te be found on this stand is the H.H. hand lamp, which is invaluable fer use in the motor house. One of these, in eur pessession, has been used for two and a half years, and the battery is still as sonnd as on the day it was delivered, even though it has been carried in the hand and used as a head light while riding a moter bicycle. Numerous electrical accessories will also be shewn. Among these may be mentioned a particularly neat lamp switch, which is operated by a small screw in the vulcanite casing, which makes contact between two metal blocks. It is positive in action, and should prove to be most reliable.

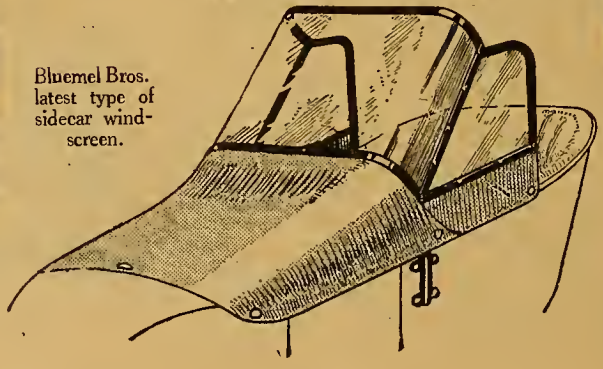
Brown Bros. (Stand 164).—During the present year, Messrs. Brown Bros., Ltd., have shown great activity in the production of motering accessories. Among the many fitments which will be exhibited by this firm may be mentioned a neat little tail lamp and a handle-bar mirror. The top of the tail lamp, which is finished in black, opens, allewing access te the burner for lighting. The white glass at the side and the red glass at the rear are held in position by a piece of coiled steel wire, which keeps them securely in place and yet allows them to be withdrawn with the greatest ease for the purpose of replacing or cleaning. The mirror is light and well-made, has a nniversal movement, and is well-finished. This device should cemmend itself to all motor cyclists who favour this useful type of accessory.



Brown Bros.' number plate and rear lamp.

Bluemel Bros., Ltd. (Stand 161).—Undoubtedly the majority of sidecar passengers agree that their comfort is enhanced a hnndredfold when an efficient windscreen is fitted. Messrs. Bluemels have for some time realised the demand for such fitments, and have extensively experimented in this directien during the past year, with the result that a Bluemel patent windscreen will be offered to the public for 1920, and our considered verdict is that it is likely to be very popular. In the first place, the front part of the celluloid screen is curved, and side extensions are fitted, which prevent side draughts. All three panels are fitted in light enamelled steel frames, and below the assembly a waterpreof apron covers in the space between the shield and the body work at the front and sides of the sidecar.

Sandham Engineering Co. (Stand 15a).—In addition to the sidecars which will be exhibited by this firm, a simple screen also will be shown. It consists merely of two adjustable metal tubes which are screwed, by means of the clamps provided, to each side of the body. Carried between them is a screen held at its upper and lower edges by a band of Cape cart hood material. By slackening the fly-bolt at the lower end of each tube, the screen may be tilted at any angle to suit the passenger. A storm hood and screen also will be staged, which consists of the conventional type of sidecar hood having two side flaps which are a permanent fixture. Immediately at the front of the hood is a reller blind, con-

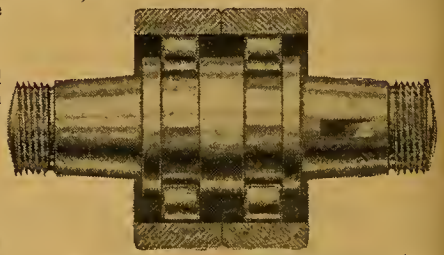


Bluemel Bros. latest type of sidecar windscreen.

A new windscreen, produced at a moderate price by the Sandham Engineering Co.

structed of waterproof material, which, when the occasion arises, may be pulled down and clipped to the two front stays of the hood so as to protect the passenger from the elements. An oval window is provided in the roller blind, and twe similar windews in either side ef the hood. The complete fitting may be erected in a few seconds, and should be found of extreme utility te motor cyclists who find themselves suddenly caught in a storm.

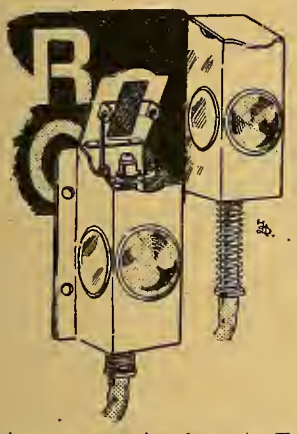
Hoffmann Manufacturing Co. (Stand 235).—Roller bearings are new becoming so popular with designers of all types of engines that the exhibit of the Hoffmann Co. will interest many visitors to the Show. A full range of ball and roller bearings will be displayed, together with a model of a moter cycle engine, the main bearing and big end of which have been fitted with Hoffmann roller bearings



One of the many types of Hoffmann roller bearings.

Accessories for 1920.—

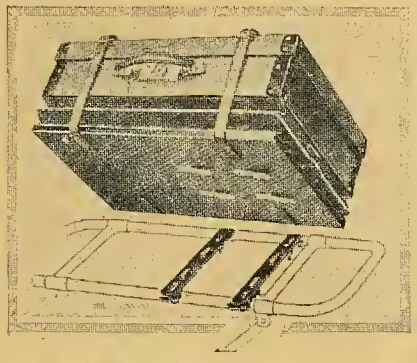
TAN SAD WORKS (Stand 211).—Among the several new units for the well-known pillion seat, which will be introduced on the Tan Sad stand, will be a neat little rear lamp which has a spring lid. By lifting this, the burner of the lamp is caused to rise into a position convenient for lighting. In the lid is a roughened



A new rear acetylene lamp, the Tan Sad. The lamp on the left (showing the method of opening) is sold separately, the one on the right can be obtained with number plate attached.

strip for striking the match, so placed that a downward stroke should ignite the match and gas at the burner almost simultaneously, thereby removing one of the greatest troubles in connection with lamps which have to be lighted by a match in high winds. The other specialities of this firm are referred to elsewhere in this issue.

LEATHERIES, LTD. (Stand 229).—In addition to saddles of all types for cycles and motor cycles, Messrs. Leatheries, Ltd., will exhibit a comprehensive range of general leather equipment of interest to the motor cyclist, chief among which we would mention the collapsible valise for fixing to the carrier. The framing is permanently secured to the machine by four sliding clips, which enable it to fit almost any type of carrier. To the upper side, four metal loops are riveted, and on the underside of the valise are four metal plates which fit into the loops. The valise is held in place by means of one fly nut and bolt attached to the framing, and which engages with a recess in the metal plate. When expanded, the valises measure $14\frac{1}{2} \times 9\frac{1}{2} \times 5\frac{1}{2}$in., $16\frac{1}{2} \times 11 \times 6\frac{1}{2}$in., and $18\frac{1}{2} \times 12\frac{1}{2} \times 7\frac{1}{2}$in. The prices of the respective sizes are 22s. 6d., 26s. 6d., and 31s. 6d. This is only one



A useful expanding touring bag, by the Leatheries Co.

of the many propositions in motor cycle equipment.

GRINDLAY, LTD. (Stand 30).—This Coventry sidecar firm is exhibiting at Olympia a new adjustable sidecar screen, which is of the conventional framed type,

The new Grindlay sidecar screen, a neat model that can be adjusted to any position.

fitted on to hinged tubular extension arms, by means of which the screen may be placed in any position between the passenger and the front of the sidecar. In addition, the screen may be placed on the slant, if it is desired to divert the air current away from the passenger.

A full and illustrated report on the accessories at Olympia will be contained in *The Motor Cycle* Special Accessory Number, December 4th.

Birmingham M.C.C. Trial for the Sangster Cup.

A Club Members' Competition held in Dense Fog.

ORIGINALLY intended to be run over a difficult course, the route was changed at the last moment so as to give club members an opportunity of ending the season by competing for the cup on an easy course—Birmingham to the Wrekin, *via* Castle Bromwich, Brownhills, Ivetsey Bank, and Wellington, returning by the same route—apparently an easy task, yet out of the thirty-one starters only five came through with full marks, therefore it does not appear necessary to run trials over had ground and through unknown lanes.

On Saturday, Birmingham was enveloped in a dense fog, through which it was impossible to see more than a few yards. Yet of the thirty-three entrants thirty-one started from Selly Oak, on what proved to a good many an adventurous journey.

The first test commenced the moment the men were started, for the route from Selly Oak to Castle Bromwich led through the heart of Birmingham, and to average 20 m.p.h. in clear weather would not be an easy task; in the dense fog it proved an impossibility, and it was no surprise to the checker at Castle Bromwich (not a time check) to find all competitors considerably behind time.

Fortunately, in places *en route* the fog cleared slightly, enabling the men to make up time, which was easily accomplished over the Watling Street to Wellington.

Patches of dense fog were run into, and serious accidents only avoided by driving with the greatest of care.

Nearing Wellington, a paper trail was laid, which led the competitors to Forest Glen *via* a good hard road. Turning through the gate the ascent to the Wrekin was commenced.

After leaving the main road at Wellington the climb commences, not severe until the gate is reached, but sufficient to warm the engines up. On reaching the gate the gradient becomes steeper, and there were many failures at the hairpin, caused principally through bad acceleration after rounding the bend. Eighteen failed at this point.

No sidecar combination succeeded in making a clean ascent. Saddington, on a 5-6 h.p. James, was the only one of the sidecar class that succeeded in the stop and restart. Amongst the solo riders good performances were made by Duke (Triumph), Kuhn (Levis), Kershaw (Verus), Silver (Quadrant), Strange (James), Walker (Triumph), Bird (B.S.A.), Milner (Diamond), Watson Bourne (Blackburne), Neave (Sunbeam), and Atcherley (Triumph).

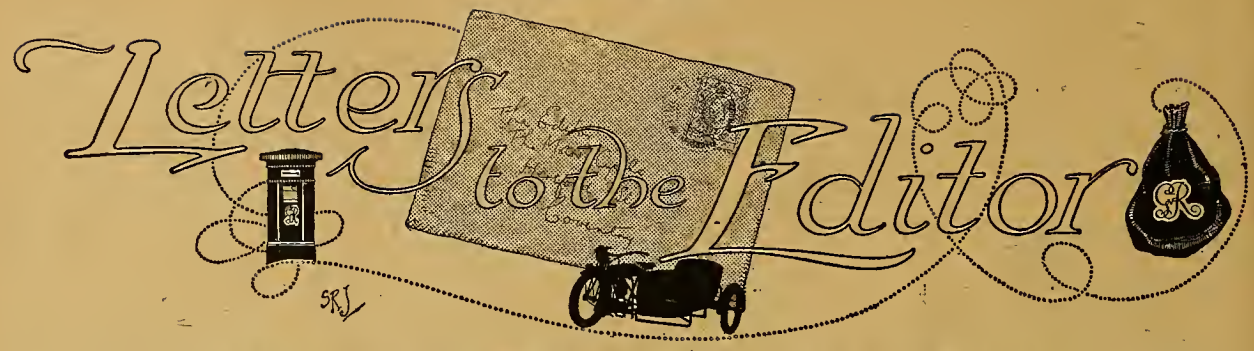
After passing the stop and restart tapes, stoppages were plentiful before reaching the tea rooms—time check.

Here the trials hon. sec., Mr. T. Silver, had ready a good substantial lunch for the frozen competitors, most of whom showed signs of a strenuous journey.

After lunch the acceleration and brake test was held on a perfectly straight, flat road. Competitors were timed from start to finish of the acceleration section, a distance of seventy-five yards, and had to pull up in brake section, which was marked off in yards, the results being obtained by adding the time and distance.

After leaving the glen, fog again enveloped the competitors, the bank continuing right to Brownhills, where it cleared. Near Brownhills a surprise brake test was laid, but the competitors were too wary to be caught. If the brake test did not serve the purpose intended, it certainly caused the men to ride with caution through the bank of fog.

Duke, Strange, Kuhn, J. Walker, and Bird lost no marks and tied for the cup. The winner will be found when the acceleration test results are worked out.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—Although one is constantly reading about the difficulty of obtaining spares, it appears that the A.A. can give very great assistance in this matter.

The other day, I broke two piston rings and was held up. It was most important that I should be able to use my machine immediately, but I could not get any rings locally or in any of the surrounding towns. I wrote to the A.A. at Birmingham, and, much to my delight and astonishment, I received the rings by return and express post, though the A.A. people had difficulty in obtaining them.

J. S. LOPKINS.

TAPPET CLEARANCES.

Sir,—The question of tappet clearances for four-stroke air-cooled engines is an important one. Doubtless different fuels give different results. Using a mixture of naphthalene and petrol and tappets (B.S.A.) set to five thousandth of an inch cold, I notice, as the engine warms up to average travelling heat, the clearance increases enormously, and, strange to say, very nearly as much in the exhaust as in the inlet, but, if the engine is run hard uphill on second gear and made very hot, the exhaust clearance begins to reduce.

I am sure some opinions on this subject would be very interesting and instructive. B.S.A.

Stoke-on-Trent.

A COMMENT.

Sir,—In reply to your correspondent Henry Evans, who asks what rider of a Triumph is troubled with his machine shedding nuts, I may state that my 1919 Triumph has twice lost one of the small screws which hold the under side of the toolbag case to the carrier stays. In both cases the screw was as tight as an ordinary screwdriver could make it. Major Kennedy in his "Candid Criticism" says: "There are a number of small screws in connection with toolbags which tend to lose themselves." Perhaps he has lost some, too. In conclusion, I should like fully to endorse what has been said about gear changing with the foot. I find it quite easy, however, without having the end of the lever bent.

A. WELCH.

A LADY'S RIDE.

Sir,—Do you care to record this run, which I did on my solo motor bicycle (two-stroke) in a day in September last? I left Bournemouth in the morning early, and got up to Stamford (North Lincs.) at 6.30 p.m., stopping an hour in Winchester and another in Oxford, going by way of Ringwood, Romsey, Winchester, Newbury, Oxford, Bicester, Towcester, Kettering, Stamford, and did the same run back to Bournemouth four days after.

There is a good deal said about the two-stroke being only a "potterer's mount," and I daresay other two-stroke riders like myself who have ridden motor bicycles such as the Triumph and Douglas would not hesitate to choose either of the two last named; but when it is a case of expense, and perhaps having to wait months before being able to be supplied with one, it is better to take and make the most of what one can get and be thankful, especially in, shall I say, these striking times!

My motor bicycle is a Connaught, and I did the journey on just over one gallon and a half, as I have an extra air valve fitted to my carburetter.

I. V. CORRIE (Miss).

SHAFT DRIVE.

Sir,—Letters such as that of "All Belt" make me tired! He is welcome, so far as I am concerned, to extol the merits of all-belt drive, though I doubt if his letter will prove convincing to all-weather sidecarists. About chain drive, its merits and demerits, he appears to know little, while of shaft-drive in motor cycle practice he obviously knows nothing. He asks, "If shaft drive is ideal, why is it not in more general use?" Apparently, in "All-belt's" world, the real and the ideal are mainly synonymous. I wish it were so in my world! I do not find the methods in "general use" are usually ideal.

But to conclude. Belt drive (of which I know nothing) evidently suits some riders admirably. Chain drive I have proved to be excellent, though it has serious drawbacks, which its users generally discover. Shaft drive has given me unqualified satisfaction in many thousands of miles of sidecaring. I do not trouble whether it is "ideal" or not; it is the best thing in transmission I have struck. FN 1240.

Newbury.

KICK STARTERS.

Sir,—May I presume on a little of your space in reply to "B.J." (October 30th)?

I had trouble in starting my Sunbeam (chain-cum-belt model) at first, but found that starting depends chiefly on three factors—*(a)* the petrol, *(b)* the lubricating oil, and *(c)* the moment of dropping the exhaust.

With regard to *(a)*, I find starting much easier when (to use an Irishism) the petrol is benzole.

(b) I think the oil recommended, viz., Castrol "C," is rather too heavy, and get much easier starting with a slightly lighter oil.

(c) is, of course, a knack, which is easily acquired.

With benzole and a suitable lubricating oil I usually started up with two or three kicks in cold and first kick when hot.

In very cold weather it is sometimes a good thing to dope the cylinder and then kick several times, with the exhaust lifted, to ease the piston.

Like "B.J.," I have no fault to find with the machine, which runs splendidly.

I hope this may be of use to "B.J."

A. F. SCROGGS.

THE LIGHTING REGULATIONS.

Sir,—Having read the opinions on rear lighting expressed by "Sivel" in your issue of November 6th, I feel that I cannot pass over such an absurd letter without some comment.

First, your correspondent says, "In addition to cyclists, one will occasionally come across pedestrians, cattle, stray horses, broken down carts, parcels dropped from vehicles, bricks, and numerous other possible sources of trouble." "Why," he asks, "should not these have to carry lights as well as bicycles?" Those whom he calls the "enthusiasts of the rear light" know well enough that there must be pedestrians on the road. These usually have the sense to get out of the way; but as to the rest, well, one *might* happen to fall down a hole made by an earthquake on a dark night! These are ordinary risks, which any night rider, fast or slow, has to take, and have nothing whatever to do with the subject of rear lights on bicycles. Many other dangers cannot be guarded against. The danger of colliding

with a bicycle can; and surely it were better to have one less danger on the road, for the exercise of a little trouble? Motorists and motor cyclists have to carry rear lamps; why not cyclists, to whom they are far more of a safeguard.

Lastly, your correspondent states that he would always carry a rear lamp himself on a push bicycle. He thus admits the wisdom of the course.

His remarks as to road hogs need little comment. The percentage of these is no greater than that of cyclists who ride across main roads as hard as they can without giving warning. IORWARTH.

Cambridge.

Sir,—In view of the letters in your issue for November 6th protesting against your leading article on the lighting regulations, I feel bound to let you know that there are some of your readers who entirely endorse your views. It is obviously absurd to try and make out that the cyclist has no responsibility for his own safety on the roads at night, and equally absurd to contend that the rear light is no safeguard. In fact, the whole case of the cyclists who oppose the regulation may be summed up in the one word laziness.

Your correspondent Isaac Bartu admits as much in the last paragraph of his effusion. Surely while the unfortunate motorist or sidecarist has to "mess about" with no fewer than three lamps "in the dark and cold," the cyclist should not complain at having to use one extra lamp of a much simpler pattern usually. It is not therefore right that all the responsibility should be thrown on the shoulders of the motorist, merely to excuse the sheer laziness of the cycling element of the community. As regards safety, there can, of course, be no doubt of the advantages of the rear lamp.

I may state in support of my impartiality that I have been for many years both a cyclist and a motor cyclist, and as such have had plenty of opportunity for studying the subject from both sides. M5229.

Oxford.

Sir,—With regard to this vexed question, and particularly with reference to the correspondence referred to by "Sivel" as appearing in the press, and to his own letter, in my opinion much of the discussion fails utterly to touch the real point at issue, and to get to the true merits of the case. Surely the real question is as to whether lights, including rear lights, should be displayed by all vehicles using the roads in the dark, or by none—the word vehicles being used in a comprehensive sense, and to include all road users that can reasonably and conveniently carry a light. "Sivel" refers to pedestrians, parcels dropped, and bricks. What are we to infer from this? Surely this argument means that, because a parcel dropped from a van, or a brick in the road, cannot be compelled to exhibit head and rear lights, these are unnecessary on cycles, and, presumably, superfluous on larger vehicles. Does he advocate the abolition of all lights? If so, it must be prohibition of lights on vehicles, because nothing could be more dangerous, both in country lanes and city streets, than the intermingling of lighted and unlighted vehicles, especially as, even in London, fogs and mist are not unknown. Of course, if and when we have the "Prohibition of Lights on Vehicles" Order during a fog, traffic will cease entirely. If that does not suit "Sivel," we are back at the only safe alternative—compulsory lights, front and rear, on all vehicles. He cannot have it both ways, and for lights to be compulsory only during certain climatic conditions is, I think I may safely say, quite impracticable.

Anyway, why is there so much objection to "rear" lights? If any class of road users are of opinion that they should be favoured to the extent of being required to carry one light only, why not agitate for the abolition of front lights? Oncoming traffic passes on the other side of the road, and, if any light is wanted at all, it is surely for that portion of the traffic that is using the same track, and as I can conceive of no useful purpose whatever served by a rear light on an overtaking vehicle, the only use left for the light is to manifest the presence of a vehicle being overtaken. Further, if there is to be any differentiation of treatment as between the various sections of road users, the only claimants who can reasonably plead for exemption are those who most frequently overtake and are not overtaken, and the compulsion to carry lights should be most strongly enforced on those who are more frequently overtaken.

Personally, I fail to see why any class of vehicle should be particularly penalised, or particularly favoured, and we are thus back again at my original contention, viz., either that all should carry effective front and rear lights, or that all lights should be prohibited. The impracticability of the second alternative under certain climatic conditions prevalent during the darker months of the year—rain, mist, or fog—render the first alternative the only safe and logical one.

Hornsey. SOMMON CENSE.

HONOUR TO WHOM HONOUR!

Sir,—I am sorry to disturb the harmony of the mutual admiration society which is holding its meetings in your columns under this heading, but—

Three weeks ago my back wheel was run into by a lorry, and so buckled that a new tyre rim is the only possible repair.

The machine is 1919 pattern—in fact, brand new a few days before the accident.

A new rim was ordered from the makers—a well-known firm—the same day by the repairers who have my machine. Since then both they and I have asked the makers to hurry, explaining that the machine is required for daily use.

I have no interest whatever in the firm beyond that of a customer who would no doubt be satisfied if his machine had a back wheel in it, and so enabled him to acquire satisfaction, twice daily, at 8.15 a.m. and 7 p.m.

Oh! ye motor cycle manufacturers! Search in your hearts and order books, lest, peradventure, ye be the culprits. So that I may have my rim: and ye, the shekels therefor; and my blessing on yourselves, your successors, and assigns, in fee simple, and free from incumbrances.

Slough. VERBUM SATIS FACIENTI?

CLUB CHAMPIONSHIP IN HOLLAND.

A scene in the recent inter-club team trial which took place in Holland. Eight teams of three competed, and twenty-one riders survived the course, which was very treacherous owing to rain.

Sir,—I should like to add my testimony on this subject concerning the only firm with whom I have dealt.

I have had from the Sunbeam people a 2¾ h.p., a 3½ h.p., and an 8 h.p. machine in succession, starting the first-named as a complete novice. The firm of John Marston then impressed on me that they did not lose interest in their machines when they left the works, and that I was to write to them in all cases of difficulty, though they did not expect that I should have any difficulties that were not of my own making. I can only say that they have absolutely acted up to their principles, and on the few occasions when anything went wrong, as it did once or twice without blame to the machine, the firm acted with the utmost promptitude and generosity. If the demands of the working-man will allow it, I shall never have another brand of motor cycle. I have no connection with the firm except that of a highly satisfied customer.

The weekly testimony of your readers is like the housemaid's character—taken altogether it is more interesting for the names that do not appear! G. T. PARRATT.

Woking.

THE MOTOR CAR ACTS, 1896-1903.

Sir,—I am with Mr. Jones in his protest against the interference and persecution of motorists by the police and magistrates of certain particular districts.

Of course, concerted action is the only remedy; but how are we going to get it? Letters to motoring journals are not much use. The daily press is the power that moves the authorities, and I do not think we are likely to get help from that source. At present the daily press only publishes very short articles of any interest to motorists and reports from police proceedings against the really bad and careless driver, which only prejudice public opinion. We can read in the daily papers of a motor car that ran from Scotland to London during the strike at a speed that exceeded the legal limit, and wonder whether the police trappers had found some other work. The Automobile Association advertises that it was requested by the authorities to organise many thousands of willing motorists against the railway strike, and it tells us that during that "black week" the motorist was the man of the moment. All that sort of thing is very good.

The advertised fact that a motor car can be driven safely at a speed exceeding 20 m.p.h., and that the motor car or cycle owner is quite a potential and respectable member of society does not seem to bear weight with the authorities in certain districts, and the above obsolete Acts are still being used to employ the police and provide a source of revenue.

We cannot hope for anything different while the average motorist is so apathetic and content to be merely tolerated on the roads, and I do not think motorists could organise strongly enough to force the authorities to let up on a system of persecution which is so profitable to themselves. And I think public opinion is still with them, and helped on by the motorist who does more mileage round the houses than the open road.

Many motorists have experienced the usual "hold up" by the police on our main roads and noticed the unsympathetic attitude of the walking public who stop to see the "fun." When the majority of motorists have experienced the methods of the police and the way in which the police are encouraged by magistrates against motorists in the police courts, we may hope for some concerted action, but, until we get to that stage, or enlist the aid of the daily press, we cannot hope for any relief from the present system of persecution. A. LONGMAN.

Sir,—In your issue of October 30th H. Reg. Jones states that "in this locality (South Wales) motor cyclists are watched in all ways, and on the slightest pretext are summoned and heavily fined," and that "no matter whether careful riders or otherwise, no one escapes for more than a month or so (in this locality at least)."

Now, while heartily agreeing with him that these Acts need well revising, as one of a motoring family of nineteen years' standing "in this locality," and as a motor cyclist of eight years, also "in this locality," I must take exception to these statements.

At all times we have found the police obliging and willing to help motorists. In at least six cases they have warned the owners of dogs which attacked me when on a motor cycle, and offered to take proceedings if the animals again offended.

As a matter of fact, most of them would welcome more sensible motoring laws.

I believe, if county records could be compared, it would be found that this county (Glamorgan) would head the list both for road improvements and non-molestation of motorists. Locally, if the police take action against anyone it is usually understood that the offender has been "asking for it." NELSON NEALE.

SPEED WOBBLE.

Sir,—As there have been several letters, etc., written in *The Motor Cycle* recently concerning "speed wobble," may I be permitted to advance a possible theory as to the cause of this phenomenon.

At high speed the front wheel of a motor cycle is subjected to a considerable force in a vertically upward direction as a result of the wheel striking the small irregularities in road surface. This force is aided, perhaps infinitesimally, by the pull of the engine on the back wheel, which tends to lift the front wheel.

The result of this is that after a certain speed has been attained, depending on the weight distribution in the particular machine, the front wheel is practically off the ground, and control becomes impossible.

This idea is based, and possibly confirmed, by the fact that a precisely similar wobble, increasing in width and finally finishing in a crash, can be produced at low speeds by weighting the carrier to a sufficient extent abaft the back axle.

A cure should lie in bringing the centre of gravity further forward.

Following this same line of thought, a quick rebound spring fork and a hard front tyre should make matters worse; hence an argument in favour of laminated front fork springs, with their nice lazy action. A.W.P.P.

On Active Service.

JET SIZES.

Sir,—I hope it is not too late to write a few words in reply to "C.T." in your issue of October 9th, which, as I have just come back from Egypt, I have only just seen. I had, until recently, a French military 3½ h.p. Sunbeam, with an Amac, and got the best results with a 26 jet. I found, however, that the marked sizes were very unreliable and confusing, but with this particular 26, and using benzole, I got 80 to 100 m.p.g. fairly slow running, and excellent hill-climbing.

I entirely agree with "C.T." about the air lever, and have found that with any jet only a small range of speeds is possible, without starving at high speeds and choking at low ones. The 26 jet gave an approximately correct mixture at about 20-25 m.p.h.

I should like to know if "C.T." or any one else has observed the following fact: With the engine running light and air about half open, the engine accelerated if the air was either fully opened or fully closed, but ran slower with the air lever in the middle. I should be interested to hear an explanation of this from the Amac people, or anyone else. I might also mention that I found it necessary to open the air at low speeds and close it at high ones, which is contrary to the makers' instructions. A. F. SCROGGS.

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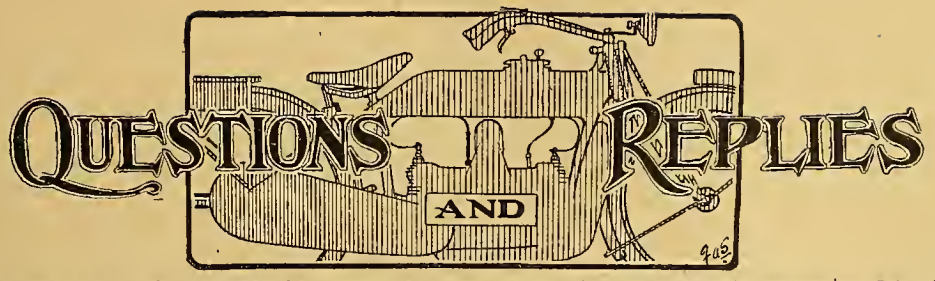

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Taxation Liability.

Will you please inform me if I am liable for Inland Revenue licence for a motor cycle which I bought in September this year, for which the previous owner had already paid the tax.—B.G.G.

If you used the machine in September, you are liable for the full tax, but if you did not take the machine on the road till October, half the tax is payable.

Sidecar for Lightweight.

I am the owner of a 2¾ h.p. (1915) A.J.S., and am desirous of fitting a light sidecar—not wicker—to my machine. It would be used chiefly for passenger work in the Cambridge district—flat country. I should be glad, therefore, to have your advice on the following: (1) best type of sidecar; (2) size of jet advisable; and (3) would any other alteration to the machine be necessary?—G.P.Y.

Your machine would be capable of taking a light sidecar and passenger in flat country. You would not require to make any special alterations to the machine, other than possibly fitting a larger jet in the carburetter. A 30 jet should be satisfactory. Most of the sidecar manufacturers make light coachbuilt sidecars.

Damaged in Transit.

I recently had cause to claim on the railway for an engine broken during transit to the makers. The engine was being sent for a minor repair, and when it arrived the fins were smashed off the cylinders. I was immediately advised by the makers. They, of course, renewed the cylinder, and this entailed new piston, connecting rod, etc., until their bill was £8 10s., which I paid. The railway company decline to recompense me, as the makers' employee gave a clear signature when the engine arrived. It was sent carriage paid, company's risk, and was externally perfect. Have I a case against the railway or against the makers?—W.A.L.

You are in rather an awkward position, as the makers gave a receipt clearing the railway company, and it seems to us that the proper course is to claim on the former for the damage through their negligence in giving this receipt, or else by arrangement with them to sue the railway company on the strict understanding that if the claim is lost through the receipt being given the firm will indemnify you from all loss.

Speed and Consumption.

On ordinary running, if the machine is travelling fast, does it use more petrol on the same length of run, or less, than when the speed is slower?—R.D.C.

All other conditions being equal, the petrol consumption is greater the higher the speed maintained.

For Overseas Condition.

Would you please inform me which type of motor cycle is best suited for overseas conditions in Palestine or Egypt?—C.H.T.

The most suitable type of motor cycle for the road conditions in Palestine or Egypt would be one with a fairly high ground clearance and transmission not likely to be seriously affected by sand or dust. A chain-cum-belt model would, therefore, be satisfactory, and the preference should be given to one in which the primary drive and all engine details are carefully enclosed. A cool running single-cylinder engine would be a desirable power unit.

CUMBERLAND M.C.C. (WESTERN SECTION) RELIABILITY TRIAL.

A. R. Hill (2¾ h.p. Royal Ruby J.A.P.) checking in at the finish. This rider lost only five marks on time, climbing Red Bank (Grasmere) and Kirkstone Pass (steep side from Ambleside) in fine style.

Engine Details.

Will you kindly answer the following? (1.) How are the valve guides fixed in a 1912 B.S.A. cylinder? (2.) How can I get them off? (3.) Would a piston ring that is $\frac{1}{32}$in. narrower than the groove in the piston cause knocking?—G.T.

(1 and 2.) The valve guides in the B.S.A. cylinder are a driving fit. To remove them they require knocking through. This must be done carefully so as to avoid breaking the cylinder. (3.) A piston ring so much undersize as your sketch indicates would certainly account for a great deal of engine noise

Oil Slinging.

(1.) My 3½ h.p. Rover has recently developed oil-slinging from the pulley side. Does this indicate engine wear? (2.) While running at 25 m.p.h. the steering seems to be affected slightly, giving the feeling of side-slip. On examining the engine I find I can move the main shaft horizontally about $\frac{3}{16}$in. by pulling the pulley. The belt now rubs against the silencer and the frame. The machine climbs beautifully, and there is no indication of knocking.—G.N.

(1.) This is probably due to wear in the main bearing. (2.) This might be due to the frame having been strained in some way. The side play you refer to may be ignored.

Silence.

Some time ago I purchased a 6 h.p. motor combination, but have sold it, mainly on account of its being so noisy and my wife's health not of the best. I should be glad (being quite a novice) if you would tell me: (1.) What are the chief causes of noisy motor cycles? (2.) What do you consider the least noisy make of motor cycle, capable of taking a heavily laden sidecar? (3.) Is a 3½ or 4 h.p. powerful enough to take a sidecar and passengers over any ordinary ground? Speed is of no consequence whatever.—Noisy.

It is impossible to say which is the quietest motor cycle on the market. Noise, of course, is largely dependent on the style of driving adopted, and there are many motor cycles at present on the market that are reasonably silent. We would advise you to study the figures in the reports of the 1919 Six Days Trial, when comparative tests were made in the silent running of the various competing machines.

Clutch Lining Material.

Could you please tell me which is the better lining for a clutch, leather or Ferodo?—F.W.

Ferodo is a most satisfactory lining, and has usually a much longer life than leather; it is less affected by external conditions, such as excess or lack of oil, heat, or undue friction by slipping.

Lack of Power.

I have a 4 h.p. Bradbury, old pattern (about 1909), with automatic inlet valve. It will work well on the stand, and starts easily, but after running twenty yards it has no power whatever. Can you tell me the cause of this? I find the inlet valve spring is very frail.—J.T.

Probably the weak inlet valve spring is the cause of your engine falling off in power. It may also be due to a partial stoppage in the petrol supply. You should notice when the engine stops whether the float chamber of the carburetter is empty; if so, try slightly raising the level.

Running Costs.

A friend of mine and I have been having a discussion as to the relative annual running costs of a twin motor cycle and sidecar and a light cycle car, say, of 8-10 h.p. We should like your opinion on this matter.—T.W.H.

With regard to the actual running costs, we do not think that there is any appreciable difference between those of a high-powered motor cycle and sidecar and a light car not exceeding 8 h.p. or 10 h.p. The expenses, however, involved outside running costs, such as garage, insurance, taxation, etc., are considerably higher in the case of the four-wheeled vehicle.

Two-stroke Troubles.

I have a two-stroke 2¾ h.p. engine—Dixie fixed magneto—as fitted to a 1914 Wolf. I have tried in vain to get this engine to fire correctly. Everything appears to be in perfect order. Sometimes the exhaust appears to be in the crank case, at others through the carburetter. A blow-back here is noticeable, even when the exhaust is *via* the correct port. The firing is only intermittent, exhausting at the points named. The spark is good. The piston rings are new. All joints are airtight. Jet No. 28, Amac. Compression not sufficient to lock the driving wheel. Piston after uncovering inlet port goes ¼in. higher. A thin machining has been taken off the neck of the crank case owing to a repair.—S.A.J.S.

The correct timing for your engine should be: Spark to occur with piston on top dead centre when the ignition control is fully retarded. Try a smaller jet, say No. 26. We do not think that a slight alteration to the crank case would seriously affect the running. A possible cause of the trouble may be that, in reassembling the engine, you have fitted the piston incorrectly; that is, with the deflector nearest the exhaust instead of having it on the same side as the transfer port.

Flat-faced Valves.

My engine is a single-cylinder 5-6 h.p. with valves faced on the under side of the head, instead of the usual petrol engine pattern. What is the advantage of valves faced in this manner?—H.D.

There is no particular advantage in flat-faced valves, and the few makers who favoured them have mostly discontinued their use.

Generosity may be Costly.

About two months ago I had the misfortune to run into a woman. It was quite an accident, as she and her friends admitted, and was entirely her own fault, for she said she completely lost her head. I took her home, and shortly afterwards called to see how she was going on. She said she was progressing nicely, but was still under the doctor. Later I received a note saying she was not going on so well, and the doctor advised her to write me and ask for assistance in the expenses that had been incurred. Unfortunately, I am not insured against third party risks, and therefore would like your advice what to do. The woman, who is not in very good circumstances, appears to me to be honest, and I should certainly like to help her in some way, but in these cases sometimes there is no end, and I thought if I made a payment I might incur further liabilities—C.B.

Under the circumstances you describe, any payment made by you to the party injured in the accident will seriously prejudice your position in the event of any legal action. Before offering any assistance, it would be as well to consult a local solicitor, or in any case to get an admission in writing that the accident was the fault of the other person.

EXPERIENCES WANTED.

"J.W.C."—Benefits derived from use of Spots in petrol on small four-stroke engine (Beaufort).

READERS' REPLIES.

Cutting Paper Washers.

In your issue of October 30th, on page 470, you have a short article describing how to make a paper washer for cylinder base. The method you give is, of course, very old, but the description is likely to give the novice some trouble. Instead of tapping round the outer edge of the cylinder base first, and afterwards tapping round the mouth of the cylinder, these operations should be reversed, the paper being held firmly while the circle of the cylinder mouth is tapped out. The paper will then be a tight fit round the lip of the cylinder, and will not move whilst the operator taps round the outer edge of the cylinder base and finally taps out the paper at the holes. The ideal tool for this job is a small ball-pane hammer. Personally, I make a dozen at a time by taking an impression or rubbing of the original washer and fastening to twelve pieces of paper cut to a suitable size, fastened together with paper stays. The outline of the washer is then cut round with a knife as used by embroidery draughtsmen who cut their designs out in paper or card. Thus in one simple operation I have enough washers to last a year or two. For those of your readers who are keen on a clean crank case, I would give the following tip. Well soap your washers on both sides before using, whether you oil them or not. There is no need to soak them in oil, which is a messy job, if they are liberally soaped.—F. W. CHAPMAN.

An Unsatisfactory Insurance Transaction.

Your answer is certainly not Scotch law, and is contrary to custom. Even if the average clause were contained in the policy and a machine insured for £80 stolen, although worth £100, the company would require to pay the £80 in full. The average clause would only come into play in the event of a partial loss. In the case stated, and presuming the machine was value for £100, you admit the insured was only four-fifths insured, but he is entitled to four-fifths of the total loss—£100; that is, £80 nett. His share of the loss, one-fifth, is represented by the difference between £80 and £100. Had the cycle been partially burned and the total damage £40, only then would the average clause come into play, and the insurance company would have stated they were prepared to pay four-fifths of the loss of £40, hand the insured £32, and make him pay the £8 himself. I have had many similar cases come up before me, and the above are the lines on which the companies have always paid.—INSURANCE AGENT.

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CATERHAM TO TORQUAY, VIA SOUTH COAST.—T.A.B.

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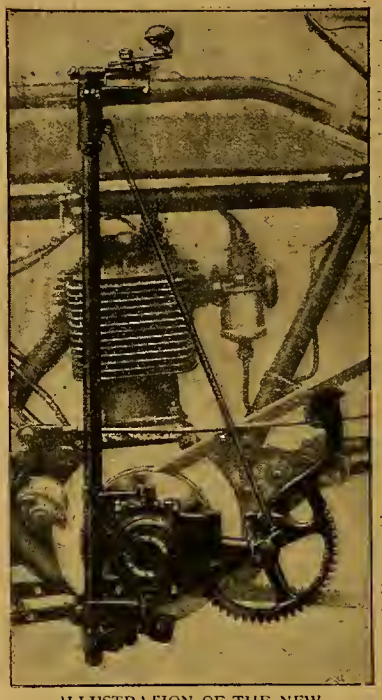

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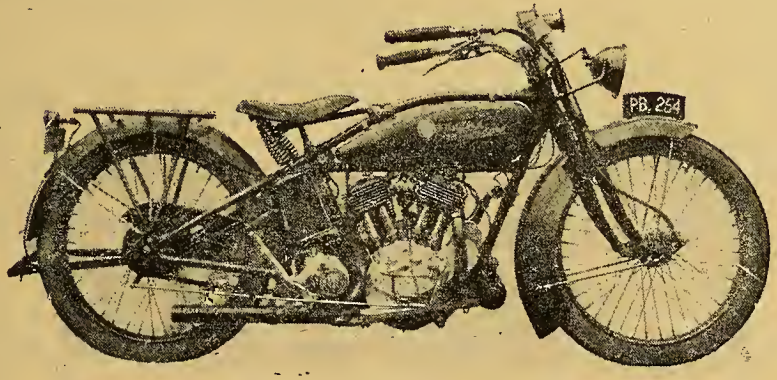

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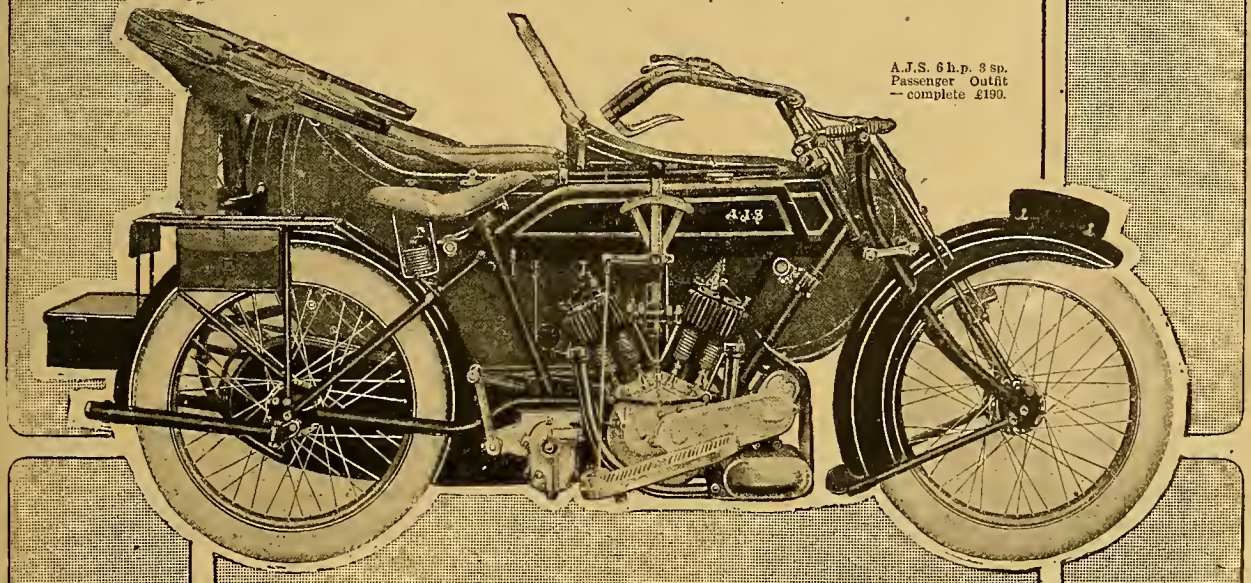

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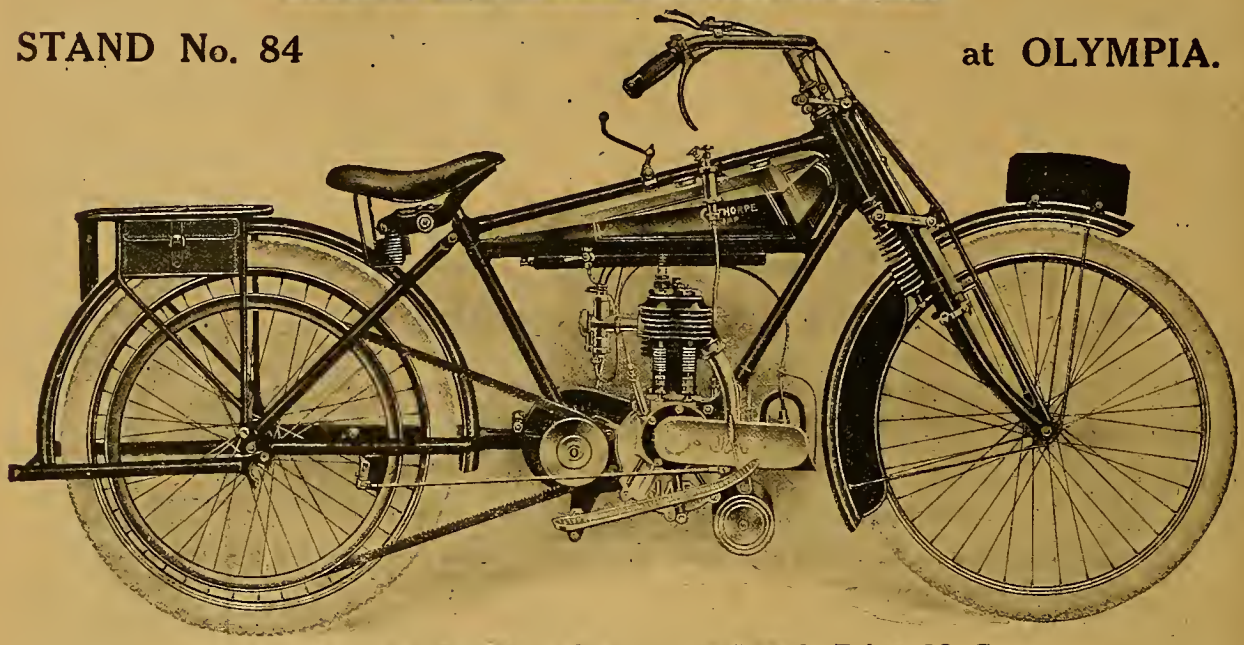

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TRANSMISSION. Two roller chains (on the left hand side of the machine) from sprockets on the engine shaft, one from each gear to a counter shaftin the bottom bracket, which contains the two-speed mechanism. The drive from the countershaft to the back wheel is by ¾in. belt off a fixed pulley on the right hand side of the machine. Midway between the two gears is the free engine position, which is passed through to engage either gear. The drive through both gears is direct, thus obviating that friction which is created when running through gear wheels.

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COMPLETE. With stand, carrier, strong wide mudguards, armoured Pannier Bags, with tools in roll complete, handsomely finished in four coats of lustre enamel and all bright parts heavily plated.

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W.H W.

In answering this advertisement it is desirable to mention "The Motor Cycle."

THE INCOMPARABLE

AUTOGLIDER

(Trade Mark).

THE ALL-WEATHER GENERAL PURPOSE MACHINE.

An enjoyable and practical solution of the travelling problem.

Speed—Walking pace to 40 miles per hour.

Watch future advertisements showing the application of the Autoglider as a service machine.

SPECIFICATION

ENGINE—2¾ h.p. Autoglider Union Two-stroke.

DRIVE—Chain through steel plate clutch.

BRAKES—Two. Band, one foot one hand.

CHASSIS—Steel tube fitted with the patented Autoglider suspension of laminated steel springs.

WHEELS—Disc shod with Autoglider Palmer Cord tyres 16x2⅜.

MUDGUARDS—The most efficient ever made.

Some performances of the unbeaten Autoglider:—

Birmingham to London reliability run, 112 miles in 4 hours 48 minutes.

Silver Medal—Style Cop Hill Climb, July 19th.

1st Prize—Southend Hill Climb.

Gold Medal—Sutton Bank, Sept. 8th.

Winner Luton Speed Trials, Sept. 13th.

Silver Medal—Style Cop Hill Climb Sept. 27th.

The Autoglider climbed Leathley Bank, Yorkshire, Oct. 4th, with two passengers; total weight of passengers, 19 stone 11 lb.

Price £40 nett

delivered Birmingham.

LIST OF AGENTS WILL APPEAR IN THE NEXT ISSUE.

THE MACHINE THAT IS WELL WORTH WAITING FOR.

Write for advance list to—

AUTOGLIDER, Limited,

Caxton House, Great Charles Street, BIRMINGHAM.

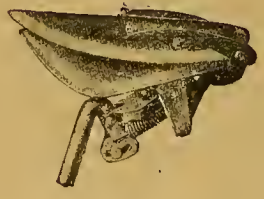
X-L-ALL MAKE HISTORY.

X-L-ALL made the ORIGINAL Pan Seat Saddle.

X-L-ALL made the ORIGINAL Parallel Motion Saddle.

X-L-ALL made the ORIGINAL Detachable Plug.

Stand 219



Model H2

Model H27 with folding back rest.

X-L-ALL Detachable Plug.

X-L-ALL LTD., Hall Green, Birmingham.

London Office: 329, High Holborn.

REGISTERED TRADE MARK

STAND 178 OLYMPIA

Specialities

REGISTERED TRADE MARK NOVELTIES

Accessories

STAND 178 OLYMPIA

REGISTERED TRADE MARK

H.A.H.

COMPLETE ELECTRIC LIGHTING SETS

(See Catalogue 42)

Sole Selling Agent for

GENUINE HELLESEN DRY BATTERIES

For United Kingdom and India (See Catalogue 43)

FOR THE MOTOR CYCLIST.

Fig 386 11/-

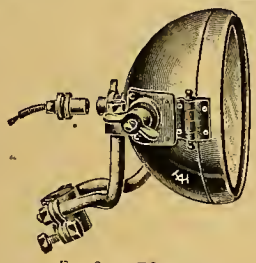


Fig. 893 50/-

"FLASH," 4½ volt 14/7

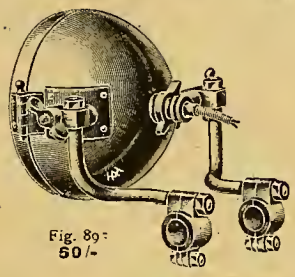


Fig. 893 50/-

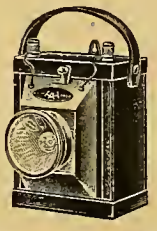


Fig. 1040 26/- complete

Fig. 455 6d per tin

Fig. 886 26/6

H.A.H Accumulators

Fig. 855 18/6

Fig. 390 6/6

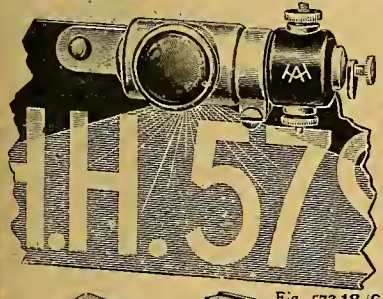


Fig. 572 18/6

SPECIALITIES H.A.H. NOVELTIES

H.A.H. Complete Electric Lighting Sets
Genuine Hellesen Dry Batteries.

STAND 178 OLYMPIA

GALLERY.

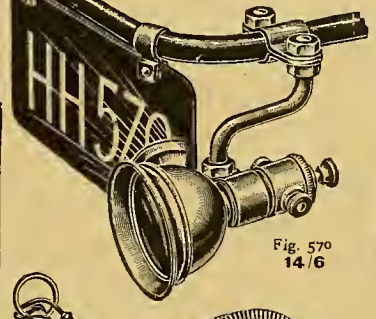


Fig. 570 14/6

Fig. 370 1/6

TYPES OF GENUINE HELLESEN DRY CELLS AND BATTERIES.

Fig. 245 6d

Fig. 573 9/6

Fig. 150 12/-

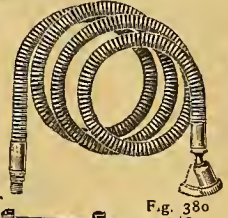


Fig. 380 1/6

"FLARE," 2 volt 9/9

"FLIGHT," 4½ volt 14/7

"STORMSET," 6 volt 71/4

"VICTOR," 6 volt 16/8

"FLAME," 4½ volt 13/2

Fig. 428 3/6

CARRIAGE EXTRA on all the above.

Telephone: BANK 8114/5.

A. H. HUNT,

Present Address: 115-117, CANNON ST., LONDON, E.C.4.

Fig. 410, 2/-

Telegrams: 'KEYAGE CANNON, LONDON.'

REGISTERED TRADE MARK

IMPORTANT NOTE.—Change of Address after Xmas, 1919,

H.A.H. WORKS, TUNSTALL ROAD, CROYDON,

Telephone: CROYDON 2225 & 2226. **ENGLAND.** Telegrams: "KEYAGE, CROYDON."

REGISTERED TRADE MARK

The Service Company Ltd (LONDON)

MOTOR CYCLISTS' EXHIBITION

Permanently established in the heart of LONDON.

EVERYTHING FOR THE MOTORIST.

CARS.

We have contracts with many of the most popular types, and can offer early delivery.

During the Motor Cycle Show, our representatives will be on Stands

No. 69 BROUGH
„ 103 CLYNO
„ 86 O.K.
„ 60 NEW IMPERIAL

MOTOR CYCLES.

Contracts with all principal makers.

Early delivery. We always have one of the finest selections in the Kingdom in stock—new and second-hand. We have customers in every part of the United Kingdom, and are generally regarded as *the* reliable firm.

ACCESSORIES.

Special features. Our Showrooms are not a mere shop, but a permanent exhibition of the latest and best in motor accessories, and your inspection is always invited, whether a buyer or not. A large range of second-hand accessories and spare parts.

OUTFITTING.

The "best stock in the Kingdom," vide press. Everything for the comfort of the rider awheel.

TERMS: CASH — CREDIT — EXCHANGE — AND GOOD SERVICE ALWAYS.

The Service Company (London) Ltd.,

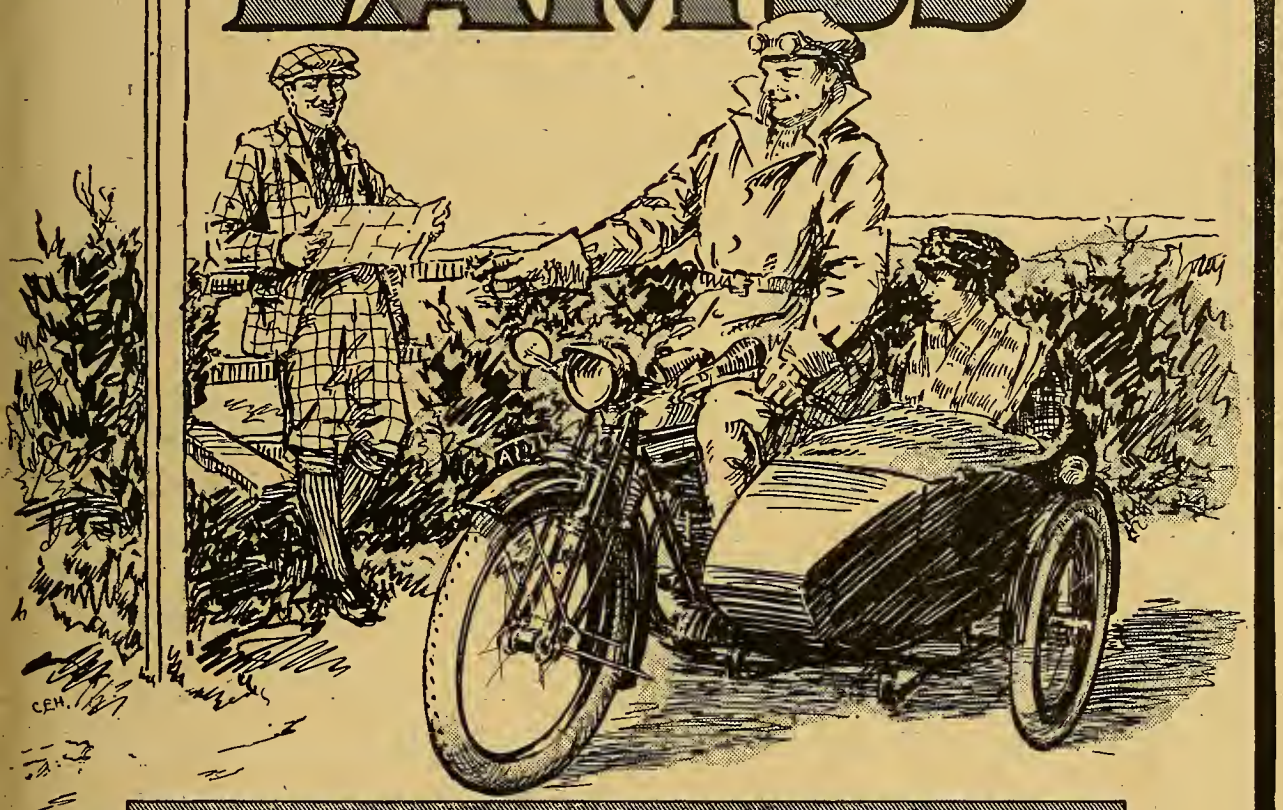
292, 293, and 95 and 96, High Holborn, London, W.C.1.

'Phone: 6430 Holborn. **Telegrams "Admittedly, London."**

In answering this advertisement it is desirable to mention "The Motor Cycle."

Ah! You purchased at Lamb's!! Then All Roads are Good Roads!

LAMB'S



DOUGLAS
2¾ h.p. Blue and Silver Tank,
68 gns.

NEW IMPERIAL
8 h.p. Combinations
at **£135** each.

1919 BLACKBURNE.
1919 NORTON 3-speed T.T.
1919 ALLON De Luxe.
1919 ENFIELD.
1920 HARLEY elec. comb.
1919 ARIEL 5-6 h.p.
1919 ARIEL 3½ h.p. comb.
1919 NEW IMPERIAL 8 h.p.
1917 MORGAN Grand Prix w.c.
1919 FORD 5-seater.

1919 B.S.A. c cum-b. comb.
1919 TRIUMPH comb.
1920 MATCHLESS.
1919 ZENITH comb.
1917 ENFIELD 8 h.p. cyn mo.
1916 ALLDAYS c1.
1919 METRO-TYLER 2-speed.
1919 METRO-TYLER.
1919 SUNBEAM.
And many others.

SIDECARS AT MAKERS' PRICES.

CANOELET. All models.
WATSONIAN Touring.
GRINDLAY De Luxe.
B.S.A. No. 2.

DEFERRED TERMS BY ARRANGEMENT.

LAMBS

151, High Street, Walthamstow.
'Phone: 169, Walthamstow.
Telegrams:
Cyclotomo, Phone, London.'

387, Euston Road
(Facing Gt. Portland St. Station).
'Phone: Museum 4978.

50, High Road, Wood Green, N.
'Phone:
Hornsey 1956.

Telephone: 995, Cambridge (2 lines). Cables, A.B.C. Code. Telegrams: "Bicycles, Cambridge."

ROBINSON'S GARAGE
32-35, GREEN ST., CAMBRIDGE

Motor Bicycle Spare Parts, Accessories, etc.
In stock at the time of advertising.

Telephone, wire, or cable us your wants. You can send confirmation and cash by next post. Cheques and Postal Orders should be made payable to H. Robinson and crossed "Lloyd's Bank, Cambridge." We shall be pleased to quote for any spares not mentioned below.

DOUGLAS 2¾h.p. Spares, brand new, genuine and pattern.—Footboards only 32/-, with clips 34/8; footrests, 11/- pair; footrest tubes, 7/9; handle-bars, upturned and semi-T.T., ⅞in. and 15-16in. stems, with grips, 24/6, grips only 2/6 pair; Pedley rubber grips, 4/3 pair; mudguards, T.T. type (front and back), 12/1, touring type (back) 27/6; number plates, front 2/3, back 2/3; stands, front 8/9, back 18/6; lubricator glasses, 1/9; petrol and filler caps, 5/-; glasses, 6d.; stand clips, front 1/1, back 4/6; kick start bolts, 9/10; springs, flat, 1/1; springs, round, 9d.; petrol tap and filter combined, 7/-; drain and compression taps, 4/-; armoured toolbags, 14/-; canvas tool rolls 7/-, leather 6/6; tool kits, complete, 45/-, (pattern) 30/-; front brakes, 30/-; guides, 2/6 pair; shoe with pads, 5/6 pair; pads only, 1/- pair; back brake pads, 3/6; foot brake springs, 1/-; exhaust wires, 3/-; outer sheaths, 3/-; grease injectors, 3/9.

Front Forks.—Front forks only, 55/-; fork springs, 3/6; spindles (long and short), 1/6 each; head clips, 10/-; steering column, 16/6; head lugs, 16/6.

DOUGLAS 2¾h.p. Engine Spares.—Cylinders, 1913-1919, 44/-; pistons, 1912-19, complete with gudgeon and rings, 19/6; rings, 2/6; gudgeon pins, 2/3; copper ends, 2d.; bushes, big end 4/-, small end 3/-; valves, exhaust 6/-, inlet 6/-; springs, 1/-; collars, 9d.; cotters, 2d.; valve guides, 4/6; tappets, complete, 5/4; tappet guides, 4/-; cam wheel studs, 4/6; intermediate wheel studs, 3/6; crankshafts, 55/-; crankshaft pinions, 9/4; crankshaft ball bearings, 25/6 and 15/6; flywheel sprockets, 5/9; flywheel nuts, 1/1; locking plates, 3/6; cam wheels, 30/-; magneto wheels, 11/-; intermediate wheels, 11/-; inlet and exhaust valve rockers, 7/9 each; valve caps, inlet and exhaust, 7/9; silencers, 40/6; long exhaust pipes, 15/- pair; clips for same, 2/6; jointings and asbestos washers, all sizes, for Douglas.

TAN-SADS, complete, 51/-; saddles only, 33/-; cushions only, 5/-; side footrests, with dress protector, 6/-; side backrests, collapsible, 7/-.

VALVES for J.A.P., Humber 1912-13 3½h.p., Rover 3½h.p., B.S.A. 1913-14 3½ and 4½h.p. (1919), New Hudson 1913-14 3½hp., James 4½h.p., Triumph 3½ and 4h.p., Douglas 4h.p., 6/6 each.

MIRRORS.—Handle-bar, ebony, Lucas pattern, fine finish; 12/6 each.

MECHANICAL Horns.—Latest Cowey 60/-, Mecaphone 30/-; small sizes 13/6 and 10/6.

DOUGLAS 2¾h.p. Gear Box Spares.—2-speed: Secondary shafts 27/6, 24T screwed sleeves 18/6, 30T plain sleeves 13/2, mainshafts 18/8, 24T pinions 18/6, dogs 7/9. 3-speed: 16T screwed sleeve 18/8, 20T plain sleeve 15/6, 16T pinion 14/3, dogs 10/-, ball bearings—large 14/-, small 10/6; fixed pulleys 11/-, pulley keys 7d., chain wheels 13/5, chain wheel nuts 7d., 2-speed gear box with pulley and chain wheel £10, 2-speed gear box with clutch and kick starter £18.

DOUGLAS Wheels, 1914-19.—Back wheel complete, less tyre, £4/3/9; front wheel, less tyre, £2/9/6; hub axles, back and front, 7/- each; cups, 3/9 each; hub axles, 1912-13, back and front, 5/-; rims, 26×2¼in., back and front, 14/3; spokes and nipples, 2d.

COLLEGE Mudshields for Winter, 16/6, 20/6, 32/6, and 36/6 each.

PLUGS.—Lodge weatherproof, 7/6; Lodge ordinary, 5/-; Sphinx D41, 4/-; Forward W.M., 8/6; Apollo L.C.V., 5/-; C.A.V. No. 3, 3/6.

1919 Triumph Spares.—Cylinders, £6/6; front stand, 7/9; front guard stays, 2/6 pair; rear carrier, 31/-; valve caps, inlet and exhaust, 5/-; valve cotters, 3d.; pistons complete, 28/-; connecting rods, 23/6; connecting rod rollers, 5/- set; gear cover, complete with bushes, 16/3; cam wheels, 23/-; rocker arms, inlet and exhaust, 8/8; cylinder base studs, 4d.; cylinder base stud nuts, 3d.; adjustable tappets, complete with guides, 9/- pair; exhaust union nuts, 3/3; rear brake springs, 5d.; front crown axle and cones, 8/-; fork buttress, 9/-; Junior Triumph cylinder, £2/2; pattern pistons with gudgeon and rings, 28/-; gudgeons only, 5/-; large bushes 5/-, small 3/6; piston rings, 2/6; valves, inlet and exhaust, 6/6; valve springs, 7d.; filler caps, 2/6; extra heavy covers, 34/-; inner tubes, 12/-; footrest rubbers fitted to frame, 4/- each; footrest complete, 35/-.

AMAC Carburetters for Douglas, 70/-; throttle and air valves, 9/- pair; floats, 2/-; needles, 2/-; springs, 4d.; jets, 6d.; caps, 2/-; gauzes, 1/-; handle-bar controls, 15/6; wires, inner and outer, 9/- pair.

SIDECAR Mudguards, enamelled, with strong stays, standard fitting, 12/6.

RENOLD Chains.—A.J.S. and Sunbeam, 101 links, ⅝×⅜, 24/7; ditto, 56 links, 13/10.

DOUGLAS 4h.p. Spares.—Frame, £21; cylinders, 50/-; pistons complete, 26/-; gudgeon pins, 2/6; connecting rods, 31/-; rings, 2/6; small end bushes, 3/-; big end bushes, 5/-; crankshafts, 70/-; flywheel sprockets, 5/6; valves, 6/6; springs, 1/-; collars, 9d.; cotters, 2d.; valve caps, 7/-; asbestos washers, exhaust 7d., valve cap 4d.; Renolds chains, 17/9; spare links 1/-; front brake pads, 2/- pair; head clips, 13/-; mudguards, front 30/-, back 29/-; extra heavy 4h.p. Douglas covers, 36/-.

WATERPROOF Overalls.—Suits complete, double breasted, good quality, all sizes; 37/6, 50/-, 70/6, leggings only, 19/6.

GLOVES, Gauntlets—Leather, with wool lining, 25/6, 21/6, and 17/6; waterproof gauntlets, 25/6; special unlined leather, 10/6.

MAGNETOS, twin and single-cyl., brand new; C.A.V. £8/5, Thomson-Bennett £7/7/6; control lever, wire and sheath complete, 17/6.

DOUGLAS Accessories. Reliable quality.—Late Brooks B170 saddle, 47/6; springs, 2/6; hand grips, 2/6; rubber grips, 4/3, Dunlop heavy cover 47/3; inner tubes, 10/3; Dunlop and Pedley belt 11/5; belt fasteners, 1/6; K.D. belt punches, 3/6 Dunlop outfits, 3/3 and 4/3; Chemico outfits, 3/ solutions, 9d.; tyre levers, 1/6; valve extractors 2/ Duco 5/-; grease injectors, 3/9; K.D. Model wrenches, 3/-; Raugraphine, 6d. and 1/6; oil cans, 2/ goggles, 3/- and 3/6; Prices' gear lubricant, 1/6 funnels, 1/2 and 2/-; Bluemels tyre pumps, 7/-; pum connections, 1/3; pliers, 4/- pair; magneto spanner 9d.; tappet spanners, 6d.

SIDECARS, brand new, genuine Douglas, with stor apron, door, 4 attachments, £30; Canoelet Mino (sporting), with apron, £17/8; Mills-Fulford Skiff, wit apron, £23; Corvette, with apron, £25/5; crates 17/ extra; Cameo screens, with side shield, £3.

MOTOR Bicycle Agencies.—Douglas, Sunbeam Triumph, Coulson-B., and Humber.

BULB Horns, best quality, plated 27/6 and 18/ black finish 21/6.

LAMP Sets.—Hesca head, 55/-; P. and H., 67/- an 42/-; rear lamps, 5/6, 6/6, and 9/6; generator with brackets 22/6 and 10/6, without brackets 15/6 brass Y-pieces, 9d.

HUNTS' Electric Lighting Sets.—Head lamps, N.I 50/- and 26/6, black 18/6; rear lamps, 9/6 Hellesen batteries, 13/6 and 3/9; leather cases fo batteries, 12/6.

PISTON Rings, high tensile cast iron, for Douglas Triumph, Sunbeam, Rover, A.J.S., Indian, Rab Triumph, J.A.P., Premier, Humber, Enfield, B.S.A and P. and M.; 2/6 each; correct sizes; no waiting

ACCUMULATORS, 4 volt 40 amp., 4×3½×5½in best quality, ready for charging; 30/-.

PISTONS, for J.A.P. 4, 6, and 8h.p., 35/-; 2¼h.p 30/-; Premier 3½h.p., 35/-; Triumph 3 and 4h.p 28/-; Douglas 2¾h.p. 19/6, 3½h.p. 25/-, 4h.p. 26/- complete with rings and gudgeon pins.

SPEEDOMETERS.—Cowey trip £6, ordinary £5 Watford trip £5, ordinary £4; Stewart trip £5/5 ordinary £4/4; brand new.

DOUGLAS Handbooks, 2¾h.p. and 4h.p.; descriptive illustrations; your own repairs; 1/3, including postage.

HANDLE-BARS, Douglas pattern, semi-T.T., 1in stem, including expanding bolt; any make of machine; 20/-.

KNEE-GRIPS.—Real leather padded, 10/6; leather and canvas padded, 7/6; all leather, best quality 14/6.

TOOL Rolls, real leather, with straps, 6/6; canvas 7/-

CONDITIONS OF BUSINESS:—

TERMS.—Goods supplied against Pro-forma Invoice, upon receipt of cash, or by return against approved Ledger Accounts.

PROMPTNESS.—All orders despatched same day as received if goods in stock.

SATISFACTION.—There is no risk in ordering by post; if goods fail to please, your money refunded in full if returned to us within seven days.

COLONIAL AND EXPORT orders, when possible, despatched in 11 lb. parcels per parcels post, saving shipping delays and excessive freight charges.

All quotations are plus cost of postage or carriage and suitable packing, also subject to alteration without further notice.

Robinson's Garage, Green Street, Cambridge.

c60 *In answering this advertisement it is desirable to mention "The Motor Cycle."*

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

OVERTISEMENTS in these columns rst 12 words or less 2/-, and 2d. for every ional word. Each paragraph is charged ately. Name and address must be counted. s discounts, conditions, and special terms gular trade advertisers will be quoted on cation.

stal Orders and Cheques sent in payment for rtisements should be made payable & Co. IFFE & SONS Ltd., and crossed sury Notes, being untraceable if lost in sit, should not be sent as remittances.

l advertisements in this section should be npanied with remittance, and be addressed e offices of "The Motor Cycle," Hertford t, Coventry. To ensure insertion letters ld be posted in time to reach the offices of Motor Cycle," Coventry, or London (20, r St., E.C.4), by the first post on Friday ing previous to the day of issue.

letters relating to advertisements should the number which is printed at the end of advertisement, and the date of the issue nich it appeared.

e proprietors are not responsible for clerical inters' errors, although every care is taken oid mistakes.

NUMBERED ADDRESSES.

the convenience of advertisers, letters may be sed to numbers at "The Motor Cycle" Office. this is desired, the sum of 6d. to defray the cost of ation and to cover postage on replies must be added advertisement charge, which must include the Box 000, c/o "The Motor Cycle." Only the number ppear in the advertisement. All replies should be sed No. 000, c/o "Motor Cycle," 20, Tudor Street, *Replies to Box Number advertisements containing nces should be sent by registered post, but in all such t is advisable to make use of the Deposit System.*

e case of motor cycles offered for sale under a box r, as it is unusual for these to be sold without first nspected by the intending purchaser, advertisers will te business by embodying in their advertisements mention of the district in which the machine may be seen and tried.

DEPOSIT SYSTEM.

ons who hesitate to send money to unknown persons nd in perfect safety by availing themselves of our t System. If the money be deposited with "The Cycle," both parties are advised of this receipt. time allowed for a decision after receipt of the s three days, and if a sale is effected we remit the t to the seller, but, if not, we return the amount depositor, and each party to the transaction pays e one way. For all transactions up to £10, a fee of 1/- is charged; on transactions over £10 der £50, the fee is 2/6; over £50 and under £75, 5/-; 75 and under £100, 7/6; and on all transactions 100, 1 %. All deposit matters are dealt with at lor Street, London, E.C.4, and cheques and money should be made payable to Iliffe & Sons Limited, letter "D" at the end of an advertisement is an ion that the advertiser is willing to avail himself of posit System. Other advertisers may be equally s, but have not advised us to that effect.

SPECIAL NOTE.

aders who reply to advertisements and receive no to their enquiries are requested to regard the as an indication that the goods advertised have been disposed of. Advertisers often receive so enquiries that it is quite impossible to reply to me by post.

MOTOR CYCLES FOR SALE.

A.B.C.

.C.—Caffyns, Ltd., Eastbourne, distributers for Sussex, are booking orders for earliest deliveries. [0062

IES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, Finchley. [0026

.C.—Deliveries commencing after the Show. Have you ordered?—Prompt deliveries from Victor nan, Ltd., 7, Mount Pleasant, Liverpool. [0021

NCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and y of Rutland; particulers and illustrations on st. [0056

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London, E.C.4.

For square deals and Values....

City Agents for all the leading makes of Motor Cycles. Also for cycle cars and light cars. A varied selection of new and second-hand machines for sale for immediate delivery. Inspection cordially invited. Our usual guarantee of mechanical fitness accompanies second-hand machines. If you want anything in motor cycles or combinations, you can usually get it from

WAUCHOPE'S

and be certain to get every satisfaction.

...ne rates. 1919

6 h.p. J.A.P. Twin Cylinder Engines

From Stock. Trade Supplied. Terms on application; these include extras. 50 Engines for immediate delivery, £37 10s. each.

Second-hand Engines taken in part payment. GOOD PRICE ALLOWED.

Makers' Guarantee

Wauchope's, 5, Shoe Lane, London

'Phone: Holborn 5...

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [0015

Abingdon

ABINGDON 3½h.p., T.T.; £36/10.—Full particulars from Symon, Upcroft, Chorley Wood, Herts. [X8278

ABINGDON, 3½h.p., N.S.U. 2-speed, new Middleton sidecar, fully equipped; £45.—595, Green Lanes, Harringay, N.8. [2440

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [9574

CROW Bros., High St., Guildford, A.J.S. agents since 1912, accept no premiums. [X7943

CROW Bros., High St., Guildford, A.J.S. agents since 1912 - Deliveries have begun [4...

1915 6h.p. A.J.S. Combination, 3-speed, hood, screen, lamps, etc.; £110.—97, Chestnut Rd., Plumstead. [X8693

TWIN 6h.p. 1918 A.J.S., ridden solo, grand condition; £100.—Vickery, Military Hospital, Hollymoor, Birmingham. [X8591

A.J.S. 2¾h.p., 2-speed, semi-T.T., lamps, horn, etc., in excellent condition; £50, or best offer.—11, Crescent Rd., Ramsgate. [2605

A.J.S., 1918, 5-6h.p., 3-speed, military model, used solo only for a few miles, Lucas accessories, complete; £125.—Below.

A.J.S., 6h.p., 1918, military model, practically new, run 1,000 miles, fitted with Mills-Fulford cane sidecar; £135.—Moss, Wem. [X8658

ALL-BLACK 1919 6h.p. A.J.S. Combination, Aug., any trial; £170, or best offer over.—Lakeman, Goldsworth, Woking, Surrey. [X8445

6h.p. 1914 A.J.S. and sidecar, 3-speed countershaft gear, kick starter and clutch; £95.—Wauchope's, 9, Shoe Lane, Fleet St., London. [2580

2¾h.p. A.J.S., 1914 model, countershaft gear box, accessories, good condition; £45; exchange anything useful.—22, Campbell Rd., Hanwell. [2473

1919 Brand New A.J.S. Combination, just received from works; offers; spare wheel, wind screen, etc.—Baines, 3, Central Rd., Blackpool. [2634

A.J.S. 1919 6h.p. Combination, delivered late Aug., spare wheel, wind screen, apron, and accessories.—Box L5,459, c/o *The Motor Cycle.* [9484

A.J.S. 6h.p. Military Model and coachbuilt sidecar, purchased new Sept., 1919; £150.—Bryant, The Laundry, Eastergate, near Chichester. [2600a

A.J.S., 1918, 5-6h.p., 3-speed, military model, with Sunbeam sidecar, Lucas accessories complete, in nearly new condition; £160.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0066

A.J.S. 6h.p., late 1913, Canoelet, M.D.L., screen, Lucas lamps, horn, Cowey, tools, spares, tube, perfect engine.—115, Bradford Rd., Manchester. [X8519

6h.p. A.J.S. Combination, delivery expected Nov., advertiser, who is next on list, going abroad; what offers?—Box 767, c/o *The Motor Cycle.* [X8459

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth Sole agents. Now booking for earliest deliveries. [0061

1916 A.J.S. Combination, 6h.p., spare wheel, speedometer, 3 electric lamps (accumulator), hood, screen; £140.—R.H., 7, Chatham Close, Golder's Green, N.W. 'Phone: Regent 1928. [2604

1919 A.J.S., new 6h.p. military model, just delivered. Lucas horns and lighting set; best offers over £125; also £10 spares included; genuine; private owner.—98, Grange Park Rd., Leyton, E.10. [2998

1914 A.J.S., 2¾h.p., 2-speed countershaft, new tyres, lamps, horn, etc., re-enamelled and in splendid condition; £48; Darlington.—See Kwiksale advertisement Miscellaneous Motor Cycles. [2917

1919 A.J.S. Combination, interchangeable wheels, wind screen hood and cover, storm apron, Lucas lamps, horn, watch, tools, etc., perfect condition; best offer over £186.—Chadwick, 5, The Crescent, Morecambe, Lancs. [2772

6h.p. A.J.S. Military Model, brand new from A.J.S. agent Aug. 25th, 1919, disc wheels, Lucas lighting, Klaxon, excellent condition, 3 months' guarantee remaining; £130 cash.—Lieut. P. D. Gibson, Edgmont, Derby Rd., Nottingham. [2493

A.J.S. 6h.p. Combination, new April, 1919, hood, wind screen, storm apron, spring seat-pillar, luggage carrier, special mat for sidecar, 3 lamps, 3 generators, horn, tools, etc., just been overhauled; £200.—Woitt, 81, Lichfield Rd., Stafford. [X8359

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts [2237

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Alldays.

ALLONS at Gourlay's, Fallowfield, Manchester. [2832

ALLON.—Caffyns, Ltd., Eastbourne, for delivery shortly. [0063

1920 Allon 2-stroke, clutch, kick starter, delivery January.—Clifford Motories, Eastwood, Notts. [2456

ALLON.—Guaranteed early delivery latest 1920 models.—Parker's, Deansgate, Manchester, Bradshawgate, Bolton. [X8722

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0027

1919 Alldays Allon, elctrical light, speedometer, Lucas horn, mileage low; £60.—1, Berkley Terrace, Norwood Rd., Southall. [X8562

2¾h.p. 1919 2-stroke Allon, 2-speed, free engine and clutch, brand new machine; £70.—Wauchope's, 9, Shoe Lane, London, E.C. [2577

ALLON 1915 2¾h.p. 2-speed 2-stroke, perfect condition, small mileage, powerful lamps, horn, tools, spare tube; £50, near offer.—73, Cricklade Av., Streatham Hill, S.W.2. [X8705

ALLDAYS Allon, 1915, single speed, just overhauled by makers, spare wheel and tools; £45, or nearest offer; buying combination.—Apply, Bancroft Schoolhouse, Morley, near Derby. [X8437

ALLON, recent model, 2-speed, Hutchinson tyres, saddle, lamps, pillion seat, all new, complete tools and accessories; £50; seen by appointment.—Adams, 50, Redcliffe Rd., South Kensington. [X7608

1914 Alldays Matchless, 2½h.p. Villiers engine, good condition, unused during petrol restrictions, new tyres and belt, fitted with accumulator electric lighting; £35; after 4.—13, Lyon Rd., Harrow. 'Phone: 632. [2627

F.O.C.H. for the new Allon de Luxe, 2-speed, kick starter.—Book your order now for early 1920 deliveries, starting January. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [9469

Alecto.

ALECTO 1919 Brand New 2-stroke Combination (coachbuilt), hand clutch, complete outfit; £120.—H., 2, Balham Hill, S.W.12. [2941

Ariel.

ARIELS.—Gourlay, Agent, Fallowfield, Manchester. [2833

CROW Bros., High St., Guildford, Ariel agents, supply at makers' prices. [X7944

CYRIL WILLIAMS, for early delivery of Ariels.—Chapel Ash Depot, Wolverhampton. [X8625

ARIEL Combination, 3½h.p., nearly new, accessories; 85 gns.—Driscoll, 58, Woodfield Rd., Ealing. [2612

1917 3½h.p. Ariel Combination, perfect running order; £85.—Jevons, Solicitor, Tonbridge. [X8323

ARIEL, 3½h.p., 2-speed, clutch, wicker sidecar, good condition; £50, near offer.—Bond St. Garage, Ealing. [2531

JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [0028

ARIEL 3½h.p., October, 1919, standard specifications; £95; after 6 o'clock.—Union Flag, 178, Lambeth Rd., Lambeth, S.E. [2643

ARIEL 3½h.p., 1919, kick starter, 3-speed, absolutely new; immediate delivery London; £100.—Gibbons, Imperial Hotel, Jesmond, Newcastle-on-Tyne. [2567

1912-13 Ariel, 3½h.p., 3-speed Sturmey-Archer hub, machine just been overhauled; £45 solo, £55 with sidecar.—Kwiksale, 35, Long Acre, W.C. [2915

1919 Ariel 6-7h.p. Twin Coachbuilt Sidecar, splendidly equipped; £125; Cambridge.—See Kwiksale advertisement Miscellaneous Motor Cycles. [2923

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare part stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

2¾h.p. Ariel (about 1910), excellently preserved, good tyres, belt, thorough order, but wants accumulator; best offer.—102, Grange Rd. East, Middlesbrough. [2946

1919 3½h.p. Ariel Combination, fully equipped, excellent condition, privately owned; best offer over £110.—Aldous and Co., 56, Ludgate Hill, E.C. City 2389. [2881

F.O.C.H. have a 1919 6-7h.p. twin Ariel coach combination, fully equipped, small mileage, perfect.—5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [3036

1919 (July) 6-7h.p. Ariel, coachbuilt sidecar, 3-speed countershaft, clutch, front and rear lamps, horn, grid, Bonniksen speedometer, mirror, tools, not done 1,400 miles; £138.—48, Waterloo Rd., Bedford. [X8584

1919 (August) 3½h.p. Ariel and Sidecar, with horn, and tail lamp, heavy Dunlop tyres, spare tube and valves, guaranteed ridden under 500 miles, perfect condition, and indistinguishable from new.—W. E. H. Bull, c/o Robinson's Garage, 32-35, Green St., Cambridge. [2899

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WALL Auto-Wheel, mechanically perfect; £10, nearest.—Rampling, 15, Bramford Lane, Ipsw (D) [X8

WALL Auto-wheel, 1914, only run 100 miles, stored at Devonport; £10.—Commdr. Gerty, College St., Worcester. [X8

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WALL Auto-Wheel, complete for bicycle, newly o hauled, and excellent condition; carriage p £12.—Hughes, James St., Pittenweem, Fife. [X8

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B.A.T., 4h.p., perfect running order, tyres nea new, powerful and fast; bargain, £32.—E.M., Buxton Rd., Brighton. [X8

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CROW Bros., High St., Guildford, are old Bla burne agents, and invite enquiries. [X7

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6h.p. Bradbury, new; owner deceased; Bowser s car, full equipment; £160.—Box 5,408, c/o *Motor Cycle.* [2

BRADBURY Combination, 4h.p., 3-speed, clut overhauled, running order; £45.—Wardill, Pov St., Carshalton. [2

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BRADBURY.—For the earliest possible deliveries 1919 models.—The Walsall Garage, Wolverhar ton St., Walsall. Tel.: 444. [9

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BRADBURY, 2-speed, free engine, kick starter, late model, just been overhauled; £60, or offer.—Studley, Melton, Woodbridge, Suffolk. [2

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BROUGH twin Combination, 1915, every accesso fast and reliable; any reasonable offer.—11, Pa Mansions, Vauxhall, S.W.8. [30

1916 Brough, 3½h.p., Sturmey-Archer 3-speed, clut kick starter, speedometer, very fast; £85 Edward, 1, Ovington Gardens, S.W. [29

SOUTH Lancashire, North Cheshire, and Isle Man Only.—Brough enquiries.—J. Blake and C Official Dealers, Liverpool and Manchester. [70

1919 Brough, 5-6h.p., in perfect condition, scarc used, Millford sidecar, lamps, etc.; best o over £130.—Advertiser, 18, Fitzwilliam St., Co bridge. [X86

BROUGH 1915-16 3½-4h.p. T.T., engine just ov hauled, accessories, fast, ridden solo only by pert; owner bought car; £60, no offers; trial on depo —Housekeeper, City Chambers, 65, Fenchurch St., E.C [26

B.S.A.

B.S.A., 3½h.p., T.T., 1916; 50 gns.—Elcock, Pe wern, Neath. [30

1915 B.S.A. Combination, in good condition; £90 Bounds' Garage, 223, High Rd., Kilburn. [27

1919 B.S.A. Model K. Combination, brand new, stock.—Empson, Gamlingay, Sandy, Beds. [24

B.S.A. Sole District Agents; book now.—The Wals Garage, Wolverhampton St., Walsall. Tel.: 4 [95

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A.—Book now, 1920 models; special agents.—Turner Bros., 134, Upper Thames St., London, [2981

A. Specialists.—Book now, earliest deliveries.—Pattison Bros., 29, Montford Place, Kennington; [X8668

A.—1920 Model K; delivery before show list price.—Turner Bros., 134, Upper Thames St., E.C. [2980

B.S.A. New 1919 4¼h.p. B.S.A. and Sidecar; £123; bargain, unused.—Box L5,512, c/o *The Cycle*. [3050

B.S.A. Garage, special agents for B.S.A., Broad Ley, Muswell Hill, N.10, and Woodside Parade, Finchley. [0030

B.S.A. Combination, 3½h.p., wicker sidecar, B.B. Bosch, 2-speed hub, good order; £45.—Dunton Green. [X8631

B.S.A. 1914 3½h.p., 2-speed, free, stored during war, perfect; £60.—Wade, 33, Whitehead Lane, Primrose Hill, Huddersfield. [X8346

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B.S.A., 1915, 4¼h.p., 3-speed countershaft model; £72/10, or with new coach sidecar, £89/10.—Motor Exchange, Union St. South, Halifax. [3061

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B.S.A. Models K, H, and A for earliest deliveries; order now and avoid disappointment.—Newnham & Co., 223, Hammersmith Rd., W. 'Phone: 80 Hersmith. [3044

B.S.A., 1919, 4¼h.p., 3-speed, chain drive, B.S.A sidecar outfit complete, in nearly new cond £145.—Elce and Co., 15-16, Bishopsgate Av Hille St., E.C.3. [0067

B.S.A., 1917, all chain smart coachbuilt sidecar lucas lamps, speedometer, mechanical horn; without speedometer, £88; privately owned.—Ilkley Rd., Erith. [1870

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B.S.A. 1919 Model K., 99 gns.; B.S.A. No. 2 sidecar gns.; separate or together; unused, delivered ck; owner unable to use.—10, Ashchurch Te Shepherd's Bush. [262

B.S.A. Specialists.—All replacements in stock; B.S.A cars in stock.—The County Cycle and Moto ad St., Birmingham. Tel.: Midland 733. T.A.: o, Birmingham. [S224

B.S.A. Motor Cycle, lamps, speedometer, side ar, in excellent condition, in perfect running best offer over £90.—Advertiser, 18, Fitz St., Cambridge. [X8691

B.S.A. 1915 B.S.A. 4h.p. Combination, 3-speed countershaft, chain-cum-belt, Montgomery sidecar, grid, lamps, etc., splendid condition; £88.—ton, Morborne, Peterborough. [X8307

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Calcott.

CALCOTT-PRECISION, 1914 2½h.p., 2 speeds, good condition; £35.—66, Arthurdon Rd., Brockley, S.E. [2651

CALCOTT, 1913, 2¾h.p., fine running order; first cash secures, £35.—Bennett, 318, King St., Hammersmith. [2797

Calthorpe.

CALTHORPE, 2-speed; £34.—Full particulars on application, Symon, Upcroft, Chorley Wood, Herts. [X8279

CALTHORPE-J.A.P., 1919, 2-speed, free engine, little used; £55.—176, Walmer Rd., North Kensington. [2636

1916 Calthorpe-Jap, 2¾h.p., 2-speed, new tyres, new lamps; price £50.—Cold, Harbour, Headcorn, Kent. [2862

1915 Calthorpe, 2¾h.p. J.A.P., Enfield 2-speed gear; £45; excellent condition.—Franklin, 357a, North End Rd., Fulham. [2955

CALTHORPE-J.A.P., 2¾h.p., Enfield 2-speed, clutch, enamel and plating perfect; ride away; 42 gns.—28, Wolstonbury Rd., Hove. [2543

CALTHORPE-J.A.P., 1919, 2¾h.p., 2-speed, new in stock; £60/3/6. — Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3 [0068

CALTHORPE Junior, enclosed countershaft 2-speed, fine climber, 120 m.p.g., appearance almost new; trial here; £34.—Greetham, Millom, Cumberland. [X8561

1915 Calthorpe-Jap, 2¾h.p., fitted with new Grade Multi gear, in good running order; ride away; £38.—The Woking Lodge, Ottershaw Park, Chertsey. [2997

1916 Calthorpe-Jap, 4·5h.p. twin, Enfield gear and clutch, handle starting, Binks, Best and Lloyd sight feed lubricator, excellent sidecar machine; £58.—63, Solon Rd., Brixton. [2557

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CAMPION-VILLIERS, 2½h.p., unridden; bought combination; £45 secures.—Food, Shepshed, Loughborough. [2485

1913 Campion-Jap, 4h.p., 2-speed, handle starting, good running order, tyres good, spare belt and cover; £38.—Calow, 12, Nathaniel Rd., Long Eaton, Notts. [X8331

CAMPION, 1919 (June), 2¼h.p., mileage under 200, good as new, fitted with P. and H. lamps, horn, and all accessories; £60.—Foster, 170, Elborough St., Southfields, S.W. [X8549

CAMPION 2¾h.p. 2-stroke, Sensprayed, E.I.C., everything delivered Oct., 1919, except 1915 frame, tyres not run 50 miles; bargain, 42 gns.—Utridge, Bolsover, Chesterfield. [2432

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4h.p. Centaur, T.T. bars, Mabon clutch pulley, Dixie mag., carburetter, engine in first-class condition, complete less front tyre and saddle; bargain, £12/10.—158, Bedford Hill, Balham, S.W.12. [2751

CENTAUR 4h.p. Combination, 2 speeds, free engine, mag., B. and B. carburetter, Whittle belt, nearly new tyres; ride away; £45, or near offer.—L. Stratford, 203, Junction Rd., Upper Holloway, London, N.19. [2679

Chater-Lea.

6h.p. Chater-Lea; £26; 1912 clutch, Bosch, ride away.—7, David's Rd., Forest Hill, S.E. [2943

CHATER-LEA 2¾h.p. 2-stroke, believed 1915, good tyres, minus mag.; bargain at £25, offers, carriage paid, too cheap for approval.—29, Park Rd., Harringay, N.15. [2892

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CHATER-LEA Extended Combination, 6h.p. twin, all accessories, trial; £65, offer; exchange.—Horsley's Garage, Cricket Green, Mitcham, Surrey. 83-80 'buses; station, Mitcham Junction. [3052

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CHATER-J.A.P., 3½h.p., just completely overhauled, very fast, new P. and H. front lamp, tank re-enamelled; £35.—5, Boulevard, Balham High Rd., S.W. [2745

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CROW Bros., High St., Guildford, West Surrey agents for the new Clyno.—Order now for early delivery. [4084

BROOK Bros. are now booking orders for the new 1920 Clyno motor cycles; write for particulars to-day; early deliveries.

BROOK Bros., Burnham-on-Sea, can give delivery from stock of the new Clyno lightweight; write for particulars. [9592

NEW W.D. Clyno (8h.p. J.A.P.), noiseless and powerful, complete with tools and horn; £115.—70, West Hill, Wandsworth. [2736

1916 6h.p. Clyno Combination, 3 speeds, clutch, kick starter; full particulars; £110.—Chestnuts, Stapleford, Cambridge. [2738

CLYNO 2-stroke, 2-speed, hand-controlled clutch, fine condition; first cheque secures.—C. F. Downing, Fort Grange, Gosport. [X8744

1914 Clyno 5-6h.p. Coachbuilt Combination, 3-speed countershaft, excellent order.—E. Thetford, Heatherden, Iver Heath, Bucks. [2877

6h.p. Clyno Coachbuilt Combination, good condition, 2-speed, 1919 B. and B., stored 3 years; £67; room wanted.—17, Garden Av., Mitcham, S.W. [X8588

CLYNO, new 1919, 8h.p. J.A.P., 3 speeds, clutch, with carrier; accept reasonable offer, cash wanted.—20, Goldsmith's Row, Hackney Rd., E.2. [2953

CLYNO 1915 6h.p. Combination, complete with lamps, screen, spare wheel, tools, etc., 3-speed, kick starter, in perfect condition; 95 gns.; bargain.—41, Brown's Rd., Surbiton, Surrey. [3046

Connaught.

HOVE Engineering Works, Davigdor Rd., Hove, sole district Connaught agents. All accessories and repairs. Established 12 years. [9638

CONNAUGHT 1915 2¾h.p., 2-stroke, 2-speed countershaft gear, free engine, Dunlops as new, fast and powerful mount, not ridden 2 years; bargain, £42 cash.—Clarke, Furnisher, 74, Overstone Rd., Northampton. [X8369

Coulson.

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

COULSON-B., 1919, 2¾h.p. Blackburne engine, 2-speed gear, a few weeks old, and ridden only a few miles, spring frame, Capac carburetter, fitted up with big Lucas King of the Road, Lucas horn, Hunt's electric back lamp, decompressor, a beautiful little mount, fast and comfortable; owner taking delivery car; selling at list price, 85 gns.—H.M., c/o J. Lee and Sons, 156, New King's Rd., Fulham. [2469

Coventry Eagle.

COVENTRY EAGLE, 2½h.p. Villiers, July, 1919, Jardine 2-speed, tools; £55; delivered any part of England.—Cowlishaw, Etruria, Stoke-on-Trent. [X8296

Diamond.

CYRIL WILLIAMS, for early delivery of all model Diamonds:—Chapel-Ash, Wolverhampton. [X8622

1918 2½h.p. Diamond-Villiers, oversize Dunlop heavy tyres, both unpunctured, in new condition, complete with horn, headlight, etc.; £35, no offers.—12, Anson Rd., Cricklewood, N.W.2. [2444

Dot

3½h.p. Dot-Jap, 1913, Bosch, Amac, variable pulley, horn, Lucas lamps, Michelins, enamel as new, guaranteed excellent condition, extremely fast; ride away; £52, exchange lightweight.—Smith, Green Monot, Stamford Rd., Bowdon, Cheshire. [X8687

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MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS at Gourlay's, Fallowfield, Manchester. [283

DOUGLAS, 1914, 2 speeds; £36.—Hole, 129, Par Lane, Carshalton. [266

1916 4h.p. Douglas, 3-speed, nice order; £72.—Bellingham Terrace, Catford. [267

1915 2¾h.p. Douglas, 2-speed, very fast; £47.—Bellingham Terrace, Catford. [267

DOUGLAS, brand new 2¾h.p., T.T., makers' colours, £70.—R., 5, Victoria Av., Surbiton. [X824

DOUGLAS Brand New 2¾h.p., W.D. model; £75. Ray and Son, 68, Church Rd., Hove. [274

2¾h.p. Twin Douglas, 1916, W.D. model, unused 65 gns.—Spurgeon, Sible Hedingham. [274

2¾h.p. 1915 2-speed Douglas, good condition; £47/1 bargain.—7, Gibson Sq., Islington, N.1. [295

DOUGLAS 1915 2¾h.p., 2-speed; bargain, £45.—Bowles Rd., Old Kent Rd., London, S.E. [X83

DOUGLAS, 2¾h.p., 2-speed, lamps, top-hole; £55. 57, Clarence Rd., Teddington, Middlesex. [X869

DOUGLAS 2¾h.p. Single, splendid condition and running order; £30.—P., 13, Henning St., Battersea [X830

1919 Douglas, 2¾h.p., complete, perfect, lamps, horn, spares, tools; £72.—29, Wynell Rd., Forest Hill [269

DOUGLAS W.D. 2¾h.p., as new, and accessories £70.—Bounds' Garage, 223, High Rd., Kilburn [271

DOUGLAS, 2¾h.p., new tyres, in good order; ride away; £35.—5, Howard Rd., Bromley, Kent. [288

2¾h.p. Douglas, used only 200 miles; £66; wanted lady's model.—37, Arlington Rd., Surbiton. [250

£32.—Douglas, 2¾h.p., condition exceptional, brakes.—16, St. Mary Abbott's Terrace, Kensington. [253

1915 Douglas, 2¾h.p., 3-speed, Colonial model; £6 —Usher, Old Farm Garage, Chorley Wood Herts. [274

DOUGLAS 2¾h.p., speed gear countershaft, new just uncrated; £72.—Owen, 19, Battersea Rise S.W.11. [260

1919 Douglas 4h.p. Combination, lamps, horn, spare tyre, apron; £125; evenings.—Ward, 99, Wardour St., W. [256

DOUGLAS, 1916, 2¾h.p., 2-speed, splendid condition, very fast; £60.—8, Station Parade Balham. [286

DOUGLAS, 1911, single-speed, footboards, horn excellent tyres; £35.—Mr. Irwin, Leavesden Rd. Watford. [246

4h.p. Douglas, late model, in sound condition; £7 cash; appointment.—24, Richmond Rd., Kingston-on-Thames. [248

2¾h.p. Douglas Machines, War Office Models; £7 each; new but shop-soiled.—Wauchope's, 9, Shoe Lane, London. [257

1917 4h.p. Douglas, almost new condition; £8 'Phone: Streatham 352.—2a, Sestova Rd., Balham, S.W.12. [248

SALE, Douglas 2¾h.p. motor cycle, 1916, first-class condition throughout; £57/10.—Winter, Leasingham, Sleaford. [X827

2¾h.p. Douglas, 2-speed, A1 condition, and C.B. sporting sidecar; 50 gns., or close.—32, Leicester Causeway, Coventry. [X836

DOUGLAS Solo and Combination; regular monthly deliveries from November.—Lloyd and Son, 29 Station St., Lewes. [958

DOUGLAS 2¾h.p., W.D., makers' colours, new April ridden 1,500; £65.—Weston, 35, St. Bartholomew's Rd., Reading. [262

1915 2¾h.p. Douglas, 3 speeds, light underslung sidecar, C.B. Watsonian body; £62.—Cole, 2 Belsize Park, N.W.3. [246

DOUGLAS, 1914, 2¾h.p., 2 speeds, footboards, Bosch everything complete, guaranteed; £60, lowest.—Claydon, Eastry, Kent. [X831

DOUGLAS 4h.p. 3-speed Combination, smart and powerful; 95 gns.—Halifax Motor Exchange, Union St. South, Halifax. [306

IMMEDIATE Delivery 1919 Douglas models, 2¾h.p. £80, 4h.p. combination £135.—Moffat, Douglas Agent, Yeovil. 'Phone 50. [110

1919 Douglas 4h.p. Combination, new type clutch not run 100 miles, as new, lamps, etc.—Edwards 1, Ovington Gardens, S.W. [290

1919 Douglas Combination, as new, fully equipped mileage 500; best offer over £125.—F., 42, Albemarle Gdns., New Malden. [289

1919 4h.p. Douglas Combination, complete with lamps wind screen, luggage grid, etc.; price £130.—Dove, Wragby, Lincolnshire. [250

1915 Special T.T. 2¾h.p. Douglas, special large silencer, 5a cam, all accessories, extremely fast any trial; £54.—5, Station Rd., Edgware, Middlesex. [X830

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS, 2¾h.p., late 1913, clutch, kick start, lamps, horn, tools; £50, or nearest.—Jepson, Municipal Offices, Nuneaton. [X8289

DOUGLAS, 2¾h.p., 1919 W.D., not soiled, never been on road, 2-speed, new tyres; £70.—20, Bournemouth Rd., Folkestone. [2528

DOUGLAS 2¾h.p., Albion, lamps, horn, tools, top-hole condition, as new; £45, or exchange Rudge Multi.—Foulkes, Newport, Salop. [2623

DOUGLAS 1915 2¾h.p., perfect condition, tyres, belt, etc., as new, lamps, horn, and all accessories; £60.—Box 739, c/o *The Motor Cycle*. [X8245

DOUGLAS.—Run few 100 miles only, 2-speed model, lamps, horn, spares, trial or examination.—Parker's, Bradshawgate, Bolton. [X8721

SMITH'S, 10-16, Haverstock Hill (opposite Chalk Farm Tube Station), have in stock new W.D. 2¾h.p. Douglases, from 65 gns. [0083

1915 Douglas, 2¾h.p., T.T., new lighting set, 1919 Stewart trip speedometer, good sporting mount; £45.—Phelps, Butcher, Hereford. [X8596

DOUGLAS, 1917, 2¾h.p., 2-speed, makers' colours, T.T., powerful, faultless; £57/10.—Blencathra, Highfield Rd., Walton-on-Thames. [X8246

1914 Douglas, 2¾h.p., T.T., lamps, horn, footboards, pump, tools, Dunlops and engine perfect; £52.—33, Moreton Av., Stretford, Manchester. [X8258

DOUGLAS 2¾h.p., 1916 W.D. model, uncrated October, 1919, 2-speed; 65 gns., or near offer.—25, Townshead Rd., Richmond, Surrey. [2761

4h.p. Douglas, 3-speed, K.S., re-enamelled and plated, new tyres, new appearance, thoroughly overhauled; £75.—Wilson, Haxey, Doncaster. [2966

DOUGLAS 2¾h.p., 2-speed, indistinguishable from new, fitted with Miller lamp sets, complete set spares.—Parker's, Bradshawgate, Bolton. [X8726

1920 Douglases.—By one who kaows; delay is dangerous.—Order yours now from the Douglas Specialist, Gibb, Gloucester. 'Phone: 852. [6340

DOUGLAS, 2¾h.p., 2-speed, uncrated in May, absolutely perfect, fully equipped, fast and smart; £65.—60, Wellingford Av., North Kensington. [2495

2¾h.p. Douglas, late 1913, lying up for 2 years, and recently overhauled, in perfect condition; £50, or nearest offer.—Macdonald, Airmount, Waterford. [X8054

DOUGLAS 4h.p., 1918 model combination, almost new, with all accessories; a bargain, £100; any trial.—174, Barcombe Av., Streatham Hill, S.W.2. [2712

1914 2¾h.p. Douglas, engine and framework splendid condition, tyres and belt practically new; £45, or near offer.—Elliott, 110, Hogh Rd., Coventry. [X8665

DOUGLAS 4h.p. Combination, 3-speed, clutch, kick start, in top-hole condition, lamps and horn; £100, or near offer.—19, Ensor Mews, Cranley Gardens, S.W.7. [2588

2¾h.p. Douglas Motor Cycle, 1917 war model, long exhaust, first-class running order; this is the real goods; price £70.—C. Webster, Weston Hills, Spalding. [2824

DOUGLAS 1916 2¾h.p., Dunlops, footboards and equipment, re-enamelled and plated like new, not W.D. scrap; £50.—18, Marlborough Rd., Old Kent Rd. S.E. [2651

DOUGLAS 1918 4h.p. Combination, complete set lamps, horn, etc., spleadid condition, tyres good; 100 gns.—Hillary, c/o Budd, Monk Sherborne, Basingstoke. [2642

DOUGLAS, 1919 (1920 model), delivered Sept., 4h.p. combination, aluminium discs, electric lightiag, done 500, equal new; £150.—Hitchioson, Boroughbridge. [2825

F.O.C.H. have a 1919 4h.p. Douglas combination, fully equipped, almost as new, perfect.—5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [3037

DELIVERY To-day, brand new 2¾h.p. Douglas W.D. models, fitted with head lamp, rear lamp, mechanical horn, tools; 69 gns.—3, St. George's Rd., Beckenham, S.E. [2722

1916 Douglas Combination, 4h.p., 3 speeds, new coach-built sidecar, excellent tyres, well equipped; £110, or nearest offer.—Apply, letter only, Dr. Vincent Denne, 17, Harley St., W.1. [X8657

1919 (September) 4h.p. Douglas Combination, latest type, clutch, royal blue sidecar, complete, P. and H. lamps, horn; £135.—Capt. Kirkland, 57, West Hill Rd., Southfields. [X7131

1914 2¾h.p. 2-speed Douglas, lamps, generator, new Dunlops and belt, Cowey speedometer, horn, engine perfect; 55 gns.; sieen any time.—Read, Aston Clinton, Tring, Herts. [2749

1919 (August) 2¾h.p. Douglas (not W.D. finish), P.H. lamps, horn, spare belt, etc., absolutely new condition; £80.—Tonge, Inns of Court Hotel, High Holborn. Holborn 6499. [2476

1919 Douglas 2¾h.p., as new, perfect, 2 months old P. and H. lamps, Lucas horn, speedometer, numerous spares, including belt, valves, etc.; best offer accepted.—Ellum, 56, Seabourne Rd., Boscombe, Hants. [2723

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1919 4h.p. Douglas Combination, new August, lamps, Klaxon, Easting wind screen, luggage grid, spares, hardly iodistinguishable from new; £125.—Stancliff, 26, Wood Lane, Highgate, N.6. [2560

DOUGLAS, 1914, T.T., knee grips, long exhaust, recently enamelled, Bosch, Binks, spare tyre, and lamps, stored 3 years; £50, or offer.—Otway, 125, Woodwards Rd., Dulwich. [2879

DOUGLAS 4h.p. Combination, new clutch, lamps, storm apron, delivered last Sept., ridden one week, fully insured till Sept., 1920; any trial in London; £150.—Box L5,501, c/o *The Motor Cycle*. [2913

1914 2¾h.p. Douglas, sporting model, Triumph T.T. bars, long exhaust, just overhauled, condition as new, enamel nonscratched, lamps, etc., very fast; £50.—9, Stoneleigh St., North Kensington, W.11. [2606

1919 4h.p. Douglas Combination, with Lucas head lamp and generator, rear lamp, Lucas horn, excellent condition throughout; £120.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995. T.A.: Bicycles. [3038

DOUGLAS Late 1914 2¾h.p., purchased new 1915, Amac carburetter, finest Lucas head, rear lamps, and horn (new), everything excellent condition; £56.—Simpson, Orchard Rd., Park Rd., Sunbury-on-Thames. [2648

DOUGLAS, lady's 2¾h.p., 2-speed, clutch, Model X, delivered July, 1914, to present owner, scarcely used, new condition throughout, all accessories; seen London; 60 gns., no offers.—Box L5,404, c/o *The Motor Cycle*. [2683

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0016

DOUGLAS, 2¾h.p., W.D., late 1916, stored 2 years, completely overhauled July; £49, no offers; exceptional opportunity to secure sound, fast, powerful machine from private owner, at bargain price.—7, Hillfield Rd., N.W.6. [2937

4h.p. Douglas Combination, 3-speed, clutch, kick start, just overhauled, 2 new outer covers and inner tubes, lamps, horn, 1916 model, perfect condition; £125; appointment; owner buying car.—Prout, 5, Broad Green Av., Croydon. [2815

1919 4h.p. Douglas Combination, complete with lamps, horn, pump, tools, spare cover, etc., Douglas sidecar, just been repainted, mileage under 2,000, ready to ride away; what offers?—Werren, Lyndhurst, Callis Court Rd., Broadstairs. [2568

DOUGLAS 1918 4h.p. Combination, recently overhauled, sidecar repainted and upholstered, 3 lamp sets, new tyres, belt, sprocket and chain, spares; £120, or exchange Harley or Morgan.—Middleton, 330, Ivydale Rd., Nunhead, S.E.15. [2671

2¾h.p. Douglas, W.D., 1916.—A number, all thoroughly overhauled and in fine mechanical condition, some with new tanks and handles, appear as new; wire before coming to avoid disappointment.—W. Stanford, Midland Bank Chambers, Yeovil. [2393

DOUGLAS 4h.p. Combination, 1918, 3-speed countershaft, clutch, kick starter, special sidecar body (just repainted) makers' colours indistinguishable from new, lamps, mechanical horn, tools; 98 gns. lowest; after 6.30.—Parker, 65, Clifton Av., Wembley Hill. [2534

VIVIAN HARDIE and Lane, Ltd., Douglas specialists.—4h.p. combination, £135; 2¾h.p. solo, £80; we stock everything you require for your Douglas.—Vivian Hardie and Lane, Ltd., 24, Woodstock St (off Oxford St), Bond St., London, W.1. 'Phone: Mayfair 6559. [0012

DOUGLAS, W.D., done about 400 miles since uncrated, Binks carburetter, P. and H. lamp set (not once lighted), Cowey speedometer, Klaxon horn, dry battery rear light, new tyre (Palmer) on front, full insurance, beautiful machine; buyer does not require to spend fortune on accessories; 75 gns.—Rostern, 11, Christ Church Rd., Doncaster. 'Phone: 527. After 6 p.m. [2894

Edmund.

EDMUNDS, spring frame, you simply float.—Sole agent, Gourlay, Falkowfield, Manchester. [2831

Enfield.

ENFIELD 1917 2-stroke, 2-speed, complete; £52.—22, Blatchington Rd., Hove. [3027

ENFIELD Twin Lightweight, 2-speed, Bosch, Binks; ride away; £37.—76, Western Rd., Southall, W. [2540

ENFIELD 3h.p. Twin, 2-speed, K.S., chain drive, lamps, 1917; £64.—229, Marywle Rd., Bournville. [2821

ENFIELD 3h.p. Twin, 2-speed, excellent condition; £60.—Usher, Old Farm Garage, Chorley Wood, Herts. [2743

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0031

ENFIELD.—Excellent delivery latest 1920 8h.p. combination models.—Enquire Parker's, Bradshawgate, Bolton. [X8723

ENFIELD Combination, 6h.p., good running order, ride away; £75; after 2 p.m.—Wells, Butcher, Wanstead, Essex. [2537

MOTOR CYCLES FOR SALE.

Scott.

SCOTT Combination, 1916, splendid condition; any test; illness couse of sale; appointment preferred. £75.—16, Comeragh Rd., West Kensington. [2463

3½h.p. Scott Combination, C.B. sidecar, 2-speed, clutch, Bosch, lamps, horn, speedometer, just overhauled, tyres good as new, in excellent condition throughout; £70, or nearest offer.—A. D. Cruickshank, Hill House, Wheatley, Oxon. [X7259

1915 Scott Combination, 2-speed, kick starter, sound running order, engine and gears recently overhauled by makers, radiator replated, Klaxon, speedometer, lamps, spare heavy Palmer cover, Canoelet sporting C.B. sidecar, with luggage grid and toolbox; £78.—Poole, Ivydene, Alexandra Rd., Hounslow, W. (close to Heston-Hounslow Station). [1521

Singer.

SINGER, 1912, 4h.p., 2-speed, countershaft, clutch, coachbuilt sidecar; £45.—Blandy, 65, Whatman Rd., Brockley Rise, S.E.23. [2545

1913 Singer, 3½h.p., 3-speed hub, Bosch mag., B. and B. carburetter, good condition; £40.—Apply, 11, Market St., Tamworth, Staffordshire. [X8274

4½h.p. Singer, just completely taken down and overhauled, Bosch mag., 2-speed, clutch, in good running order; £45.—Maddocks, Wytheford, Hatch End, Middlesex. [X8498

Sparkbrook.

SPARKBROOK 2-stroke, practically new condition, perfect running order; £40.—7, Primrose Hill, Chelmsford. [2636

2¾h.p. Sparkbrook 2-stroke, 2-speed, nearly new, done under 600, lamps, horn; £55.—Holmes, Jun., 97, Upper Clapton Rd., E.5. [X8619

SPARKBROOK 2½h.p., 1919, 2-speed, lamp, tools, Klaxon, done 500 miles, as new; £57/10, delivered to buyer.—9, Temple St., Basford, Stoke-on-Trent. [X8295

Star.

STAR, 4¼h.p., 3-speed countershaft, all-chain drive, Amac, M-L mag, as new; £80; owner requires lighter solo.—Seen at Stamper's Garage, Bradford-on-Avon. [X8690

STAR-J.A.P. 1916 C.B. Combination, 6h.p., 3 speeds C.S. clutch, kick starter, all-chain drive, wind screen, all in good order and appearance; bargain, £85; any trial.—Nicholson, 197, Stonehouse St., Clapham, S.W. [3000

Sun.

1916 Sun, V.T.S., 2¾h.p., 2-speed, excellent condition, very powerful, fast; ride away; £38, or offer.—S. W. Taylor, Carnadon, Castlefin, Co. Donegal. (D) [X8569

SUN-VILLIERS 2¾h.p., 2-stroke, 2-speed, 1917, perfect condition, mechanical horn, lamps, etc., climb anything; £42.—77, Crescent Rd., Plumstead. [2724

Sunbeam.

3½h.p. Sunbeam, splendid condition, 2-speed; 75 gns., worth £85.—Bigg, Stotfold, Beds. [2906

6h.p. Sunbeam Combination, fully equipped, perfect.—Abram, Hoole Lane, Banks, Southport. [X8282

SUNBEAM 2¾h.p., 2-speed clutch, lamps, horn, speedometer, good tyres (one new), decent order.—Seen at Parker's Garage, Oxford. [3004

1914 Sunbeam Combination, guaranteed thoroughly overhauled, as new, splendid condition; £115, no offers.—Harris, 24, Grand Parade, Brighton. [2682

SUNBEAM 1916 Combination, 8h.p., M.A.C., interchangeable wheels, hood, screen, etc.; 135 gns.—Longman Bros., 387, Uxbridge Rd., Acton. 1578 Chiswick. [2514

SUNBEAM 1914 3½h.p. Combination (Millford), perfect running order, tyres good, all accessories; £95 lowest; seen West London.—Box L5,403, c/o *The Motor Cycle.* [2684

1916 3½h.p. Sunbeam Combination, complete with lamps, tools, spare tube; seen at Eastbourne by appointment; price £110.—Write, Box L5,509, c/o *The Motor Cycle.* [1728

1915 3½h.p. Sunbeam and coachbuilt sidecar to match, excellent order and appearance; £100, genuine bargain, no offers.—19, Millfield Terrace, Gateshead-on-Tyne, Co. Durham. [X8495

MAGNIFICENT 1916-17 Black and Gold Sunbeam, 3½h.p., 3-speed, K.S., and top-hole coachbuilt sidecar, whole outfit looks like new; sacrifice, £120, or best.—Todd, Waterbeach, Cambs. [X8585

1916 3½h.p. Sunbeam, just thoroughly overhauled, new gears and tyres, all accessories, Bonniksen speedometer (£6), perfect condition; £100.—B. T. Halliwell, Ramsay Lodge, Edinburgh. [X8292

SUNBEAM 1917 8h.p. Combination, 3 speeds, kick starter, complete with hood, screen, lamps, spare wheel, tools, etc., all as new, any trial; 135 gns.; bargain.—41, Brown's Rd., Surbiton, Surrey. [3047

1919 Sunbeam, 3½h.p., black and gold, with Canoelet sidecar, electric head light, rear and sidecar lights, horn, luggage carrier, perfect condition, done 1,000 miles, 80 m.p.g.; best offer over £140.—Stileman, Exeter College, Oxford. (D) [X8336

3½h.p. Sunbeam Combination, 1916, frame 3730, black and gold, Millford coachbuilt sidecar, 3 F.R.S. electric lamps and acumulator, leg shields, horn, pump, tools, spares, 2 spare covers, 4 tubes; £115.—B. England, Belle Isle, Wakefield. [X8293

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MANCHESTER,
245, Deansgate.

MOTOR CYCLES FOR SALE.

Sunbeam.

SUNBEAM, 2¾h.p., semi-T.T. bars, 2-speed, h.b. clutch, free engine, kick start, complete, Lucas lamps, horn, pump and tools new tyres, entirely overhauled by makers last Sept.; best offer over £66 secures.—Apply, W. Harris, Gas Works, Market Harborough. [2808

Swift.

3½h.p. Swift Combination, White and Poppe engine, decompressor, multi gear, Watsonian sidecar, disc wheel, Miller lamps, good tyres, new tubes; £70, or offer. 'Phone appointment.—Trevor, 93, Linden Gardens, W.2. Park 615. [2703

T.D.C.

T.D.C. De Luxe 2-stroke, 2¾h.p., Amac, Dixie, lamps, horn; cheap, £20.—Simons, 15, Beeby St., Workington. [X8618

T.D.C. 4¼h.p. Coachbuilt Sidecar, Grado kick starter engine, Amac, mag., belt, machine not gone 500, accessories nearly new, no accommodation; first money order secures, very strong, £55.—Heaps, 51, Crosby St., Stockport. [X8608

Thor.

1916 Thor Combination, 8-10h.p., mag.-dynamo model, foolproof gears, done about 5,000, been stored, excellent condition; £125, or nearest; exchange modern lightweight and cash.—Glenville, Desborough Park Rd., High Wycombe, Bucks. [X8557

Triumph.

1919 Baby Triumph, unused; £60.—Kwiksale, 35, Long Acre, W.C. [2919

1914 4h.p. Triumph, 3-speed, disc wheels; £55.—1, Bellingham Terrace, Catford. [2675

1917 4h.p. Triumph, 3-speed, C.S., powerful; £68.—1, Bellingham Terrace, Catford. [2674

TRIUMPH Junior, 2¼h.p., 2-stroke, 2 speeds, new; £70.—Day, Tutsham, West Farleigh, Kent. [2791

1918 4h.p. 3-speed Countershaft Triumph; best over £65.—Bates, 17, Hamilton Terrace, N.W.8. [2645

1918 Countershoft Triumph, looks new, and runs better; £85.—72, Cornwall Rd., Brixton Hill. [2649

TRIUMPH, 1912, 3½h.p., clutch model, splendid condition; £40.—8, Station Parade, Balham. [2870

BARGAINS.—20 Triumphs for sale, from 1914-18; call or write.—145, Blackhorse Lane, Walthamstow. [2149

TRIUMPH, 1914, T.T., lamps, horn, etc., excellent condition; £40; after 5.—106, Theobald's Rd., W.C. [2984

1919 4h.p. 3-speed W.D. Triumph, fully equipped, ample spares; £85.—Box 765, c/o *The Motor Cycle.* [2713

1915 countershaft Triumph, in good going order; offers.—31, Tupman Place, Friar St., Blackfriars. [3073

TRIUMPH, 1914, 4h.p., 3-speed, good condition; 48 gns.—Longman Bros., 17, Bond St., Ealing. 689 Ealing. [2517

TRIUMPH 2½h.p., brand new, delivered too late for owner; list price.—Johnson, 145, Sutherland Av., Maida Vale. [2765

TRIUMPH, 3½h.p., 1910, Grado gear, lamps, horn, perfect running order; £38.—18, Rowan Rd., Hammersmith. [2940

TRIUMPH, 3½h.p., single speed, clutch, with Rally sidecar, good running order; £55.—Menusan, The Down, Bexhill. [2660

JONES' Garage, special agents for Triumphs, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0038

TRIUMPH, 3½h.p., fixed running order; £30, or exchange lathe and cash.—Odart, 5, Becklow Place, Shepherd's Bush. [2657

1914 4h.p. Triumph Combination, Sturmey 3 speeds, clutch; any trial; £68.—Chalkley, The Broadway, New Southgate. [2974

1914 Triumph, Millford Empress sidecar, tyres new, good going order; £75.—174, Knockhall Rd., Greenhithe, Kent. [2616

TRIUMPH War Model, 1918, 4h.p., very fast, lamps, tools, etc.; £80.—Lonsdale House, nr. Angell Rd., Brixton Rd., S.W.9. [2759

TRIUMPH Junior, late July, 1919, lamps, horn, and accessories; £60, no offers.—Clarke, Jeffry Villas, Green St., Hereford. [X8675

1919 Triumph-Gloria Combination, as new, very fully equipped; £135, no offers.—C. J. Neale, East Bridgford, Notts. [X8455

TRIUMPH, 1913, 3½h.p., 3-speed, clutch, new tyres, just overhauled, unused 3 years.—Bennett, 318, King St., Hammersmith. [2795

TRIUMPH Coachbuilt Combination, 3-speed, condition as new; £75.—Lewis Bros. (Dover), Ltd., Cherry Tree Av., Dover. [2958

TRIUMPH 1914 4h.p. Combination, grand condition, accessories; 70 gns.—Bunting's Exchange, Mason's Av., Wealdstone. [2867

JUNIOR Triumph, 2-speed, 1919, not ridden 500 miles, lamps, horn, tools, etc.; £60.—48, Paxton Rd., Chiswick, W.4. [2880

MOTOR CYCLES FOR SALE.

Rover.

JONES' Garage, special agents for Rovers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0035

1916 3½h.p. T.T. Rover, lamps, tools, insurance policy, very fast; 50 gns.—Ellis, 46a, Stondon Park, S.E.23. [2303

1919 New W.D. 6h.p. Rover Combination, tools, pump, 3 lamps, spares; £128; all chain drive.—Baines, 3, Central Rd., Blackpool. [2635

ROVER 6h.p. Combination, new last July, fully equipped, warranted as new; £140.—Bunting's Exchange, Mason's Av., Wealdstone. [2859

1919 5-6h.p. Rover, 2 lamps, F.R.S. head, Klaxon and hnlh horns, large tool kit, spares, fast solo, equal new; offers.—Smith, Moira, Stonehouse, Glos. [2503

ROVER, 1919, new Sept., twin combination, powerful and fast, complete with lamps, horn; first cheque over £172 secures.—The Binswood, Leamington Spa. [X8559

1917 3½h.p. Rover Combination, complete, 3-sped countershaft, clutch, gear box, nearly new; reasonable offer considered.—75, Cromwell Rd., Hertford. [2869

3½h.p. Rover, 1915, 3-speed, clutch, pedal starter, lamps and horn, tools, new condition, paint perfect; £70, or near offer.—R. Letts, Semer Lodge, Ipswich. [2486

ROVER Single and Twin Models; a limited number available for next season.—Particulars of delivery dates and prices from Lloyd and Son, 29, Station St., Lewes. [9581

3½h.p. Rover, 3-speed, Bosch, B.B., new tyres, tubes and belt, excellent running order, inspectable, London; £80, bargain.—Box L5,483, c/o *The Motor Cycle.* [2813

ROVER, 1917, 4h.p., T.T., Lucas accessories, Philipson pulley, a beauty; £80; sidecar to suit if required.—Bunting's Exchange, Mason's Av., Wealdstone. [2858

1914 Rover 3½h.p., Mabon variable gear, lamps, horn, almost new Dunlops, enamelling and plating good, tank as new, also fitted with 3-speed hub, in good condition; £50.—78, Hertford Rd., Enfield Wash. [2933

BRAND New.—In stock, for immediate delivery, 5-6h.p. Peace model Rover combination, £138; also 3½h.p. Rudge Multi roadster, £90; makers' prices.—Churm's, 1, Bank St., Greenock, N.B. [X8442

F.O.C.H. have a 1919 3½h.p. Rover, 3-speed countershaft, clutch, kick starter, small mileage, beautifully equipped, excellent condition; large selection in stock.—5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [3035

1919 Model Rover Combination, 5-6h.p. J.A.P., 3 speeds, kick starter, delivered August, Lucas acetylene lamps, also electric head light, horn, tools complete, done about 400 miles; seen Nottinghamshire.—Box L5,419, c/o *The Motor Cycle.* [2700

1918-19 3½h.p. Rover, 3-speed countershaft, kick starter, coachbuilt sidecar, new Cowey speedometer, horn, mirror, powerful P. and H. head light, rear light, 2 generators, several new spares, full kit tools, perfect; £120.—Fenton, Ribblesdale, West Bridgford, Nottingham. [X8653

ROVER (1913 approximately) Combination, 3-speed, clutch, with Watford speedometer, handle-bar watch, handle-bar mirror, lamps front and rear, generator, 2 spare tubes, spare belt, mackintosh overalls, tools, etc.; £50, no offers.—Girling, Electricity Works, Maldon, Essex. [X8640

Royal Ruby.

JONES' Garage, special agents for Royal Rubys, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0036

1919 Royal Ruby, 2-stroke, condition as new, beautiful machine; £42; owner purchased twin.—Gordon Smithdale, Acle, Norwich. [X8493

Rudge.

CROW Bros., High St., Guildford, Rudge agents, supply at list prices. [X7948

RUDGE Multi, 1919, 3½h.p., brand new machine; £90.—Waters, Stone St., Cranbrook. [2526

7-9h.p. Rudge Multi, twin, I.O.M. type, absolute latest.—159, St. Anne's Rd. East, St. Anne's-on-Sea. [X8345

3½h.p. Rudge, clutch, wicker sidecar, lamps, etc.; £40.—Dewey, 89, Putney Bridge Rd., S.W.15. [X8702

BARGAIN.—3½h.p. Rudge Multi coachbuilt combination; £55.—259, Acton Lane, Chiswick, London. [2475

3½h.p. Rudge Multi, 1914, Whittle belt, excellent order; 50 gns.—Cranshaw, Old Hall, Pembroke. [X8484

T.T. Rudge, 3½h.p., fully equipped; £48; new condition.—35, Clifford St., Oxford Rd., Manchester. [2523

RUDGE Multi 3½h.p., 1914, wicker sidecar, splendid condition, spares; £65, offers.—Ring Lloyd, Hop. 3953. [2472

1914 Rudge Multi, 3½h.p.; £58, or near offer.—Lewis Bros. (Dover), Ltd., Cherry Tree Av., Dover. [2957

RUDGE Multi Combination, 1919 model, scarcely used, Millford sidecar, all accessories.—Ontliff, Maidenhead. [X8496

The "IVY" TWO STROKE

We would make it better if we could.

We won't make it better because we can't.

The above few words sum up our whole policy. Every time and all the time we are out to produce a motor cycle of distinction, an aristocrat among its fellows, and we invite you to visit our exhibit

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when we shall have pleasure in demonstrating to you the various features of design, all of which go to make the machine THOROUGHBRED.

S. A. NEWMAN, LTD., ASTON CROSS, BIRMINGHAM.

THE ARISTOCRAT OF ITS TYPE

MOTOR CYCLES FOR SALE.

Rudge.

RUDGE Multi, 1919, 3½h.p., equal to new; 80 gns.—Longman Bros., 387, Uxbridge Rd., Acton, 1578 Chiswick. [2516

JONES' Garage, special agents for Rudge, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [0037

1919 (July) 3½h.p. Rudge Multi, lamps, mirror, horn, complete; £90.—Birtle, Lyndon Terrace, Bingley, Yorks. [2439

3½h.p. Rudge, variable gear, in good condition; £35.—Apply, Bearman, 18, Dalgarno Gdns., Wormwood Scrubbs, W.10. [2885

5-6h.p. Rudge Multi 1915 Combination, splendid condition, lamps, horn, complete tool kit; £85, or nearest.—32, Dixons Green, Dudley, Worcs. [X8652

1915 5-6h.p. Rudge Multi and Burbury wicker sidecar, lamps, horn; £75, or sell separate.—Linford, 5, Council St., Walton, Peterborough. [X8749

RUDGE Multi, 1919, 3½h.p., in practically new condition, guaranteed; £90.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0069

1919 3½h.p. Rudge Multi, bought Aug. 12th, complete with horn, tools, spare valve, etc.; any trial; £85.—Apply, Advertiser, H.M.S. Orion, Portland. [X8284

RUDGE Multis for Speed Merchants; T.T. models for earliest delivery.—Newnham Motor Co., 223, Hammersmith Rd., W. 'Phone: 80 Hammersmith. [3041

1919 I.O.M. Rudge Multi, Lucas lighting set, horn, tools, spare belts; £88.—'Phone: Sutton 1084.—Redfern, Mount Mascal, Worcester Rd., Sutton, Surrey. [3058

3½h.p. Rudge Multi, 1919 machine, with free engine and kick starter, includes accessories and tools, condition as new; £87/10.—Wauchope's, 9, Shoe Lane, London. [2581

RUDGE Multi, 3½h.p., hand clutch, lamps, Klaxon, C.A.V. Mag., foot oiler, speedometer, fast machine; £70.—Jepson, 67, Bay View, Bowerham, Lancaster. [2855

1915 Isle of Man Rudge, 3-speed, thorough good condition, very fast machine; £60, or near offer.—Seen at the Automobile Engineering Works, 76, Maybury Rd., Woking. [2908

1915 5-6h.p. Rudge Multi Powerful C.B. Combination, splendid condition, new Lucas lamps, generators, horn, speedometer, spares; £75.—W.M., 58, Abbey Rd., Chertsey. [3016

1919 3½h.p. Rudge Multi and coachbuilt sidecar, speedometer, lamps, etc., mechanically sound as new; £120, or exchange 2-seater, cash adjustment.—5, St. Martin's Rd., Knowle, Bristol. [2490

1919 3½h.p. Rudge Multi, graduated gear, Dunlops, Jones speedometer, Lucas lamps, horn, and all accessories, done about 100 miles, as new; £85.—Petty's, 3, Norbury Parade, Norbury, S.W. [2828

RUDGE Multi, 1919 (Sept.), I.O.M., Lucas large lamp set, aluminium rear light, mechanical horn, kneegrips, all accessories, very fast, guaranteed perfect; £95. After 6 p.m.—85, Ermine Rd., Lewisham, S.E.13. [2614

1919 3½h.p. Rudge Multi Combination, coachbuilt sidecar, bought in September, lamps, horn, tools, spare belt, fully insured, only done 1,000 miles; £115, lowest; owner has bought car.—Cooke, 4, York Rd., Hitchin. [X8374

F.O.C.H. for Rudges.—Book your order now for the very earliest 1920 delivery, all models. Our motto, "Strict rotation and no premiums."—F.O.C.H. (Fair Offer Car House), 5, Heath St., Hampstead (near Hampstead Tube). 'Phone: Hampstead 3752. [8619

1914 Rudge Multi Combination, 5-6h.p., clutch, Clincher tyres, complete with 3 new lamps, new spare belt, tools, very good running order and appearance; £85; insured for £109 until Sept., 1920; first cheque secures.—Bowen, New Copse Farm, Tilshead, Wilts. [X8266

RUDGE Multi, 1916, 3½h.p., T.T. model, tourist handle-bars, with canoe-shaped sidecar, oversize tyres, head light acetylene, sidecar and rear lamps electric, owner getting higher power, machine just received from makers after complete overhaul and re-enamelling, sidecar newly re-upholstered in red, whole outfit practically brand new; £105: Seen by appointment only, any evening after 6 p.m.—Jackson, 76, Brecknock Rd., Camden Rd., Islington, N.7. [2986

Scott.

1919 Scott, 6 weeks old, Lucas lamps, speedometer; nearest £125.—19, Sabine St., Stafford. [X8329

SCOTT Coachbuilt Combination, Binks, speedometer, lamps, mirror, etc.; £65.—112, Iron Mill Lane, Crayford. [2893

SCOTT, 1914, T.T. bars, discs, Lucas lamp, smart appearance, spares; £56.—Johnson, 145, Sutherland Av., Maida Vale. [2766

CHEAP For Quick Sale.—Scott, T.T. bars, new Dunlops, lamps, etc., just been overhauled.—Lovett, Chaddock St., Preston. [X8617

SCOTT, 1911, 3½h.p., 2-speed, red with black disc wheels, good plating, semi-T.T. bars, Binks, new tyre, lamps, mechanical horn, tools and spares; £45.—14, Elm Rd., Wembley, N.W. [X8330

MOTOR CYCLES FOR SALE.

Enfield.

1916 3h.p. Twin Enfield, K.S., with lamps and horn, ready for road; £50.—Redler, Fairfield, Cheddon Rd., Taunton. [X8492

3h.p. Twin Enfield, 1913-14, 2-speed, kick start, Bosch, tyres nearly new, recently overhauled; £45.—39, Ashford Rd., Swindon. [2632

1913 (late) Royal Enfield 6h.p. Coachbuilt Combination, lamps, horn, etc., very fine condition; £92/10; Halifax.—See Kwiksale advertisement Miscellaneous Motor Cycles. [2927

ENFIELD 6h.p. Combination, 1914, electric lights, speedometer, tyres new; trial; 100 gns.—26, Highbridge St., Waltham Abbey. [X8548a

1913 Enfield Combination, 6h.p., Binks, in thorough running order; £80.—Apply, Jameson, 47, Westbury St., Millfield, Sunderland. [X8636

1919 6h.p. Enfield Combination and accessories, in good condition, done little mileage; £155; seen any time.—223, High Rd., Kilburn. [2709

1915 Enfield, 2¼h.p., 2-stroke, 2-speed, unused during war, lamps, horn, tools, as new; £60.—Clark, Combe Dale, Chard, Somerset. [X8604

1919 6h.p. Enfield Combination, lamps, speedometer, hood, screen; £148; seen any time.—29, St. Leonard's St., Bromley-by-Bow (near Bow Bridge). [2932

ENFIELD 2¼h.p. 2-stroke, 2-speed, with special Brooks saddle and light Watsonian sidecar, not done 600 miles; 49 gns.—Johnson, Aldergate, Berkswell. [X8335

ROYAL ENFIELD 1914 5-6h.p. J.A.P. Combination, splendid condition, lighting set, screen, speedometer; 100 gns., no offers.—41, Sprules Rd., Brockley, S.E.4. [3014

21h.p. 2-stroke Enfield, 2-speed, late 1917, stored 24 1918, mileage under 500, first-class condition; offers over £50.—Carwithen, 13, Banister Rd., Southampton. [X8746

1917 3h.p. Twin Enfield, 2-speed, tyres excellent, spares, lamps, horn, tools, excellent condition, ride away; nearest £75.—Webb, Ellenslea, Lichfield Rd., Stafford. [X8298

ENFIELD Motor Cycle, 3h.p., 1913, K.S., 2-speed, with lamps, horn, and speedometer, in perfect condition; £45.—Hadwin Bros., Meathop, Grange-over-Sands, Lancs. [2072

1914 6h.p. Enfield Combination, with luggage grid, head light, spare chain and tube, just overhauled, good condition throughout; 100 gns.—Martin, 2, Broad St., Ratcliffe, E. [2835

1916 Enfield 3h.p. Twin, 2-speed, and Canoelet sidecar, all accessories and spares, wind screen, etc., perfect condition; £85.—165, Broadfield Rd., Catford, S.E. (After 6 p.m.) [2931

1914 Enfield 3h.p. Twin, 2-speed, F.E., kick starter, Bosch mag., lamps, horn, tools, perfect condition; any trial; smart mount; £40.—M. Whitmore, Chase Estate, King's Lynn. [2732

1916 Enfield 6-8h.p. Combination, excellent condition, not done 3,000 miles, fitted with Lucas dynamo lighting set; £130.—Swainson, 9, Scalegill Rd., Moor Row, Cumberland. [2888

ENFIELD 6h.p. Coachbuilt Combination, 1914, scarcely used, owner abroad, wind screen, hood, lamps, luggage carrier, etc.; £100.—Write Donald Frost, 342, Commercial Rd., E. [X8075

ENFIELD; £90, must sell; nice C.B. sidecar, 2-speed, screen, cover, spares, lamps, fine turnout, 6-8h.p. J.A.P. engine.—View after 5 p.m., at 78, Newlands Park, Sydenham Station (near 72 and 75 'buses). [2883

ENFIELD 3½h.p. Twin, late 1915, 3-speed, kick start, F.E., lamps, generator, horn, tools, tyres and chain very good condition, just cost £15 for overhaul, perfect order; £65.—Phillips, Upwey, Dorchester. [2864

ENFIELD Combination, late 1919, indistinguishable from new, speedometer, Klaxon, 3 F.R.S. lamps, screen, spare tyre and tube, inclusive insurance Oct., 1920; £150; any trial.—164, Floyer Rd., Small Heath, Birmingham. [X8311

ENFIELD 1916 6h.p. Combination, luggage grid, electric lighting set, mechanical horn, speedometer, new back outer cover and tube, new driving chain, just overhauled, in excellent condition; seen week-ends; £145.—142, Belgrave Rd., Wanstead, E.11. [2977

1919 6h.p. Royal Enfield and Sidecar, special Colonial model, powerful engine, 2-speed, Palmer cord tyres, spare tube, perfect running order, nearly new, lamps, horn, tools, etc., magnificent turnout; £160; Hants.—Box L5,465, c/o *The Motor Cycle*. [2776

ROYAL ENFIELD 6h.p. Combination, Lucas electric lighting, horn, Orto sliding wind screen with wings, speedometer, good Palmer light car tyres, splendid condition and appearance, little used, carefully driven; £100, no offers.—P. F. Groom, Bury St. Edmunds. [2457

ENFIELD Combination, 1915-16, coachbuilt, 6h.p., hood, screen, luggage grid, Pillion seat, electric horn, Klaxon, lamps, speedometer (slight repair required), tyres new (one only run 200 miles)) spare inner, also serviceable tyre; £110, or offer.—Capt. Pogson, 48, College Rd., Hayward's Heath. [X8320

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SPECIAL MORGAN AGENTS.

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WE SHALL BE PLEASED TO BOOK YOUR ORDER FOR ROTATION DELIVERY at Manufacturers' list price at time of delivery.

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'Grams ;— "Elcemoyca, London."

15-16, BISHOPSGATE AVENUE, CAMOMILE STREET, E.C.3.

ELCE

MOTOR CYCLES FOR SALE.

Excelsior.

AMERICAN-EXCELSIOR.—Sole Midland agents, The Premier Motor Co., Aston Rd., Birmingham. [2190

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7038

LATEST 1919 American Excelsior, magneto model, solo; £136; just unpacked.—Castra Motor Cycle Garage, 42, Bridge St., Chester. 'Phone: 943. [2116

BRITISH Excelsior, now in stock for immediate delivery, 2½h.p., 2-stroke, 2-speed, £58/16; with clutch and kick starter, £64/17/6.—The Premier Motor Co., Aston Rd., Birmingham. [2192

1917 American Excelsior 7-9h.p. Combination, Bosch, lamps, tools, spare chain, in splendid condition, new Palmer tyres front and rear; and trial; £130, or exchange lower power and cash.—352, High Rd., Willesden. [2762

THE Premier Motor Co. will be pleased to meet prospective purchasers of the new American-Excelsior at Stand No. 21, Olympia, when orders can be booked and all information given.—Aston Rd., Birmingham. [2191

MOTOR Cycle, British Excelsior, Bosch mag., Sturmey 3-speed hub and clutch, Lucas lighting set, King of the Road, Amac carburetter, drip feed lubrication, everything in good order; best offer accepted.—Apply, Rev. W. Turner, Rose Ville, Knighton, Rads. [X6941

Fafnir

3½h.p. Fafnir, good condition; £25.—Platts, 602, King's Rd., Fulham, London, S.W.6. [2466

F.N.

F.N. Combination, 4-cyl., 5-6h.p., fitted with 2-speed gear; bargain, £34.—Earl, Athenæum Works, The Vale, Hampstead, N.W. [2590

5½-6h.p. 4-cyl. F.N., clutch, Bosch, latest B. and B., just been completely overhauled and re-enamelled, top-hole condition, ride away; spot cash, 60 gns.—57, Cecil Rd., Hale, Cheshire. [X8326

F.N. 2¼h.p., 2-speed, multi clutch sight drip feed, shaft drive, automatic carburetter, fully equipped, fine condition; £25, or nearest.—Vernon Cobb, 25, Meadow Lane, Nottingham. [X8377

F.N., 4-cyl., 5-6h.p., T.T. bars, dropped frame, long exhaust, nearly new Dunlop and 3-rib Palmer, thoroughly overhauled, rebushed, excellent running order; £35.—W., c/o Oakley's Garage, Yorktown, Camberley. [X8606

F.N. 4-cyl. 5-6h.p. Coachbuilt Combination, hood, screen, clutch, 2-speed, Bosch, Senspray, lamps, generators, 2½ gall. tank, overhauled by makers, good running order, good tyres, inner tubes, spares; trial; £75, or nearest offer; no dealers; seen Saturday.—Austin, Fire Station, Battersea Bridge, London, S.W.11. [2502

Harley-Davidson.

HARLEY-DAVIDSON.—Secure your order now; deliveries now expected.—Parker's, Bradshawgate, Bolton. [X8725

1916 Harley-Davidson Combination, mag. model, excellent condition; what offers?—Dunford, Park Rd., New Barnet. [3030

ONE Only, Latest 1919 Harley-Davidson, solo, £154; a real beauty.—Castra Motor Cycle Garage, Chester. 'Phone: 943. [2115

HARLEY-DAVIDSON, 1918, 7-9h.p., 3 speeds, good condition, new tyres, enamel like new; £135.—Alex. Thom, 201, City Rd., Cardiff. [2788

HARLEY-DAVIDSON, 1915 mag. model, excellent running order; £135, or offer.—Seen, King Edward Garage, Church End, Finchley. [2535

HARLEY-DAVIDSON 1915 Electric Model Combination, in perfect condition; £145, or near offer.—54, High Rd., East Finchley, N.2. [2125

FOR Sale, 1918 Harley-Davidson combination, in perfect condition, privately owned; price £140.—H. Cottell, 41, Manor Lane, Terrace, Lee, S.E.13. [2786

1916 Harley-Davidson Combination, perfect condition, new paint, genuine bargain, 3 new Palmer tyres; £125.—Harris, 24, Grand Parade, Brighton. [2681

1915 Harley-Davidson, August, mag. model, disc wheels, splendid condition, stored during war; offers over £90.—Capt. Little, Airships, Pulham, Norfolk. [X8750

HARLEY-DAVIDSON 7-9h.p. 1919 Combination, almost equal to new, magnificent outfit; 175 gns.—Longman Bros, 17, Bond St., Ealing. 'Phone: 689 Ealing. [2518

HARLEY-DAVIDSON Combination, 1917, 7-9h.p. mag. model, good condition; price £150, or highest offer.—Call or write, No. 6, Knoll Gardens, The Crescent, Sandgate, Kent. [185

1915 Harley-Davidson 7-9h.p. Coachbuilt combination, dynamo lighting, perfect condition throughout: £120; Salisbury.—See Kwiksale advertisement Miscellaneous Motor Cycles. [292

1917 Harley-Davidson Combination, full equipment 3 spare tyres and tubes, nearly new, perfect condition, owner purchased car; say £110.—Bayldon 14, Dunster St., Northampton. [218

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

REPAIRERS.

YLINDERS Ground (car and cycle) and pistons fitted; J.A.P., Douglas, and Triumph patterns in k; standard valves and rings in stock; engines re-ed and all kinds of welding done.—Howard Dug-e, Motor Engineer, 40½, Bristol St., Birmingham. [X8684

ISTONS, Cups, Spindles, Gear Wheels, etc., made to your requirements. Broken frames and chassis ired and brazed. Cracked cylinders and broken e welded. Write stating full particulars; estimate return. Work done for trade.—Wards, 51, Upper mond Rd., Putney. [2273

ISCS.—We specialise in the manufacture of discs and can supply to fit any make of motor cycle car; aluminium, £1/5 and £1/10 per wheel; bro, £1 per wheel. If you send your wheels we fit in 3 days.—Hill and Co., Disc Specialists, I 3, Walmersley Rd., Bury, Lancashire. [X8671

CETYLENE and Electric Welding. — Broken flanges, cracked water jackets, scorced bores, worn ings, built up; aluminium gear boxes, crank cases, broken motor part welded and machined up and rred in 7 days, 14 years' experience. — Lincoln ies, jun., Gun and Motor Maker, 120, Steelhouse e, Birmingham. [7736

HE Harley-Davidson Motor Co., Ltd., have appointed highly trained experts for their service rtment, and desire to warn all Harley-Davidson rs against employing individuals or firms claiming e Harley-Davidson experts. The company positively se to accept any responsibility for machines handled epaired by other than their authorised agents.—The ey-Davidson Motor Co., Ltd., 74, Newman St., ord St., W.1. [1579

HE Tennant Engineering Co., official repairers to A.C.U. and pioneers in ecientific motor-repairing, scrapped their war service plant, taken new pre-s at 238, Bristol St., Birmingham, equipped them highest grade new machinery specially selected for or repairs, and are at the service of motorists re-ng specialised assistance. Cylinders rebored and ned in two days; pistons fitted; oversize and stand-rings in stock, 2/6 each; engines rebushed, over-ed, and returned full of vim; welding in all metals. y job handled by real experts, and full satisfac-guaranteed. [0047

MISCELLANEOUS.

MARTIN'S Accessories.—Below.

×2¾ Special Clearance Motor Cycle Tubes; 9/6 —Below.

MARTIN'S Motor Cycle Head Lamp, complete with generator and brackets, 4in. fronts, nickel d, 52/6; black and nickel, 55/-; F.R.S. and P H. lamp sets also in stock.—Below.

MARTIN'S Acetylene Rear Lamps, with white light, 5/6 each; T.W.R. aluminium torpedo-shape lamps, 8/3 each; P. and H. black and nickel, each.—Below.

MARTIN'S.—Klaxon.—Genuine Klaxons, Model C, all-black finish, 36/- each, from stock; Volta anical horns, turn-handle type, black and nickel each; mechanical horns, push-down type, 15/6 ; bulb horns, all black, 15/6 each.—Below.

MARTIN'S Tool Rolls, best quality tools only 25/- each.—Below.

MARTIN'S Plated Motor Cycle Pumps, with foot stirrup, 7/6 each.—Below.

MARTIN'S Holdtite Repair Outfits, 2/6 each; patchquick, 3/- each; tyre levers, 9d. per pair.—r.

MARTIN'S.—All makes sparking plugs in stock; Lodge 5/, Sphinx 4/-, K.L.G. 5/-, Oleo 5/-, Cooke h pattern) 5/-, etc., etc.—Below.

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1920

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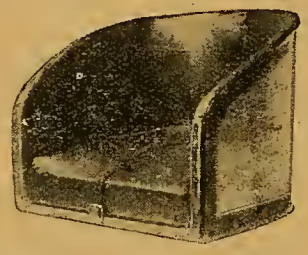

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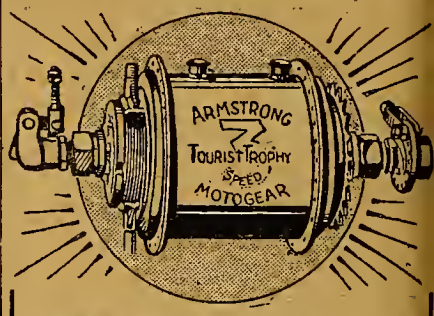

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DROPPED Back Frame and Tank, 45/-; 6 sound plugs, 10/6; cone clutch, 20/-; coil, 7/6; accumulator, 7/6; new exhaust lever, cable, fittings, 12/-; race bearing, 52×16×25, 8/6.—36, Winchester St., Coventry. [X8655

INDIAN Spares.—2-speed gear box with clutch, £6/10; Dixie magneto, £4/10; cylinders, £1/10; heads, back, £1/10; springs front and rear; 2-speed gear parts. Send requirements.—Bolton, Holdenhurst Rd., Bournemouth. [2497

B. and B. Lightweight Carburetter, single control, 15/-; gunmetal Longuemare carburetter, 10/-; new accumulator, £1; Mabon clutch, wants repair, £1; rubber goggles, 3/6; Oleo plug, 4/-.—Sutton, 250, Hanworth Rd., Hounslow. [X8348

THOMSON-BENNETT Anti-clock Breaker, with Bowden handle-bar control, new, £5; ball bearing countershaft, £1; sea rod and reel, in good order, £1; "Electric Engineer Institute" books, 8 vols., £4.—31, High St., Leiston. [2935

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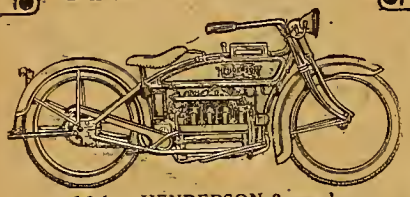

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M.W.	7′3″	x 2′6″	x 4′0″	52/9	19/9
H.W.	7′9″	x 2′9″	x 4′6″	58/6	23/6
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GRADO Variable Gear, new, £4/7/6; Jones speedometer, as new, perfect, £2/18/6; 26×2½ tube, new, 7/6; new ⅞in. belt, 9/6; large mechanical horn, new, 32/6; Aero plug, new, 2/9.—Fearn, 65, Nottingham Rd., Alfreton, Derby. [3006

GARAGES.—We can supply timber for building, cut to any lengths. Price list on receipt of stamped addressed envelope. We are also importers of plywood suitable for coachbuilding.—The City Road Timber Yard, 227, City Rd., London, E.C.1. [0040

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3½h.p. Triumph Engine, like new, and in perfect condition, recently completely overhauled by Triumph Co., £20; new frame to suit, £5; new B.S.A. spring forks, £6; new tank, £4; offers invited.—Apply, Box 753, c/o *The Motor Cycle*. [X8438

MAGNETO, Dixie, 180°, £4; 3 contact breakers (second-hand), platinum points perfect, 12/6 each; 2 1913 Douglas pistons, rings, and gudgeons, 25/-; 1 new 4h.p. Singer valve, 8/6; wanted, Triumph magneto.—Blewett, Chemist, Hayle. [X8448

FOR Sale, Scott carburetter, 12/6; rear brake, complete, 12/6; two half compression valves, new, 2/6 each; lever, new, with spring peg, 10/-; also Bradbury adjustable pulley, 7/-.—J. Baxter, Hawthorn Place, Gunnerton, Barrasford, North Tyne. [2936

CROWN Adjustable Pulleys, from stock, 5in., for Triumph, Rover, B.S.A., Bradbury, Humber, Premier, Precision, 14/9; J.A.P., 5½in., 16/9, post free; piston rings, 1/9, for all engines.—Ridington, 202-4, Southampton St., Camberwell, S.E. [2928

BRADBURY Spares.—Cylinder, 89mm., complete with valves, caps, etc., £3/10; piston and connecting rod, complete, £2; B.B. carburetter, complete, £2; Druid forks, complete, £3; tank and fittings, £2/10.—Tweedale, 3, Maclure Rd., Rochdale. [X8627

OWNER Leaving England, has some good stuff for disposal.—Sidecars, aluminium, streamlined, wicker, £7/10, £6; three accumulators, new; two magnetos, clock and anti, almost new; plugs, etc.; amateurs only.—Write Box L5,406, c/o *The Motor Cycle*. [2686

INDIAN: Corbin speedometer, minus rear wheel driving sprocket, mileage 1,000, £2; two sprockets, as new, 8/- each. Douglas: Watford speedometer, perfect, £3; butt-ended Dunlop, 26×2½, 8/-; toolbag, new, 10/-.—Grice, Cumpstones, Silecroft, Cumberland. [2996

NEW Amac Carburetter, 1⅛ outlet, 50/-; new C.A.V. lighting accumulator in case, 60/-; 3h.p. Rivett motor cycle, rebushed, enamelled, complete less mag., £15; 3½h.p. Pengeot, Bosch, B. and B., horn, new belt, ride away, £26.—Mayhew, 451, West Green Rd., N.15. [2620

CAPAC Carburetters, £4/4, give maximum acceleration, exchanges quoted; new tool rolls, £1/2/6; genuine unused army knapsacks, 13½×11×4½in., with short straps and buckles, 5/6; Corona oil stoves, 25/-.—Halifax Motor Exchange, Union St. South, Halifax. [3067

SENSPRAY Carburetter, with control, £1/5; B.B., with control and by-pass, £1/10; 6ft. ⅝×¼in. chain, 15/-; car horn, 12/-; wicker pillion seat, 15/-. Wanted, heavy frame, take gear box, belt rim, 6in. head, or back part frame.—B., 294, Haydons Rd., Wimbledon. [2637

HANDLE-BAR Muffs.—Keep your hands warm. The finest value obtainable, waterproof and warmly lined, 9/6 pair; best quality, 12/6; approval against cash.—Manufacturers, The Para Rubber Co., 27, 29, John Bright St., and 99, Station St., Birmingham. [0011

MOTO-REVE Tank, new condition, all fittings, £1; 2¾h.p. N.S.U. engine, a.i.v., fitted free engine pulley, all controls, carburetter, £4; steel pulley off countershaft, 6/-; Campion-Jap 4h.p., £38 (see classified columns).—Calow, 12, Nathaniel Rd., Long Eaton, Notts. [X8332

5h.p. Twin a.i.v. Rex Engine, £5; Harley 1917 back cylinder, £2; lightweight Amac, 25/-; Ducellier lamp generator, 30/-; Lucas No. 46 generator, 7/6; P. and M. engine sprockets 16 and 14, 4/- each; Douglas engine sprocket, 4/-.—Gill, 51, Nassington Rd., Hampstead [2631

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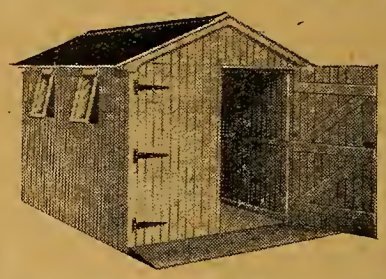

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11ft.	8ft.	9ft	£21 10 0	£7 0 0
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TRIUMPH Spares.—For these try the promptest firm. Our spares dept. under the supervision of Mr. Stretton-Ward, the well-known competition rider, late of the Triumph Co. See our displayed advt. at end of this issue.—Forfield Motors, 11 and 13, Forfield Place, Leamington Spa. [X8696

BOSCH Magneto for 50° V Twin, complete set 3 Lucas lamps for sidecar combination, Palmer 650×65 tube, knee lace-up boots and riding breeches, tennis racket, ice skates, all perfect condition, good as new; seen by appointment.—Vincent, 98, Mayola Rd., London, E.5. [X8681

TRIUMPH Parts (1917).—Engine, £12; Sturmey gear box, incomplete, £7; rear frame, £1; back wheel, £1; countershaft chain, 10/-; magneto chain and cover, 12/6; Sturmey stem, brake rod and pedal, magneto platform, 5/- each.—Alex Howieson, Haywood, by Lanark. [X8688

BODY, coachbuilt, 3 cupboards, finished green, never used, £7; new heavy Moseley tyre and tube, 26in.×2½in., 57/-; 5in. P. and H. head lamp, Bausch lens and generator, top bracket, 50/-; not required, sold machine; Newcastle district.—Box 770, c/o *The Motor Cycle*. [X8703

8h.p. Air-cooled J.A.P. (unused), complete with bevel drive for magneto, £34; front and rear axles with 650×65 wire wheels, 2 semi-elliptic, 2 quarter elliptic springs for cycle car, £8; old pattern 3-speed gear box, chain drive, £5; or £45 the lot.—Box 755, c/o *The Motor Cycle*. [X8489

DISCS.—Make your machine "disc"-tinctive. Aluminium discs in stock for Harley, Zenith, Triumph, Douglas, P. and M., Indian, other makes 3 to 5 days; 70/- set, two wheels; sidecar wheel, 38/6. Trade supplied.—Maudes', 100, Gt. Portland St., W.1; 100, Paris St., Exeter. [3031

BARGAINS.—Electric fan or motor, 7/6; 7ft. new Pedley belt, 1in., 10/-; banjo, good condition, £2; electric tail lamp, 7/6; 1 pair Winslow roller skates, ball bearing, 15/-; 1 pair Pedley grips, new, 3/6; pair gum boots, new, size 9, 10/6.—Pickett, Court Rd., Tunbridge Wells. [2844

4-SPEED Jardine Gear Box, clutch, all controls, perfect, £10; 2-speed and clutch, countershaft, new, £7/10; B. and B. carburetter, top feed, new, £2; Amac, 1919, new, £2/10; both suit 3½h.p. upwards; Watford speedometer, 26in. wheel, latest type, new, £4.—Hill, 94, Bridge End Rd., Grantham. [2625

TRIUMPH Connecting Rod, 15/-; springs for fork, 7/6; front stand, 6/6; Douglas piston, 12/6; 1912 crankshafts, £1/5; new Brampton chains, ½×3-16, 10/-; Triumph, Bosch mag., £28; Sunbeam sprockets, valve, guides, etc., all new; what offers.—Simpson, Devona, Sunbury. [3002

ELECTRIC head lamp, unused, suitable for lightweight, £1; khaki British warm lined lambs wool, chest 36in., cost £7, accept £4, hardly used; 1 pair knee flying boots, lined lamb's wool, 9's, condition good, ideal for winter riding; £1/10.—Write Aero, 14, Montpelier Walk, Cheltenham. [X8676

MATCHLESS V.S. two-speed wheel, perfect, £7/10; F.N. spring forks, £2; 6h.p. Minerva, less pistons, £3/10; 4h.p. 1914 J.A.P., mag. drive, cylinder scored, £7/10; B. and B. carburetter, 27/6; V.S. frame and tank, £3; evenings after 6 p.m.—Maxwell, 4, Cambridge Place, Kilburn Park, N.W. [2988

1918 4h.p. Douglas Spares.—New set of clutch corks, 5/-; crankshaft, 55/-; fork blades, 40/- pair; frame, £6; gear box, £8; C.A.V. contact breaker, 15/-; Amac carburetter, 40/-; Triumph frame, fork blades, etc., B.B. carburetter, new, 60/-.—2a, Sistova Rd., Balham, S.W. 'Phone: Streatham 352. [2571

THE Office Furniture People: Reliance Co., 2, Gray's Inn Rd., Holborn.—200 office tables, 50 typing tables, 100 filing cabinets and drawers, 20 roll-top desks, 40 knee-hole tables, chairs in abundance, stationery, cupboards, etc., all good second-hand stuff, marked in plain figures at such prices that command a ready sale. [2433

1917 Harley-Davidson Back Cylinder, £2; 5h.p. a.i. Rex crankcase, complete, £2; P. and M. engine pinions, 16 and 14, 4/- each; No. 62 Lucas generator, 7/-; square Ducellier generator, 30/-; Cowey complete cable, 15/-; front cylinder and piston, a.i., 5-6h.p. Rex, 25/-.—Gill, Nassington Rd., Hampstead. [2631

BELTS.—8ft.×1⅛, 16/-; 6ft. 6in.×1⅛, 13/-; 6ft. 9in.×⅞, 10/-; all new and faultless, and of good make; 26×2½ and 2¼ wheels, built up on good disc hubs, plated rims, and spokes, 35/-; Empire de Luxe medium weight saddle, 22/6; any item carriage paid.—Dene Motor Cycle Co., Haymarket, Newcastle-on-Tyne. [X8461

4h.p. Douglas Spares.—Cylinders, £3/10 pair; pistons, 40/- pair; connecting rods, complete, £2 pair; crankshafts, £2 and £2/10; crank case, complete, £5, two 3-speed gear boxes, less some clutch parts, £4 each; good tank complete, oil feed caps, £2/10; flywheel, 30/-; back mudguard and carrier, £1; back stand, 10/-; brake complete, 15/-.—Below.

6h.p. Clyno Engine £10, tank 35/-, frame £7, forks £4, pair wheels with good tyres £4, mudguards £1 pair, carrier 10/-, bars 7/6.—7, Gibson Sq., Islington, N.1. [2993

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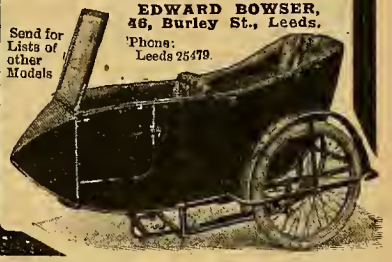

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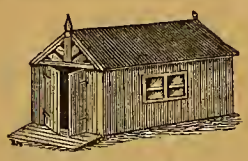

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MISCELLANEOUS.

LOOK.—Gent's high-class trench coats, rubber interlined, London style; £3; cheques accepted; trade supplied.—Irwin, Machinist, Leavesdon Rd., Watford. [2852

PISTONS, latest pattern Triumph, with 3 rings, 35/- each, all complete; piston rings for Triumph, B.S.A., Rudge, Rover, Sunbeam, J.A.P., 2/- each, Douglas 1/9; carriage paid; in stock.—The Regent Motor Co., 38, Regent Place, Birmingham. [X8450

STURMEY-ARCHER 3-speed gear box, minus clutch and pulley, £3; also type J.S. hub gear, incomplete, £6, or will sell in parts; B. and B. carburetter, new, 60/-; King Dick tool roll, new, 30/-; 1912 Douglas, 2¾h.p., requires new crankshaft, £30; Miller sidecar lamp, new, 10/-; Senspray carburetter, less controls, 35/-.—257, Oavendish Rd., Balham, S.W. [2663

DOUGLAS Gear Box, less pulley and sprocket, £3; 4h.p. Ariel engine, W.C. head, £2; 2¾h.p. F.N. and 3½h.p. Rover engines, £1 each; 710×90 Dunlop cover and tube, £2; Low generator, 30/-; B. and L. drip feed, 15/-; B. and B. carburetter, £2; Zenith 2½in. back wheel, 15/-; 26in.×2½in. back wheel, 15/-.—Pittuck, Railway Station House, East Ham, E.C. [2837

ARMY Boots sent promptly per return with our guarantee. Fair wear, free pair, or cash refunded. 12/, 9/-, 6/6; brown Colonial boots, 15/- and £1; field boots, 18/6; infantry leggings, 5/-; in fact, everything that is leather. Drop P.O. for our catalogue.—M. C. Lethbridge and Son, Bootmakers, George St., Devonport, Devon. Est. 1900. [9678

DOUGLAS 4h.p. Sight Feed Lubricator, 12/6; oil pump, 15/-; Dixie coil, perfect, 25/-; breaker bar with platinum point, 10/-; platinum screw, 8/-, as new; Triumph crank pin, roller type, brand new; Peco crank pin and set of rollers, gudgeon pin, release valve and lock nut, magneto sprocket; all as new; what offers?—Lucas, 31, Chertsey Rd., Woking. [2470

2¾h.p. Douglas Spares, brand new.—Connecting rod, complete, 20/-; cam wheel, 20/-; piston, complete, 17/6; timing studs, 4, 14/-; ball bearings for crankshaft, 20/- each; gear box, second-hand, £4/10; new layshaft, high and low gear dogs, 15/- each; magneto for 4h.p. Douglas, C.A.V., £5; sprocket for same, 10/-.—9, Annandale St., Edinburgh. [2887

GODFREY'S, Ltd., Accessory Dept can offer from stock well finished pillion seats, easily fitted, 38/-; Cowey and Stewart speedometers, 95/- and 84/-; chain punches, ⅛in. 5/-, ⅝in. 6/-; belt punches, ¾in., 1in., 1¼in., 2/6 each; enamel, Indian red, green, black, and white, 2/6 tin; goggles, 4/6 pair; post orders receive prompt attention.—208, Gt. Portland St., London, W.1. Tel.: Mayfair 7091. [3054

GOOD Coachbuilt Sidecar, fit any motor cycle, £7, cheap at £14; new Palmer cord tyre, 26×2¼, £2; good Dunlop rubber studded tyre and tube, 26×2¼, 35/- the two; X.L. pan seat motor cycle saddle, splendid condition, 30/-; 3 doz. new plated cycle handle-bars, £1 per doz.; good Philipson free engine clutch pulley, £2.—Box 743, c/o *The Motor Cycle*. [X8371

DISCS, Discs, Discs.—Oure are acknowledged to be the best and simplest to fit, in stock, best enamelled steel, light, strong, for 26in. motor cycle wheels; black 33/-, other colours 36/-, electro-plated 48/- per set for 2 wheels, with all fitments, carriage paid. All kinds of tinplate work and enamelling undertaken; terms for quantities.—Acme Cycle Co., 10, Lucknow Grove, Greenheys, Manchester. [5693

1915 B.S.A. parts engine, £12; gear box, less clutch cap, all other controls, £15; centre part frame, £4; front wheel, nearly new cover and front forks, £5; back stays, carrier and stand, £2; tank with drip feed, £2/15; timing cover, 25/-; clutch-pedal, 4/-; brake pedal, 4/-; gear lever, 5/-; back wheel and nearly new studded cover and sprocket, £3/10.—Hole, 129, Park Lane, Carshalton. [2664

3-SPEED Opperman Small Gear Box, £5/10, no clutch; new 8h.p. J.A.P. W.C. cylinder, perfect; driver's side Morgan, side by side, £3/5; 20h.p. Holley carburetter, £1/5; 4-cyl. car coil, H.T. trembler, £2/5; wanted, 2-seater C.B. sidecar, stamp, reply; exchange 1919 lightweight C.B. Henderson, mileage 200.—Rance, 81, Digby St., Scunthorpe, Lincolnshire. [3060

REMODEL your Office!—This is of equal importance and part and parcel of a progressive business policy. Every firm of standing use typewriters; many of the best known motor firms buy from Reliance Co., the Typewriter people; there's a reason why! Call when in town, always glad to see old and new friends. —Reliance House, 2, Gray's Inn Rd., Holborn End. 'Phone: Holb. 2388. Business hours, 8.30 to 5.30. [2425

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PISTON Rings.—High grade, properly ground and stressed, enquiries invited for sizes from 50 to 110 mm., single rings 1/6 to 2/6 each delivered; being on mass production, can supply any quantities; following makes in stock: A.J.S., B.S.A., Connaught, Douglas, Enfield, Ford, Fordson, Humber, Hudson, Indian, J.A.P., Levis, Metallurgique, Rover, Rudge, Sunbeam, Singer Light Car, Villiers, etc.—Turley Bros., Engineers, St. Mark's Rd., Wolverhampton. [X8302

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Post free 1/6; 12 Sets 15/-.

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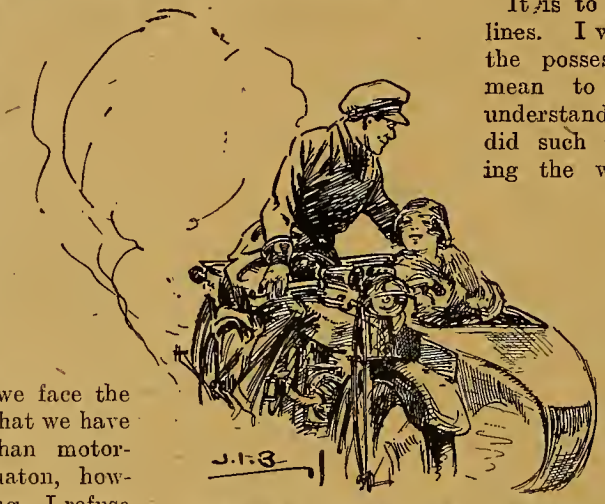
If you are unlucky and are not able to visit Olympia, read the pages of this issue carefully as the best alternative. They constitute Olympia in a nutshell.

WHY YOU SHOULD BE A MOTOR CYCLIST

THE first Olympia Show since the war is the beginning of a new era in the history of motor cycling. Five years ago pessimists were croaking that the war would be the death of the sport; to-day we realize that nothing has done so much to popularize motor cycling as the great struggle through which we have passed victoriously.

Tens of thousands of men and women have learned to drive during the war; hundreds of thousands who had never before been driven in sidecars have learned by practical demonstration the value of these speedy and economical little outfits. To-day we face the curious position of finding that we have far more motorcyclists than motorcycles. This peculiar situaton, however, is not likely to last long. I refuse to believe that a country that could perform the engineering miracles that were worked during the war can be beaten by any difficulties, and I look forward to a time in the near future when there will be ten motorcycles on the roads of Great Britain in the place of every one that raised the dust before the war.

At this great Show there will be thousands of men and women who have never yet owned motorcycles but who have been made to realize their utility during the last five years, and who do not require very much persuasion to induce them to join the ranks of those who motorcycle for pleasure.



"Those who have not experienced the pleasures of sidecarring can hardly be said to have lived."

It is to these that I address these lines. I want them to realize what the possession of a motorcycle will mean to them. I want them to understand that the machine that did such faithful donkey work during the war is in peace time the greatest boon that has been given to us by science.

The possession of a motorcycle changes all one's views of life. It is not merely a means of locomotion; it is a constant source of new pleasure; it provides a new sport; it appeals to both sexes and to the elderly as much as to the youthful.

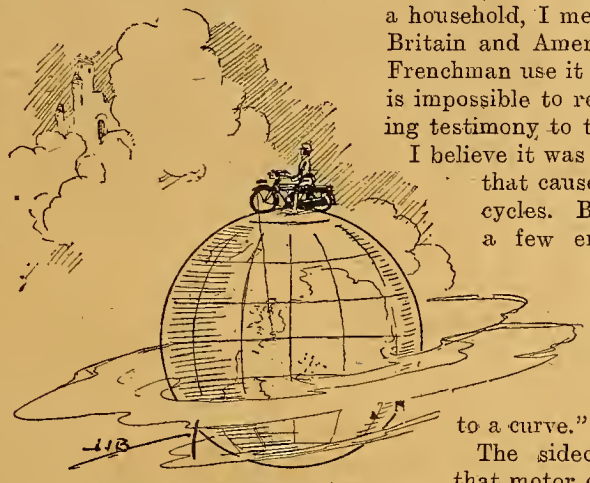
Many are at first attracted by the obvious utility of the machine. They think it will be useful for business purposes, which it will be without doubt, or that it will serve to take them to the river, the football field, or the tennis club. One and all they learn that the pleasures of motor cycling lure them from the aforetime fascinations of inferior sports.

"With a motorcycle you can start off in the morning tor the links. . . . ."

Why You Should be a Motorcyclist (contd.).

Those who have patiently patted a white globule round the same old golf course year after year and have cursed in the self-same swear words in the same old bunkers and over the same old rabbit holes, suddenly realize that there are other courses to conquer. They make new friends; life is broadened. Soon the fascination of travelling outweighs all other pleasures; the motorcycle is no longer regarded merely as a means of getting about, but as a creature that is palpitatingly alive.

Most things mechanical add to the irritations of life. Trains mean boredom from which we drug ourselves by reading papers that only bore us a little less; the time-wasting invention of the telephone has caused more enthusiastic profanity than any other device of man, always excepting those hideous burrowings into the home of the earthworm in which Londoners hang by straps over seats for which they have paid.



With a motorcycle the world is yours to explore.

But a motorcycle is a thing that every normally-constructed man or woman can love. To begin with, it pleases the eye. It is graceful in its lines. It arouses one's intelligent interest. One wants to know all about it. It has moods that have to be humoured as a lover—poor brute—humours the whims of his pro tem. inamorata. But unlike the lover of woman, he who gives his affections to a motorcycle has the satisfaction of knowing that its whims are understandable, whereas——. But enough has been said. I am reminded that *Motor Cycling* has many readers of the sex that so charmingly adorns our sidecars.

One of my few claims to fame when I am declutched from this life, and of which I wish to remind obituary writers, is the invention of that terminological exactitude the "Flapper bracket" which first appeared in *Motor Cycling* some six or seven years ago, and which, like "Gipsy Meeting," has become a household, I mean roadside, word in Great Britain and America. I have even heard a Frenchman use it with a pronunciation that it is impossible to reproduce, a somewhat striking testimony to the ubiquity of this journal.

I believe it was the invention of the sidecar that caused the great boom in motorcycles. Before that time there were a few enthusiasts, some of whom hitched trailers to their machines, and inspired *Punch* to the famous picture of a motorcyclist calling out to an empty trailer, "Hold on tight, Auntie, we're coming to a curve."

The sidecar removed the objection that motor cycling was a selfish and unsociable pastime. Young men should be warned that the possession of sidecars makes it extremely difficult for them to avoid the careless habit of becoming engaged.

Those who have not yet experienced the pleasures of sidecarring can hardly be said to have lived. To set off early on a summer morning with a congenial friend who knows how to "do" her hair so that the

. . . play your two rounds without worrying about having to catch a train at any particular time, . . .

". . . and return home in the evening to your front door, saving yourself a walk from the station."

wind will not disturb it and put her out of temper, and to leave cities and work behind, to get out into God's own country, along roads tunnelled through trees and flecked with sunshine, to rush through pure air over commons flecked with white geese, past purple heaths, over wooded hills and open moorland, is an experience once enjoyed will never pall.

The need for alertness when driving to avoid the dangers of the road produces a pleasant stimulation of the senses that banishes all cares. One is merely conscious of a feeling of supreme happiness. Scenes change so rapidly that the fascination is never dimmed, and always the white ribbon of road lures one on to find out what lies round the next bend, or what view will be disclosed when the summit of the next hill is reached.

Other sports may thrill, but motor cycling gets into the blood; it arouses the wanderlust that can never be sated. It gives one the feeling that at least one has discovered what it is to be free. Instead of a garden, one has counties to play in, or countries or continents if time permits.

And the desire to explore, to see how God has planned his great garden, becomes keener as time goes on. One-day runs to the country and the sea are extended into long week-end tours covering hundreds of miles, and still the ambition to go farther afield grows steadily. Arrangements are made for a holiday tour. There is no need to decide upon where to go. The wise man does not make plans of any sort. He has all of Great Britain to play in, and the whim of the moment will determine where the next resting place shall be.

The owner of a modern motorcycle has a machine that will take him to worlds of romance of which he has formerly only dreamed. He may have it slung aboard a Channel steamer and the Continent of Europe is his to enjoy. The chateaux of France mellowed by the glamour of history, the sunshine of the Mediterranean, the white Alps that glow crimson as the sun sinks, the valleys of Switzerland painted with gentians and Alpine roses, lakes, waterfalls and glaciers that are frozen oceans of lovelier blue. Italy! He may learn all that her name means to her lovers; Spain with its memories of Moorish grandeur, its colour and sun—as time goes on he may know all these as no tourist who is the slave of railways can ever know them.

Remember that when one has bought a motorcycle one has a key to the world. It costs no more, very often less, to spend a motor cycling holiday exploring Europe than to spend it in England.

If you were given a free pass over all the railways of Europe would you not travel? If you would not you must be strangely lacking in that spirit of adventure that has made Britain. The motorcycle is a travelling pass to the lands of which you have read and about which you have dreamed on so many occasions.

And let me tell you one thing more. If you buy a motorcycle to-day you will find that it is an introduction into the society of the keenest, most human, most chivalrous sportsmen and sportswomen in the whole world.

Join them now and may the best luck of the road be with you!

Competitions for 1920.

A MEETING of delegates from each of the territorial districts in which the Motor Cycling Clubs have been divided by the Auto-Cycle Union, will be held at Olympia at 5.30 p.m. to-morrow, Thursday. This meeting is principally being held for the purpose of arranging dates for the more important competitions in 1920.

C22

Many Cyclists Fined.

IT is interesting to note that, in connection with the tirade against rear lamps, no fewer than 50 cyclists were recently fined 10s. for omitting to carry a rear light. A representative from The Cyclists' Touring Club attended in order to endeavour to get the convictions quashed, but his efforts were naturally unsuccessful.

One Mile,
5 Miles,
10 Miles,
25 Miles, and
25 Miles
Sidecar
Championships.

FIVE

American National Championships

won on

Indian

Motocycles

The 25 Miles Sidecar Championship was won in the wonderful time of

20 minutes $36\frac{3}{5}$ seconds,

being an average speed of

72·8 miles per hour,

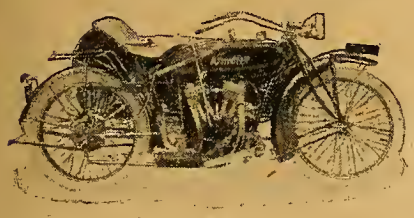
whilst the 10 Miles Solo was won at a speed of

94·74 miles per hour.

Exhibiting at Olympia

STAND——93

The Motocycle



that did it.

HENDEE MANUFACTURING CO.,
"Indian House," 366-368, Euston Road, London, N.W.
Telephone—Museum 1634, 'Grams—"Hendian, Euroad, London."
AUSTRALIA—109-113, Russell St., Melbourne. AFRICA—Indian House, 127-9, Commissioner Street, Johannesburg. Indian House, 579, West Street, Durban. Indian House, Strand Street, Port Elizabeth.

What are the Roads like in Your locality?

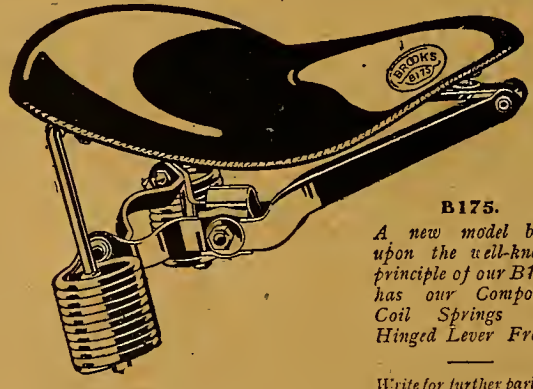
On every run you take you surely cannot be assured of decent surfaces. Some roads, continuously travelled, will shake the finest motor bicycle to pieces, and almost do as much for he who rides it. But—

BROOKS

(REGISTERED TRADE MARK)

the saddles super-excellent, with their perfect system of springing and first-rate workmanship throughout, will give the greatest comfort whatever the roads are like in your locality.

J. B. BROOKS & Co., Ltd.,
77, Criterion Works, Birmingham.



B175.
A new model built upon the well-known principle of our B170, has our Compound Coil Springs and Hinged Lever Front.

Write for further particulars.

STAND 236
Cycle and Motorcycle Show.

NEWS IN BRIEF.

Lighting-up Times for Saturday, November 29, 1919.

London	4.25 p.m.	Edinburgh	4.16 p.m.
Newcastle	4.20 p.m.	Liverpool	4.30 p.m.
Birmingham	4.29 p.m.	Bristol	4.35 p.m.
Dublin	5.13 p.m.		

Lighting-up time in the United Kingdom is now half-an-hour after sunset. Lamps must be kept alight until half-an-hour before sunrise. Moon.—First Quarter 30th.

A Spartan Rider.

THE defendant in a recent speed limit case gave the novel excuse that the bumpy road caused him to go faster than he meant to. One is tempted to ask—twist grips or levers?

Death While Driving.

AT Birkenhead recently a driver of a sidecar outfit with a lady passenger, collapsed in the saddle. He was picked up unconscious and died immediately. Apparently his last act was to close the throttle, and the machine came to a standstill within a few yards.

Interesting Engine Developments.

WE have often wondered how long it would be before the sleeve valve made its appearance in motorcycle engine practice. We now hear rumours of a most interesting single-cylinder engine being built in the north, and which has already undergone some very extraordinary tests most successfully. In its present form the engine is of quite small dimensions, being but 70 mm. by 76 mm., but it has shown such promise that its builders are already embarking upon a large range of models, running as high as 7 h.p.

To T.T. Aspirants.

READERS will remember a paragraph which recently appeared, stating that a well-known concern was anxious to get in touch with a possible rider for next year's T.T. race. The result was an avalanche of applications, and we are now asked by the concern interested to say that, while every application is receiving consideration, it is, of course, impossible to reply to each one individually.

Triumph Finance.

ONCE again the Triumph Co. have had a prosperous season. The directors recommended at the 24th ordinary general meeting of the company, held on the 28th inst., that a final dividend at the rate of 12½ per cent. be paid on the ordinary shares, and 6½ per cent. on the preference shares. These two dividends will account for a sum of £31,137 10s.; £25,000 will be carried forward to the general reserve fund, while the pension fund, which has been especially for the benefit of the employees of the company, will be increased by £2,000. In addition, the amount of £13,284 12s. will be carried forward to next year's account. During the year the company has lost the services of Mr. M. J. Schulte, who was the joint managing director and one of the founders of the company. Mr. Schulte has retired from business altogether.

Royal Ruby Developments.

IN order to cope with the demand for Royal Ruby motorcycles and to increase their output, the Ruby Cycle Co., Ltd., have now taken over a works at Altrincham for the manufacture of their 3 h.p. machine.

CAUGHT AT THE RIGHT MOMENT.

"Unfaked" photographs of spills taken at the psychological moment are rare. These two falls were experienced during the recent Scott trial and we are indebted to the Gaumont Film Co. for permission to reproduce the photographs.

Prices, Deliveries, and Horse-powers—The I.A.E. and the Six Days' Report.

Royal Ruby Price.

AT the time of going to press with the article which appeared in our last issue there was some doubt concerning the price at which the new 3 h.p. spring frame Royal Ruby would be sold. We are now advised that this has been fixed at 95 guineas.

The Regent Delivery Position.

WE fear that perhaps the wrong impression may be conveyed through a phrase which appeared in the description of the Regent motorcycle in our last issue. We said that deliveries might be delayed "owing to the extensive tests that had to be carried out." We are now advised that there are no further tests to be undertaken, as the producers have already satisfied themselves as to the thoroughness of the design.

The I.A.E.

A SPECIAL meeting for the purpose of discussing the judges' report on the recent Six Days' Trial will be held in the top room of the Princes' suite at Olympia at 2.30 p.m. on Thursday afternoon next, the 27th inst. The meeting is open to all interested in motoring matters, and it is hoped that there will be a large attendance of the manufacturers who entered machines in the Trials.

The 1920 T.T. Limits.

WE learn that at the last meeting of the Competitions Committee of the A.-C.U., the basic conditions of the 1920 Tourist Trophy Races were discussed. It was proposed by Mr. A. V. Ebblewhite, seconded by Mr. E. B. Ware, and carried unanimously, "that two Tourist Trophy Races be held in the Isle of Man, a senior race for machines not exceeding 350 c.c., and not over 200 lb. in weight, and a junior race for motorcycles not exceeding 250 c.c. and 125 lb. in weight." The reduction in capacity in the two classes is due to the fact that 500 c.c. machines were becoming too fast to be safe on the island roads.

A SIDECAR BODY FOR DUCK SHOOTING!

Our American correspondent, having first sealed up all body joints with pitch, successfully used his sidecar body as a duck punt.

A Regrettable Accident.

READERS will be sorry to hear of an unfortunate occurrence to Lieut.-Colonel Charles Jarrott, the popular president of the Motor Cycling Club. A few days before the Car Show opened Colonel Jarrott had the misfortune to cut his foot on a broken bottle. The wound proved to be more serious than was at first anticipated, and eventually he had to enter a nursing home, where an operation was performed. We are glad to hear that he is now progressing favourably, and that we may expect to see him amongst the visitors to the Motor Cycle Exhibition.

D2

The New Humber Model.

IN our description of the 1920 Humber last week, we inadvertently referred to the new 4½ h.p. model. The capacity of its cylinders is 600 c.c., so that it will be at once seen that its power is considerably more.

Lecture at the R.A.C.

READERS are reminded that a lecture on "The 1919 Olympia Show" will be given by Mr. Douglas Leechman at the Associates' Room, R.A.C., Pall Mall, on December 4th next, at 7.30 p.m. The Essex M.C.C., under whose auspices the lecture is being given, extend a hearty welcome to all.

MIDLAND CLUBS AND 1920 COMPETITIONS.

FOLLOWING on a meeting, held in Birmingham a week or so ago, to consider the question of amalgamation of the Birmingham clubs, at which meeting it will be remembered the clubs decided not to amalgamate entirely just yet, but to amalgamate for the purpose of open trials, a meeting was held on Monday, the 17th inst., to which meeting all the clubs included in the Midland District under the new A.-C.U. scheme were invited.

Mr. Frank Urry, the hon. secretary pro tem. of the Midland Centre, was asked by Major Vernon Brook, who was elected to the chair, to read the correspondence he had received from the clubs not represented. The Wolverhampton Club had been written to several times, but had not replied to the letters, and the Banbury and White and Poppe Clubs were evidently not sufficiently interested to be present. Representatives were present from the following clubs:—

Birmingham M.C.C.
Sutton Coldfield A.C.
South Birmingham M.C.C.
Midland Cycling and Athletic Club.
Redditch and District M.C.C.
Kidderminster M.C.C.
Nuneaton and District M.C.C.
Clarion M.C.C.

The Chairman, after explaining the objects of the meeting, said he hoped it would be possible to come to an amicable settlement as to which clubs or group of clubs would have the four A.-C.U. open competition permits for 1920 allotted to them, otherwise the matter would be left in the hands of the A.-C.U., who would have to ballot for the names of the clubs.

Mr. Murray, of the Clarion M.C.C., proposed that the whole of the clubs should amalgamate for the purpose of running four good open trials.

Mr. C. Dawes, of the M.C. and A.C., Mr. F. S. Whitworth, of the Sutton A.C., and other speakers were opposed to this on the ground that by the time the third or fourth trial came round the officials would be so tired of their jobs that the events would be more or less moribund. They also pointed out that a spirit of friendly rivalry was necessary if competitions were to be kept up to the high water mark of efficiency and organization, and if all four trials were in the hands of one group of officials there would not be this spirit of rivalry and sportsmanship.

Before the proposition was put, it was suggested that the Redditch and Kidderminster Clubs, who had already expressed their willingness to amalgamate, should combine with the Wolverhampton Club and be allotted one of the four permits, this suggestion being agreed to by the Redditch and Kidderminster Clubs, the Wolverhampton Club not being represented. Mr. Dawes moved as an amendment to Mr. Murray's proposition that those clubs desirous of obtaining an open trial permit should hand in their names, and the whole meeting would ballot for the three most likely clubs, not including the three above mentioned. The amendment, being put, was carried.

The following clubs applied for permits:—Birmingham M.C.C., Sutton A.C., South Birmingham M.C.C., M.C. and A.C., and the Clarion M.C.C.

These names being put to the vote, the count came out as follows:—

M.C. and A.C., 13 votes.
Birmingham M.C.C., 12 votes.
Sutton Coldfield, 12 votes.
South Birmingham, 5 votes.
Clarion M.C.C., 3 votes.

South Birmingham and the Clarion M.C.C., therefore, drop out of open trials along with the other clubs which did not apply, during 1920. It was decided that in the event of a fifth permit being granted to the Midland centre, as was considered by the meeting very essential, in view of the importance of the Midlands, not only from the strength of its Clubs, but also as a motorcycle manufacturing centre, then the South Birmingham M.C.C. would take it.

The meeting then unanimously elected Major Brook as delegate to the meeting of clubs to be held during the motorcycle show, and gave him a mandate to ask the A.-C.U. to confirm the decisions made regarding the allocation of permits, and not to grant permits to any of the clubs which did not attend the meeting, but which might apply for them on their own initiative. The meeting also was strongly of the opinion that the distribution of permits had been very badly carried out, in view of the importance of the centre with its 11 clubs, compared with the north-western district with only four clubs, which was allocated three permits, and the delegate was instructed to apply for an additional permit at the Show meeting, which takes place this week.

THE MANUFACTURERS' UNION BANQUET.

Great Gathering of the Trade and Press—Interesting Statements Made.

THE fifth annual banquet held by the Cycle and Motor Cycle Manufacturers and Traders Union, Ltd., took place at the Criterion Restaurant last Friday, and was eminently successful.

The chair was taken by Mr. C. A. Hyde (of the B.S.A. Co., Ltd.), who is now resigning from the position he has held on the Union for three years. Practically all the leading men in the cycle and motorcycle industry were present, together with a very representative gathering from the Press, both technical and daily, who listened to the speeches with great interest. After the toast of "The King," which was proposed by the chairman, Mr. E. Manville, M.P., President of the Associated Chambers of Commerce, proposed the toast of the Manufacturers' Union, to which Mr. Hyde replied with some very interesting remarks concerning the state of the industry. The guests were toasted by Mr. A. Brampton, J.P., and in response Lt. Col. Sir Rhys Williams, Bart., in discussing future road extensions, made public a sugestion for special tracks for cyclists. The toast of the guests was replied to in addition by Sir Allan Smith, K.B.E., and by Mr. Massac Buist on behalf of the Press. The chairman was toasted by Mr. Harold Bowden. It is regretted that we have not sufficient space to report more fully the speeches, but the more interesting topics discoursed upon are dealt with editorially this week.

D3

MOTOR CYCLING

The Original Motor Cycling Journal. Founded in 1902. New Series Commenced 1909.

Written, Edited and Illustrated by a Staff of Practical Motor Cyclists.

Conducted by EDMUND DANGERFIELD.

Proprietors—TEMPLE PRESS LTD., 7-15, ROSEBERY AVENUE, LONDON, E.C.1.

The Manufacturers Agree with Our Views.

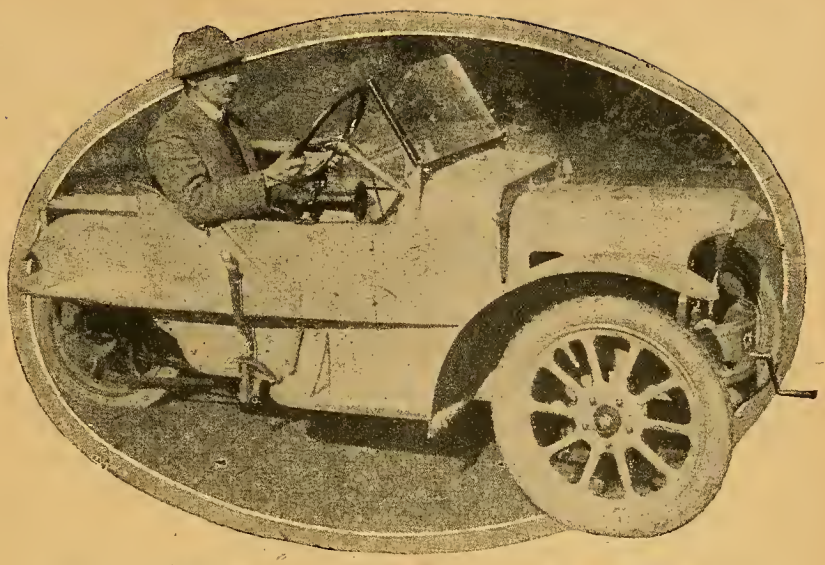
At the fifth annual banquet of the Cycle and Motor Cycle Manufacturers and Traders Union, Ltd., naturally the favourite topic in the speech-making was the state of the motorcycle industry. It is gratifying to note that, in the speeches made by the chairman and others present, many of the subjects we have discussed and suggestions we have made editorially during the past year were brought up, and our views generally were agreed upon. It will be remembered that a month ago we prophesied that the prices ruling when the Olympia Exhibition opened would be even higher than they had been in the past. The price question was very fully dealt with in the speeches, and it was pointed out that as the price of the motorcycle is not advanced to anything like the same extent as the increased production costs, the motorcycle to-day in comparison with other commodities was really cheap. It is gratifying to note that the members of the Manufacturers' Union realize that no useful purpose is served by the "cut-throat" policy, and they intend in the future more than ever to work together and exchange opinions, all of which will help towards producing better motorcycles and more of them. In this connection a committee composed of ten members from some of the leading manufacturers is now thoroughly going into the question of cost. Another point touched on in the speeches was that of Overseas trade, and again the views we have been expressing periodically for the past year were agreed upon. It is pointed out that British trade abroad was being very severely handicapped owing to our manufacturers being unable to produce sufficient machines for our home markets, and consequently making no attempt to capture, or even to hold their own in, the foreign markets. It was urged that all manufacturers should make a point of setting aside at any rate a small percentage of their output for export, in order that our Colonies and foreign countries should not have a chance to forget that the British made machine is the best of them all. If no British machines are exported, all the export trade will go to foreign markets, whereas if even only a few English machines are sent abroad, it will form the starting point of a great export trade, when production makes this possible. The Secretary to the Minister of Transport in conversing upon road alterations stated that a proposal had been made for providing specially-prepared tracks for cyclists. We are of the opinion that it would be moving more with the times if special roads were set apart for motor vehicles

The Need of a Special Exhibition Building.

We are writing before the doors of the Cycle and Motor Cycle Exhibition are thrown open to the public, but do not hesitate to prophesy that the attendance will be almost, if not quite as great as in the case of the recent Car Show. Those who visited the latter will agree that the crush at all times was so great as to defeat to a great extent the primary object of the exhibition, i.e., facilitating the examination and comparison by the public of a number of competitive makes of machines. The growth of the popularity of all species of motoring is rapid, and with every prospect of a "boom" season in front of us, it does not require a very vivid imagination to conclude that Olympia will not be able to cope with the crowds which will seek admittance to the 1920 Exhibitions. It is, of course, impossible to find a cure within twelve short months, but the obvious solution, in our opinion, would be the erection in some public park of a building of sufficient size to house the largest exhibition—be it of a motoring or any other nature—likely to be held for many years to come. It should be an exhibition hall, pure and simple, and it should be possible and desirable to incorporate with it open spaces in which demonstrations under working conditions could be held, and—in the case of both the car and motorcycle Shows—a gradient on which hill-climbing powers could be demonstrated. Utopian, perhaps, but feasible, and, if only desirable at present, certainly imperative in the immediate future. First cost would, of course, be heavy, but it is a characteristic of the "nation of shopkeepers" to encourage exhibitions of all kinds, and there should be no doubt that such an institution would be self-supporting. The enormous crowd which will be present at the Motor Cycle Exhibition will prevent many from viewing the exhibits as carefully as they would wish. In order partly to do away with the confusion resulting from sightseers trying to push in all directions, irrespective of any "rule of the road," we have suggested to the Manufacturers' Union that some system of traffic control should be instituted. The idea is to allow traffic in one direction only along each gangway. This could be effected by the use of arrows, whilst the stationing of R.A.C. Guides or A.A. Scouts at each corner for the purpose of controlling the traffic would be of considerable benefit to all concerned. The suggestion has been very favourably received, but unfortunately it has been made rather late, and it is therefore doubtful if the necessary arrangements can be made in time to carry it out.

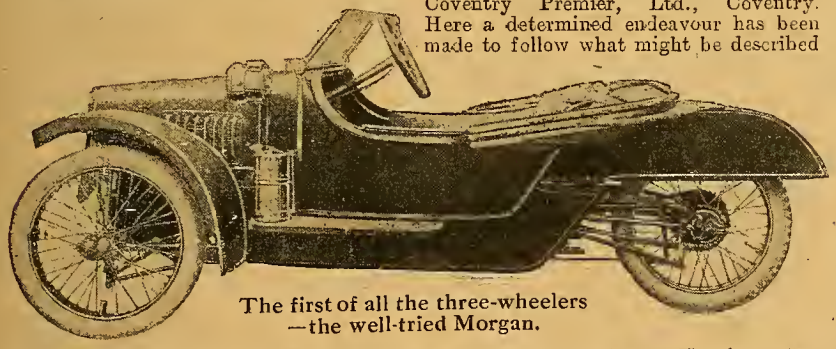
THE GROWTH OF THE THREE-WHEELER.

New and Interesting Examples of Light Runabouts.



The L.S.D., which sells for £185—the cost of a first-class sidecar outfit.

DESPITE a good deal of prejudice, the light three-wheeled type of runabout has made remarkable strides and bids fair to be one of the most popular types of cyclecars on the market. In the past there has been a great deal of misconception regarding three-wheelers, and its removal is due, in no small measure, to the unwavering zeal shown by the manufacturer of what must be regarded as the most successful three-wheeler of the day, viz., the Morgan. No apology, therefore, is necessary in dealing with this car first.



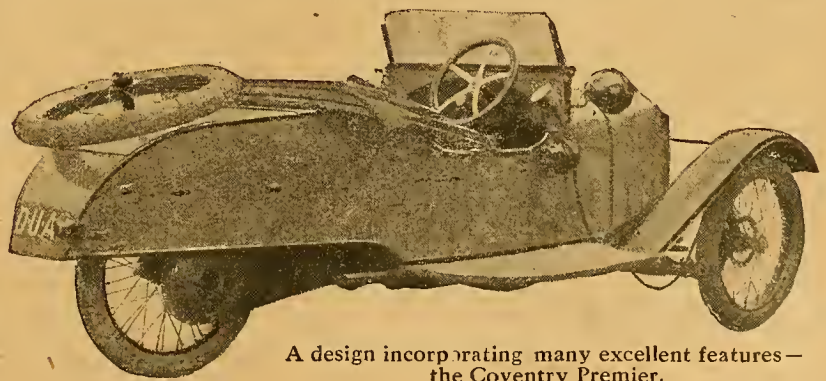
The first of all the three-wheelers —the well-tried Morgan.

The Morgan will be exhibited on Stand No. 120, and, although its chief characteristics no doubt are familiar to readers of *Motor Cycling*, a brief survey of the specification may be given. The power unit is an 8 h.p. J.A.P. twin, either air or water cooled, the carburetter being an Amac. The drive is transmitted through a cone clutch lined with Ferodo to a bevel box through the medium of an enclosed propeller shaft, the final drive being obtained by means of dogs and chains to the rear wheel. Helical suspension is provided for the front wheels, whilst double quarter-elliptic springs are fitted at the rear. Noteworthy features are the fitting of oversize tyres (i.e., 700 mm. by 80 mm.), and the sturdy design of the band brakes, which act upon drums forming part of the rear wheel. The overall length is 9 ft., overall width 4 ft. 7 ins., and the chassis weighs about 2¾ cwt. Steering is direct. The prices of the Morgan range from £145 for the sporting air-cooled model to £160 for the water-cooled De Luxe, the address of the manufacturers being The Morgan Motor Co., Ltd., Worcester Road, Malvern Link.

A three-wheeler which is bound to attract a good deal of attention is the Coventry Premier, which is made by Coventry Premier, Ltd., Coventry. Here a determined endeavour has been made to follow what might be described as light car practice, a V-twin water-cooled engine being installed within a car-type bonnet, and cooling being effected by means of a handsome radiator in the orthodox position. Beneath the radiator is found the starting handle, which is not placed at the side as in the case of the Morgan. A leather inverted cone clutch takes the drive by means of a shaft to a neat gearbox, which gives three forward speeds, and what is distinctly an innovation as regards the three-wheeler—a reverse. The final drive is by enclosed chain. Reduced steering is provided by means of a rack and pinion, whilst springing is by quarter-elliptics throughout. The Coventry Premier will be shown on Stand No. 62, the price completely equipped with three lamps, generator, spare wheel and tyre being £210.

The third type of three-wheeler having final chain drive is the L.S.D., which will be exhibited on Stand No. 38, and is priced at 185 guineas. The general trend of design somewhat resembles the Coventry Premier, inasmuch as a gearbox is employed, the final drive being by means of shaft and chain. The engine, however, is an air-cooled J.A.P., whilst the gearbox only provides two forward speeds and a reverse. A patented system of suspension of the helical type, and probably very similar to the Morgan, is employed at the front, whilst quarter-elliptic springing is used at the rear. The L.S.D. also resembles the Morgan in so far as steering is concerned; this is direct. A refinement is provided by the electric lighting, which we understand to be a standard fitting, whilst the equipment includes hood, tools, etc. The car is manufactured by Sykes and Sugden, Ltd., Spring Place Works, Huddersfield.

Only one variety of three-wheeler

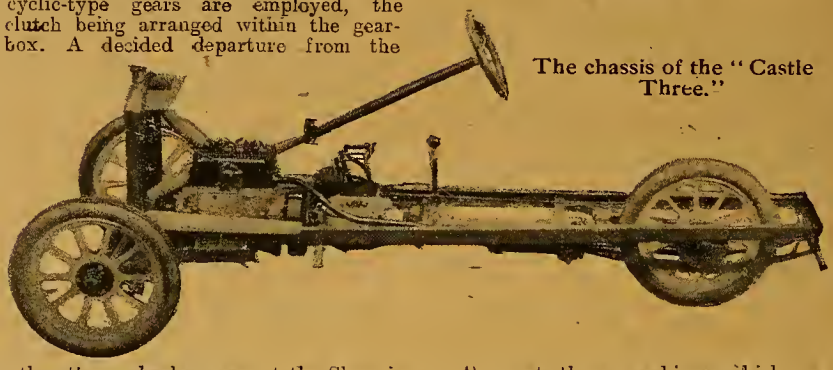


A design incorporating many excellent features—the Coventry Premier.

Growth of the Three-wheeler (contd.).

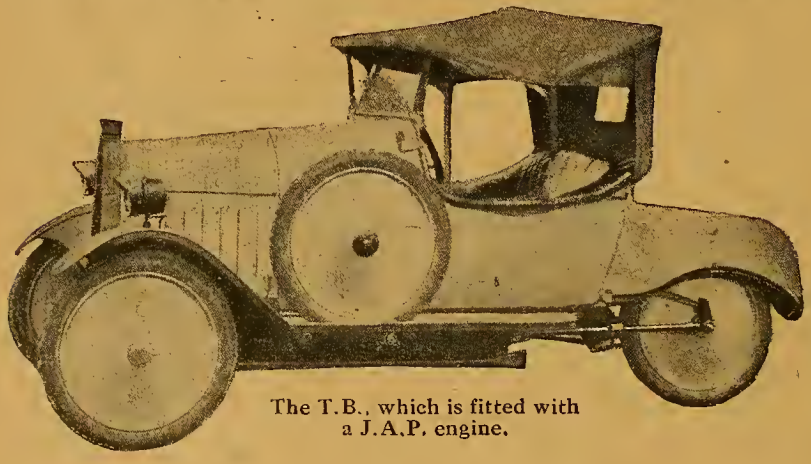
employs belts in the system of transmission, this being the Wooler-Mule. Apart from this, it has several very interesting features. The final details are being jealously guarded by the makers, The Wooler Engineering Co., Alperton, but the following particulars probably will be found to be fairly accurate :—A special Wooler engine having horizontally-opposed cylinders, the bore and stroke of which are 85 mm. and 90 mm. respectively, is placed under a bonnet at the front of the car, a cooling draught being introduced through cowling by means of a convex-shape flywheel open to the atmosphere at the front and vanes upon the periphery of this wheel which suck in and distribute air round the cylinder heads. The drive from the engine is transmitted through expanding pulleys, of which there are six, three on the extension of the crankshaft and three on the main propeller shaft immediately beneath it, which transmits the final drive to the rear wheel. This car will be shown on Stand No. 47, the price working out at £130.

The Castle Three, a newcomer to the ranks of three-wheelers, employs shaft and bevel drive, being thus a marked contrast to the Morgan, the Coventry Premier, and L.S.D., with chain drive, and the Bantam with friction drive; moreover, it is fitted with a Dorman engine, and, therefore, should be an exceedingly powerful little machine. Epicyclic-type gears are employed, the clutch being arranged within the gearbox. A decided departure from the adopted for the steering. The lighting is electric or, at a reduced price, either acetylene or oil. The car is made by the Castle Motor Co., Ltd., Kidderminster, the price with equipment and electric lighting being £250.



The chassis of the "Castle Three."

other three-wheelers seen at the Show is the method of springing adopted on the Castle Three : it is fitted with quarter-elliptics at the front, but semi-elliptic at the back—a determined attempt to eradicate one of the minor disadvantages of three-wheelers and obtain comfortable rear suspension. Planetary gear is



The T.B., which is fitted with a J.A.P. engine.

Amongst those machines which are crowded out of Olympia the M.B. and the T.B. are worthy of mention. The M.B. is a particularly striking cyclecar both as regards outward appearance and design. It is fitted with a four-cylinder water-cooled engine, Zenith carburetter, and Thomson-Bennett magneto, two forward gears and a reverse being provided. Transmission is by shaft and chain, semi-elliptic springing being fitted at the front and quarter elliptic at the rear. The equipment includes spare wheel, and the price of the car—which is made by Merrall Brown Motors, St. George's Road Works, Bolton, Lancs.—is £250.

The T.B. is fitted with a J.A.P. engine (85.5 mm. by 85 mm.), the carburetter being an A.M.A.C. and the magneto an M.L. Two speeds and reverse are provided, the drive being transmitted by shaft to the rear wheel, the final drive being by bevel. A noteworthy point of the T.B. is the method of suspension at the rear which is on the cantilever principle. Full equipment is provided, including spare wheel, the price being £200 and the manufacturers Thompson Bros. (Bilston), Ltd., Aircraft Dept., Bilston.

THE O.K.-UNION AND LEVIS END-TO-END TRIPS

ONE of the stunt rides which we mentioned in our last week's issue is that undertaken by P. Pike, who, mounted on a 2¾ h.p. O.K.-Union, set out last week to ride from John o' Groats to Land's End in five days. The test is being officially observed by the Auto-Cycle Union.

On Monday we received the following wire :—"Banff.—O.K.-Union going well on most difficult roads of snow, ice and water. Great strain on rider to prevent frequent broadside sliding. Too dangerous to proceed in dark, therefore three hours behind schedule. Resume in morning for Aberdeen and Perth. Muddy roads will be welcomed as a picnic."

The next communication reached us on Wednesday, and was dated from Edinburgh. It said :—"O.K.-Union proceeding through abnormal road and weather conditions—ice, snow, mud and deluge of rain. Making Newcastle to-night, going well; half-day behind schedule."

On Thursday we were notified from Newcastle :—"Torrents of rain at Edinburgh, followed by heavy melting snow. Regret we have not yet had fog. Proceeding Doncaster and Birmingham; half-day behind schedule. O.K.-Union O.K." Evidently the torrential rain has not damped the rider's humour.

After a terrible journey Capt. Pike arrived at Birmingham from Newcastle on Friday at 2 a.m., 12 hours behind the scheduled time. The worst part of the journey, from Inverness to beyond Banff, over 45 miles, was through solid ice with deep drifts of snow on either side.

After a rest they proceeded on their journey to Land's End, encountering a terrible blizzard over the Derbyshire moors. This, however, Pike considered a joy ride! The trial is proceeding at the time of closing for press.

The Levis Attempt.

DESPITE road and weather conditions of the utmost severity the standard Levis, which Kuhn is riding from the Midlands to John o' Groats and Land's End, is making good progress. The route has been altered, for, instead of returning from Land's End to Birmingham, Kuhn will come to London in order that the machine may be available outside Olympia for such as are interested. Up to the time of going to press Kuhn had reached Birmingham on the morning of Friday last, having experienced no trouble beyond the state of the roads, which were ice-bound or inches deep in water and mud. The plucky rider should reach London on Tuesday unless further bad weather intervenes, and we hope to give fuller particulars of the trial in our next issue.

The Editor's Correspondence.

The Editor is not responsible for, neither does he necessarily agree with, the views taken by correspondents. Both sides of any topic are given equal publicity. A pen-name or initials can be given for publication, but the writer's full name and address must always be sent. All communications should be written on one side of the paper only and be in ink. Envelopes should be marked "Correspondence."

The Division of Those Twenty Open Trial Permits!

The A.-C.U. and the "Twenty Limit."

It would appear from "Signals'" letter in your current issue that the Auto-Cycle Union is an autocratic body imposing, for reasons only known to itself, certain drastic rules and regulations, which the clubs have "put up with" so far, but which they "bitterly resent" and will no longer bear in "grudging silence." What could be further from the truth? The Auto-Cycle Union is a union of clubs, and it is the clubs' own elected representatives who are, of course, responsible for this so-called "high-handed action."

The proposal to limit the number of permits to be issued next year to 20 was made by a club representative at a well-attended meeting of the General Committee, and not one of the many club representatives present voted against it; but, on the contrary, received the suggestion with enthusiasm.

Surely the nom de plume of "Signals" cannot hide a Bolshevist; and this gentleman must agree that every sport must have its controlling body. If so, who better fitted to control than the elected representatives of the clubs?

This "immense dissatisfaction" and "bitterest resentment" must be very galling to those 20 club men who, in March last, had reason to think they enjoyed the confidence of their fellow-members! I admit the suggestion to limit the number of permits was originally my own, and it was made for what seemed to me very good reasons. But I must also admit that it did not occur to me that the main reason why a club applies for a permit is to revive its finances, and that, if prevented from so doing, it must "shut up shop." On the other hand, I submit that without trade support an open trial can hardly be a success from any point of view. This is regrettable, but must be faced.

During this season several applications for permits were made and granted, but subsequently withdrawn on the club's finding that the trade would not support them. I happened to know that if we, i.e., the clubs, had not taken action for next year, the trade would themselves drastically limit the number of competitions they would support; indeed, they may still take this course. (And those who pay the piper have some right to call the tune.) Which is the better—a policy of "laissez-faire," which will mean general confusion and discontent, or a cut-and-dried scheme which may not give us all we want, but should keep our competitions on the high level which in this country alone motor-cycling sport has reached?

I should like to join issue with "Signals" on another question he raises—that of the benefits of membership; but as it is entirely irrelevant to the question under discussion, I will spare your readers. But if any of them, including Mr. "Signals," care to argue this point at Olympia at Stand No. 2, I shall be delighted to meet them there.

T. W. LOUGHBOROUGH,
Secretary, Auto-Cycle Union.

What was "Signals" Object?

I notice with surprise a letter in last week's issue signed "Signals," and although I hold no brief for the A.-C.U., I should like to reply. I think that if I trace the course of events with regard to the allocation of the open permits, your readers will readily see that "Signals" has no cause for complaint.

At the end of October the secretary of the A.-C.U. wrote a circular letter to the 20 clubs in the home counties district, pointing out that four permits had been allotted to them, and suggesting that the secretaries of these clubs should arrange a meeting to decide which clubs, or which amalgamation of clubs, should run these events. Of the 20 clubs concerned, only two secretaries (Mr. Ellis, of the Woolwich Club, and myself) took any action in the matter, and eventually a meeting was arranged to be held at the A.-C.U. At this meeting only six clubs were represented, two wrote saying they did not intend to organize open competitions next year, two more wrote intimating their desire to amalgamate with other clubs, and one wrote more or less demanding a permit, and this one I very much suspect to be our friend "Signals," thus leaving nine clubs who apparently had no interest in the matter. Of the six secretaries present, two of these expressed the opinion that they did not desire to apply for permits.

Now, in analysing the results obtained, it was agreed that the Woolwich, Streatham, and Rochester Clubs should have the right to apply for one permit. We ourselves (the Essex M.C.C.) agreed to run our Southend speed trials in conjunction with the Southend Club, and in view of "Signals'" absence he could hardly have been surprised if the right to apply for the remaining two permits had been divided by those clubs which did attend, but the feeling of the meeting was that they did not desire to have the only places in the sun, but would rather give some of the smaller clubs a chance, and therefore the right for a permit was given to "Signals." Even then there still remained a further permit to be given, and this was left over to be allocated to one of the remaining nine clubs.

What does "Signals" hope to obtain? He has got one open permit, for he asks for in his letter; other clubs have got what they asked for, and there still remains another permit for allocation. What does he want?

Now one further point. "Signals" states that trade support is not necessary. Let him then organize a club meeting, and to attract the unattached sportsmen let him make them members of the club for the day only, at a nominal fee. He would then not require a permit. I shall anxiously watch next year's trials and see whether he takes this advice.

Now, "Signals," I would repeat that you have obtained one permit, other clubs having got what they want, and we still have one left. What is the object of your letter?

DOUGLAS S. KAPADIA,
Hon. Secretary, Essex Motor Club.

Correspondence (contd.).

A Competition Riders' Union.

I should be glad to hear from enthusiastic competition riders with a view to forming some sort of a union for the purpose of determining what clubs and trials should be supported. Under the present system the actual rider has nothing to say in the matter, and I, for one, am very fed up with the methods of some clubs in their competitions.

ALBERT MILNER, Lieut.

Dr. A. M. Low on the Paris-Nice Trial.

May I be permitted to draw the attention of both riders and manufacturers to the forthcoming Paris-Nice trial to be held in the early spring of next year. This trial is likely to be very well supported, and will lead to a great amount of publicity apart from its own value. I feel that it is most important for us to realize in this country how large are the markets covered by a Continental trial of this kind, and I have been asked by one of the principal promoters to bring it to your readers' attention.

A. M. LOW, A.C.G.I., etc.

Captured from a German officer in Palestine, this photograph of a German repair shop is the more interesting because the tyreless motorcycles bear out the rumours of the rubber shortage which existed towards the end of the war. The machines depicted are N.S.U.s.

A Motorcycle Circus Suggested.

An idea thrown out by a new comer to the world of motoring created a suggestion which I should like to pass on to you. When he heard that there was to be a Cycle Show at Olympia he said, "Oh, on the same lines as the Naval and Military Show, I suppose." It will be remembered that in the Naval and Military Exhibition each section of H.M. Forces sends a representative body to show the worth and skill of that section to the general public, and doubtless by this he meant that each firm would send one or more of their motorcycles of the type for the coming year, and twice a day for six days they would be "put through their paces" in the arena, with the tiers of seats, which hold umpteen thousand people, full of the motorcycling world.

And why should not this be so? I do not for one minute suggest that the present type of Show should be abolished. Far from it, for it is the sole joy of manufacturers, and is exceedingly good for prospective buyers desiring a close view of the machines. Hold both shows, so that the exhibitor of the first show can carry out his boasts in the second.

There are about 80 firms who would be exhibiting, and if each type of cycle was given about two minutes, and such exhibits as magnetos and tyres given a little less, the whole thing would take about three hours. Or it could be worked on the cinema system—"continuous performance" from 10 a.m. to 10 p.m., comprising four "turns" daily—and you could walk it at any time and complete the "round."

The various subjects capable of being dealt with are the main essentials of motorcycling, and include:—

1. Silence.
2. Hill-climbing—an artificial hill of gradient of 1 in 4.
3. Slow running.
4. Fast running.
5. Easy starting.
6. Accessibility.
7. Interchanging of wheels.
8. Magnetos—an artificial pond.
9. Steering—a hairpin track.

There are other things your readers may think of. Each firm could have half-a-dozen machines in the arena at once, and tyre firms could fit up their own apparatus for showing non-skid and puncture-proof devices.

CYRIL THRIPP.

The Judge's Report.

I notice that Mr. Cyril Thripp is taking myself and others to task for having criticised the Six Days' Trial before the Judges' Report was issued. There is undoubtedly a certain amount of truth in his remarks published on November 19th, but I would like to point out that it was the *Trail* which was being criticised two months ago, and not the report. It should also be remembered, as was pointed out in an Editorial footnote last week, that thanks largely to the two months' delay in the publication of the report, the Judges had had ample time in which to think out the wording in such a way as to answer many of the criticisms which they had heard from time to time.

That the Auto-Cycle Union admit many of the accusations on the Trial is borne out by the fact that in several cases they altered their regulations and system of deducting marks, after listening to the many criticisms.

As regards the publication of the petrol consumption test, I was rather surprised to see this done, having inside information as to the manner in which the consumption was measured. As a good deal of mystification exists on this matter, I see no harm in stating now that the level in competitors' petrol tanks was measured on several occasions before the morning's start, unknown to the riders. At the lunch stop the Judges noticed how much spirit had to be poured into the competitors' tanks until it reached the same level. There is absolutely no guarantee that additional petrol was not added by the competitors during the morning's run, which I am afraid rather detracts from the value of the published figures.

I still maintain that the brake test was a farce; the Judges admit that they only took into consideration brakes which were out of adjustment or ineffective at the end of the Trial, there being no actual road test. The only road test which will ever do away with ineffective front brakes is the descent of a steep hill in neutral, only one brake at a time being used.

TOURIST.

SPECIFICATIONS AND PRICES AT A GLANCE.

Below, and on the following pages, appear details of the principal motorcycles now being manufactured. Prices are given where these have been decided at the time of going to press, but we are asked to state that they are liable to fluctuation. In many cases models slightly different from those described can be obtained, as detailed in the footnotes. The list does not pretend to be a complete one of all motorcycles made. Many little known machines of similar construction, built up from components, are omitted.

TWO-STROKE MOTORCYCLES

Horse-power and Make.	Engine Type.	Bore and Stroke in mm.	Cubic cap. in c.c.	Gearbox Type.	Gear Ratios.	Clutch Type and Controls.	Transmission.	Frame.	Front Fork.	Carburetter.	Magneto.	Size and Make of Tyres.	Type of Brakes.	Lubrication System.	Price.
3½ h.p. Alecto ...	2-stroke	76 by 76	345	2-speed Juckes	—	Cone, hand	Chain and belt	Rigid	Druid	A.M.A.C.	C.A.V.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	£83 7s.
Allon	Allon 2-stroke	70 by 76	292	2-speed Alldays	5½ and 9½ to 1	Cork, hand	Chain and belt	Rigid	Brampton	B. and B.	E.I.C.	26 by 2¼ Dunlop	Front and rear band contracting.	B. and L. drip	£70
4 h.p. Black Prince	Single plug horizontal twin 2-stroke	60 by 70	480	2-speed Black Prince	5 and 8 to 1	Ferodo plate, hand	Chain and Shaft	Pressed steel spring	Black Prince	Zenith	Runbaken	26 by 2½ Dunlop	Front and rear internal expanding	Mechanical pump	£66
2¾ h.p. British Standard	2-stroke	70 by 70	269	Single-speed	—	—	Belt	Rigid	Saxon	A.M.A.C.	E.I.C.	26 by 2 Palmer	Front rim. Rear belt rim.	Petroil	£43
2¾ h.p. Calthorpe	Peco 2-stroke	75 by 79	349	Enfield 2-speed	5.1 and 9.4 to 1	Hand	Chain and belt	Rigid	Druid	A.M.A.C.	C.A.V.	26 by 2 Dunlop	Front rim. Rear belt rim.	B. and L. drip	—
2½ h.p. Campion...	Villiers 2-stroke	70 by 70	269	2-speed	5½ and 9 to 1	—	Chain and belt	Rigid	Druid	A.M.A.C.	E.I.C.	26 by 2¼ Dunlop	Front rim. Rear belt rim.	B. and L. drip	—
2¼ h.p. Cedos ...	Cedos 2-stroke	62 by 70	211	2-speed Cedos	5 and 8¾ to 1	—	Chain and belt	Rigid	Cedos	Cedos	Runbaken	24 by 2¼ Dunlop	Both rear, belt rim.	Pressure drip	£63
2½ h.p. Chater Lea	Villiers 2-stroke	70 by 70	269	2-speed Chater Lea	5¼ and 9¼	—	Chain and belt	Rigid	Chater Lea	A.M.A.C.	M.L.	26 by 2 Dunlop	Front rim. Rear pulley.	B. and L. drip	—
2½ h.p. Clyno ...	Clyno 2-stroke	70 by 70	269	2-speed Clyno	5¾ and 10	Plate, hand	Chain and belt	Rigid	Brampton	A.M.A.C.	C.A.V.	26 by 2 Dunlop	Front rim. Rear belt rim.	Sight drip feed	£63
2½ h.p. Connaught	Connaught 2-stroke	73 by 70	293	2-speed Albion	2¼ and 5⅛ to 1	—	Chain and belt	Rigid	Druid	A.M.A.C. B. and B. or Senspray	—	24 by 2 Capac	Front and back rim.	Petroil	£60 A.B.
2¾ h.p. Coulson B.	Union 2-stroke	69 by 78	292	Single-speed	5 to 1	—	Belt	Spring	Druid	Runbaken		26 by 2¼ Dunlop	Front rim, rear band	B. and L. drip	£59 17s.
2½ h.p. Coventry-Eagle	Villiers 2-stroke	70 by 70	269	Single-speed	—	—	Belt	Rigid	Brampton	A.M.A.C.	M.L.	24 by 2¼ Dunlop	Front rim and rear belt rim	Hand pump	—
2½ h.p. Coventry-Eagle	Villiers 2 stroke	70 by 79	269	2-speed Sturmey	—	Cork, hand	Chain and belt	Rigid	Brampton	A.M.A.C.	M.L.	26 by 2¼ Dunlop	Front rim and rear belt rim	Hand pump	—
2½ h.p. Diamond	Villiers 2-stroke	70 by 70	269	Single-speed	5½ to 1	—	Belt	Rigid	Druid	A.M.A.C.	C.A.V.	26 by 2¼ Dunlop	Front rim, rear heel-operated	B. and L. drip	—
2½ h.p. Diamond	Villiers 2-stroke	70 by 70	269	2-speed Sturmey	5.71 and 10.15	Cork, hand	Chain and belt	Rigid	Druid	A.M.A.C.	C.A.V.	26 by 2¼ Dunlop	Front rim, rear heel-operated	B. and L. drip	—
3¾ h.p. Edmund	Union 2-stroke	—	290	2-speed Enfield	6 and 10 to 1	Enfield, clutch	All chain	Spring	Druid	A.M.A.C.	Runbaken	26 by 2¼ Dunlop	Front rim and rear rim	B. and L. drip	£73 10s.
2¼ h.p. Enfield ..	Enfield 2-stroke	64 by 70	225	2-speed Enfield	5 and 9 to 1	Expanding band, hand	Chain	Rigid	Enfield	A.M.A.C.	T.-B.	24 by 2 Palmer	Front rim, rear belt rim	Petroil	£63
2½ h.p. Excelsior (British)	Villiers 2-stroke	70 by 70	269	2-speed Albion	5½ and 9 to 1	—	Chain and belt	Rigid	Druid	A.M.A.C.	E.I.C.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	£58 16s
2½ h.p. Excelsior (British)	Villiers 2-stroke	70 by 70	269	2-speed Sturmey	5½ and 9	Cork, hand	Chain and belt	Rigid	Druid	A.M.A.C.	E.I.C.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	£64 17s. 6d.
3½ h.p. Fairfield	Precision 2-stroke	74 by 81	349	2-speed Albion	5½ and 9 to 1	Cork, hand	Chain and belt	Rigid	Brampton	A.M.A.C.	T.-B.	26 by 2¼ Dunlop	Front rim, rear belt rim	Automatic	£75
2½ h.p. Hobart	Villiers 2-stroke	70 by 70	269	Single-speed	5⅝ to 1	—	Belt	Rigid	Brampton	A.M.A.C.	C.A.V.	26 by 2¼	Front rim, rear belt rim	B. and L. drip	—
2½ h.p. Hobart	Villiers 2-stroke	70 by 70	269	2-speed	5¼ by 9¾ to 1	—	Chain and belt	Rigid	Brampton	A.M.A.C.	C.A.V.	26 by 2¼	Front rim, rear belt rim	B. and L. drip	—
2½ h.p. Hobart	Villiers 2-stroke	70 by 70	269	2-speed Sturmey	5¼ and 9¾ to 1	Cork, hand	Chain and belt	Spring	Brampton	A.M.A.C.	C.A.V.	26 by 2¼	Front rim, rear belt rim	B. and L. drip	—
2¾ h.p. Hoskison	Union 2-stroke	76 by 76	293	2-speed Burman	5 and 10 to 1	Plate, hand	Chain and belt	Rigid	Saxon	—	—	26 by 2¼ Kempshall	—	B. and L. drip	£68 5s

TWO-STROKE MOTORCYCLES (*Continued*).

Horse-power and Make.	Engine Type.	Bore and Stroke in mm.	Cubic cap. in c.c.	Gearbox Type.	Gear Ratios.	Clutch Type and Control.	Transmission.	Frame.	Front Fork.	Carburetter.	Magneto.	Size and Make of Tyres	Type of Brakes.	Lubrication System.	Price.
2½ h.p. Ivy	Ivy 2-stroke	64 by 70	224	2-speed Albion	5½ and 9 to 1	—	Chain and belt	Rigid	Ivy	A.M.A.C.	E.I.C.	26 by 2¼ Dunlop	Front rim, back belt rim	B. and L. drip	£62
2½ h.p. Ivy	Ivy 2-stroke	64 by 70	224	2-speed Sturmey	5½ and 9 to 1	Plate, hand	Chain and belt	Rigid	Ivy	A.M.A.C.	E.I.C.	26 by 2¼ Dunlop	Front rim, back belt rim	B. and L. drip	£68 DE
2¼ h.p Levis ...	Levis 2-stroke	62 by 70	211	Single gear	5¾ to 1	—	Belt	Rigid	Druid	A.M.A.C.	E.I.C.	24 by 2 Dunlop	Front rim and belt rim	Automatic	£50
2½ h.p. Metro Tyler	Metro-Tyler 2-stroke	70 by 70	270	Metro-Tyler 2-speed	5.25 and 9.84 to 1	—	Chain and belt	Rigid	Brampton	A.M.A.C.	C.A.V.	26 by 2¼	Front rim, rear belt rim	Automatic	£70
2½ h.p. New Comet	2-stroke	70 by 76	293	2-speed	5 and 8 to 1	—	Chain and belt	Rigid	Druid	A.M.A.C.	C.A.V.	26 by 2¼ Dunlop	Front rim, belt rim	Petroil	—
2¼ h.p. New Hudson	2-stroke	62 by 70	211	New-Hudson	5 and 9 to 1	—	Chain and belt	Rigid	Druid	B. and B	C.A.V.	24 by 2 Dunlop	Front rim, rear belt rim	Forced feed	£65
2¾ h.p. O.K. ...	Union 2-stroke	70 by 76	293	Single gear	—	—	Belt	Rigid	O.K.	A.M.A.C.	C.A.V.	26 by 2 Hutchinson	Front rim, rear belt rim	Drip	£39 18s.
3 h.p. Paragon ...	Paragon 2-stroke	76 by 79	349	2-speed Paragon	4¼ and 7½	—	Chain and belt	Spring	Saxon	A.M.A.C.	M.L.	26 by 2¼ Dunlop	Front rim, rear belt rim	Automatic Sight feed	£60
3½ h.p. Precision...	2-stroke	74 by 81	350	Precision 2-speed	5 and 9 to 1	Expanding clutches, hand	All chain	Spring	Precision	A.M.A.C.	—	26 by 2¼ Dunlop	Front and rear band	Automatic	£95
2½ h.p. P.V. ...	Villiers 2-stroke	70 by 70	269	2-speed Chater Lea	5½ and 9 to 1	No clutch	Chain and belt	Spring	Brampton	A.M.A.C.	E.I.C.	26 by 2¼ Dunlop	Front rim and belt rim	B. and L. drip	£63
2¼ h.p. Radco ...	Radco 2-stroke	62 by 70	211	2-speed Albion	5 and 9¼ to 1	Hand control	Chain and belt	Rigid	Druid	A.M.A.C.	C.A.V.	24 by 2 Dunlop	Front rim and rear belt rim	B. and L. drip	£55
2½ h.p. Revere ...	Villiers 2-stroke	70 by 70	269	2-speed Sparkbrook	5½ and 10½ to 1	—	Chain and belt	Rigid	Druid	A.M.A.C. or B. and B.	C.A.V. or M.L.	26 by 2 Dunlop	Front rim, rear belt rim	B. and L. drip	£63 A.
3¾ h.p. Scott ...	Scott twin 2-stroke	73 by 63.5	532.5	Scott 2-speed	4.26, 7.84	Foot	Chain	Rigid	Scott	Binks 3-jet	T.B.	26 by 2½ Palmer	Front rim, rear on chain eprocket	Mechanical	£115 10s.
2½ h.p. Sparkbrook	Villiers 2-stroke	70 by 70	269	Single speed	6 to 1	—	Chain and belt	Rigid	Sparkbrook	B. and B	C.A.V.	26 by 2	Front rim, back belt rim	B. and L. drip	£60
2½ h.p. Sparkbrook	Villiers 2-stroke	70 by 70	269	2-speed Sparkbrook	5 and 9 to 1	—	Chain and belt	Rigid	Sparkbrook	B. and B	C.A.V.	26 by 2	Front rim, rear belt rim	B. and L. drip	k £65
2½ h.p. Spur ...	Villiers 2-stroke	70 by 70	269	2-speed Albion	5 and 9 to 1	—	Chain and belt	Rigid	Druid	A.M.A.C.	E.I.C.	26 by 2 Dunlop	Front rim, back belt rim	B. and L. drip	£60
2½ h.p. Spur ...	Villiers 2-stroke	70 by 70	269	Single speed	5 to 1	—	Belt	Rigid	Druid	A.M.A.C.	E.I.C.	26 by 2 Dunlop	Front rim, back belt rim	B. and L. drip	£50
2¾ h.p. Sun... ...	Sun Vitesse 2-stroke	70 by 70	270	2-speed Albion	5½ and 9 to 1	—	Chain and belt	Rigid	Sun	B. and B	T.B. and C.A.V.	26 by 2 Dunlop	Front rim expanding	Automatic	£58 10s. OF
2¼ h.p. Triumph...	Triumph 2-stroke	64 by 70	225	2-speed Triumph	40 per cent. high to low	—	Chain and belt	Rigid	Triumph	Triumph	—	24 by 2¼ Dunlop	Front rim, rear belt rim	Petroil	£63
2¼ h.p. Velocette...	Veloce 2-stroke	62 by 73	220	2-speed Velocette	5 and 8 to 1	—	All chain	Rigid	Brampton	A.M.A.C. or B. and B.	C.A.V.	24 by 2¼ Dunlop	Front rim, rear expanding	Mechanical	£65
2¼ h.p. Verus ...	Verus 2-stroke	62 by 70	211	Single speed	6 to 1	—	Belt	Spring	Brampton	A.M.A.C.	E.I.C.	24 by 2 Dunlop	Front rim, rear belt rim	B. and L. drip	£50
2½ h.p. Verus ...	Verus 2-stroke	70 by 70	269	2-speed Burman	5½ and 10½	—	Chain and belt	Spring	Brampton	A.M.A.C.	E.I.C.	26 by 2½ Dunlop	Front rim, rear belt rim	B. and L. drip	£75
2¼ h.p. Vindec ...	2-stroke	64 by 70	226	2-speed	5½ and 11.1	Hand	Chain and belt	Rigid	Druid	A.M.A.C.	T.B.	26 by 2¼ Dunlop	Front and rear rim	Hand pump	£65
2½ h.p. Wolf ...	Villiers 2-stroke	70 by 70	269	2-speed Albion	—	—	Chain and belt	Rigid	Druid	A.M.A.C.	M.L.	26 by 2 Dunlop	Front rim	B. and L. drip	£59 10s.
2½ h.p. Wolf ...	Villiers 2-stroke	70 by 70	269	2-speed Sturmey	—	Kick-starter	Chain and belt	Rigid	Druid	A.M.A.C.	M.L.	26 by 2 Dunlop	Front rim	B. and L. drip	£65 10s.

FOUR-STROKE SINGLE-CYLINDER MOTORCYCLES UP TO 350 c.c.

2¾ h.p. Blackburne	Single-cylinder	71 by 88	348	3-speed Sturmey	1⅞, 7¾ and 12½ to 1	Plate, hand	Chain and belt	Rigid	Brampton	A.M.A.C.	T.-B.	26 by 2⅝ Palmer	Front rim, rear belt rim	B. and L. drip	—
2¾ h.p. Bradbury	Bradbury single-cylnr.	74½ by 80	348	2-speed Bradbury	5 and 10 to 1	Cork, hand	Chain and belt	Rigid	Druid	B. and B.	C.A.V.	26 by 2¼	Front rim, rear belt rim	B. and L. drip	£85
2¾ h.p. Calthorpe	J.A.P. single-cylinder	70 by 76	293	2-speed Enfield	5.7 and 9.5 to 1	Hand	Chain and belt	Rigid	Druid	A.M.A.C	C.A.V.	26 by 2 Dunlop	Front rim, rear belt rim	B. and L. drip	—
2½ h.p. Campion	J.A.P. single-cylinder	70 by 76	293	2-speed	5½ and 9 to 1	Plate, hand	Chain and belt	Rigid	Druid	B. and B.	T.-B.	26 by 2¼	Front rim, rear belt rim	B. and L. drip	—
2¾ h.p. Coulson B.	Blackburne single-cylnr.	71 by 88	350	2-speed Albion	4⅞ and 8 to 1	Hand	Chain and belt	Spring	Druid	Capac	E.I.C.	26 by 2½ Dunlop	Front rim, rear band	B. and L. drip	£89 5s.
Coventry-Eagle ...	J.A.P. single-cylinder	70 by 76	293	2-speed Sturmey	5 and 10 to 1	Plate, hand	Chain and belt	Rigid	Brampton	B. and B.	C.A.V.		Front rim, rear belt rim	B. and L. drip	—

FOUR-STROKE SINGLE-CYLINDER MOTORCYCLES UP TO 350 c.c. (*Continued*).

Horse-power and Make.	Engine Type.	Bore and Stroke in mm.	Cubic cap. in c.c.	Gearbox Type.	Gear Ratios.	Clutch Type and Controls.	Transmission.	Frame.	Front Fork.	Carburetter.	Magneto.	Size and Make of Tyres.	Type of Brakes.	Lubrication System.	Price.
2½ h.p. Diamond	J.A.P. single-cylinder	70 by 76	293	2-speed Sturmey	5.71 and 10.15 to 1	Cork, hand	Chain and belt	Rigid	Druid	A.M.A.C.	C.A.V.	26 by 2¼ Dunlop	Front rim, rear heel-operated	B. and L.	—G
2¾ h.p. Dot ...	J.A.P. single-cylinder	70 by 76	293	2-speed Albion	5 and 10 to 1	Hand	Chain and belt	Rigid	Saxon	A.M.A.C.	E.I.C.	26 by 2¼ Dunlop	Front rim. rear belt rim	B. and L. drip	£60C
2¾ h.p. Edmund...	J.A.P. single-cylinder	70 by 76	293	2-speed Enfield	6 and 10 to 1	Enfield clutch	All chain	Spring	Druid	A.M.A.C.	M.L.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	75 guineas
2¾ h.p. Edmund...	J.A.P. single-cylinder	70 by 76	293	2-speed Burman	6 and 10 to 1	Cork, hand	Chain and belt	Spring	Druid	A.M.A.C.	M.L.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	79 guineas
2¾ h.p. Excelsior (British)	J.A.P. single-cylinder	70 by 76	293	2-speed Albion	5½ and 9 to 1	—	Chain and belt	Rigid	Druid	A.M.A.C.	C.A.V.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	£62 10s.C.
2½ h.p. F.N. ...	Single-cylinder	65 by 86	285	2-speed	—	Multiple disc, foot	Shaft	Rigid	F.N.	A.M.A.C.	Fellowa	26 by 2	Internal expanding rim on rear	Drip feed	£85
2¾ h.p. Hobart ...	J.A.P. single-cylinder	70 by 76	293	2-speed Sturmey	5¼ and 9¾ to 1	Cork, hand	Chain and belt	Rigid	Brampton	A.M.A.C.	C.A.V.	26 by 2¼	Front rim, rear belt rim	B. and L. drip	—
2¾ h.p. New Imperial ..	J.A.P. single-cylinder	70 by 76	293	2-speed New Imperial	5¾ and 11 to 1	—	Chain and belt	Rigid	Saxon	B. and B.	E.I.C.	26 by 2¼ Dunlop	Front rim, rear belt rim	Automatic	£60 13s.
1¾ h.p. Omega ..	Single-cylinder	70 by 76	293	2-speed	5½ and 10 to 1	—	Chain and belt	Rigid	Brampton	B. and B.	M.L.	26 by 2¼ Dunlop	Front rim, rear belt rim	Hand pump	58 guineas
1¾ h.p. Omega ..	Single-cylinder	70 by 76	293	2-speed	5½ and 10 to 1	Cork, hand	Chain and belt	Rigid	Brampton	B. and B.	M.L.	26 by 2¼ Dunlop	Front rim, rear belt rim	Hand pump	68 guineas
h.p. Royal Ruby	Single-cylinder	74.5 by 80	349	2-speed Royal Ruby	4¾ and 9 to 1	Cork, hand	Chain and belt	Spring	Royal Ruby	A.M.A.C.	T.-B.	26 by 2½ Dunlop	Front and rear rim	B. and L. drip	—
2¾ h.p. Spur ...	J.A.P. single-cylinder	70 by 76	293	2-speed Albion	5 and 9 to 1	—	Chain and belt	Rigid	Druid	A.M.A.C.	E.I.C.	26 by 2 Dunlop	Front rim, back belt rim	B. and L drip	£63
2¾ h.p. Verus ...	Blackburne single-cylnr.	71 by 86	348	2-speed Burman	5½ and 10½	Hand	Chain and belt	Spring	Brampton	A.M.A.C.	E.I.C.	26 by 2½ Dunlop	Front rim, rear belt rim	B. and L. drip feed	£99 15s.
2¾ h.p. Wolf ..	J.A.P. single-cylinder	70 by 76	293	2-speed Albion	—	Hand	Chain and belt	Rigid	Druid	A.M.A.C.	Lion	26 by 2 Dunlop	Front rim	B. and L.	£61 10s.
2¾ h.p. Wolf ..	J.A.P. single-cylinder	70 by 76	293	2-speed Sturmey	—	—	Chain and belt	Rigid	Druid	A.M.A.C.	Lion	26 by 2 Dunlop	Front rim	B. and L.	£67 10s.

FOUR-STROKE SINGLE-CYLINDER MOTORCYCLES ABOVE 350 c.c.

3½ h.p. Abingdon	Single-cylinder	85 by 88	499	3-speed countr'sh'ft.	4.9, 8.2 and 15.3 to 1	Cork, foot	Chain and belt	Rigid	Druid	A.M.A.C.	T.-B.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and S. drip	—
3½ h.p. Ariel ...	Single-cylinder	86.4 by 85	498	3-speed Ariel	5½, 8¾ and 16½ to 1	Cork, foot	Chain and belt	Rigid	Druid	B. and B.	E.I.C.	26 by 2⅜ Dunlop	Front rim, rear belt rim	B. and L. drip	£100
3½ h.p. Ariel ..	Single-cylinder	86.4 by 85	498	3-speed Ariel	5½, 8¾ and 16½ to 1	Cork, foot	Chain and belt	Rigid	Druid	B. and B.	E.I.C.	26 by 2⅜ Dunlop	Front rim, rear belt rim	B. and L. drip	£135
4½ h.p. Ariel ...	Single-cylinder	86.4 by 100	586	3-speed Ariel	5½, 8¾ and 16½ to 1	Cork, foot	All chain	Rigid	Ariel	B. and B.	E.I.C.	28 by 3 Dunlop	Front rim. rear expanding	B. and L. drip	£115
4½ h.p. Ariel ..	Single-cylinder	86.4 by 100	586	3-speed Ariel	5½, 8¾ and 16½ to 1	Cork, foot	All chain	Rigid	Ariel	B. and B.	E.I.C.	28 by 3 Dunlop	Front rim, rear expanding	B. and L. drip	£150 H
4¼ h.p. B.S.A. ..	Single-cylinder	85 by 98	557	3-speed B.S.A.	5, 8 and 12.8 to 1	Plate, foot	Chain and belt or all chain	Rigid	B.S.A.	B.S.A.	E.I.C.	26 by 2½	Front and rear belt rim	Sight drip feed	£93 and £9
4 h.p. Blackburne	Single-cylinder	85 by 88	499	3-speed Sturmey	4¾, 7¾ and 12½ to 1	Plate, hand	All chain	Rigid	Brampton	A.M.A.C.	T.-B.	28 by 3 Palmer	Front rim, rear contracting band brake	B. and L. drip	—
4 h.p. Bradbury ...	Single-cylinder	89 by 89	554	3-speed Bradbury	5.1, 8.4 and 14.8 to 1	Cork, hand	All chain	Rigid	Druid	B. and B.	T.-B.	26 by 2⅜	Front rim, rear expanding band	B. and L. drip	£102 10s.
Coventry-Eagle ..	Abingdon single-cylinder	85 by 88	499	3-speed Sturmey	4¼, 7½ and 13½ to 1	Cork, hand	Chain and belt	Rigid	Brampton	B. and B.	E.I.C.	26 by 2½	Front rim, rear belt rim	Hand pump	—
4 h.p. Norton ..	Single-cylinder	82 by 120	633	3-speed Sturmey	4.69, 7.61 and 12.42	Plate. band	All chain	Rigid	Norton Druid	B. and B.	C.A.V.	650 by 65 Dunlop	Front rim, rear belt rim	B. and L. drip	—
3½ h.p. Norton ..	Single-cylinder	79 by 100	490	3-speed Sturmey	4.69, 7.61 and 12.42 to 1	Plate, hand	All chain	Rigid	Norton Druid	B. and B.	C.A.V.	650 by 65 Dunlop	Front rim, rear belt rim	B. and L. drip	—
3½ hp. P. and M....	Single-cylinder	84.5 by 88.9	498	2-speed P. and M.	5½ and 9½ to 1	Metal to metal, hand	All chain	Rigid	P. and M.	A.M.A.C.	E.I.C.	26 by 2½ Kempshall	Front rim, rear band	Mechanical	£95
4½ h.p. Quadrant	Single-cylinder	87 by 95	564	3-speed Sturmey	5, 8 and 13 to 1	Plate, hand	All chain	Rigid	Quadrant	A.M.A.C.	M.L.	26 by 2⅜ Dunlop	Rim	Automatic	—
6 h.p. Quadrant ...	Single-cylinder	95 by 110	780	3-speed Quadrant	5, 10 and 15 to 1	Plate, hand	All chain	Rigid	Quadrant	A.M.A.C.	M.L.	26 by 2⅜ Dunlop	Rim	Automatic	—
3½ h.p. Rover ...	Single-cylinder	85 by 88	499	3-speed Rover	5¼, 9 and 15¾ to 1	Ferodo, foot	All chain	Rigid	Druid	B. and B.	C.A.V.	650 by 65 Dunlop	Front V rim, rear expanding	Hand pump	£115

FOUR-STROKE SINGLE-CYLINDER MOTORCYCLES ABOVE 350 c.c. (*Continued*.)

Horse-power and Maker.	Engine Type.	Bore and Stroke in mm.	Cubic cap. in c.c.	Gearbox Type.	Gear Ratios.	Clutch Type and Control	Transmission.	Frame.	Front Fork.	Carburetter.	Magneto.	Size and Make of Tyres.	Type of Brakes.	Lubrication System.	Price.
3½ h.p. Rudge ...	Single-cylinder	85 by 88	499	Multi-gear	3½ and 7 to 1	Multi-plate, hand	Belt	Rigid	Rudge	Senspray	—	650 by 65	Front rim, rear belt rim	Pump	£99
5-6 h.p. Rudge ...	Single-cylinder	85 by 132	750	Multi-gear	3½ and 7 to 1	Multi-plate, hand	Belt	Rigid	Rudge	Senspray	—	650 by 65	Front rim, rear belt rim	Pump	£98 10s.
4 h.p. Rex	Single-cylinder	84.5 by 98	550	3-speed Sturmey	—	Plate, hand	Chain and belt	Rigid	Brampton	A.M.A.C.	M.L.	28 by 2½ Dunlop	Front rim, rear belt rim	Mechanical pump	—
3½ h.p. Sunbeam	Single-cylinder	85 by 88	499	3-speed Sunbeam	4.9, 7.8 and 13.4 to 1	Cork, hand	All chain	Rigid	Sunbeam leaf spring	A.M.A.C. or B. and B.	T.B. or E.I.C.	650 by 65 Bates or Dunlop	Front rim, rear expanding	B. and L. drip	—
4 h.p. Triumph ...	Single-cylinder	85 by 97	550	3-speed S.-A.	5, 8¼ and 13½ to 1	Plate, hand	Chain and belt	Rigid	Triumph	Triumph	—	26 by 2½ Dunlop or Bates	Front rim, rear belt rim	Hand pump	£97
4 h.p. Triumph ...	Single-cylinder	85 by 97	550	3-speed Triumph	5½, 9⅛ and 15¼ to 1	Multiple plate, hand	All chain	Rigid	Triumph	Triumph	—	28 by 2½ Dunlop or Bates	Front rim, rear belt rim	Hand pump	£110
4 h.p. Verus ...	Blackburne 4 h.p.	85 by 88	499	3-speed Sturmey	6, 10 and 15 to 1	Hand	Chain and belt	Spring	Brampton	A.M.A.C.	E.I.C.	26 by 2½	Front rim, rear belt rim	B. and L. drip feed	£110 5s.

FOUR-STROKE V-TWIN MOTORCYCLES.

6 h.p. A.J.S. ..	V-twin	74 by 87	748	3-speed A.J.S.	5.9, 15 to 1	Cork, band	All chain	Rigid	Brampton	A.M.A.C.	T.B.	700 by 80 Dunlop	Front rim, rear internal-expanding	B. and L. drip	£190 H
6-7 h.p. Abingdon..	V-twin	73 by 95	795	3-speed Abingdon	4.3, 7.3 and 13.5 to 1	Cork, foot	Chain and belt	Rigid	Druid	A.M.A.C.	T.B.	26 by 2½ Dunlop	Front rim, rear belt rim	B. and S. drip	—
6-7 h.p. Abingdon..	V-twin	73 by 95	795	3-speed Abingdon	4.3, 7.3 and 13.5 to 1	Cork, foot	All chain	Rigid	Druid	A.M.A.C.	T.B.	28 by 3 Dunlop	Front rim, rear internal-expanding	B. and S. drip	— H
6-7 h.p. Ariel ..	V-twin	73 by 95	795	3-speed Ariel	4⅝, 7¾ and 14 1-3 to 1	Cork, foot	Chain and belt	Ariel spring seat pillar	Druid	A.M.A.C.	E.I.C.	26 by 2½ by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	£120
6-7 h.p. Ariel ..	V-twin	73 by 95	795	3-speed Ariel	4⅝, 7¾ and 14 1-3 to 1	Cork, foot	Chain and belt	Ariel spring seat pillar	Druid	A.M.A.C.	E.I.C.	26 by 2½ by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	£155 H
6-7 h.p. Ariel ..	V-twin	73 by 95	795	3-speed Ariel	4⅝, 7¾ and 14 1-3 to 1	Cork, foot	All chain	Ariel spring seat pillar	Ariel	A.M.A.C.	E.I.C.	28 by 3 Dunlop	Front rim, rear expanding	B. and L. drip	£130
6-7 h.p. Ariel ..	V-twin	73 by 95	795	3-speed Ariel	4⅝, 7¾ and 14 1-3 to 1	Cork, foot	All chain	Ariel spring seat pillar	Ariel	A.M.A.C.	E.I.C.	28 by 3 Dunlop	Front rim, rear expanding	B. and L. drip	£165
6-7 h.p. B.S.A. ..	V-twin	76 by 85	770	3-speed B.S.A.	5.2, 8.3 and 13.3 to 1	Dry-plate hand	All chain	Rigid	B.S.A.	A.M.A.C.	E.I.C.	28 by 3	Front belt rim, rear expanding	Mechanical	£130
6 h.p. Bat	J.A.P. V-twin	76 by 85	770	3-speed Bat	4, 7 and 10 to 1	Internal-expanding, foot	All chain	Spring	Bat	A.M.A.C.	T.B.	650 by 65 Dunlop	Contracting and expanding	B. and L. drip	£154 HI
6 h.p. Bat	J.A.P. V-twin	76 by 85	770	3-speed Bat	4, 7 and 10 to 1	Internal-expanding foot	All chain	Spring	Bat	A.M.A.C.	Magdyno	650 by 65 Dunlop	Contracting and expanding	B. and L. drip	£161 HIK
6 h.p. Blackburne..	V-twin	85 by 88	998	3-speed Burman	4½, 8½ and 12 to 1	Hand plate	All chain	Rigid	Brampton	A.M.A.C.	T.B.	28 by 3 Palmer	Front rim, rear expanding	B. and L. drip	— H
6 h.p Bradbury ..	V-twin	74½ by 86	749	3-speed Bradbury	4.8, 7.9 and 14 to 1	Cork, band and foot	All chain	Rigid	Druid	B. and B.	T.B.	650 by 65	Front rim, rear expanding	B. and L. drip	£122 10s.
6 h.p. Campion ...	J.A.P. V-twin	76 by 85	770	3-speed Sturmey	4¾, 7.75, 12.65 to 1	Plate, hand	All chain	Rigid	Druid A.11	B and B.	T.B.	28 by 3	Front rim, rear expanding	B. and L. drip	—
6 h.p. Campion ...	J.A.P. V-twin	85.5 by 85	980	3-speed Sturmey	4¼, 6.93, 11.3 to 1	Plate, hand	All chain	Rigid	Druid A.11	B and B.	T.B.	28 by 3	Front rim, rear expanding	B. and L. drip	—
6 h.p. Chater Lea..	V-twin	85 by 85	964	3-speed Chater Lea	4-6 and 10½ to 1	Multi-disc, foot	All chain	Rigid	Chater Lea	A.M.A.C.	Lucas	650 by 65 Dunlop	Front rim, rear hub	B. and L. drip	—
8 h.p. Clyno ...	V-twin	76 by 102	925	3-speed Clyno	4¾, 7½ and 16 to 1	Cork, foot	Chain	Spring	Brampton	A.M.A C.	T.B.	28 by 3 Dunlop	Front rim, rear expanding	Automatic	— H
6 h.p. Dot	V-twin	76 by 85	778	3-speed Sturmey	4¾, 7.75, 12.65	Hand	All chain	Rigid	Saxon	A.M.A.C.	E.I.C.	28 by 3 Dunlop	Front rim, rear expanding	B. and S. drip	£150 I
6 h.p. Enfield ..	V-twin	76 by 85	770	2-speed Enfield	5 and 9 to 1	Expanding band, hand	Chain	Rigid	Enfield	A.M.A.C.	T.B.	700 by 80 Palmer	Front and rear belt rim	Drip and hand pump	£145 HJ
6 h.p. Excelsior (British)	J.A.P. V-twin	76 by 85	770	3-speed Sturmey	4.9, 7.9, 12.75 to 1	Disc, hand	All chain	Rigid	Druid	B. and B.	M.L.	28 by 3	Front rim, rear expanding	B. and L. drip	£162 10s. HI
7-9 h.p. Excelsior (American)	V-twin	3 21-64 ins. by 3½ ins.	997	3-speed Excelsior	—	Raybestos plate, twist-grip and pedal	All chain	Rigid	Excelsior	Schebler automatic	Berling	28 by 3	Rear internal-expanding and external-contracting	Mechanical	—
7-9 h.p. Harley-Davidson	V-twin	84 by 88	988	3-speed Harley-Davidson	4.9, 7.1, 11.1	Multiple dry-plate	All chain	Rigid	Harley-Davidson	Schebler	Berling	28 by 3 Goodyear	Contracting and expanding on rear wheel	Mechanical	£153 10s. 3d. J
5-6 h.p. Hazlewood	V-twin	70 by 90	709	3-speed Hazlewood	5, 7 and 10 to 1	Cork inset	Chain and belt	Rigid	Hazlewood	B. and B.	M.L.	650 by 65 Dunlop	Front rim, rear belt rim	Automatic	—
7 h.p. Indian ...	V-twin	79 by 100	997	3-speed Indian	4¾ 7 and 12 to 1	Plate, foot	All chain	Spring	Indian	Indian Schebler	Aero	28 by 3	Contracting and expanding	Mchncl. and hand pump	£143

FOUR-STROKE V-TWIN MOTORCYCLES (*Continued*)

Horse-power and Make.	Engine Type.	Bore and Stroke in mm.	Cubic cap. in cc.	Gearbox Type.	Gear Ratios.	Clutch Type and Controls.	Transmission.	Frame.	Front Fork.	Carburetter.	Magneto.	Size and Make of Tyres.	Type of Brakes.	Lubrication System.	Price.
4 h.p. Indian ...	V-twin	70 by 78	596	3-speed Indian	5, 7½ and 12 to 1	Plate, foot	Spiral gears and chain	Rigid	Indian	Indian Schebler	Aero	26 by 3	Contracting and expanding	Mechl. and hand pump	£115
6 h.p. L.M.C. ...	V-twin	79 by 86	842	3-speed Sturmey	4, 7 and 12 to 1	Hand	Chain and belt	Spring	L.M.C.	A.M.A.C.	T.B.	650 by 65 Dunlop	2 belt rim	B. and L. drip	£110
49 h.p L.M.C ...	V-twin	79 by 98	960	3-speed Sturmey	4, 7 and 12 to 1	Hand	All chain	Spring	L.M.C.	A.M.A.C.	T.B.	28 by 3 Dunlop	Rear internl. expnding and belt rim	B. and L. drip	£120
1½ h.p Lea-Francis	M.A.G. or J.A.P. V-twin	—	496	2 speed Lea Francis	—	Plate, hand and foot	All chain	Rigid	Druid	A.M.A.C.	—	26 by 2⅜ Palmer	Back and front dummy belt rim	—	£120
3½ h.p. N.U.T. ...	V-twin	64.5 by 76	500	3-speed Sturmey	4, 6.5 and 10 7 to 1	Plate, hand	Chain and belt	Rigid	Druid	A.M.A.C.	Magdyno	26 by 2½ Palmer	Front rim, rear belt rim	B. and L.	—
8 h.p New Imperial	J.A.P. V-twin	85.5 by 85	980	3-speed New Imperial	4½, 8½ and 13 to 1	Ferodo, hand	All chain	Rigid	Brampton or Druid	B. and B.	E.I.C.	28 by 3 Dunlop	Front rim, rear rim pulley	B. and L.	£115 10s.
8 h.p. New Imperial	V-twin	85.5 by 85	980	3-speed New Imperial	4½, 8½ and 13 to 1 approx.	Ferodo, hand	All chain	Rigid	Brampton or Druid	B. and B.	E.I.C.	28 by 3 Dunlop	Front rim, rear rim pulley	B. and L.	£144 18s. H
8 h.p. Overseas ...	V-twin	79 by 98	960	3-speed Sturmey	4, 8 and 12 to 1	Hand	All chain	Spring or rigid	Druid	A.M.A.C.	M.L.	28 by 3 Dunlop	Rear internl. expnding and belt rim	B. and L. drip	£120
10 h.p. Reading Standard	V-twin	85.7 by 101.6	1170	3-speed Reading-Standard	3.91, 6 and 9.20 to 1	Multiple-disc type, hand and foot	All chain	Rigid	Reading-Standard	Schebler	Berling or Bosch	28 by 3	Contracting and expanding	Automatic	£160
5 h.p. Rover ...	J.A.P. V-twin	70 by 85	654	3-speed Rover	5, 9 and 16 to 1	Ferodo, foot	All chain	Rigid	Druid	A.M.A.C.	E.I.C.	28 by 3 Dunlop	Front V rim, rear expanding	Hand pump	—
8 h.p. Royal Ruby	J.A.P. V-twin	85.5 by 85	980	3-speed Sturmey	—	Plate, hand	All chain	Spring	Royal Ruby	A.M.A.C.	T.B.	28 by 3 Dunlop	Front rim, rear expanding	B. and L. drip	—
7-9 h.p Rudge ..	V-twin	85 by 88	1000	Multi gear	3½, 7 to 1	Multi-plate, hand	Belt	Rigid	Rudge	Senspray	—	650 by 65	Front rim, rear belt rim	Pump	£107
8 h.p. Sunbeam ..	J.A.P. V-twin	85.5 by 85	980	3-speed Sunbeam	4.6, 7.3 and 12.6 to 1	Plate, hand	All chain	Rigid	Brampton	A.M.A.C.	T.B.	28 by 3 Dunlop	Front rim, rear expanding	B. and L. drip	H
6 h.p. Vindec ..	J.A.P. V-twin	76 by 85	770	3-speed Sturmey	4½, 7 and 11 to 1	Plate, hand	Chain and belt	Rigid	Druid	A.M.A.C.	Fellows	28 by 3 Dunlop	Front rim, rear band	B. and L. drip	H
8 h.p. Williamson	Douglas horizontal twin	85 by 85	964	3-speed Douglas	4, 8 and 13 to 1	Cork, foot	All chain	Rigid	Douglas	A.M.A.C.	Bosch	700 by 80 Goodrich	Front rim, rear band	B. and L. drip	—
6 h.p. Williamson	J.A.P. V-twin	76 by 85	770	3-speed Sturmey	5, 8.15 and 13.3 to 1	Cork hand	All chain	Rigid	Douglas	A.M.A.C.	B.L.I.C.	700 by 80 Goodrich	Front rim, rear band	B. and L. drip	—
5 h.p. Zenith ..	J.A.P. V-twin	70 by 85	654	Gradua gear	Between 3¾ and 7½ to 1	—	Belt	Rigid	Druid	A.M.A.C.	T.B.	650 by 65 Dunlop	Front rim, rear belt rim	Hand pump	£98 14s.
8 h.p. Zenith ..	J.A.P. V-twin	85.5 by 85	980	Gradua gear	Between 4 and 11 to 1	Metal-to-metal, foot	Chain and belt	Rigid	Brampton	A.M.A.C.	T.B.	650 by 65 Dunlop	Front rim, rear belt rim	Hand pump	£129 3s.

FOUR-STROKE HORIZONALLY-OPPOSED TWIN-CYLINDER MOTORCYCLES.

3 h.p. A.B.C. ...	H.O. twin	69 by 54	400	4-speed A.B.C.	5.4, 7.3, 9.7 and 13.1 to 1	Single plate Ferodo, hand	Bevel and chain	Spring	A.B.C.	Claudel	C.A.V.	26 by 2½	Internal expanding front and rear	Automatic	£110
5 h.p. Brough ...	H.O. twin	70 by 90	690	3-speed Sturmey	4.9, 8.1, 13.2	Ferodo, hand	All chain	Rigid	Brampton	A.M.A.C.	Thomson-Bennett	650 by 65 Dunlop	Front rim, back brake rim	Pump	£115
2¾ h.p. Douglas ...	H.O. twin	61 by 60	349	2-speed Douglas	5½ and 8½ to 1 approx.	—	Chain and belt	Rigid	Douglas	A.M.A.C.	E.I.C.	26 by 2¼ Clincher	Front rim, rear belt rim	Semi-automatic	£80
2¾ h.p. Douglas ...	H.O. twin	60 by 61	349	3-speed Douglas	5½, 8½ and 12 to 1	Dry plate, hand	Chain and belt	Rigid	Douglas	A.M.A.C.	E.I.C.	26 by 2¼ Clincher	Front rim, rear belt rim	Semi-automatic	£90
3½ h.p. Douglas ...	H.O. twin	68 by 68	494	3-speed Douglas	5½, 8½ and 12 to 1	Dry plate, hand	Chain and belt	Spring	Douglas	A.M.A.C.	E.I.C.	26 by 2⅜	Front rim, rear belt rim	Mechl. and hand pump	—
4 h.p. Douglas ...	H.O. twin	74.5 by 68	593	3-speed Douglas	5½, 8½ and 12 to 1	Plate, foot	Chain and belt	Rigid	Douglas	A.M.A.C.	E.I.C.	26 by 2⅜	Front rim, rear belt rim	Mechanical pump	£105
4 h.p. Harley-Davidson	H.O. twin	69 by 76	584	3-speed Douglas	5, 8.3 and 13.8 to 1	Multiple diso, oil	Spiral gear and chain	Rigid	Douglas	A.M.A.C.	Berling	26 by 3 Firestone	Front rim, rear belt rim	Mechanical pump	£123
4½ h.p. Humber...	H.O. twin	68 by 75	600	3-speed Humber	5, 8.4 and 13.85 to 1	Hand lever, plate & Ferodo	All chain	Rigid	Druid	Claudel-Hobson	H.-T.	26 by 2½ Dunlop	Front rim, rear belt rim	Forced	£120
5 h.p. Raleigh ...	H.O. twin	77 by 75	700	3-speed Sturmey	4.2, 6.35 and 11.2 to 1	Cork, hand	All chain	Spring	Brampton	A.M.A.C.	T.B.	650 by 65 Dunlop	Front rim, rear internal expanding	B. and S. drip	£136 10s.
2¾ h.p. Wooler ...	H.O. twin	60.5 by 60	345	Wooler inf. variable	4½ and 8¾ to 1, or 5½ and 10½ to 1	Expanding pulley	Belt	Spring	Wooler	B. and B.	C.A.V.	26 by 2¼ Palmer	Contracting band	Automatic	£85
2¾ h.p. Zenith ...	H.O. twin	58.25 by 65	347	Gradua gear	Variations between 5 and 11 to 1	—	Chain and belt	Rigid	Druid	A.M.A.C.	Thomson-Bennett	26 by 2¼ Dunlop	Front rim, rear belt rim	Hand pump	£93 9s.

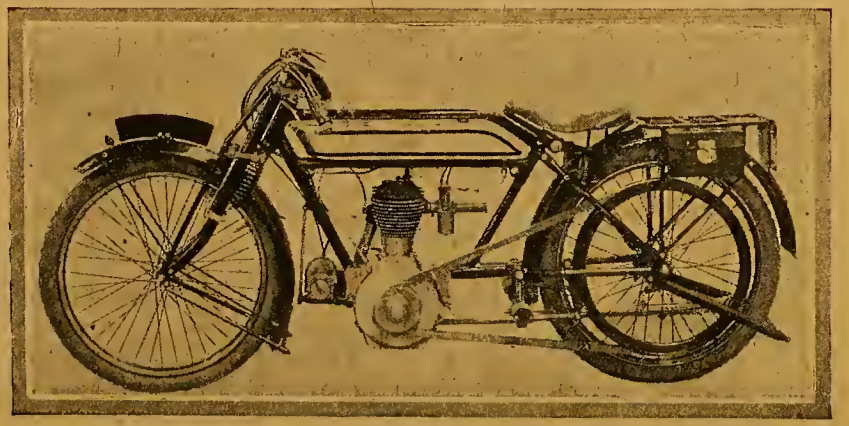
SINGLE-GEARED FOUR-STROKE MOTORCYCLES

Horse-power and Make.	Engine Type.	Bore and Stroke in mm.	Cubic cap. in c c.	Gearbox Type.	Gear Ratios.	Clutch Type and Control.	Transmission.	Frame.	Front Fork.	Carburetter.	Magneto.	Size and Make of Tyres.	Type of Brakes.	Lubrication System.	Price
3½ h.p. Abingdon..	3½ h.p. Abingdon	85 by 88	499	Single speed	4.5 to 6.5	—	Belt	Rigid	Druid	A.M.A.C.	T.B.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and S. drip	—
3½ h.p. B.S.A. ..	Single cylinder	85 by 88	499	Single speed	—	—	Belt	Rigid	B.S.A.	B.S.A.	E.I.C.	26 by 2½	Front and rear belt rim	Sight drip feed	£77
4 h.p. Coulson B..	Single cylinder	85 by 86	499	Single speed	4¾ to 1	—	Belt	Spring	Druid	Capac	E.I.C.	26 by 2½ Dunlop	Front rim, rear band	B. and L. drip	£94 10s
3½ h.p. Duzmo ...	Single cylinder	88.9 by 79	495	Single speed	—	—	Belt	Rigid	Druid	A.M.A.C.	C.A.V.	650 by 65 Palmer	Rear internal-expanding and belt rim	Mechanical pumps	£73
3½ h.p. Norton ..	Single cylinder	79 by 100	490	Single speed	4 to 1	—	Belt	Rigid	Norton Druid	B. and B.	C.A.V.	26 by 2¼ Dunlop	Front rim, rear belt rim	B. and L. drip	—
3½ h.p. Rover ..	Rover Single cylinder	85 by 88	499	Philipson pulley	4 to 6 to 1	—	Belt	Rigid	Druid	B. and B.	E.I.C.	650 by 65 Dunlop	Front rim, rear Ferodo shoe	Hand pump	—

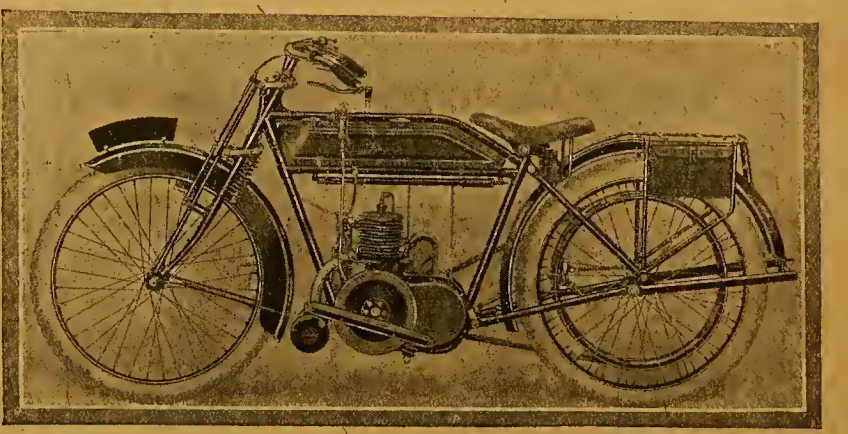
FOUR-CYLINDER MOTORCYCLES.

7 h.p. F.N.	4-cylinder	52 by 88	748	3-speed F.N.	—	Multiple disc, foot	Shaft	Rigid	F.N.	A.M.A.C.	Fellows	26 by 3	Rear internal-expanding and external-contracting	Automatic	£135
8-10 h.p. Henderson	4-cylinder	70 by 76	1168	3-speed Henderson	4¼, 7½, and 10¼ to 1	Plate, hand and foot	Bevel and chain	Rigid	Henderson	Schebler	Berling	28 by 3 Firestone	Rear internal-expanding and external-contracting	Mechanical, auxiliary hand pump	£150J

A. Single speed or clutch optional.
B. 26 by 2¼ tyres to order.
C. Also clutch model.
D. Also single-speed model.
E. Also Isle of Man sporting models.
F. Ladies' model also made.
G. Enfield two-speed gear optional.
H. Sidecar combination.
I. 8 h.p. engine same price
J. Electrical equipment to order.
K. Electrical equipment and interchangeable wheels.



One of the few T.T. machines still to be made—the Norton—guaranteed to do a certain speed.



The "Baby" James is a two-stroke machine of sturdy appearance and is exceptionally well finished.

The OLYMPIA SHOW

COMPLETE REVIEW OF MOTOR CYCLE EXHIBITS.

In the following pages will be found a complete review of the motorcycles exhibited at Olympia, arranged in alphabetical order. Scooters, lightweight sets, sidecars and accessories are dealt with in separate sections.

Stand No. 23.
Sopwith Aviation Eng. Co., 65, South Molton Street, London, W. 1.

THE exhibit on this stand is the much-talked-of A.B.C. motorcycle, designed and constructed on aero practice lines. The engine is of the horizontally-opposed twin type, set across the frame, and having cylinders of 69 mm. bore and 54 mm. stroke. It is rated at 3 h.p.

A solid two-throw crankshaft is employed, with roller bearings to the connecting rod big ends. The pistons are of aluminium alloy, and fitted with three extremely narrow rings. Detachable heads are provided to the cylinders, the barrels of which are turned from the steel bar and afterwards heat treated to ensure good wearing qualities.

The magneto is situated on a platform immediately above the cylinders, and just aft of it is the automatic single-lever carburetter, which supplies gas to the engine through an exhaust-heated induction pipe.

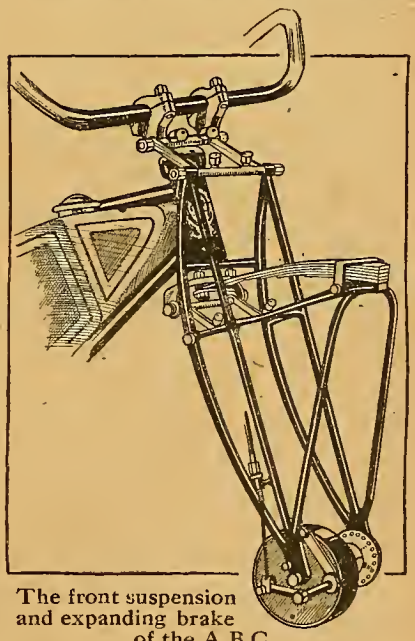
The drive to the gearbox is by a short shaft and bevels, and four speeds are provided, operated by a long lever, working in a gate, mounted on the unit casing. Final transmission to the back wheel is by roller chain, with shock absorber in the rear sprocket.

The frame is sprung on laminated leaf springs, rigidly secured at each end, and so obviating the use of shackles and pins. The top rail slopes from head to saddle, the other tubes forming a cradle in which the engine rests, and of sufficient width to protect the cylinders in case of a fall. By merely undoing four bolts the entire engine and gearbox unit may be dropped out of the frame.

The brakes act one on each wheel, and both are of the internal-expanding pattern. An electric lighting set can be fitted to order, in which case the Lucas dynamo is housed in a portion of the unit casing and the accumulator slung in a metal box on the seat tube. The finish of the complete machine is in dull black, resembling gunmetal.

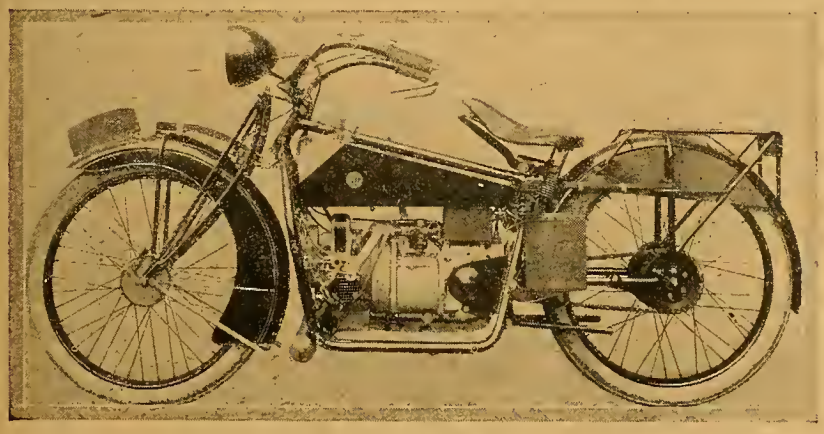
Stand No. 31.
Stevens, A. J., and Co. (1914), Ltd., Graiseley House, Penn Road, Wolverhampton.

VISITORS to this stand will miss the little 2¾ h.p. model of pre-war Shows, and the decision of the concern to suspend manufacture of this efficient and popular little mount will be received with regret. However, A.J.S.s have a fine display. The 6 h.p. twin three-speeder may be had either solo or with their very handsome sidecar, replete with spare wheel and other luxuries too numerous to mention. Practically no alteration is made upon 1919 practice, save that the footboards have been supplied with rubber half an inch thick and parallel valve springs have been substituted for the conical variety. The engine has side-by-side valve and detachable cylinder heads, which are not fitted, however, for decarbonization purposes. The makers recommend that carbon be removed by detaching the whole cylinder in the ordinary way.



The front suspension and expanding brake of the A.B.C.

The carburetter is an A.M.A.C. multiple-jet two-lever instrument, and the magneto is a Thomson-Bennett model, chain driven and controlled from the handlebar. The three-speed gearbox is on well-tried car lines. High and low gears are held by dogs, while the middle ratio is engaged by a sliding pinion. Ball bearings are used throughout. The ratios are 4.92, 8.86 and 15.92 to 1. This low ratio should enable the outfit to climb any hill in the country. Gear changes are effected by a patent gate change-speed lever having an automatic stop for each gear.

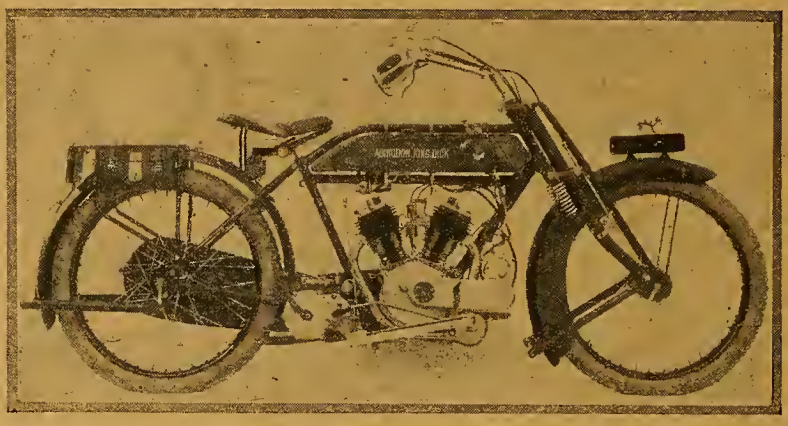


The 3 h.p. A.B.C. has so many original features that it is one of the centres of attraction at Olympia.

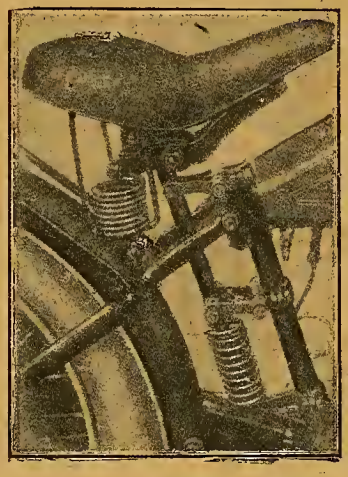
A.J.S.—Abingdon King Dick.

The frame is built up without a single bent tube in its design. The tank fits over the slanting top tube and thus presents a clean top, except for the oiler pump and filler caps. Its capacity is 2½ gallons of petrol and three pints of oil. A Best and Lloyd semi-automatic oiler in a vertical position on the tank top supplies the engine.

The chains are Hans Renold, ⅝ in. by ⅜ in., enclosed in perfectly weatherproof cases. They may be inspected without the use of tools, and, further, the back wheel, clutch, sprockets, chain, and kick-starter (this latter also enclosed) may be removed without disturbance to the chain cases. The wheels are all detachable and interchangeable, the spare being carried at the back of the sidecar above the luggage grid. It is held in place by two very neat clamps to the rim with thumb bolts. The front brake is a Bowden of conventional design, but the back one is



The 6-7 h.p. Abingdon King Dick is supplied with either all-chain or chain-cum-belt transmission.



A spring seat pillar ensures easy riding on the A.J.S.

of the internal-expanding type with large shoes on car lines, operated by the foot on the left of the machine.

The stand is worthy of special mention on account of its ease of operation. On the right-hand side is a lever, folding back and running the whole length of the stand "leg." When opened out, this lever renders the jacking of the back wheel a simple matter even for ladies. Tyres are heavy Dunlops, 700 mm. by 80 mm., with mudguards of ample size.

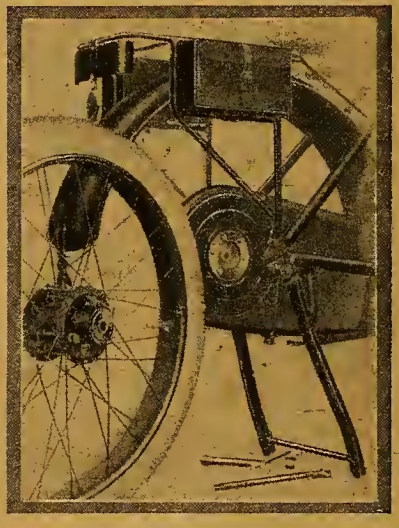
The entire outfit, including handlebars, is finished black of a surprising gloss; this to obviate frequent plating. A few special parts have been found more serviceable when plated, and here the plating is heavy.

Stand Nos. 34 and 140.

Abingdon-Ecco, Ltd., Tyseley, Birmingham.

A 6-7 h.p. twin-passenger combination and a 3½ h.p. single-cylinder machine form the exhibits of this company. The sidecar model is equipped with an Abingdon King Dick V-twin engine of 73 mm. by 95 mm. bore and stroke respectively. A feature of this engine is the unusually large ports; the lubrication is effected by suction from a separate oil compartment in the main tank.

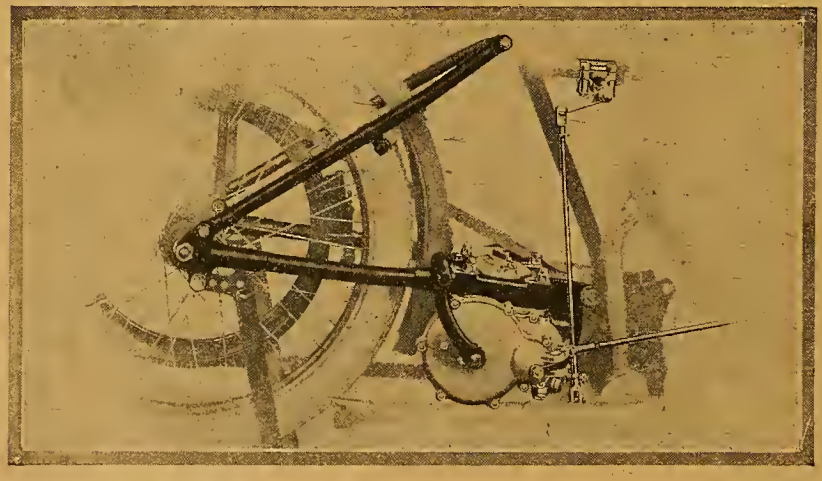
The specification includes three-speed gear and clutch of the countershaft bottom bracket type, and the transmission is either by chain and belt or all chain with shock absorber, as desired. A 6-in. ground clearance is allowed. One of the principal new features is the detachable hubs; the wheels are interchangeable, and by the use of a neat and efficient arrangement the back wheel can be removed from the frame without upsetting the chain adjustment. The back



All wheels on the A.J.S. combination are quickly detachable and interchangeable.

mudguard is hinged, and can be swung back to allow of the easy removal of the wheel. Stands are fitted to both front and back wheels, and the machine is exceptionally well equipped and finished. The 6-7 h.p. machine is suitable for either solo or sidecar work.

The 3½ h.p. models retain their former specification, and are made in two patterns, one with a three-speed countershaft gear and the other as a belt-driven T.T. machine.



Abingdon King Dick machines have sturdy countershaft three-speed gearboxes.

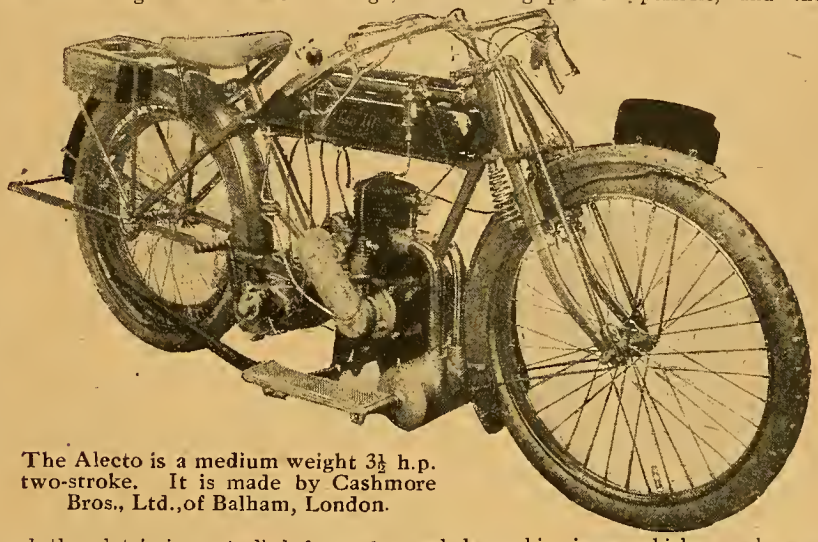
The Alecto Two-stroke—Allon Lightweights—Ariel Models.

Stand No. 15.
Cashmore Bros., Ltd., Hildreth Street, Balham, London, S.W. 12.

CASHMORE BROS. are showing two standard Alecto machines which are fitted with 3½ h.p. two-stroke engines and the Jukes' two-speed gearbox, which incorporates a clutch and kick-starter. The machines are chain and belt-driven, and are made throughout from the finest material. The engine employed has a bore and stroke of 76 mm. by 76 mm., and is of the three-port type. The piston, which is of the usual deflector pattern is made from aluminium alloy, and is fitted with three rings which are pegged in position, the lower ring acting as a scraper. A double row of Skefko ball bearings support the crankshaft, while the big-end is lined with white metal. The method of lubrication is as follows:—Oil is fed in at the inlet port and runs down to a well formed in the top of the crankcase. From here it passes through two holes drilled in webs on opposite sides of the crankcase to each main bearing. The main shaft and crank web are drilled in the transmission side, and oil is conducted through this passage to the big-end. The machine is unusually well equipped, and the specification includes Brampton Biflex forks, Brooks B150 padded saddle, Dunlop heavy 26 by 2¼ tyres, and Dunlop belt. The present price of this machine is £83 7s.

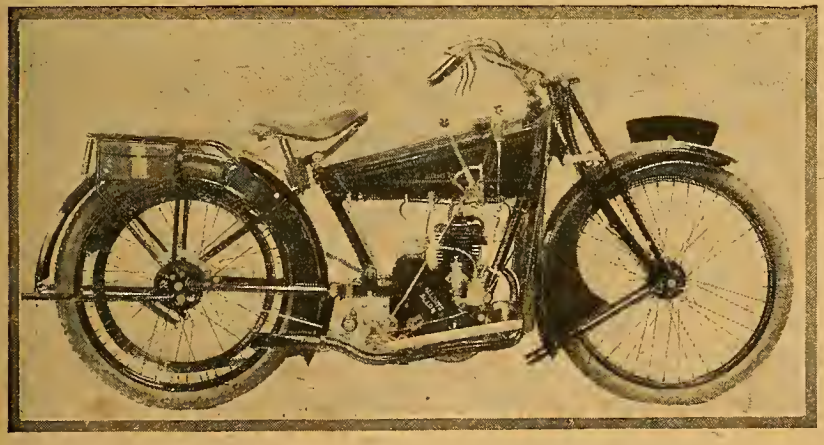
ing with any other portions of the machine This makes decarbonization a particularly simple operation.

The magneto is carried behind the cylinder, high up out of the way of water, and protected from rain by the tank. The gearbox is neat in design, and the clutch is controlled from the handlebar. Chain-cum-belt drive is employed, and the belt is adequately protected. The chain is neatly encased, and



The Alecto is a medium weight 3½ h.p. two-stroke. It is made by Cashmore Bros., Ltd., of Balham, London.

The large mudguards and footboards make a machine which is very clean to ride in all weathers, and when these are augmented by leg shields nothing further in the way of weather protection is needed. The frame design makes a very low riding position possible, and the whole machine is one which appeals particularly to business men, who must have considerable regard for appearances.



The Allon lightweight is a popular little mount of smart appearance.

Stand No. 104.
Alldays and Onions, Matchless Works, Birmingham.

TWO examples of the Allon two-stroke are shown, and they undoubtedly belong to the lightweight de luxe class, with their large tanks, two-speed gears, kick-starters and clutches. The engine is of the three-port type with outside flywheel, and is interesting from the accessibility of the various parts. The lower portion of the crankcase may be removed by undoing eight bolts, and the crankshaft and flywheel, together with the connecting rod and piston, may then be removed as a whole, without interfer-

attention to detail has been carefully studied all through the complete design. A case in point is the guard which protects the brake. Both front and rear brakes are by contracting spring bands on drums attached to the hubs.

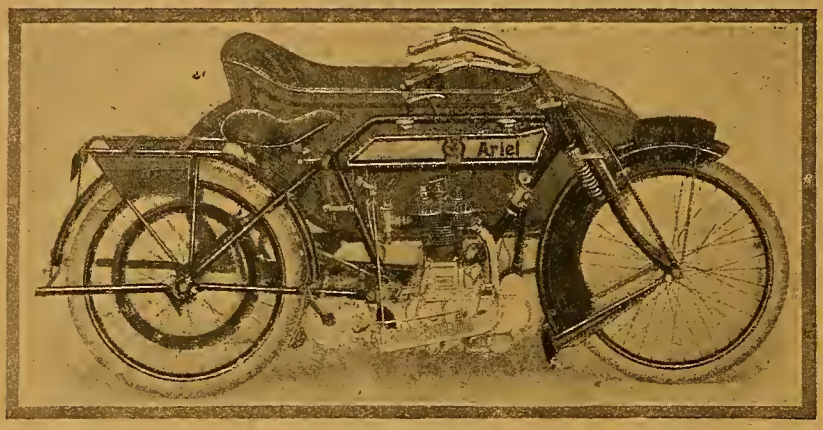
The strong frame of the Allon will be noticed; no bent tubes are employed at all. The sloping top tube was early adopted by the Allon, and the tank design is particularly pleasing. The tank is of the saddle pattern and encloses the top tube, giving a very neat appearance, besides great strength. This does away with one dust trap, the crevices formed by the exposed top tube and the tank.

Stand No. 59.
Ariel Works, Ltd., Bournbrook, Birmingham.

THE Ariel programme for 1920 comprises four models, two of which are entirely new. The present models, 3½ h.p. single-cylinder and 6-7 h.p. twin, are retained, with a number of improvements, such as larger and wider mudguards and new pattern wheel hubs. Both these models have the Ariel three-speed countershaft gearbox and chain-cum-belt transmission.

The new models are a 4½ h.p. single-cylinder and a 6-7 h.p. twin-cylinder, both with all-chain drive. The 4½ h.p. machine has an engine with bore and stroke of 86.4 mm. by 100 mm., giving a cubic capacity of 586 c.c. The valves are very large and wide apart, and the valve pockets have large air spaces completely surrounding them. Lubrication is by means of suction from a pump, with an improved system of oilways to all the wearing parts, and the well-known Ariel decompressor is fitted to ensure easy starting. Transmission is by chain throughout, and a shock absorber is fitted in the back wheel. The frame has been specially designed to give a long wheelbase, long head, and duplex front tubes. The saddle is mounted on the Ariel spring seat pillar, and the position is low, whilst yet allowing a 6-in. ground clearance, a fact that will be much appreciated by Colonial riders. The wheels are fitted with 28 in. by 3 in. Dunlop tyres, and the mudguards are extra wide, with side valances to both wheels. The back brake is of the internal-expanding, and the front brake of the ordinary rim type.

The B.S.A. Twin and Singles—The Bat Range.



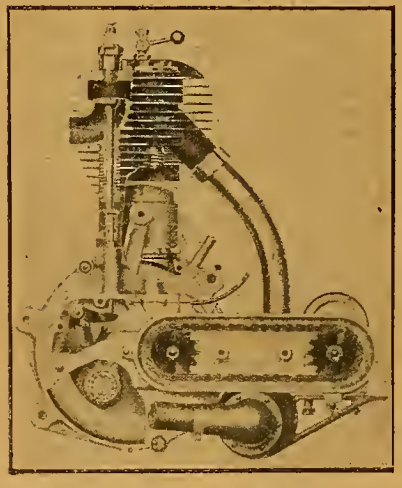
The 4¼ h.p. Ariel single-cylinder is a new model eminently suitable for sidecar work.

An interesting feature is the tank, which, although very large, is not unsightly. The petrol capacity is 2½ gallons, and the oil capacity 5 pints. With these filled up it should be possible to travel 150-200 miles without replenishing, an item that is particularly useful to riders who use their machines for night work.

The twin-cylinder model combines the above-mentioned improvements, with the exception that it is fitted with the Ariel 6-7 h.p. engine.

Stand Nos. 188-75.
Birmingham Small Arms Co., Ltd., Armoury Works, Small Heath, Birmingham.

MODELS of the well-known B.S.A. motorcycle are shown at Olympia with 3½ h.p. and 4¼ h.p. single-cylinder, and the 6-7 h.p. twin-cylinder engines.



A sectionized B.S.A. single-cylinder engine.

The former two are shown in various types, the all-chain drive Model H, which lists at £95, the chain-cum-belt model K at £93, and the 3½ h.p. T.T. model D at £77, single gear. The B.S.A. coach-built sidecar, model 2, is also shown.

These models are similar in the main to those of the 1919 season; a newcomer, however, is the 6-7 h.p. machine, which was described recently in *Motor Cycling*. This has a twin-cylinder engine of 76 mm. by 85 mm. bore and stroke, giving a cubic capacity of 771 c.c. The cylinders are placed at an angle of 50 degrees, the valve ports are of ample proportions, and all corners and recesses in the cylinders have been avoided. A cush drive is attached to the engine shaft, six powerful springs absorbing all engine shocks and ensuring flexible transmission. Mechanical pump lubrication is employed, together with an auxiliary hand pump.

Transmission is effected by means of ⅝ in. by ⅜ in. roller chain, with the B.S.A. three-speed countershaft gearbox. The clutch is situated in the large chain wheel, and is of the dry-plate variety, controlled from the handlebar. The rear brake is internal-expanding, whilst the front brake operates on a belt rim fitted for the purpose. The mudguards are 8¼ ins. wide, and the wheels are 28 in. by 3 in., tyres being Dunlop extra heavy or Palmer cord light car type.

Finish is in the usual B.S.A. black and colouring, mudguards and gearcases being lined in gold, with the usual bright parts plated. The price is £130 solo, or £168 for the combination. The spare wheel is £9 9s., and the electric lighting set £29 extra.

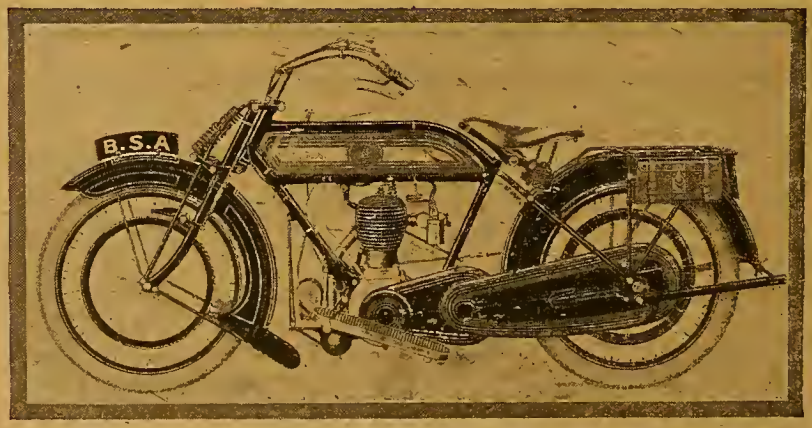
A spring seat pillar ensures easy riding on the B.S.A. twin.

Stand No. 82.
"Bat" Motor M'fg. Co. (1918), Ltd., 2, Kingswood Road, Penge, S.E. 20.

THE various models on view on this stand indicate that those responsible for the design of the Bat motorcycle are by no means content to rest on their laurels. It is interesting to note that the original Bat machine made about 1902 included independent springing of the driver as part of the design, and this feature is still retained on the present-day models, in a much improved form, of course.

A choice of either a 6 h.p. or 8 h.p. J.A.P. engine is offered at the same price. The drive is by chain throughout through a well-designed three-speed countershaft gearbox, top and low gear wheels being constantly in mesh, the second speed being engaged by a sliding pinion. The clutch is of unusual design, being an internal-expanding phosphor-bronze ring operated by means of wedge bars.

The new detachable wheel, particulars of which were given in a recent



The 4¼ h.p. B.S.A. is a sturdy solo or sidecar mount.

The Bradbury Range—The Interesting Design of the Black Prince.

issue, is worthy of notice, inasmuch as the design allows easy removal without the use of loose distance pieces. This operation can be performed in a surprisingly short space of time, the chain and bearing adjustments remaining unaffected. The chain wheel runs on its own adjustable bearings, and has dogs formed on its inner face, through which the drive is transmitted.

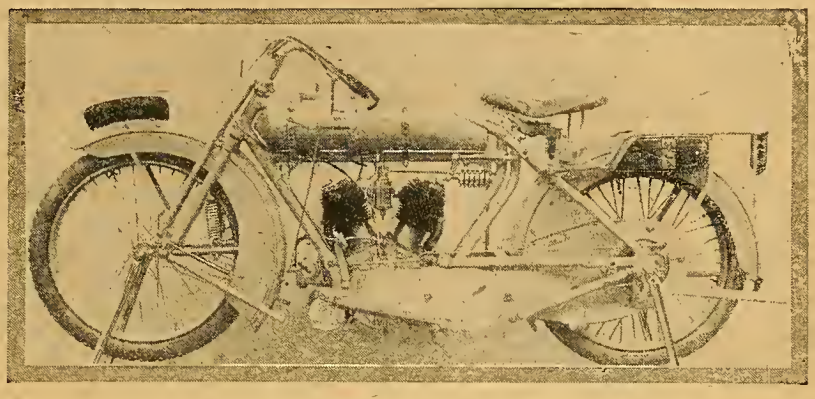
We have already referred to the Bat system of carrying the saddle and footboards on a separate sprung member. Both brakes operate on the rear wheel, these being of the internal expanding and external contracting band type. The sidecar is most roomy and comfortable, the spring wheel, in conjunction with the body springs, providing luxurious suspension. Five-point attachment is employed.

Resplendent in grey enamel, the Bat machines present a very serviceable appearance, and the fact that the designer is himself a practical motorcyclist is a point which will carry weight with prospective buyers. The price of the three-speed detachable wheel combination, 6 h.p. or 8 h.p., is £164, electrically equipped, £181, which figures include a spare wheel.

Stand No. 52.
Bradbury and Co., Ltd., Wellington Works, Oldham.

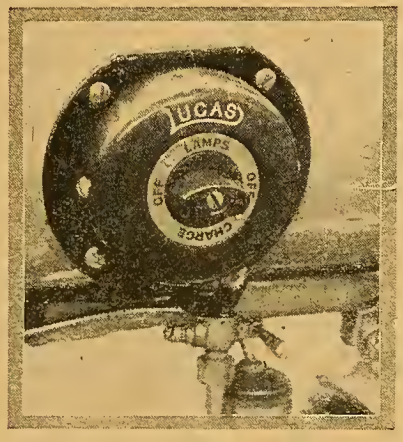
THREE models are shown:—The new 2¾ h.p. four-stroke lightweight, the 4 h.p. single-cylinder medium weight, and the 6 h.p. V-twin passenger machine.

The lightweight has a single-cylinder engine of 74.5 mm. bore and 80 mm. stroke, giving a capacity of 349 c.c. A detachable head is fitted, held by two long bolts and a bridging piece. Adjustable tappets are provided, and the timing gear has only one cam wheel. Chain-cum-belt transmission is employed, in conjunction with a two-speed countershaft gearbox with hand-controlled clutch and kick-starter. The frame is of neat appearance, with the duplex front down tubes which are a feature of all Bradbury models. The Druid spring fork has a front rim brake, and the rear wheel a foot brake working in the belt rim.



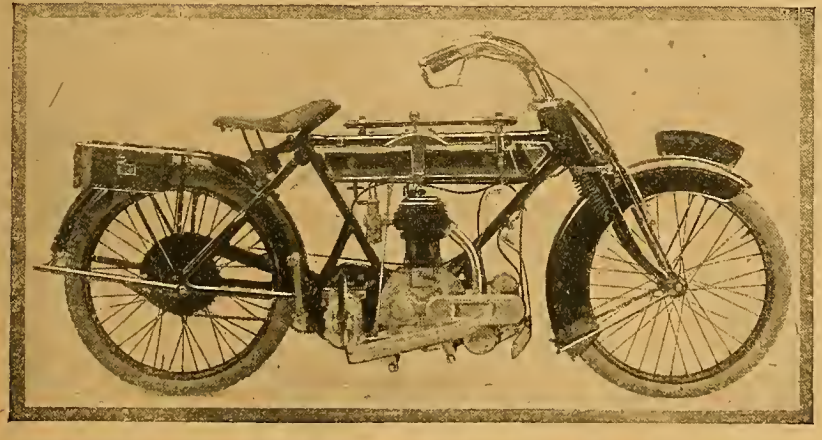
The new spring frame B.A.T., a most attractive machine.

The 4 h.p. machine is of 89 mm. bore and stroke (554 c.c.). It now has all-chain drive and three-speed countershaft gearbox with hand-controlled clutch. Except for this and the fact that the tank is finished black with gold lining, the machine remains the same as in 1914.



The tank switch of the B.A.T. lighting system.

The 6 h.p. model has a V-twin engine of 74.5 mm. by 86 mm. bore and stroke (750 c.c.). Detachable heads are fitted in the same manner as on the lightweight. The gearbox provides three speeds, with kick-starter and hand-and-foot-operated clutch, the latter being a valuable feature on any sidecar machine. All-chain transmission is employed, with semi-enclosed rear chain. The rear wheel is quickly detachable, having a knock-out spindle. The footbrake is of the internal-expanding type, working inside the rear chain sprocket, and the front brake is of the rim pattern, hand operated.



Bradbury's now make three models; the 4 h.p. single is here illustrated, and has now all-chain drive.

Stand No. 42.
Black Prince Motors, Ltd., Thorngate Mills, Barnard Castle.

MUCH interest will no doubt centre round this stand, for two reasons. Firstly, the machines are of a most unconventional design, and, secondly, the selling prices are extremely moderate.

The 3½ h.p. engine is a horizontally-opposed two-stroke, employing only one sparking plug, and a common combustion space. The mechanical balance is the same as in the ordinary four-stroke h.o. twin, i.e., both pistons travel outwards and inwards together. On their outward stroke they draw a charge of gas into the crankcase from the carburetter, and on the inward stroke expel it into the common combustion space via an automatic valve directly opposite the plug. Thus the force of the explosion acts equally on both pistons, forcing them inwards and sending a fresh charge through the transfer passage.

The engine is placed lengthways in a pressed-steel frame, and carried on a sub-frame of steel strips. Side panels are used completely to encase the mechanism. The rear wheel is sprung by volute springs placed at the lower end of the carrier supports, and is driven from the two-speed gearbox by a cardan shaft and bevels. Transmission from engine to gearbox is by chain. The gear ratios provided are 5 and 10 to 1, and the hand-controlled clutch is of the Ferodo pattern.

The tank holds 2¼ gallons of petrol and ⅜ gallon of oil, and the machine does 70-80 m.p.g. Its weight is 200 lb., and the provisional price is 60 guineas.

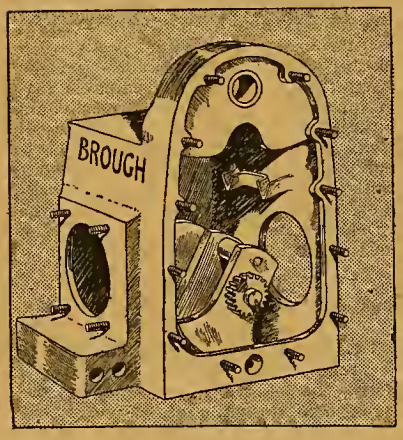
Another model to be seen on this stand is the 2¾ h.p. lightweight, fitted with Union two-stroke engine. This type weighs 170 lb., and will do 100 m.p.g. Its provisional price is 50 guineas.

The 5 h.p. Horizontal Twin Brough—Two Calthorpe Models.

Stand No. 69.

Brough, W. E., and Co., Basford, Nottingham.

ONLY one type—the 5 h.p. passenger machine—is shown, although a 3½ h.p. solo mount is also to be manufactured next year. To deal first with the model exhibited, this has a horizontally-opposed twin engine of 70 mm. bore by 90 mm. stroke, giving a capacity of 690 c.c. The crankcase is a one-piece casting, which ensures a remarkably oil-tight engine, and the solid two-throw crankshaft runs on phosphor-bronze bushes. Plain big-end bearings are employed, and are ingeniously lubricated by means of a small trough cast inside the crankcase, from the spouts of which oil trickles on to the big-ends immediately beneath. The trough is kept supplied

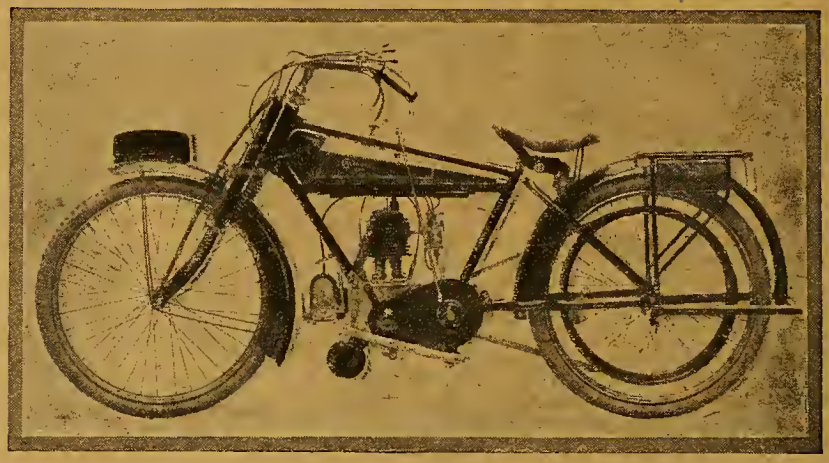


The ingenious method of lubricating the big-ends on the 5 h.p. Brough.

from a hand pump on the tank, and excess oil from the crankcase is blown on to the front driving chain so that this important part is kept continually lubricated. An A.M.A.C. carburetter is fitted, and part of the induction pipe is cast with the timing cover, in order to entail a minimum of exposed pipe.

A Sturmey-Archer three-speed gearbox is fitted at the countershaft, with the usual handlebar-controlled clutch, and all-chain drive is employed. The frame is of neat design, and low, with large and efficient mudguards.

The 3½ h.p. machine has a horizontally-opposed engine of 70 mm. by 64.5 mm., and a capacity of 489 c.c. Roller bearing big-ends are used in this engine, the inner race being a groove cut in the throws of the crankshaft, and the connecting rod forming the outer race. Aero engine practice is seen in the overhead valves and aluminium pistons. The cylinder heads are detachable, and secured by three studs.



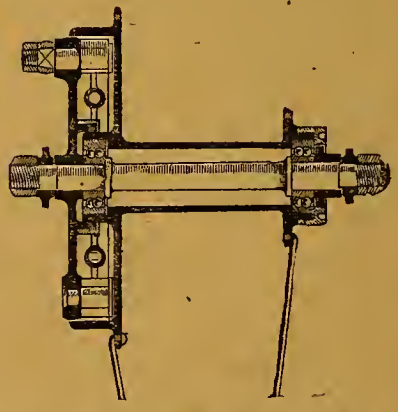
The 2¾ h.p. Calthorpe with four-stroke J.A.P. engine.

Stand No. 84.

Minstrel and Rea Cycle Co., Ltd., Barn Street, Birmingham.

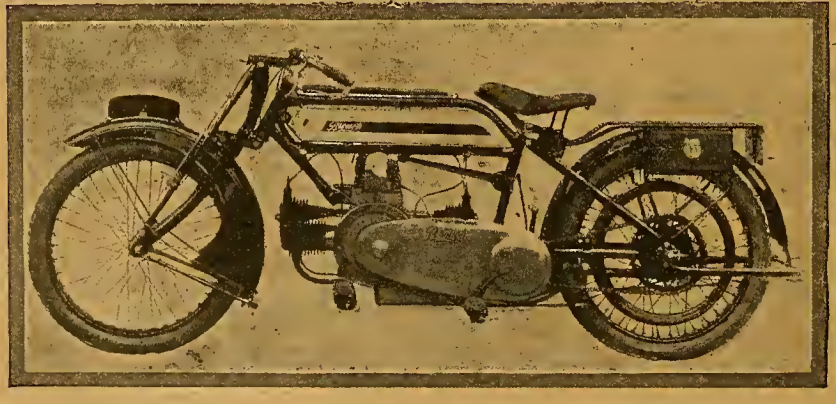
FOR 1920 there are two models of the Calthorpe, and three of each model are seen on this stand. The machines are very similar, apart from the engines, one model being fitted with the new J.A.P. 2¾ h.p. lightweight engine and the other model having the Peco engine, made by the manufacturers themselves. This is a two-stroke engine of 349 c.c., bore and stroke 75 mm. by 79 mm. The lubrication system is very thorough, as an oil duct is formed round the base of the cylinder, from which holes lead at intervals into the cylinder bore, and oil-ways from a well in the crankcase top lead direct to the main bearings.

The frame on both models has the sloping top tube now so popular, and the front forks are arranged to give a good steering rake. Druid spring forks are fitted as standard, and the 26 in. wheels are shod with 2¼ in. Dunlop tyres. An



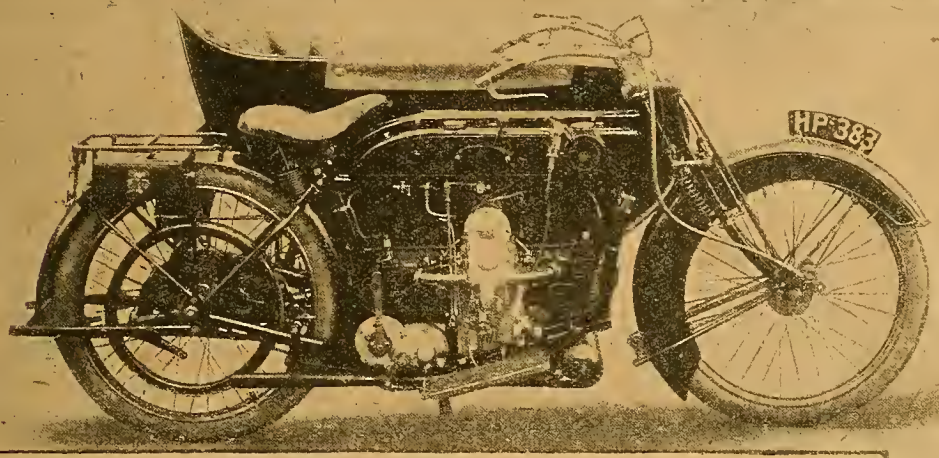
The 3½ h.p. Brough has an internal-expanding rear brake.

Enfield two-speed countershaft gear is fitted, and the transmission is by belt and chain. Large mudguards are used with side valances of ample size. Aluminium footboards are fitted, and the brake pedal is carried on the off side. On the two-stroke model the magneto is carried to the rear of the engine, but on the J.A.P.-engined machine it is carried in the forward position. A neat cast aluminium chain guard is fitted over the magneto drive, and the main driving chains to the Enfield gear are also enclosed by a metal case. A neat tubular carrier carries two pannier toolbags, and the back wheel stand is securely fastened by a strong spring clip. The whole machine forms a sturdy touring lightweight.

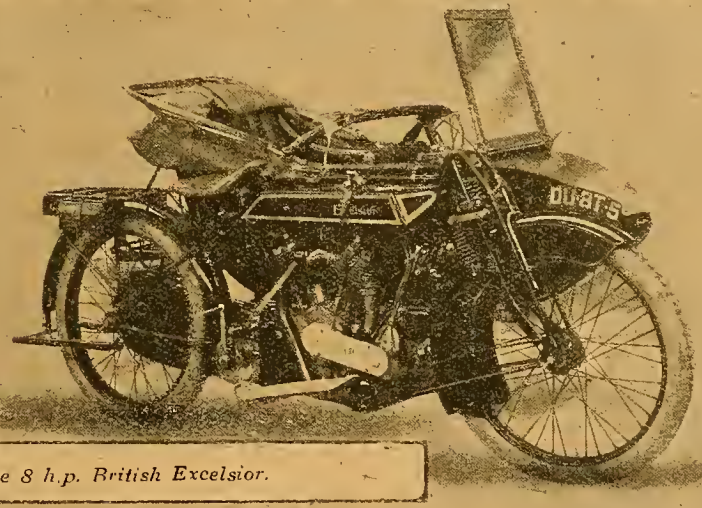


Transmission side of the 5 h.p. Brough.

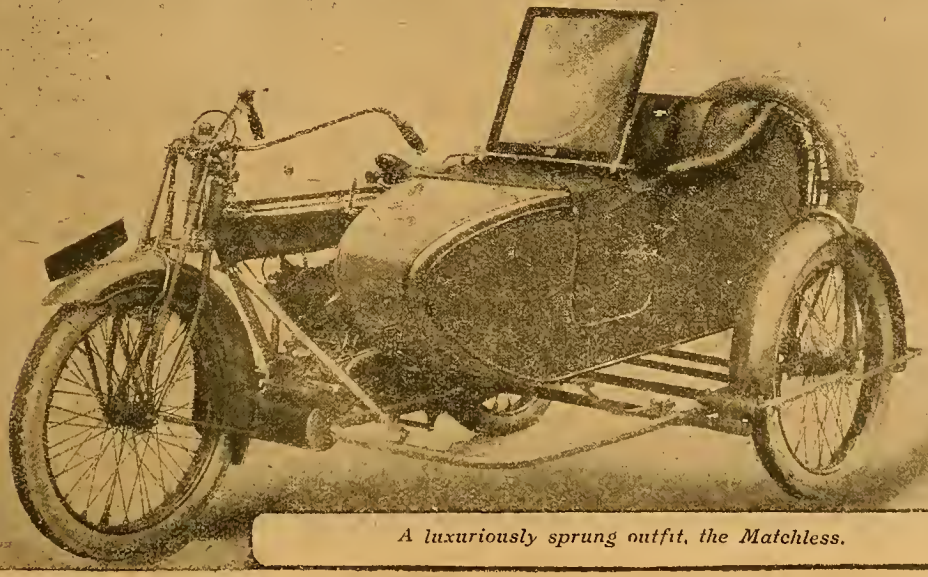
TWIN SIDECAR COMBINATIONS.



The new 4½ h.p. Humber combination.



The 8 h.p. British Excelsior.



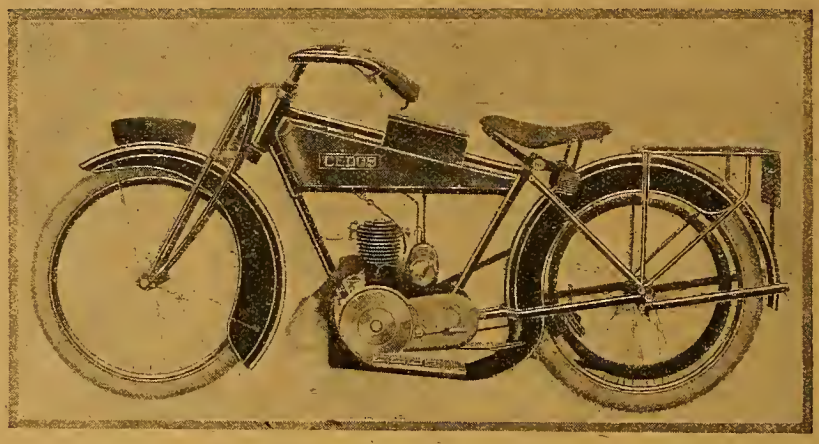
A luxuriously sprung outfit, the Matchless.

Cedos Features—The Chater-Lea Range.

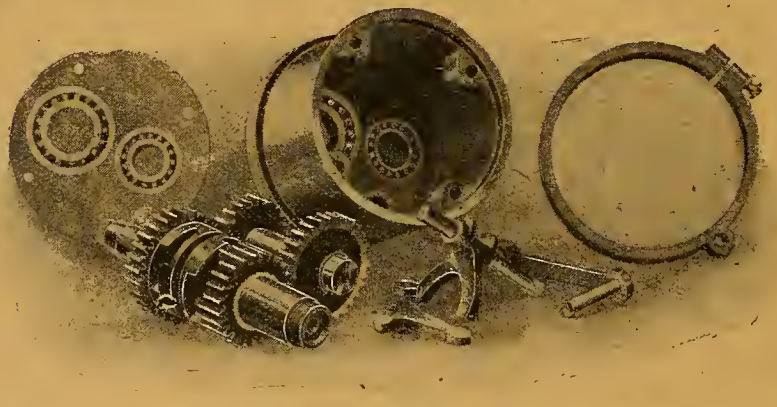
Stand No. 18.
Hanwell and Sons, Components, Ltd., Northampton.

HERE we have some Cedos lightweights which have many novel features, one of the most noteworthy being the housing of the circular gearbox in a special lug in the frame built to accommodate it. The gearbox itself is an aluminium casting, and has four pinions constantly in mesh, high and low gears being selected by movable dogs. Ball bearings are used throughout, and the gear teeth are carefully shaped. The end plate may be removed and contents inspected while the gear is in position in the frame.

The engine has a bore of 62 mm. and stroke of 70 mm. (211 c.c.). The main shaft runs on double-row self-aligning ball bearings and long phosphor-bronze bushes in order to retain compression. It will be readily understood that, as these bushes do not actually support the shaft, they should last indefinitely. Roller bearings have been chosen for the connecting rod big-end, and are Hoffmann of ¼ in. diameter. The piston and cylinders are carefully machined, to lessen the formation of carbon deposit.



Many good points are found on the Cedos two-stroke lightweight.



The Cedos two-speed gear is built into the frame.

The company's own carburetter is used; this has a variable choke tube designed specially to meet the engine's requirements. The exhaust discharges first into a bulb of 2¼ ins. diameter, whence it travels along a short pipe into a large silencer having a broad, flat pipe 2½ ins. wide and ½ in. deep. This device deadens the explosions very effectively, yet is absolutely free from back pressure, which is the maximum obtainable from any silencer. Transmission is chain to the countershaft, thence by ¾ in. rubber belt over pulleys of 6 ins. and 18 ins. diameter respectively.

The wheels are 24 by 2¼ built up on dust and weatherproof hubs. The brakes operate on the internal and external diameters of the belt rim, actuated by independent pedals.

Mudguarding has received very serious attention, the forward guard being of extra wide section and having a valance of good depth, while the rear, continuous with the undershield and long aluminium footboards, should shield the rider from anything the back wheel or transmission might throw forward in the worst weather. A ladies' model is also made.

Stand No. 83.
Chater-Lea, Ltd., 74-84, Banner Street, London, E.C.

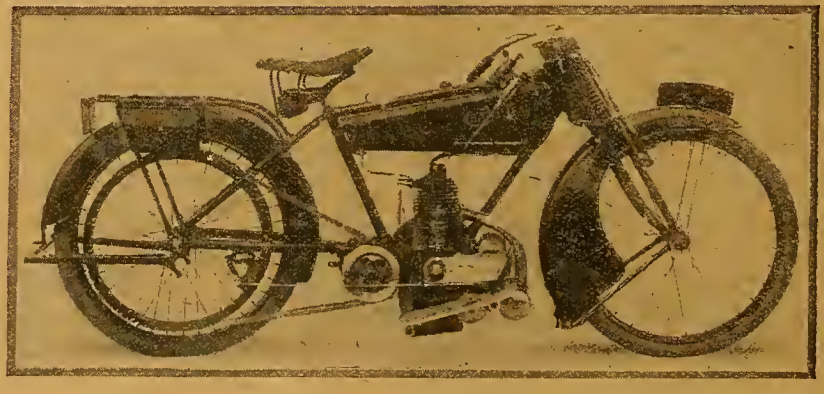
TWO 2½ h.p. lightweights and an 8 h.p. sidecar combination are the principal items of interest here.

Both lightweights are fitted with a 2½ h.p. Villiers engine and two-speed gear. Their specification includes a quickly detachable rear wheel, large section mudguards, and a novel form of front springing. The fork links are rigidly attached to the spindles, thus preventing wear at the links. The spindles have grooved oil ways cut in them, while a small oil sump is provided in the centre. A rubber buffer, entirely enclosed, which is situated at the top of the fork, permits of a slight caster movement, which has been found to be amply sufficient.

The sidecar combination is the No. 7 model, which was first introduced in 1910. It incorporates an 8 h.p. 50 degrees V-twin air-cooled engine of 85.5 mm. by 85 mm. dimensions (964 c.c.). Adjustable tappets are fitted, and the valve lifter is enclosed.

A three-speed car-type gearbox is standard, giving ratios of 3⅞ to 1, 5¾ to 1, and 10½ to 1. The clutch is of the engine shaft, multiple-disc, metal-to-metal variety, which gives a total contact surface of 130 sq. inches. The transmission is effected entirely by ¾ in. pitch chains, and 700 mm. by 80 mm. light car tyres are fitted. The back brake is of the internal-expanding type, the drum being 7 ins. in diameter by 1⅛ in. wide, and Ferodo lined.

The special Chater-Lea spring fork is fitted, and a very efficient spring seat pillar, which allows of no side movement. The lightweight motorcycle gearbox and the special front forks, in addition to a large variety of hubs, are also shown as components.



The 2½ h.p. Chater-Lea lightweight, fitted with two-stroke Villiers engine.

The Clyno Combination and Lightweight.—Connaught Models.

Stand No. 103.
Clyno Engineering Co., Pelham Street, Wolverhampton.

THREE De Luxe sidecar combinations and two samples of the lightweight machine are exhibited. The lightweight this year has a much heavier flywheel than its predecessor. The frame has been stiffened, and is now devoid of the slightest suspicion of "whip," and the handlebars are wider. Brampton forks have been substituted for the make previously fitted. Details too trivial to record have also received attention at the designer's hands. The chief feature of the model is the embodiment of the engine and gearbox in one unit and one casting incidentally. The Clyno gudgeon pin is now secured in the connecting rod instead of the piston. By this means 50 per cent. more bearing surface is obtained; it is claimed that little ends never need rebushing, its bearing having a life equal to that of piston and cylinder. Ball bearings have been replaced by Hoffman rollers wherever possible. The handlebars have been widened in order to afford greater command over the steering on treacherous roads. Next season's silencer is considerably larger, and the exhaust pipe from engine and that running from silencer to rear of machine is 1½ in. diameter.

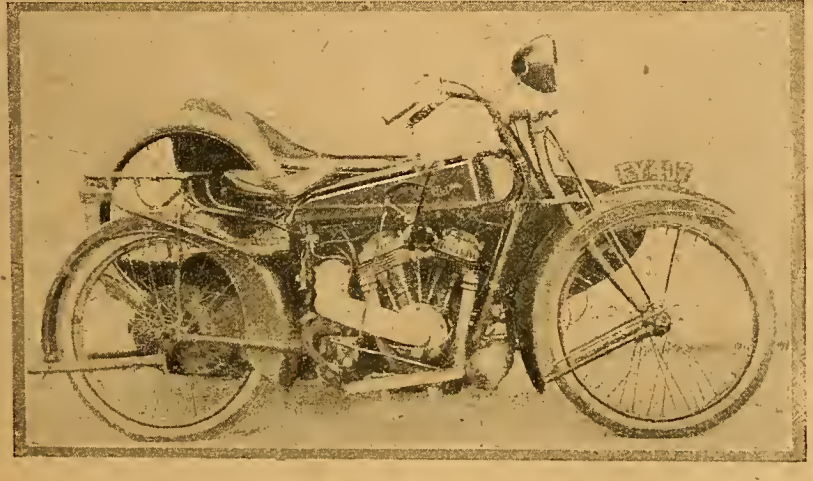
The 8 h.p. sidecar combination is an excellent proposition. Finished in grey with black wings, equipped with every conceivable refinement, including electric lighting and horn, it suggests speed and luxury at all points.

The engine has detachable cylinder heads, which practice allows of perfect machining and simplifies carbon removal, and connecting rods have cage roller bearings, the mainshaft bearings being plain. The pistons have three rings, and the middle portion of skirt is reduced to lessen friction. Valve tappets are held against their valves by springs to reduce clatter.

The carburetter is an Amac single-lever. A Lucas Magdyno supplies ignition and lighting. The gearbox is Clyno's own design of the constant-mesh sliding-dog clutch type. By the removal of the cover plate all mechanism may be taken out for cleaning purposes. Lubricant is pumped to the engine mechanically through an adjustable sight feed on the tank. A hand pump is provided as a stand-by and for the possibility of an emergency or gearbox lubrication.

The transmission is by roller chains with mechanical spring shock absorber on the engine shaft, all soundly protected. The spring frame has its centre portion sprung on two quarter-elliptic springs attached to its spring bracket. Radii centres are provided with phosphor-bronze bushes, and spring pins are specially hardened.

The mudguards are large, and dome leg shields supplement weather protection. The tank holds 2¼ gallons of fuel and 3 pints of oil. The wheels are the famous Clyno detachable and interchangeable, having voiturette rims and 28 in. by 3 in. Dunlop rubber-studded covers. The sidecars are thoroughly well appointed on spring chassis. Cee springs support the body, in which is carried the accumulators.

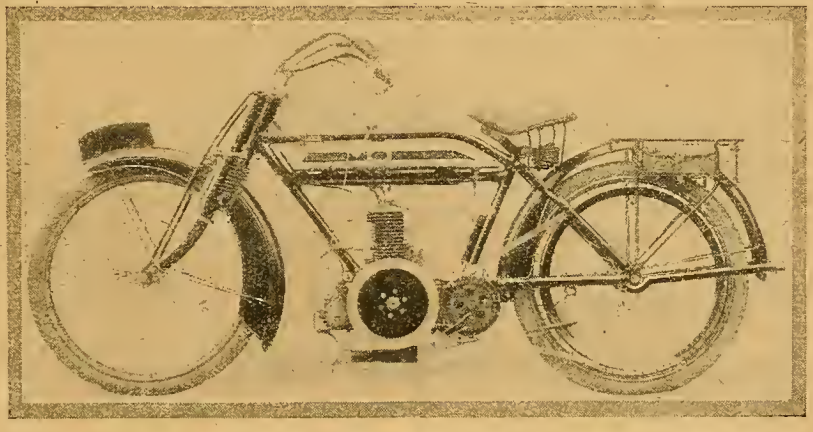


The 8 h.p. Clyno combination is a real "post-war" machine.

Stand No. 102.
Bordesley Engineering Co., Ltd., New Bond Street, Birmingham.

ON this stand are shown four models of the well known Connaught motorcycle. These are the Miniature, which sells for £52, the two-speed Miniature, which sells for £60, or with kick-starter and clutch £70, the Standard, £57, and the two-speed Standard, £65, or with clutch and kick-starter £75.

The two Miniature models are fitted with a Connaught two-stroke engine, of 75 mm. bore and 70 mm. stroke; 24 in. by 2 in. Dunlop tyres are fitted, and a ¾ in. Dunlop belt. Druid spring forks, Amac or B. and B. carburetter, and Leatheries or Lycett's saddles are standard. The finish is in black, the tank being enamelled aluminium, with green panels, lined red. Albion or Sturmey-Archer gears are fitted in the two-speed model.



The new "Baby" Connaught, which has 24 in. wheels. A larger edition is made with 26 in. wheels.

The two Standard models have 2½-3 h.p. Connaught engines, of a cubic capacity of 293 c.c. The tyres in this case are 26 in. by 2 in., and Amac or Senspray carburetters are optional. Two aluminium footboards are fitted, and the gear ratio is 5 to 1, instead of the 5½ to 1 of the Miniature models. The tank on the Standard model is black with red panels, having a capacity of 1⅜ gallons.

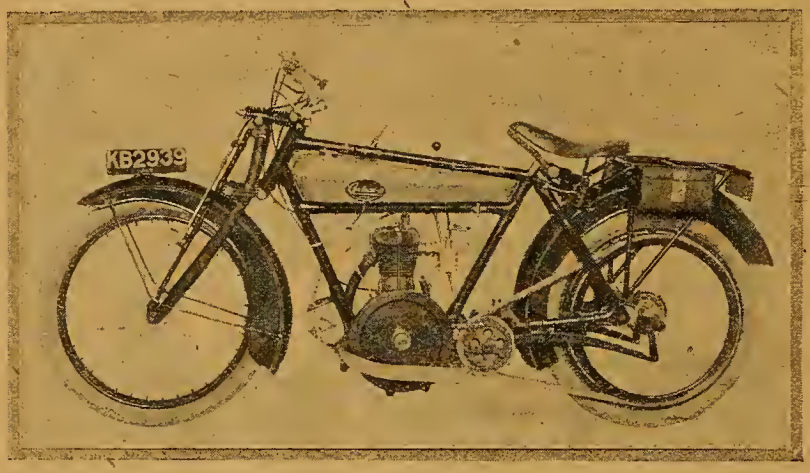
It will be remembered that the Connaught was the pioneer of the petroil lubrication system, and this is still retained, the results being very satisfactory. The special aluminium manifold attachment for the induction and exhaust pipe is cast in one piece, the inlet port being placed immediately below the exhaust port.

This system has a double advantage, the incoming gases being heated by the exhaust, and the exhaust gases being cooled by those incoming. By this arrangement the annoying "four-stroking," so common to two-strokes, is almost obviated. The device is one of the Connaught patents, and is employed, in a modified form, under royalty, by many of the best-known two-strokes at present on the market.

Corona Junior--Coulson Range—Diamond.

Stand No. 32.
Meteor Manufacturing Co., Ltd., 98, Tollington Park, London, N. 4.

THREE Corona Junior single-cylinder machines are exhibited here--a 2¾ h.p. model, a 4 h.p. solo, and one of heavier make, of the same horse-power,



The 2¾ Coulson B, fitted with Blackburne engine and spring rear wheel.

for sidecar work. The most interesting feature of these motorcycles is the construction of the engine. The crankcase and cylinder are made from cast-iron, and are in one piece. A removable cylinder head is fitted, and the crankshaft is of the one-piece variety, and mounted on heavy ball bearings.

An automatic lubrication system is employed on all models, consisting of a cogged wheel pump, which draws oil from the sump situated beneath the crankcase, and forces it along ducts into a trough into which the big end dips. Side-by-side valves are employed, and the tappets are set at an angle of 5 degrees. The cams work direct on to the tappets, the intermediate rockers being found unnecessary when the tappets are inclined at this angle.

Two internal-expanding brakes are fitted, both on the rear wheel. The wheels, which are fitted with 26 in. by 2½ in. tyres, are provided with knock-out spindles. All three models are equipped with E.I.C. magnetos and Capac single-lever carburetters.

The front fork is of particularly novel design. Near the lower extremities a cylinder, slotted on its underside, is placed horizontally on either side of the forks; this contains two coil springs. A large ball is situated between the two springs, and is connected to the front wheel by means of a bell crank lever, pivoted at the end of the forks. The machines are finished in a rather unusual way, the tank is striped black and white.

Stand No. 16.
Coulson Eng. Co., Ltd., Albion Street, King's Cross, London, N. 1.

THREE models of the Coulson motorcycle are shown at this stand, comprising the 2¾ h.p. standard Coulson B, which is fitted with a two-speed gear, 2¾ h.p. Blackburne engine, and costs 85 guineas. A 4 h.p. sporting model of practically the same design, and fitted with a Blackburne engine and single gear with adjustable pulley, priced at 90 guineas, and also a light sporting two-stroke, the Coulson U, fitted with a Union two-stroke engine and having a single gear. The price of this is 57 guineas. The specification of each machine includes the Coulson patent spring frame and registered tank design, Lycett saddle, Dunlop tyres and belt, E.I.C. magneto, semi-T.T. bars, Pedley grips, and inverted levers.

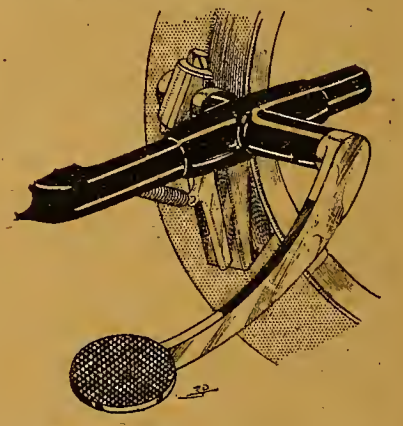
Stand No. 119.
D.F. and M. Mfg. Co., Ltd., Vane Street, Wolverhampton.

THIS concern is continuing with its extremely successful model of last year, eight samples of which are shown on the stand, in company with some half-dozen of their new model, which costs a little more and boasts one or two detail improvements, while retaining all the good points of its predecessor. Either may be had with a Villiers two-stroke engine and Sturmey-Archer two-speed gearbox, clutch and kick-starter, or with a four-stroke J.A.P. engine and Enfield two-speed gear.

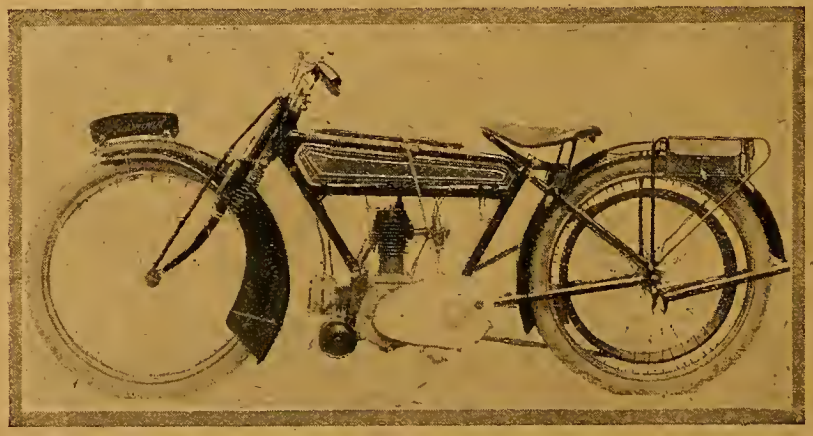
The rear brake is undoubtedly one of the simplest and most efficient ever fitted to a motorcycle. A lug is built in the frame, and holds a pin upon which the shoe moves. The pedal is merely an extension from the shoe, and is operated by the left heel, thus rods, toggles, and wires are eliminated, and the brake is reduced to elemental simplicity. Footboards are only fitted to the new model, the other having footrests.

The wheels are 26 ins. by 2¼ ins., fitted with Dunlop heavy rubber-studded tyres. The carburetter is the new A.M.A.C., and the magneto is a C.A.V. Druid spring forks take forward road shocks.

The forward down tube to the engine is duplex, and bolted up at the point of greatest strain, just under the head, by ⅜ in. bolts. The makers declare fracture to be an impossibility, as the bolts would have to shear first. On the Villiers model this frame further permits a straight exhaust pipe from the cylinder, which must be a slight advantage at speed. The new tank is larger, holding over 1¾ gallons of spirit, yet permitting of a saddle only 28 ins. from the ground.



The efficient Diamond rear brake.



The J.A.P. model Diamond, which has an Enfield gear. A Villiers machine can also be obtained with or without a gearbox.

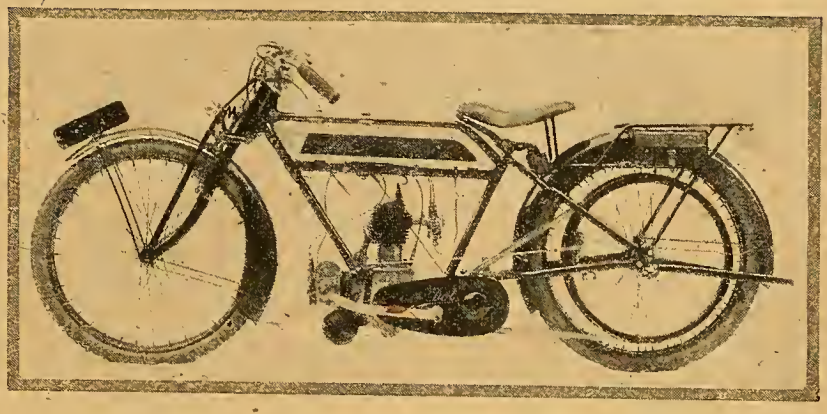
Two Dot Models—The Douglas Range.

Stand No. 113.
Dot Motors, 38, Ellesmere Street, Hulme, Manchester.

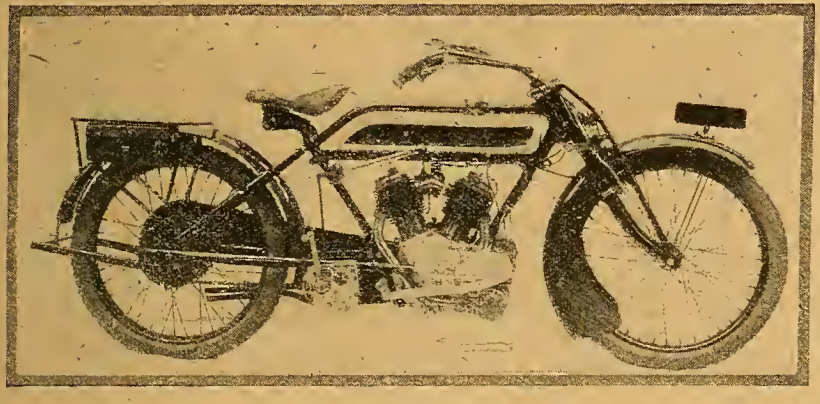
TWO models are shown, one a lightweight and one an 8 h.p. passenger machine. Both are fitted with J.A.P. engines, and are finished in similar style, with bright red frame and aluminium tank panelled red, which give them a distinctive appearance.

The lightweight is fitted with 2¾ h.p. four-stroke engine, Albion two-speed gearbox, and Saxon spring forks. The gearbox can be supplied either with or without clutch and kick-starter. Chain cum-belt transmission is employed, the foot brake working on the belt rim. The machine is supplied with 26 in. by 2¼ in. tyres, and scales 135 lb.

The passenger model has an 8 h.p. twin engine, Sturmey-Archer three-speed gear with kick-starter and hand-controlled clutch, and semi-enclosed all-chain transmission; 28 in. wheels are fitted, but the frame design is such that a low saddle position is obtained. The foot brake is of the internal-expanding pattern, operating in a separate drum on the back wheel. Saxon forks are embodied.



The Dot lightweight is a particularly attractive little machine. It has 2¾ J.A.P. engine.



Finished in bright red the 8 h.p. Dot is a handsome and sturdy sidecar mount.

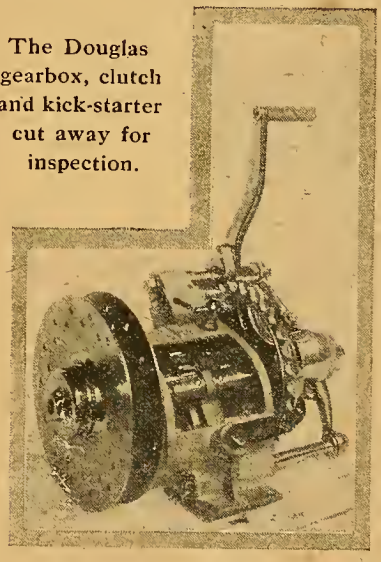
Sidecar lugs are built into the frame, and the sidecar supplied for the machine has a very rigid chassis, with four-point attachment and a body of handsome appearance, very roomy, and with bulbous back containing a large locker, suspended on leaf springs. The total weight of the combination is 550 lb., and like the machine, the sidebar body is finished in bright red and is very handsomely equipped throughout.

Stand No. 76.
Douglas Motors, Ltd., Kingswood, Bristol.

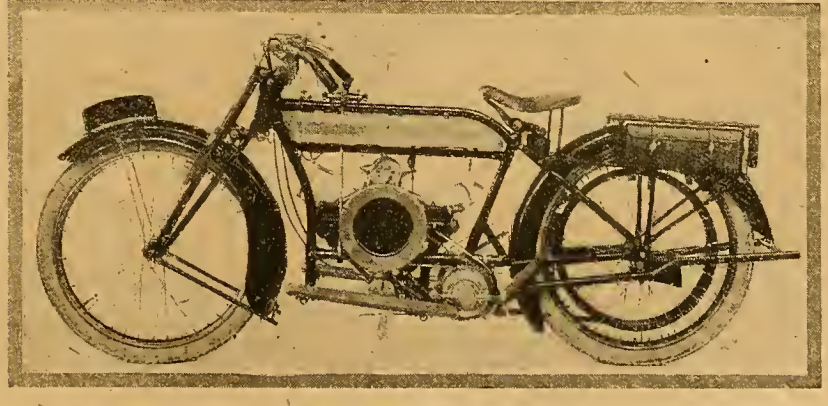
AN attractive display of Douglas models is staged, including the popular 2¾ h.p., the 4 h.p. sidecar combination, and the 3½ h.p. model which incorporates a spring frame.

It will come as a very great surprise, however, to the majority of Douglas enthusiasts to learn that it is not the intention of the concern to market the 3½ h.p. for 1920. This is due to the fact that orders for 2¾ h.p. and 4 h.p. models already booked up will more than cover the whole of the concern's productive resources for the coming season. In addition they have been compelled to cut out other existing models, and the A type T.T. 4 h.p. and the T.T. 2¾ h.p. have been entirely deleted from their programme.

The 2¾ h.p. model is now only supplied with a three-speed gear and a handlebar-control clutch of the plate type described at length in *Motor Cycling* a little earlier in the year. The latter is highly efficient, and it is a fact that it may be slipped almost indefinitely without any danger of burning. The frame



The Douglas gearbox, clutch and kick-starter cut away for inspection.



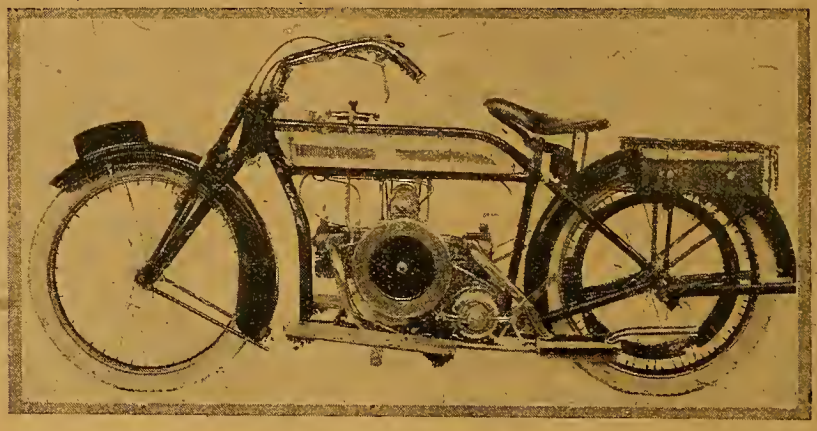
The popular 2¾ h.p. Douglas is now only supplied with three-speed gear and clutch.

More Douglas Details—Undertrays Standard—Excellent Fork Design.

of this model has been entirely redesigned for the coming season. Steel stampings for the lugs have now displaced the malleables previously used. The back stays and back forks have been widened to permit the use of large-section mudguards as extensive side valances. The new fork, which has also been described at length in *Motor Cycling*, is now fitted as standard, and adds very much to the whole appearance of the machine. It should be remembered that hardened and ground bearings and thrust washers are used throughout, and means are provided whereby lateral movement can always be taken up.

Douglas forks are of a slightly different shape for 1920.

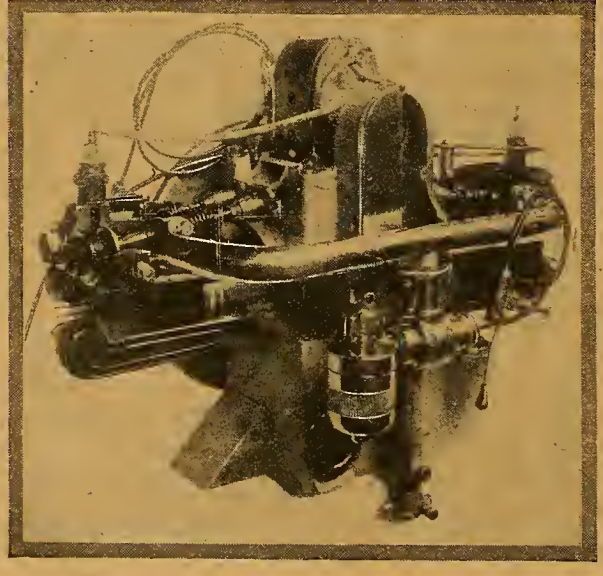
A minor detail, and one that will be much appreciated, is the use of a larger driving chain from the engine to the countershaft gearbox. This is now $\frac{5}{8}$ in. by $\frac{1}{4}$ in., and, so far as size is concerned, is interchangeable with the 4 h.p. machine.



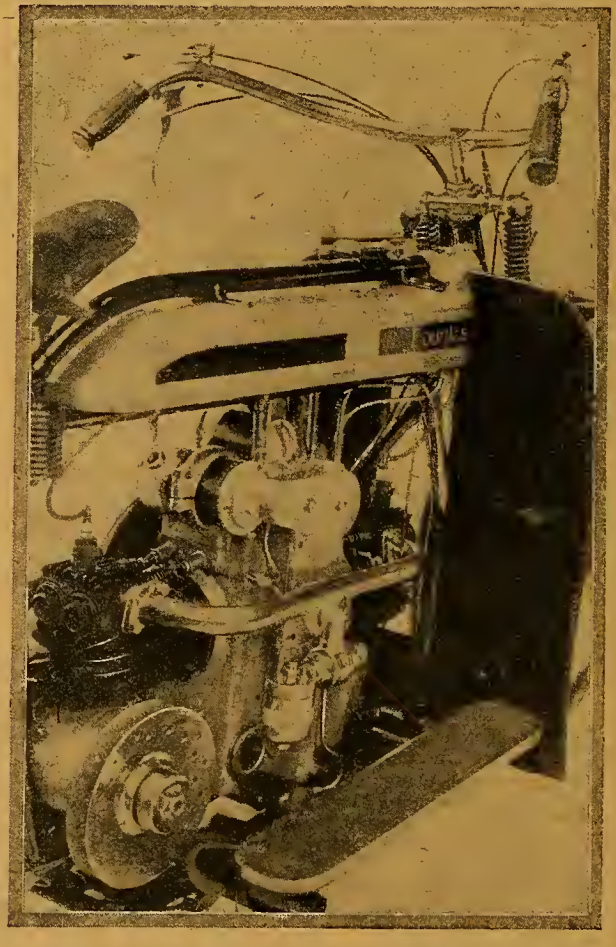
The 4 h.p. Douglas is a very familiar sidecar machine, particularly to ex-service riders.

The undertray, which was a noteworthy feature on the machines which recently went through the A.-C.U Six Days' Trial, is now fitted as standard, and will save no end of trouble in keeping the engine, gearbox and clutch in respectable condition. For a small additional charge a pair of patent leather leg shields, complete with clips, can also be supplied.

Footrests have now entirely disappeared on all models, and the well-known

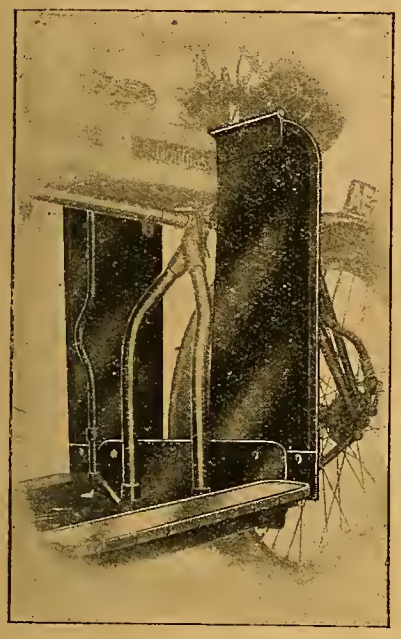


Sectional power units of all Douglas models are on view, forming a very interesting exhibit.



Undertrays are standard on all Douglas models. Note also the dynamo position and single-lever carburetter.

The Spring Frame Edmund—A New 3½ h.p. Two-stroke.



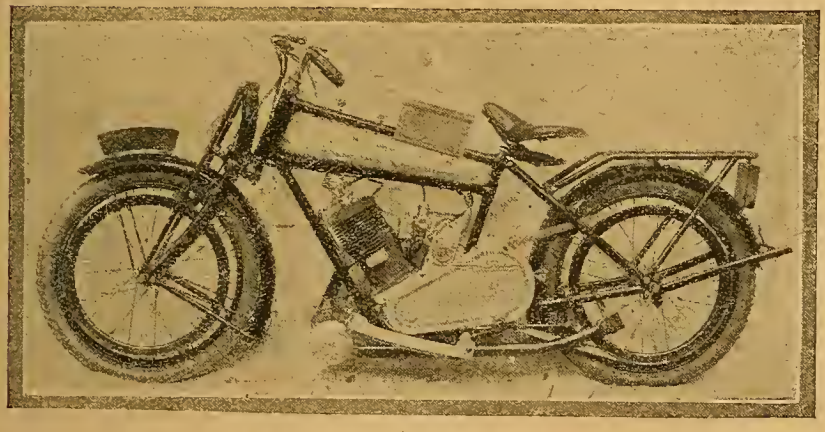
Douglas leg and undershield.

Stand No. 33.

Dunford and Elliott (Sheffield), Ltd., 96, Bath Street, Birmingham.

MESSRS. Dunford and Elliott of Birmingham, are exhibiting an example of their new Dunelt motor-cycle. This machine is fitted with a 3½ h.p. two-stroke engine of original design. By the use of a two-diameter piston it is possible to send through the transfer passage into the cylinder a charge greater than the capacity of the cylinder, this being accomplished by the bottom of the piston sucking into the crankcase a volume of gas in excess of that swept by the upper or working part. Actually, the displacement of the lower portion is 770 c.c., and that of the upper portion 500 c.c. Thus a much better scavenging effect is secured than is usually the case, and no "dead" gas is left in the cylinder to dilute the succeeding charge, in addition to which the piston is to a certain extent cooled by a portion of the fresh charge being circulated around the lower port of the working piston.

A rigid frame is employed, with sloping top tube, and spring forks of special design. A two-speed gear of the expanding ring type, with no gear wheels, is located at the countershaft, and is driven from the engine by two enclosed roller chains. A clutch and kick-starter are incorporated in the gearbox. Final drive to the back wheel is by rubber belt. Very wide domed mud-guards are fitted, also aluminium foot-boards. The wheels are interchangeable, and both front and back brakes work on the belt rims. 26 in. by 2½ in. tyres are standard. The price is to be about £70.



The only big single two-stroke—the Dunelt, of 3½ h.p.

Stand No. 99.

Edmund, C., and Co., Ltd., Crane Bank, Chester.

THE outstanding feature of all the Edmund models—of which three are shown—is the Edmund patent spring suspension of saddle and footboards.

The principle of its construction is that the top frame tube pivots at the steering head, and, carrying the tank and saddle, is supported at its rear end by two laminated springs, which are fixed in such a way as to be adjustable to suit different riders' weights, to the rear carrier stays. Short coil springs, acting as shock absorbers, are placed at the lower end of these stays. The saddle is inter-connected with the footboards by means of an extended saddle pillar passing down the seat tube; thus the rider is insulated from road shocks, whilst the main frame, carrying engine and rear wheel, remains rigid, and demands no special sidecar chassis, should one be fitted. The tank, being on the sprung portion of the frame, is relieved of a great deal of strain and vibration, petrol and oil being conveyed to the engine through pipes of flexible petrol-proof rubber tubing, as is commonly employed in aero work. The spring forks are of the Druid type.

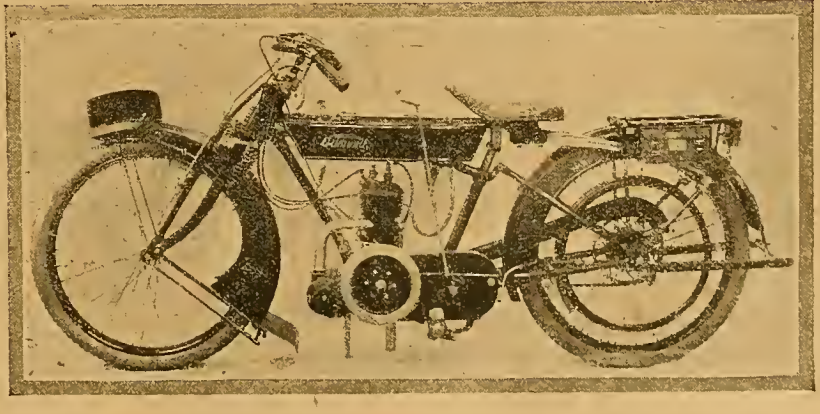
The foregoing description applies equally to all three models, the difference between the types being in engine and gearbox. Model 1 has 2¾ h.p. J.A.P. engine and Enfield two-speed gear, with all-chain cush drive; Model 2 has similar engine, but the gearbox is a two-speed Burman with clutch and kick-starter and chain-cum-belt transmission; whilst Model 3 has a 2¾ h.p. two-stroke Union engine, with the same gear and transmission as Model 1.

brass-bound linolenm-covered footboards will be fitted to all types. There is a slight alteration in the shape of the tank.

At the time of writing, the price of the 2¾ h.p. model W20 has been fixed at £90 for the coming season.

The 4 h.p. machine known as model B20 has not been altered very much from the type which proved so satisfactory in war service. Perhaps the biggest change is the incorporation of the plate clutch. As fitted, this is foot-controlled, but it can be converted to a handlebar control with a very little trouble.

The sidecar body to go with the 4 h.p. has now been vastly improved. It is nicely finished in saxe blue and upholstered in a very much darker shade of the same colour. The price of the 4 h.p. model complete with sidecar and undershield will be £145, which should appeal to those desiring a first-class outfit.



On the Edmund the saddle is supported on a well-sprung sub-frame.

The New Enfield Models—Machines for the Lady Rider.

Stand No. 72.

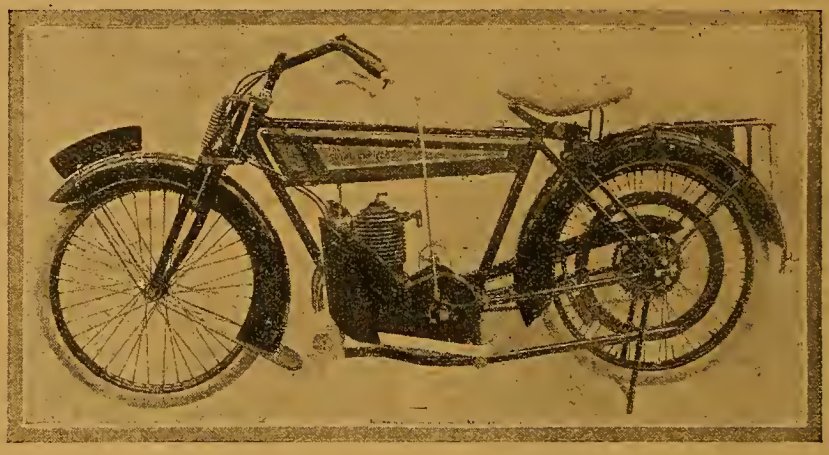
Enfield Cycle Co., Ltd., Redditch.

THE Royal Enfield machines on view at this stand differ only in minor detail improvements from previous models. The 2¼ h.p. two-stroke model is one of the smartest little lightweights on the road, and with its simple Enfield two-speed gear it is capable of going anywhere that the ordinary rider will care to take it. Unlike the larger models this machine has a sloping top tube which affords a very low saddle position. The efficient spring forks and large aluminium footboards combine to render the machine very comfortable, while the all-chain drive makes it essentially a no-trouble mount.

The "Baby" Enfield should make a special appeal to novices, for its control is as simple as it is possible to make it. The ignition is fixed, and, as the carburetter is automatic, only one lever appears on the handlebar.

Four examples of the Royal Enfield combination are shown. The power unit is the famous J.A.P. and does not call for further comment. The Enfield two-speed gear is, of course, employed with all-chain drive, the front chains being neatly encased in a cast aluminium cover. The charm of the Enfield two-speed gear lies in its simplicity of operation, each gear being engaged by means of an expanding ring clutch. This renders the machine very suitable for a novice.

The hand-starting arrangement is simple and the handle folds out of the way of the driver's leg. The large tank is provided with filler caps of large diameter and the sight feed Benton and Stone lubricator. The carburetter now fitted is the new single-lever pattern A.M.A.C.



The 2¼ h.p. Enfield two-stroke is an ideal touring lightweight.

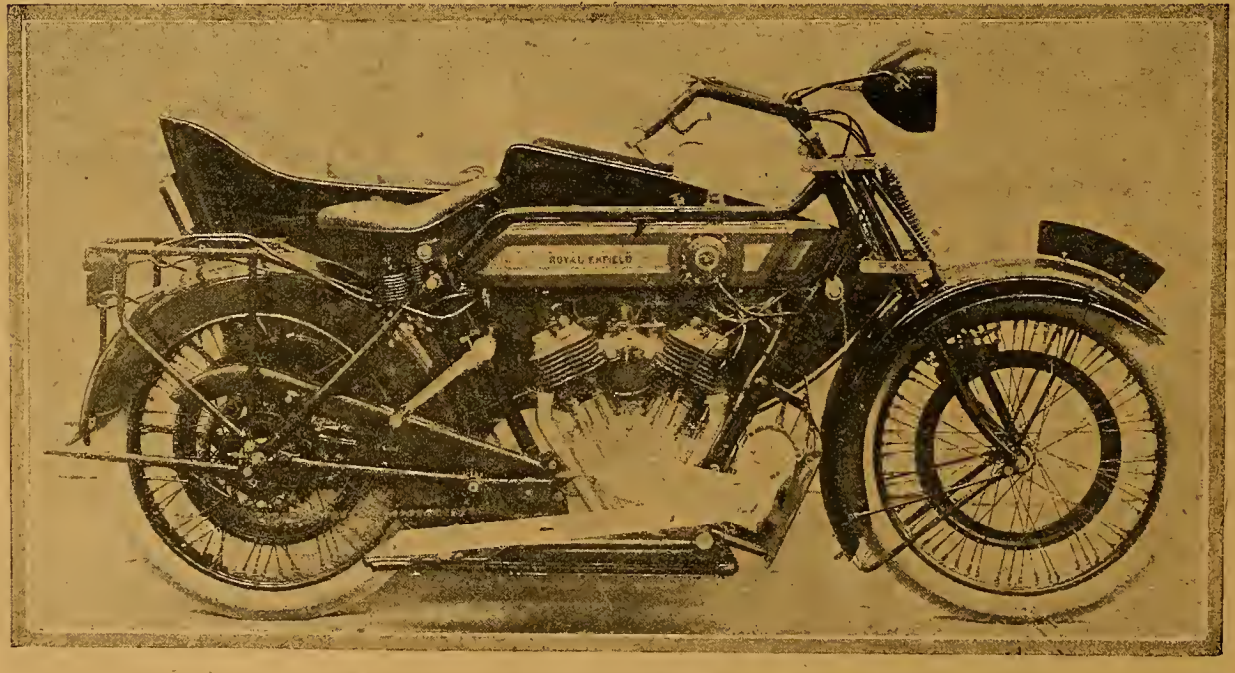
The four examples of this model shown are the standard Model 180, one with the Lucas Magdyno lighting set, known as Model 190, one with a tradesman's carrier with a large coach-built box carrier, and one with Lucas Magdyno lighting set and the Enfield hood and windscreen. The hood is of a new pattern, and when not in use folds back in the rear of the sidecar.

The windscreen is adjustable to any required angle and is locked in the chosen position by two wing nuts. To allow the sidecar door to open easily the screen is arranged to swing out of the way.

On those models which have the Lucas Magdyno fitted the switch is neatly accommodated in the offside of the tank, sufficiently far forward not to incommode the driver's leg. The handlebars are of the well-known Enfield pattern, and in conjunction with the low saddle position and long footboards give a very comfortable riding position, whatever the stature of the rider may be.

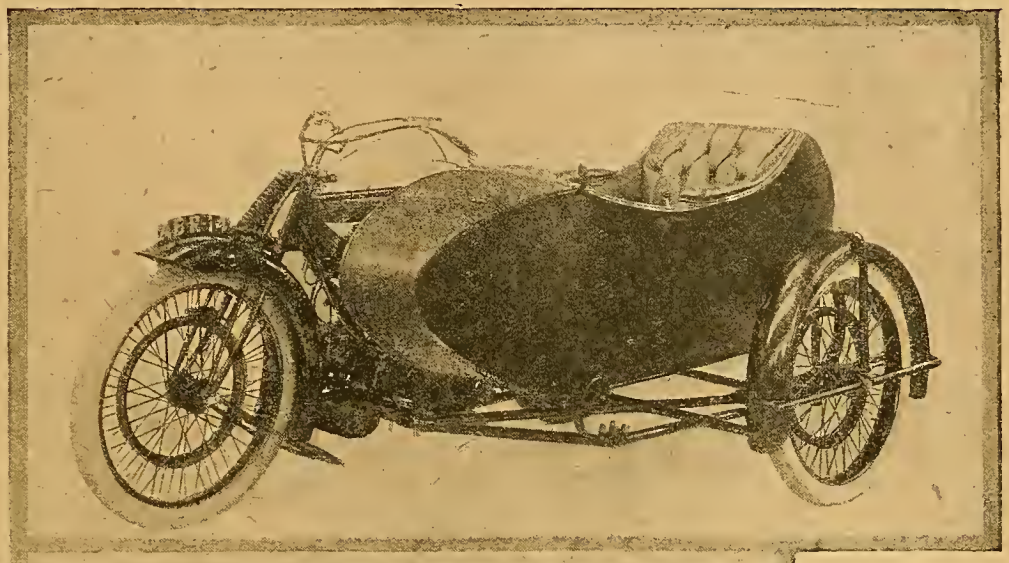
For this reason and the tractability of the big twin the Enfield has always been popular with lady riders, and this year its increased ease of control due to the single lever carburetter should result in its being more popular than ever with the fair sex. As may be seen, the wheels are now shod with 700 mm. by 80 mm. tyres, and this not only increases the riding comfort very considerably, but minimizes the chances of tyre troubles.

A notable absentee from the Enfield exhibit this year is the 3 h.p. twin.

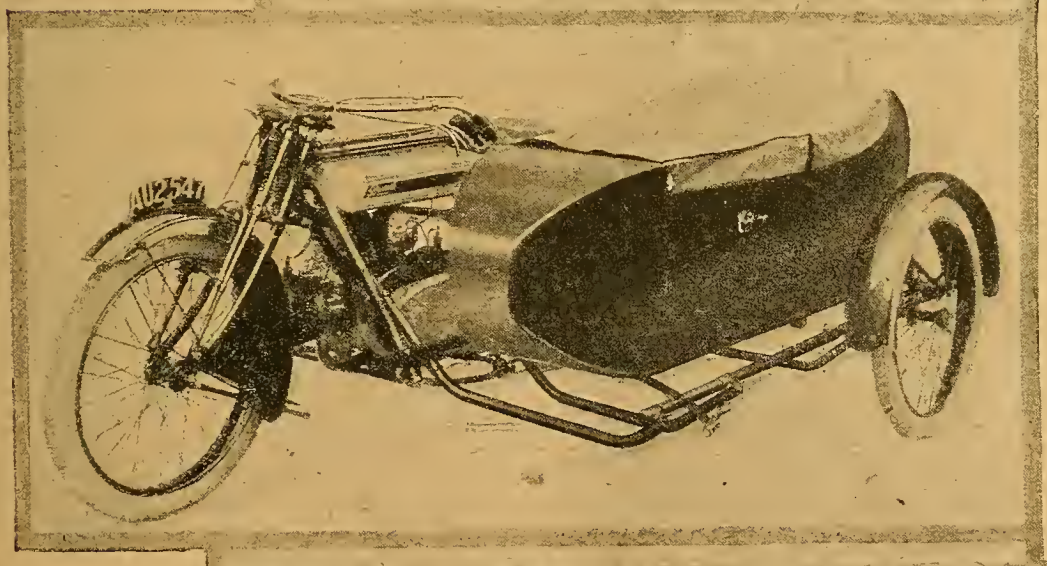


The 6 h.p. Enfield is now fitted with Lucas Magdyno and 700 by 80 mm. tyres.

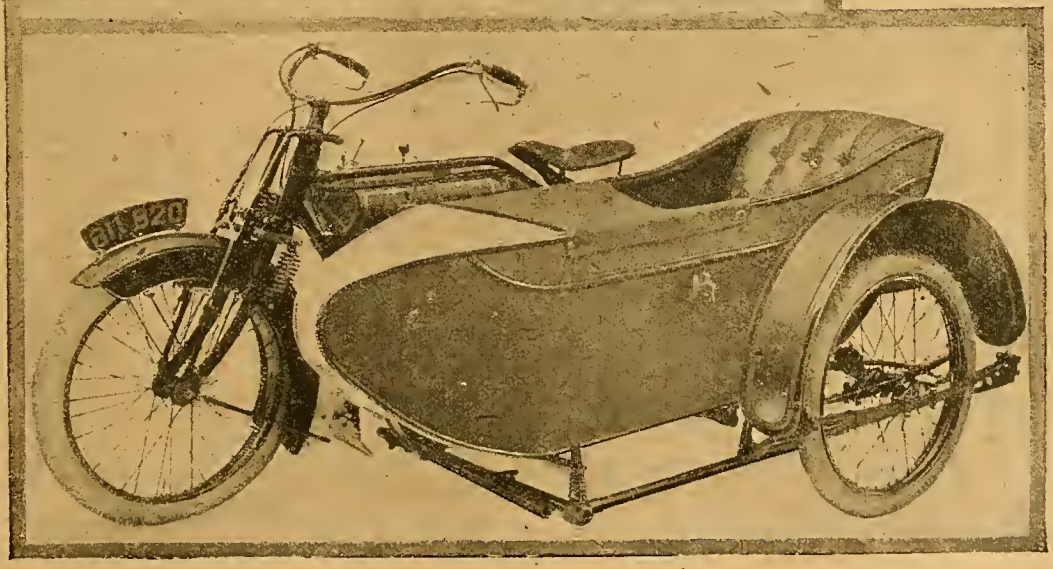
TWIN PASSENGER MACHINES



The new 6 h.p. twin B.S.A. is fitted with a mechanical lubrication system, 28 in. by 3 in. wheels, are standard, and the mudguarding is particularly well carried out.



The 5-6 h.p. Brough, one of the few horizontally-opposed-engined sidecar machines. The specification includes Brampton forks and Sturmey-Archer gear.

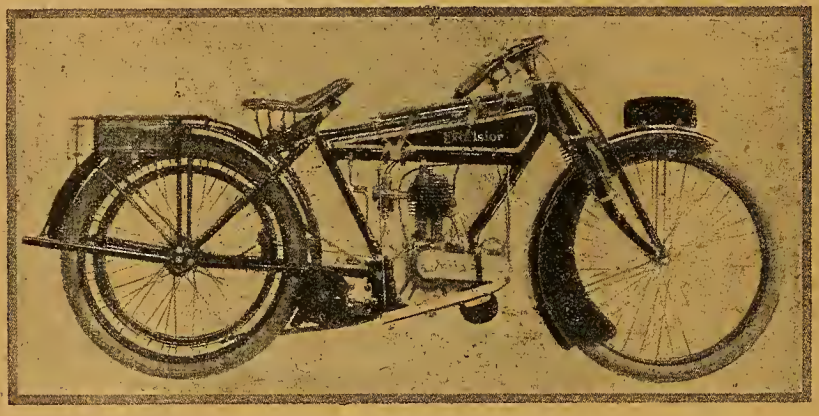


The Bradbury is designed to withstand the roughest conditions. The power unit is a 6 h.p. engine constructed at the Oldham works

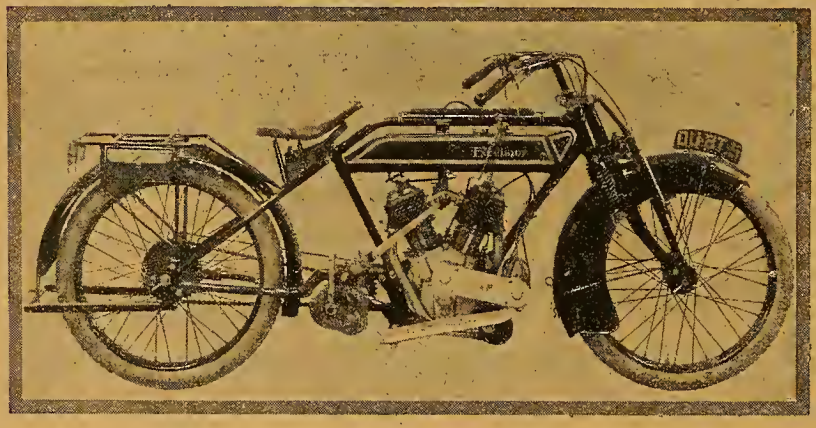
British Excelsior Lightweight and Heavyweight—American Excelsior.

Stand No. 51.
Bayliss, Thomas and Co., Ltd., King's Road, Tyseley, Birmingham.

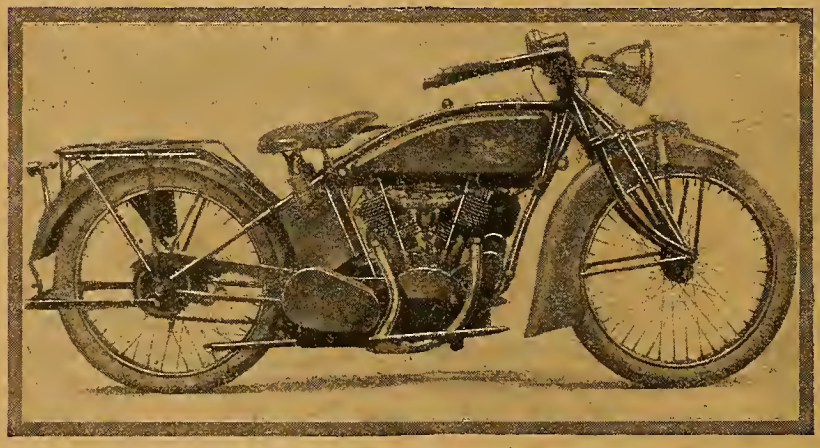
SEVEN interesting machines are found on this stand, and interest centres round the big sidecar outfit. This is the 1920 model, with 8 h.p. J.A.P. engine, three-speed Sturmey gearbox, and chain drive. The detachable wheels are a great feature, and are carried out in a sound engineering manner. The rear brake, which is of the internal-expanding type as fitted to cars, is very powerful and is Ferodo lined. The strong wheels with hubs machined from solid billets of steel are worthy of note. The large tank and many refinements are indicative of the whole nature of the machine, strength and attention to detail. The roomy sidecar is the admiration of the fair sex. The price of the outfit is £162 10s., and the solo machine is £132 10s. with either 6 h.p. or 8 h.p. The lightweights shown are the two-speed, clutch and kick-starter models, with 2½ h.p. J.A.P. engine, at £68 10s., or Villiers 2½ h.p. two-stroke at £64 17s. 6d., and similar machines with plain two-speed gears at £62 10s. and £58 16s. respectively. Chain-cum-belt drive is employed on all four lightweight models, and the standard Excelsior finish of black with blue lining on the tank is applied to all models. The lightweights bear as many refinements as the larger model. The arrangement of the brake pedal stop is very neat, for a cam on the brake pedal butts against the footboard. The wheels on the lightweights are 26 in. by 2¼ in., while the big twin has 28 in. wheels, which render it a particularly comfortable machine.



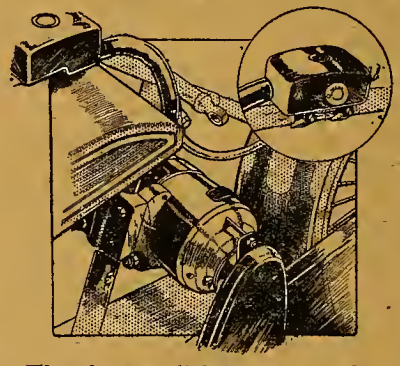
The 2¾ h.p. four-stroke British Excelsior lightweight.



A typical Britisher—the 8 h.p. J.A.P.-engined Excelsior sidecar mount.



Typical American practice—the 10 h.p. Excelsior, fitted with Midco ignition-lighting system.



The dynamo lighting set on the British Excelsior.

Stand No. 21.
Melchior, Armstrong and Dessau (London), Ltd., 14, Great Marlborough Street, Oxford Circus.

THREE Henderson and three Excelsior machines are exhibited at this stand, comprising in each case a standard model, an electric model, and a sidecar combination. The electric model Excelsior incorporates the Midco magneto generator and storage battery, while the Remy generator figures on the electrically-equipped Henderson. The latter machine, although only introduced to this country just before the war, has attained considerable popularity with British motorcyclists. Its salient features are dealt with in a paragraph on another page. To return to the Excelsior, this incorporates the "oversize" power unit so popular across the water, and as such should appeal to speedmen and sidecar enthusiasts. Overhead inlet valves, mechanical lubrication, and a Schebler carburetter are its main characteristics. While not so well known perhaps as one or two other competitive American motorcycles, it is rapidly winning an excellent reputation for itself, and the careful observer will notice the excellence of design and beauty of finish displayed.

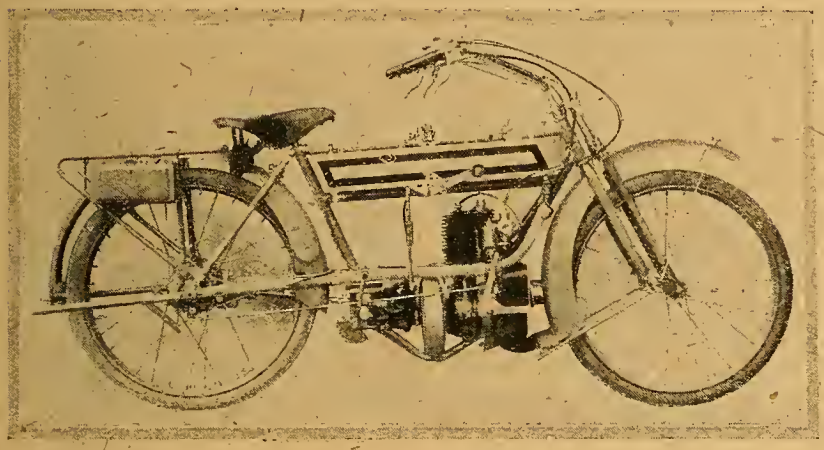
F.N.s Once Again—The Harley-Davidson Sports Model and Sidecar Combinations.

Stand No. 54.
F.N. (England), Ltd., Kimberley Road, Willesden Lane, London, N.W. 6.

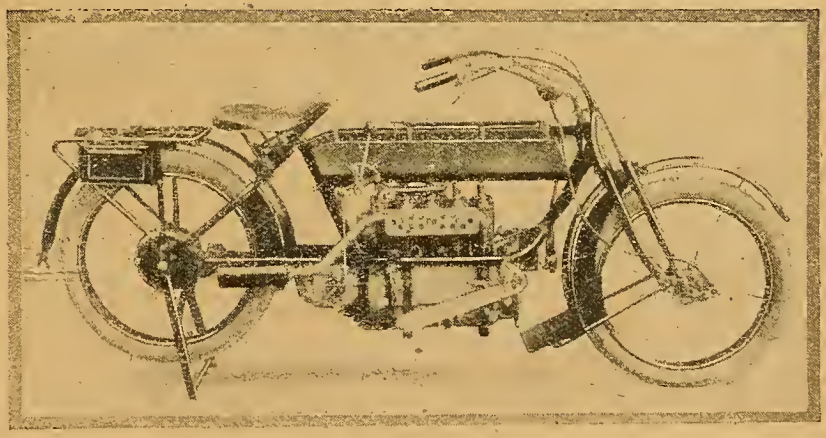
THREE 2½ h.p. lightweights, two 7 h.p. four-cylinder machines, and one 7 h.p. four-cylinder sidecar combination are to be found on the F.N. stand. Owing to the fact that the Belgian factory had been in the hands of the Germans during the war, it has been impossible to incorporate many new features on these machines, and their specification differs only slightly from the 1914 models.

As is well known, both models are built throughout on car lines. The lightweight has the engine placed crosswise in the frame, which has a duplicated lower member. A plate clutch is provided, and the drive is taken through a two-speed gearbox, and thence by bevel gears and a shaft to the rear wheel.

The 7 h.p. model follows closely on these lines, save for the fact that a three-speed gear is provided. An innovation on this model is the automatic lubrication system. This consists of a rotary centrifugal pump, driven at camshaft speed, which keeps the troughs into which the big-ends dip filled with oil, and pumps oil from the tank when required. The price of the 2½ h.p. machine will be about £85, and the 7 h.p. £135, or as sidecar combination £175.



The 2½ h.p. F.N. lightweight is a handy little mount which has pleased numerous owners.



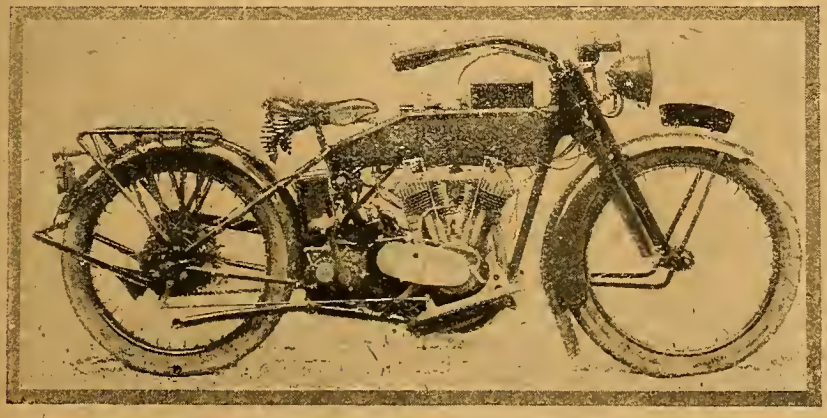
Welcome back!—The popular four-cylinder F.N. reappears.

Stand No. 117.
Harley-Davidson Motor Co., Ltd., 74, Newman Street, London, W.

HORIZONTALLY-OPPOSED twin enthusiasts will find much to interest them in the 4 h.p. Sports model Harley-Davidson, which makes its initial bow to the public at this year's exhibition. It will be remembered that the model was fully described by *Motor Cycling* earlier in the year.

It is an extremely well designed machine, and any suggestion of inaccessibility can be dispelled by a close inspection of how every vital part is so arranged as to be quickly get-at-able and removable. The inlet manifold and the gear drive of the three-speed box are deviations from standard English practice, and are especially noteworthy. The little twin still has its laurels to win in this country, but the reputation for excellence of material and workmanship gained by its big brother—of which several models are shown—will go far to help it on its way.

One model is shown coupled up to a light sidecar specially designed for it. The combination is attractive and will undoubtedly win over many users from previous devotees of the big single.



The 7-9 h.p. Harley-Davidson is one of the most popular American machines marketed in this country.

Of the 7-9 h.p. machines, both the standard (magneto) model and the de luxe (electrically equipped) model are staged. Undoubtedly the de luxe sidecar combination exhibited is one of the most handsome outfits in the hall. This company have realized what important factors comfort and elegance are in the choice of a passenger combination, and the coachwork displayed is equal to that incorporated in the finest cars. Probably the special body staged, on which the hood is of the disappearing variety, is the most luxurious which has yet been produced. The upholstered arms are so arranged as to fold back, thus disclosing a "well" on each side into which the hood collapses when not in use.

The excellent practice of staging sectional models of most of the important features of the machine is followed, and many accessories specially adapted for Harleys will also be found on the stand.

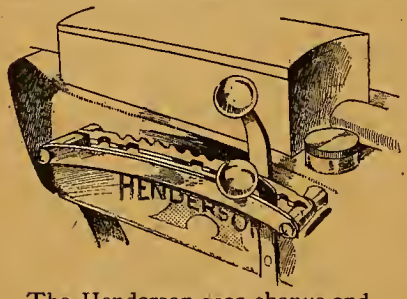
The Four-cylinder Henderson—Hobart.

Stand No. 21.

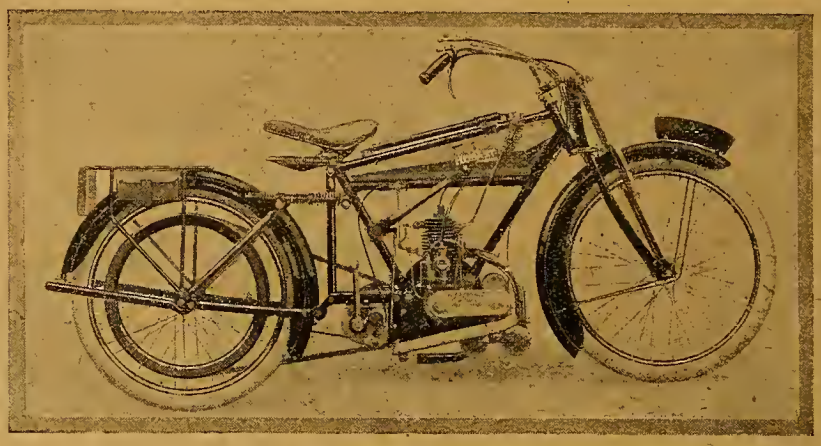
Melchior, Armstrong, and Dessau (London), Ltd., 14 and 14a, Gt. Marlborough Street, Oxford Circus, London, W. 1.

THE only serious competitor to the F.N.—the well-known four-cylinder Henderson—is shown on this stand. It is in every way a most interesting production, and apart from the sweet running qualities of its multi-cylinder engine, the fact that the latter is of larger cubic capacity than any English production should make the machine appeal strongly to sidecar enthusiasts who welcome a reserve of power.

Readers who are already acquainted with the salient features of the machine should look particularly for the new pattern front forks adopted for the coming season. These, being curved instead of straight as formerly, contribute very much to the graceful appearance of the machine, and the fact that the tank is now streamline in contour and has no sharp corners also adds to the general attractiveness. Another feature, which, to the best of our belief, is only employed by one competitive make, is the fitting of a ratchet to the brake lever, so that the machine can be left unattended with the brakes on and the clutch out. In common with most American machines, mechanical lubrication is employed, while there is a choice of models, these being obtainable fitted with either a Berling magneto or with a combined magneto and driving dynamo.



The Henderson gear change and handbrake ratchet.



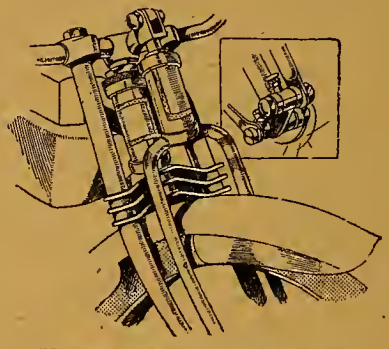
The two-stroke Hobart has a Villiers engine and spring frame.

Stand No. 106.

Hobart Cycle Co., Ltd., Coventry.

HERE we have four attractive lightweights, fitted with J.A.P. and Villiers engines, including a spring frame model. The Hobart patent spring frame, which has been under test continuously since 1915, has proved all the makers claimed for it, and may be considered seriously by those who desire a little more comfort on bad roads than is provided in the average motorcycle saddle. The stability and unity of the frame does not in any way depend upon the springs, and even in the event of the utterly impossible contingency of all the springs breaking at once, the machine would still be able to proceed.

As the company point out, two kinds of road shocks have to be provided against. Firstly, the violent, associated with potholes and ruts; and secondly, the less intense yet more frequent blows of badly-laid paving, stone setts, etc. Naturally, two sets of springs will be required to intercept both kinds of shock, and this frame meets them by a combination of stout springs having a good range of movement, but slow periodicity of action, and others very much weaker, but able to act very rapidly. All the spring mechanism is carried high out of the way of mud and dirt, while the journal bearing surfaces are of very generous proportions. Brampton spring forks are also fitted.

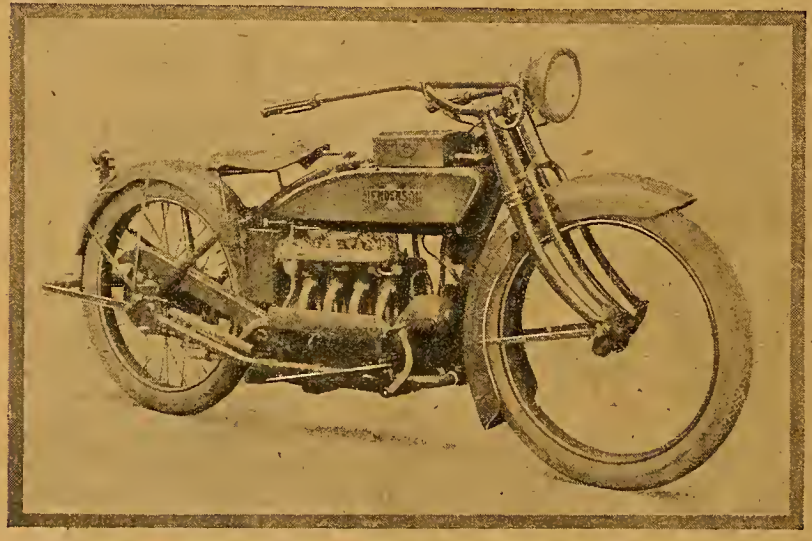


The Henderson fork spring is enclosed in a dashpot.

The rider's comfort is further studied by the provision of an X-L-All saddle and long footboards on all but the single-speed model. Those on the J.A.P.-engined machine are particularly commendable, having heel pieces and the upturned forward extremity.

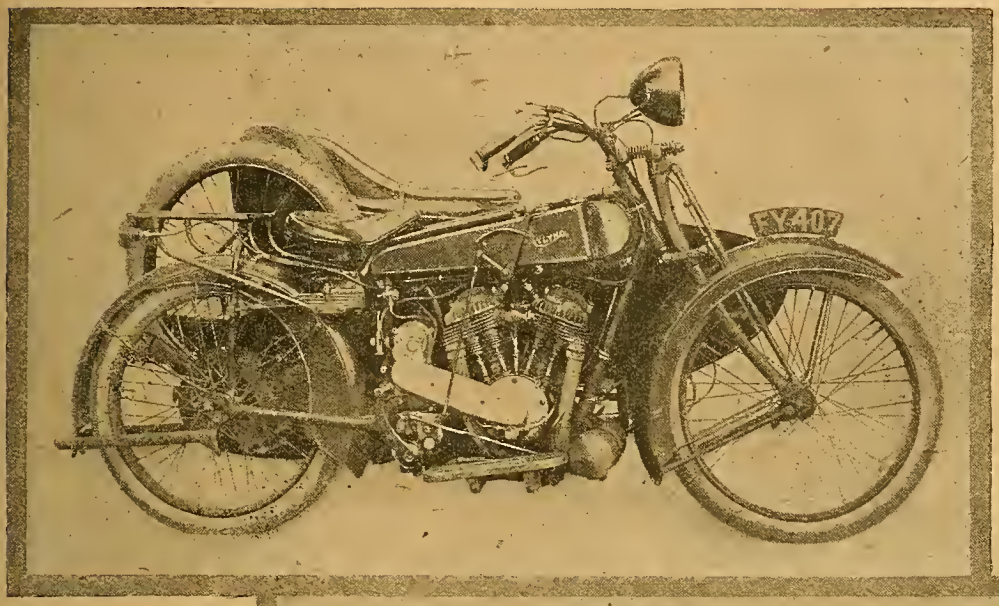
On the four-stroke and spring-frame models a Sturmey-Archer three-speed gearbox and kick starter are fitted, while the other two-speed model has a Chater-Lea gearbox, having two speeds but no clutch, and it really is doubtful whether these are necessary on such a handy little machine.

An Amac carbureter is used, and lubrication is by means of a sight feed drip oiler. The tanks are sloping and tapered, of pleasing lines, and have large glass-topped filler caps.



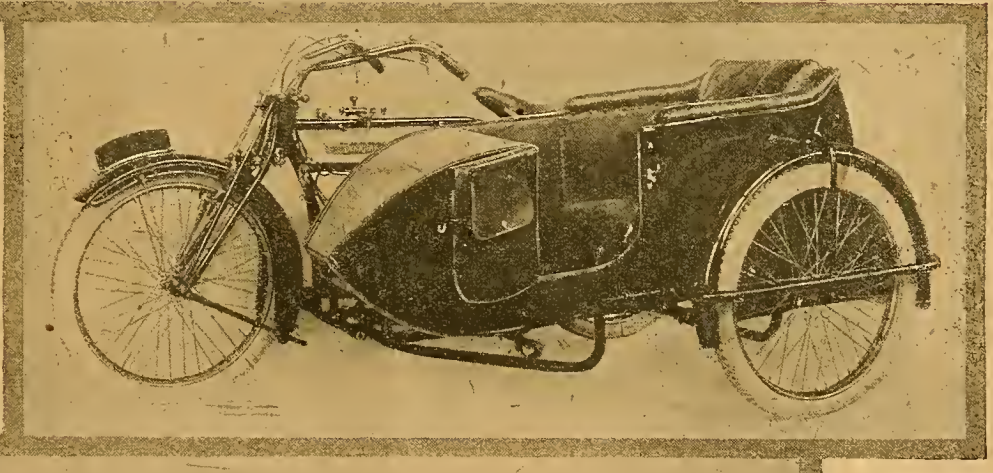
The Henderson now has a shorter wheelbase and neater lines.

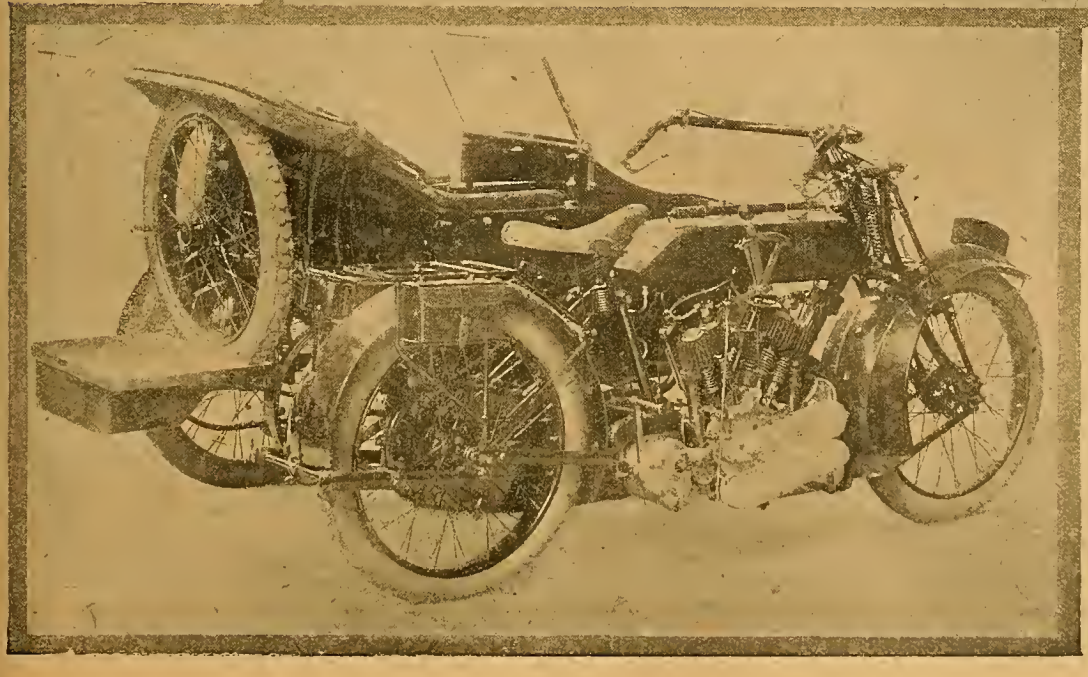
SIDECAR OUTFITS DE LUXE.



The 8 h.p. Clyno is rendered particularly comfortable by the 28in. wheels, spring frame and Brampton forks. All wheels are interchangeable.

The 4 h.p. Douglas. A successful example of the medium-powered twin opposed engine, first conceived by them.





The instantly detachable wheels, removable cylinder heads and saddle tank are distinctive features of the A.J.S.

Two Hazlewood Models—The Hobart Lightweight.

Stand No. 107.
Hazlewoods, Ltd., West Orchard, Coventry.

ON this stand are shown two sidecar outfits and a very sporting solo machine, practically the only difference in the two models being the pattern of the handlebars, the solo having wide T.T.-pattern while the sidecar outfits have the ordinary touring type.

The engine, a J.A.P. built specially to the order of Hazlewood's, has a cylinder capacity of 700 c.c., its dimensions being 70 mm. by 90 mm. The automatic model B. and B. carburetter produces the mixture, which is ignited by an M.L. magneto, chain-driven.

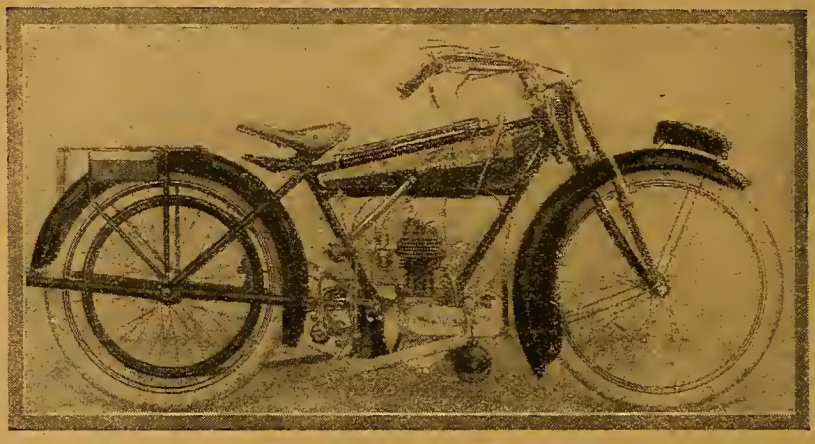
The gearbox is of Hazlewood manufacture, an exceedingly workmanlike job of sound design, and heavy but not clumsy construction, designed for a hard life under strenuous loads. It has three speeds, high and low gear pinions being constantly in mesh, and engaged by dogs attached to the sliding pinion. A kick-starter and clutch is, of course, embodied, the latter having cork insets and a very gentle action.

The transmission is chain-cum-belt, the large belt pulley on the gearbox being drilled and protected by the chain guards against bad weather, and should be subject to very little slip in the heaviest of rains. The silencer is very efficient, and has an extension to the rear. Its connections from the engine are flexible piping, helping towards accessibility in this region of the engine.

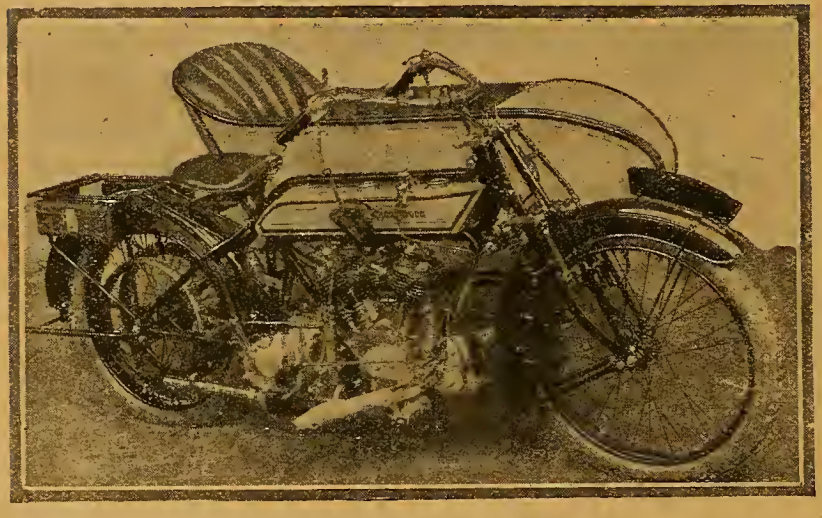
The design of the back brake should be noted. This is the compensating slipper type, Ferodo-lined, operating on a steel drum attached to the back wheel. Its operating rod is free from bends of any kind, and pierces the mudguard in order to provide a straight pull.

Hazlewood's consider their frames to be absolutely unbreakable, not a single instance of fracture having come to their notice. The tubes are all reinforced by spiral liners, and lugs for the sidecar are built up with the frame, while an additional strengthening piece is bolted up with the forward connection, providing an increased margin of safety at this vital point.

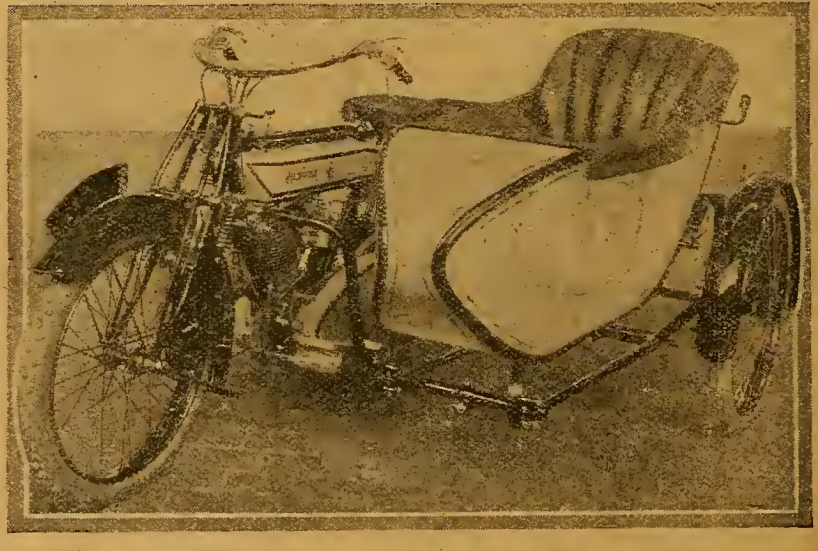
The tank capacity is 1¾ gallons of petrol and ½ gallon of oil, which enters the engine through a sight drip feed lubricator at its right-hand side. It is enamelled Hazlewood grey, with black and gold lines, and presents a very artistic appearance. The 650 by 65 mm. heavy Dunlop tyres are fitted to wheels built up with heavy-gauge spokes on stout hubs, having bearings specially designed with a view to the exclusion of water and road dust. The mudguarding is good, the forward guard having a deep valance, and the rear an extension on each side, one for intercepting the belt drum splashes and the other for mud carried round by the belt and flung upward. The long aluminium footboards provide several changes of position, and have heel pieces to prevent the feet slipping off on very bad roads. The sidecars shown on the stand are a Millford and a Canoelet.



The Hobart is a smart little mount, fitted with a 2¾ h.p. J.A.P. engine.



The 5-6 h.p. Hazlewood combination. The engine is a J.A.P. of special dimensions and 700 c.c. capacity.

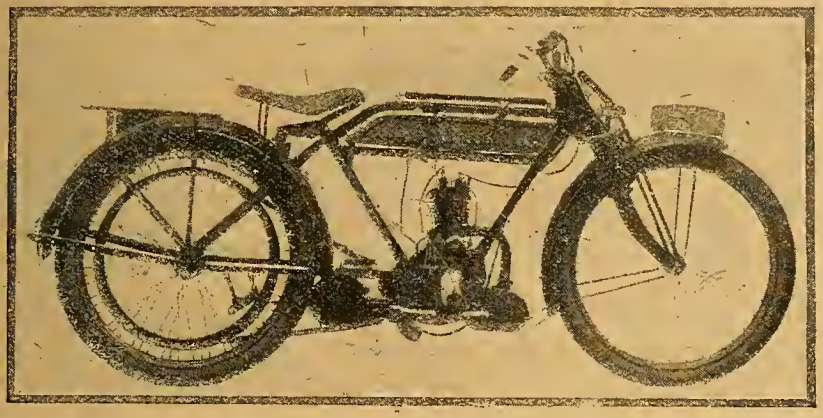


Another view of the twin Hazlewood combination.

Humber's Programme—A New Lightweight Two-stroke.

Stand No. 26.
Hoskison Mnfg. Co., Ltd., 20, Digbeth, Birmingham.

ON this stand is shown the new Hoskison lightweight motorcycle, fitted with the Union two-stroke engine, of a



The Hoskison two-stroke, a newcomer equipped with a Union engine and Burman gear.

cubic capacity of 293 c.c. The price of this model is in the neighbourhood of 65 guineas, and the manufacturers have spared nothing to make the machine as nearly perfect as it is possible for a lightweight to be. A Burman two-speed gearbox, with kick-starter and handlebar-controlled clutch is employed, transmission being by chain-cum-belt; 26 in. by 2¼ in. Kempshall non-skid tyres, B. and B. carburetter, and Runbaken magneto are standard, whilst the forks are Saxons, with the additional luxury of Terry's spring links. The mudguards are 7 ins. wide, with flap splashers both back and front. A chain case with a step boss covering the clutch is also fitted.

The tank holds 1¾ gallons petrol, and over a quart of oil, and is finished in French grey, lined black and gold. T.T. or upturned handlebars are optional, and the whole machine presents an extremely smart appearance.

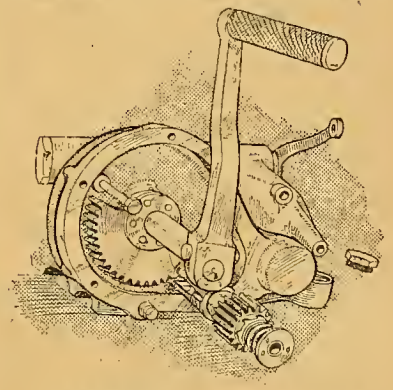
Stand No. 85.
Humber, Ltd., Coventry.

HUMBER'S are concentrating their efforts on one machine for 1920. This is an air-cooled horizontally-opposed twin equally suitable as a passenger machine or as a solo mount, rated at 4½ h.p., has undergone several modifications for 1920, the principal of which is an increase in the cylinder capacity to 600 c.c., the bore and stroke now being 75 by 68 mm. In order to increase the flow of oil to the big-ends the cranks now have dippers attached, and the tappets, which are, of course, adjustable, have stuffing boxes of a neat design.

Other features of the engine are split and white-metalled big-ends to the con-rods, and a special fitting of the valve pockets. These are held in position in pairs by a yoke and centre pin, which practice renders the removal of valve and seating for inspection a simple matter and finally overcomes that tiresome iniquity of air-cooled engines, the immovable valve cap.

A Claudel-Hobson carburetter is now fitted in place of the Longuemare of last season, and from all accounts suits the engine very well indeed, while the E.I.C. magneto is retained.

An important change has taken place in the gearbox. Last season's model had a high and low pinion constantly in mesh, and it was found that the turning effort of the larger of the low gear pinions revolving the smaller one idly on top gear was appreciable. Thus, the model exhibited has only one set of dogs for high gear, both the other ratios being engaged by the movement of a double pinion, hence, on top speed, only two pinions are idly in mesh. A kick-starter

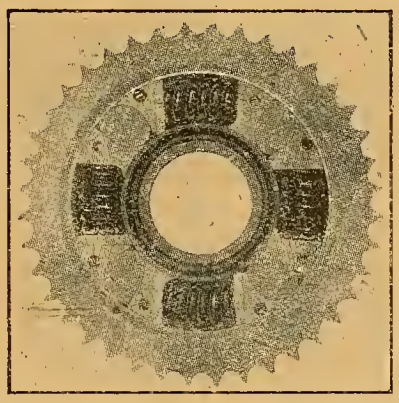


A kick-starter now replaces the handle on the 1920 Humber.

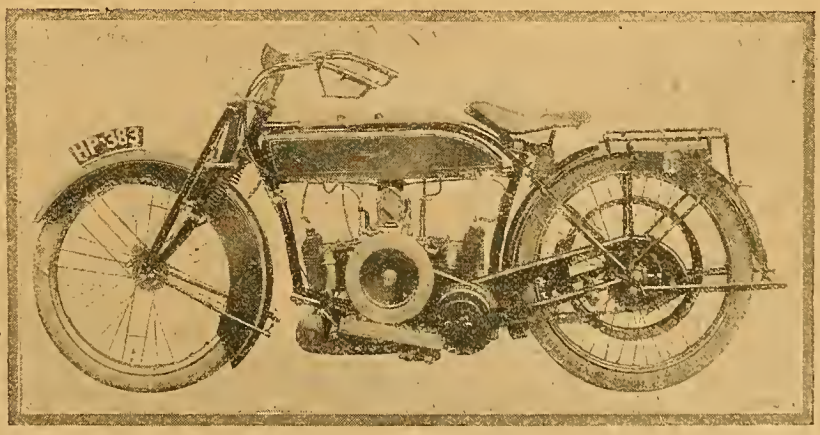
is now fitted in place of the handle, while the clutch plates formerly fixed are now floating, and the clutch is controlled from the handlebar instead of by the foot.

The capacity of the tank has been increased to 2¼ gallons, which makes possible the taking of a two-gallon can even though a little spirit remain from the previous filling.

The back brake shoe is now compensating, and grips the dummy belt drum inside, where it operates evenly for the entire length of the shoe during the whole of its life, wear taking place evenly. Other noteworthy points on the machine are the quickly detachable back wheel, the efficient chain covers, and the hinged back mudguard.

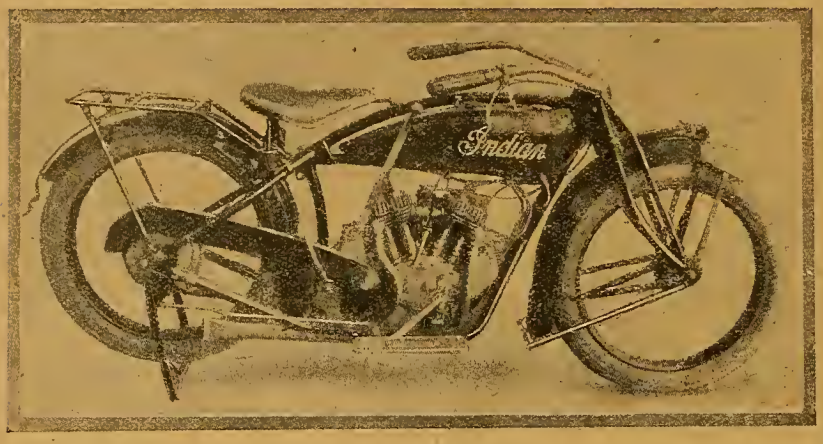


The shock absorber fitted to the Humber is composed of rubber buffers as well as springs.



The new 4½ h.p. Humber. Alterations to the gearbox have been made.

Indians Introduce a New Model—Ivy Individualities.



The new "Scout" model Indian—a welcome addition to the ranks of the small twins.

Stand No. 93.
Hendée Manufacturing Co., 366-368, Euston Road, London, N.W. 1.

THE bright and attractive colouring of Indian motorcycles comes as a welcome break in the somewhat monotonous black enamel of the bulk of the other exhibits. While only two models will be marketed next year—the well-known 7 h.p. Powerplus and the latest departure, the 4 h.p. small twin—many variations of the machines are staged. Overcrowding on the stand is overcome by suspending two of the machines in an attractive manner under the ornamental pillars of the facia.

Taking first the small 4 h.p. twin, known as the Scout model, this will be found staged firstly as a standard model, then with T.T. handlebars, and lastly in conjunction with a special light sidecar. It is a most attractive little mount, and we think that in its T.T. form it will prove an irresistible attraction to sporting riders of solo mounts. Its main features have been dealt with recently in these pages, so that there is no necessity to dwell on them at length, but we would advise those interested to pay special attention to the neatness and efficiency with which the drive is transmitted to the gearbox through gear wheels and also to note the extreme strength of the frame, which includes duplex down tubes.

The ultra-observant may notice that, as staged this model has only one brake fitted—an internal-expanding on the rear hub. The models supplied to the public will also be equipped with an external expanding band brake, Bowden operated from the handlebar.

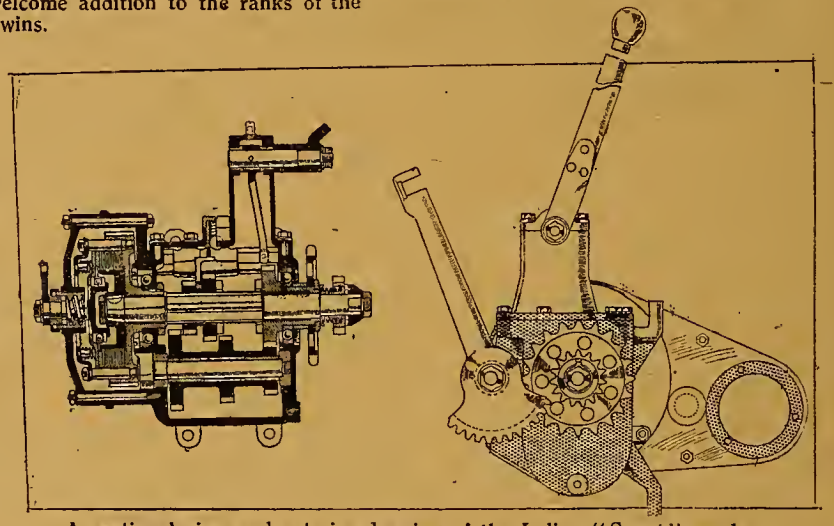
A similar range of 7 h.p. Powerplus machines are staged, and of these perhaps the sidecar combination will attract the most attention. The super elegance of the coming season's new design of sidecar body, incorporating, as it does, a bulbous back, will undoubtedly prove a centre of attraction.

Many sectional models of various parts of the Powerplus machine will be found on the stand, including one of the engine, the 7 h.p. gearbox, and another showing the composition of the clutch.

E20

"Isle of Man Sporting models." The frame is of special registered design, with dropped top rail, Duplex girder tubes being adopted instead of the usual round down tube. The engine is a two-stroke, rated at 2½ h.p., with bore and stroke of 60 mm. by 70 mm., giving a cubic capacity of 224 c.c. Albion and Sturmey-Archer two-speed gears are fitted on two models.

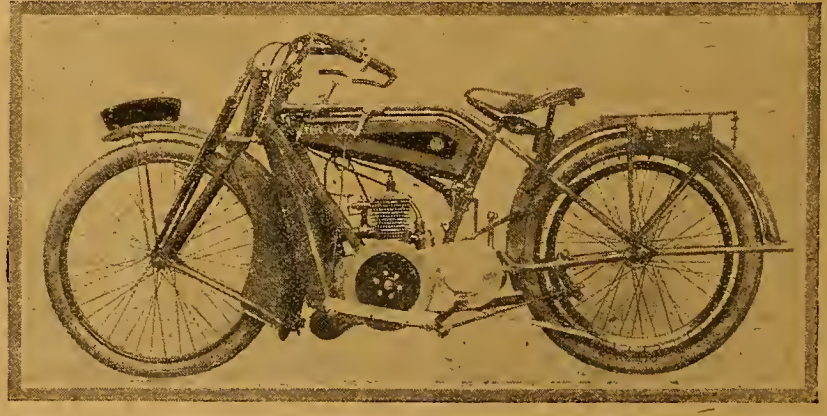
The tank is held on by three clips from the underneath rail instead of on the top, as hitherto, and has a capacity of 1¾ gallons of petrol and ½ gallon of oil on all models. The mudguards are wider, and are fitted with side valances for back and front guards. The tyres are 26 in. by 2¼ Dunlops, and the two sporting models are supplied with disc wheels. The "All-purpose" models have footboards and knee shields. The stand is a combination of the clip-up and spring-up types, a powerful spring lifting the stand the moment the machine is pushed forward, and bringing the rail into an ordinary clip at the tail of the back mudguard. It is thus held firmly and without rattle. The machines present a very smart appearance.



A sectional view and exterior drawing of the Indian "Scout" gearbox

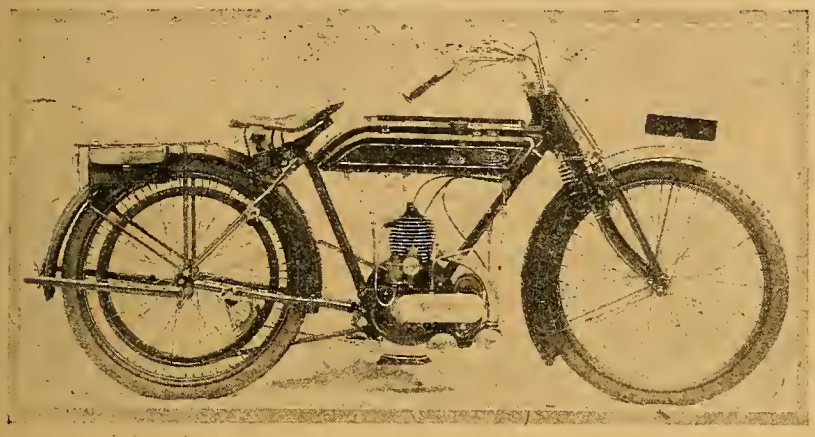
Stand No. 91.
S. A. Newman, Ltd., Lichfield Road, Aston Cross, Birmingham.

IVY motorcycles are shown this year in four models—single-speed and two-speed de luxe "All-Purpose models" and single-speed and two-speed de luxe



One of the many attractive features of the Ivy is the inclusion of leg guards.

Ixions—James continue their 3½ Twin, Big Single, 6 h.p. Twin, and Two-stroke Models.



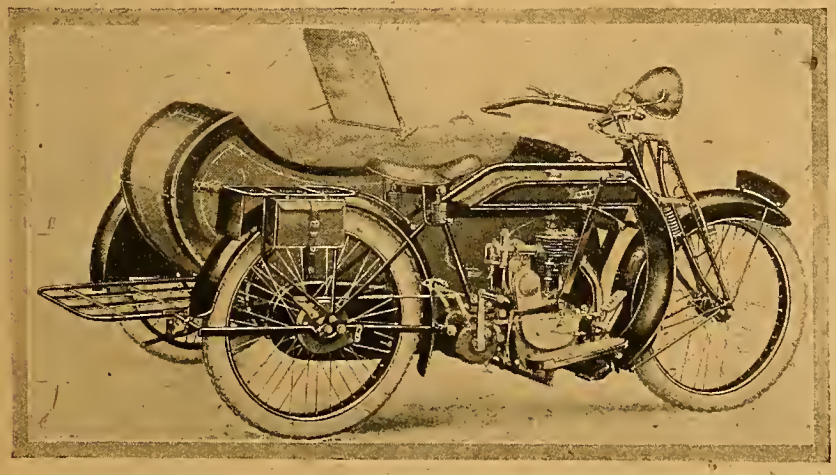
The single geared Ixion which has a Villiers engine.

Stand No. 22.

Ixion Motor Mnfg. Co., 35, Gt. Tindal Street, Ladywood, Birmingham.

THE well-known Ixion motorcycles are shown this year in four models. Model A, single gear; Model B, two-speed, with no clutch; Model B OIK2, two-speed, with kick-starter and clutch; Model D, two-speed, kick-starter and clutch, lady's model. As in the past, a 2½ h.p. Villiers engine is fitted to all types. The tyres are 26 in. by 2 in. Dunlops, the forks Druid girder type, and the saddle a Leatheries de luxe or X-L-All at option. Aluminium footboards are standard on Models BMK2 and D, and can be fitted for a small extra price on the other types.

A lady's model is particularly neat. The shields and dressguards are substantial and efficient, and the machine can be ridden without any alteration to the clothing. Above all it is particularly cleanly, light and easy to start. It should have a large market amongst ladies, for no matter what may be said to the contrary, there is no doubt that the majority of the fair sex dislike special motor-cycling clothes.



The James big single sidecar outfit has many attractive features. A 6 h.p. twin is also made.

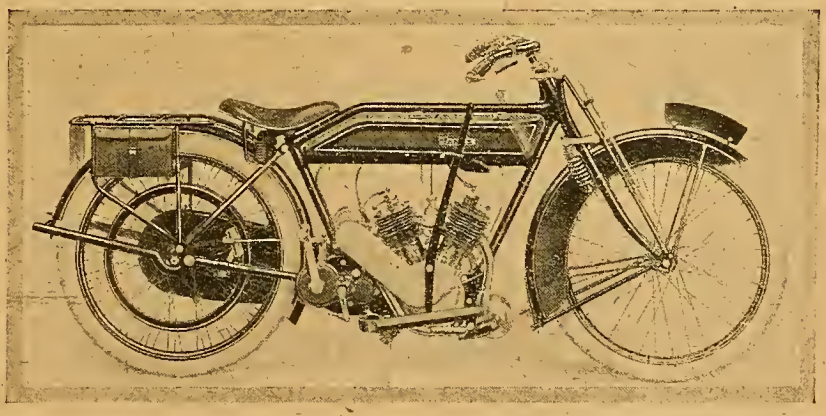
Stand No. 71.

James Cycle Co., Ltd., Greet, Birmingham.

A REPRESENTATIVE display of the four James models is on view, from the little two-stroke lightweight to the 6 h.p. combination. The two-stroke is of the three-port type, and has chain drive by two chains to a countershaft, the gears being obtained by a selective dog clutch. The wheels are now for 26 in. tyres, and with larger tank, and wide flat handlebars the small machine is much improved.

The 3½ h.p. twin is a particularly attractive solo mount. Its engine is distinctive by reason of its staggered radiating fins. All-chain drive is adopted, with handlebar-control clutch and three-speed gearbox. The sidecar models are the big single 4½ h.p. and the 6 h.p. twin. The big single has performed so well in reliability trials that it is too well known to need description. All-chain drive, totally enclosed, is a feature, and the James three-speed gearbox, embodying foot-controlled clutch, kick-starter, and three-speed gear, is particularly strong and neat. A comfortable riding position with wide handlebars and large footboards make a long tour an easy task, particularly as 28 in. wheels are now standardized on this model.

The James Canoelet sidecar is comfortable and strong, and finished in a rich brown to match the tank, the whole combination makes an irresistible appeal to the eye. The 6 h.p. twin is a powerful mount on similar lines, 28 in. wheels being fitted, and the gain in comfort by reason of the larger wheels is very great. The sidecar lugs are brazed on to the frame of the machine, and five-point attachment is provided. The Lucas Magdyno may be had on this model, and is fitted in place of the ordinary magneto, high up behind the rear cylinder.

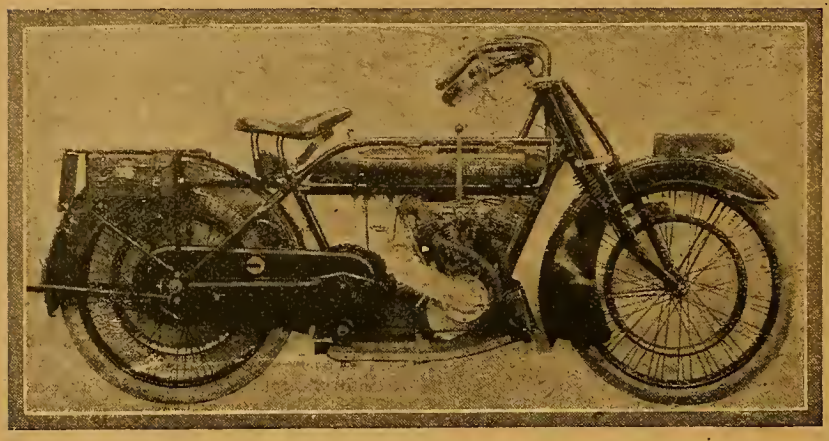


The James is one of the few remaining 3½ h.p. twin solo machines.

The rear brake on this model, as well as on the 4½ h.p. machine, is of the internal-expanding type. The mudguards are of large domed section, and when fitted with leg shields, which may be had as an extra, the outfit forms an ideal all-weather combination.

As an outfit de luxe this James combination is hard to beat. For the change-speed control a long lever is mounted on the right-hand side of the machine, and is very conveniently arranged.

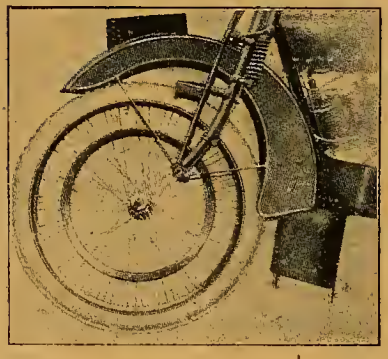
The Popular Levis Lightweight—The Lea-Francis Programme.



One of the new M.A.G.-engined Lea-Francis machines.

Stand No. 50.
Lea and Francis, Ltd., Lower Ford Street, Coventry.

FOUR Lea-Francis machines are exhibited, two with J.A.P. and two with M.A.G. engines. Owing to the uncertain conditions of present-day supplies the option has to rest with the makers, although they do their best to supply customers with engines of their choice. These machines follow very closely the models of previous seasons. The carburetter is an A.M.A.C. single-lever instrument, and a chain-driven Thomson-Bennett magneto is fitted between the gearbox and rear cylinder. This position gives ample weather protection with accessibility. The transmission is chain with a cush drive. The chains are readily accessible by removing the top half of chain cases. These latter are dust and oil tight.



Detachable wheels are standard on the new Lea-Francis machines—

The Lea-Francis two-speed gear is of the sliding-dog constant-mesh type, with ball bearings throughout. The clutch is of the multiple-disc pattern and has excellent provision for lubrication. The gear ratios are, so far as possible, adjusted to the district in which the machine is to be used; 26 in. Palmer tyres are fitted, and both wheels are instantly detachable, the front without disturbance to the brake and the rear without touching the chain cases. Both brakes operate on a dummy belt drum internally. The rear hub runs on double row self-aligning ball bearings. The tank is enamelled black with a red panel, and nicely sets off the rest of the machine; its capacity is 1½ gallon of spirit and 3 pints of oil. Lubrication is effected by a sight drip feed, combined with a hand pump, while the chains are automatically oiled from the gearbox supply.

The footboards are curved and of good length. They have a shield forward to intercept possible stray splashes that get past the front guard. Both wheels are provided with stands, the front having an underscreen incorporated in its design. The frame itself is of special design, one very creditable feature of which is the absence of cranked lugs in the chain stays. Another feature is the long steering head relieving the ball races of much strain. In designing this machine the makers were determined to build to an ideal rather than to a price.

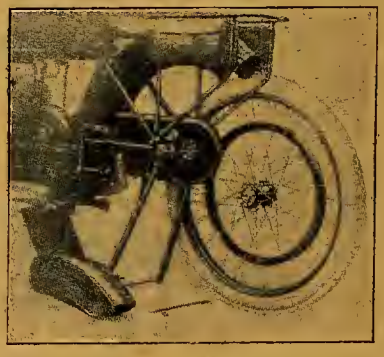
From the accompanying illustration it will be seen that the engine is placed well forward in the frame. This tends towards better weight distribution and consequent greater stability in grease. The fact that the gearbox is in a slightly raised position not only permits of a slightly longer length of driving chain being used, but gives the machine a decidedly neat and compact appearance.

Stand No. 80.
Butterfields, Ltd., Levis Motor Works, Station Road, Stechford, Birmingham.

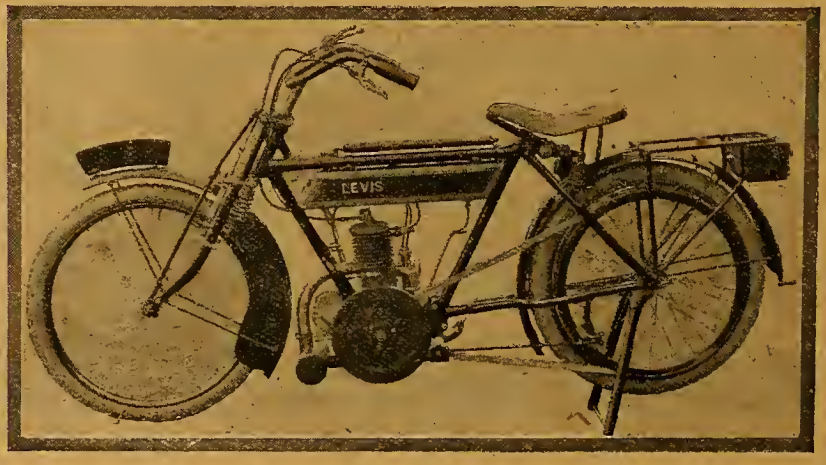
THE reputation of the Levis as a touring machine capable of covering the severest country and performing miracles of hill-climbing is well known, and three examples of the new Popular model are shown on this stand. The model differs but little from previous Levis machines, but has been improved in detail. Levis riders will at once notice the new colour scheme, for a grey tank with black panels and top is now fitted.

The 2¼ h.p. engine with bore and stroke of 62 mm. by 70 mm. is fitted, giving a cubic capacity of 211 c.c. The piston has a deflector top and two piston rings are fitted, being pegged to prevent rotation. The crankshaft is carefully balanced and ground to size. The direct belt drive is retained for this simple machine, which can truly claim to be a lightweight. The wheels are for 24-in. tyres.

A new model known as the Baby is also on view, but it will not be put into production before midsummer. The same engine is employed, but is re-designed with a roller bearing to the big-end of the connecting rod. On this model a two-speed Enfield gear is standard, with chain-cum-belt drive.

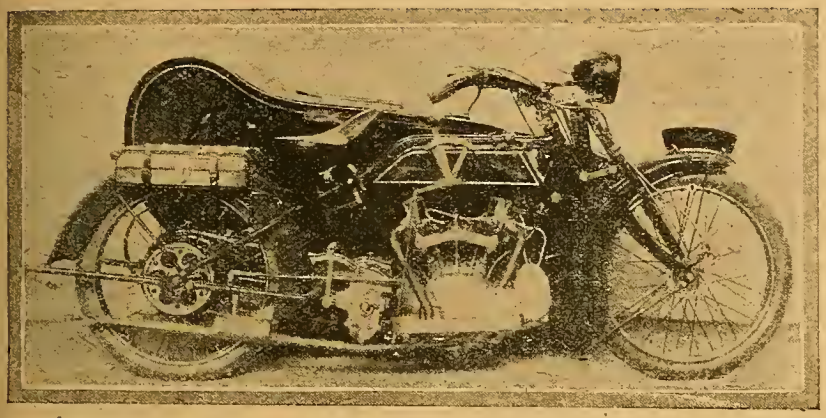


—and the rearguard is made in two pieces which can be easily removed.



The Baby Levis, which is noted for its hill-climbing powers.

The Martinsyde Makes Its Debut.



Side view of the Martinsyde combination.

Stand No. 43.
Martinsyde, Ltd., Maybury Hill, Woking.

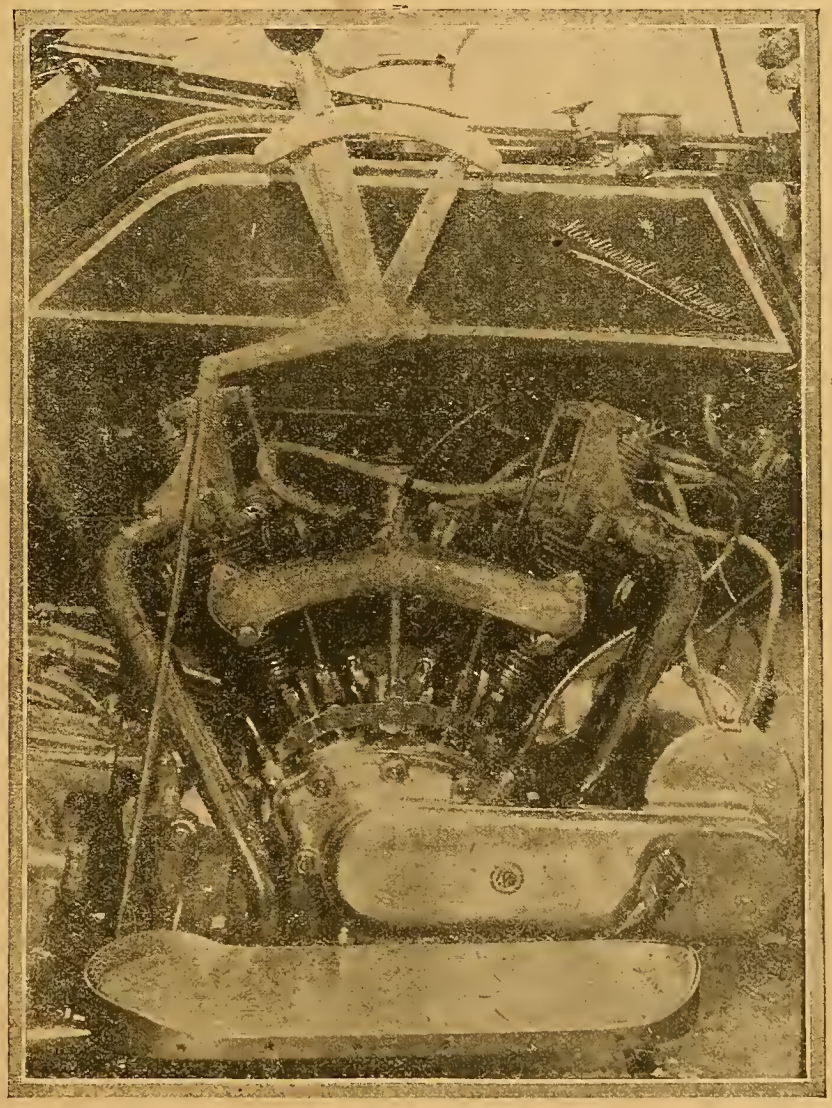
THE machine to be seen on this stand is a Martinsyde-Newman, which is an entirely newcomer to the motorcycling world, but nevertheless should make a strong appeal by reason of its being produced by a well-known aviation firm to the well-tested design of a noted motorcyclist.

To outward appearance it presents a conventional appearance, but closer examination will reveal that a feature of its 6 h.p. V twin engine is the method of placing the exhaust valves in the cylinder heads, over the inlet valves. The cylinders are set at an angle of 50 degrees, and have a bore and stroke of 70 mm. by 88 mm., giving a capacity of 680 c.c. Advantages claimed for the overhead exhaust valves are that cooling is improved and that the cylinder is completely scavenged of burnt gas on the exhaust stroke, ensuring even cylinder expansion. Roller bearings are fitted to the big-ends, and the mainshafts run on ball bearings of ample size. Foolproof automatic lubrication is employed, consisting of a sump in the timing case and a specially-designed flywheel splash action. The cast aluminium induction pipe has no angularities, so permitting of an easy passage of gas to the cylinders Snugly placed between the latter, and so continually in a warmed position, is situated the single-lever A.M.A.C. carburetter. The magneto is located in front of the engine, low down, and is very completely encased in an aluminium box. The two exhaust pipes join up just below the timing case, and the gas is conducted to an expansion box supported below the chainstay, from which a further pipe ejects it well to the rear of the machine.

Transmission is all-chain; with a three speed gearbox of the A.J.S. pattern fitted at the countershaft. The cork in set clutch is controlled from the handle bar, and a kick-starter is provided. Both chains are enclosed in oil-tight cases.

The tank is of square design, holding two gallons of petrol and half a gallon of oil. The filler caps are of large size. Brampton Biflex pattern forks are fitted, manufactured under licence, and 650 mm. by 65 mm. wheels. The foot brake is of the contracting band type, placed on the rear hub. Mudguards of good size, with side valances, ensure protection to the machine and rider. An electrical equipment is provided, consisting of Lucas head and tail lamps and accumulator, but no dynamo. Extremely good accommodation is made for carrying tools and spares by two leather bags, which run the whole length of the carrier, and have two straps in addition to the usual patent fastener. The whole machine is enamelled a pleasing shade of dark blue, and the tank is lined in gold. The engine unit is buffed and plated wherever possible, and the crankcase casting is devoid of projections to harbour dirt and mud.

It is intended that the Martinsyde sidecar shall form part of the outfit, and this comprises a handsome bulbous-back body, finished in royal blue, suspended on a well-designed chassis.

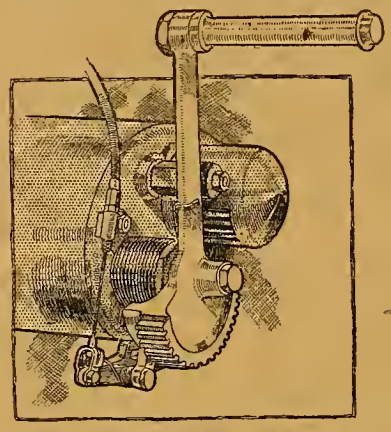


The valve side of the Martinsyde engine. Note the overhead valves and novel exhaust pipes. The engine has automatic lubrication and was designed by Mr. Newman of "Ivy" fame.

A Sumptuous Passenger Machine—Two Popular Two-strokes.

Stand No. 48.
Collier, H., and Sons, 44, Plumstead Road, Plumstead, S.E. 18.

ON this stand are shown several Matchless sidecar combinations, the latest edition of which is a striking example of the high level of excellence which the modern outfit has attained. The 8 h.p. J.A.P. engine drives through a silent chain to the three-speed gearbox,

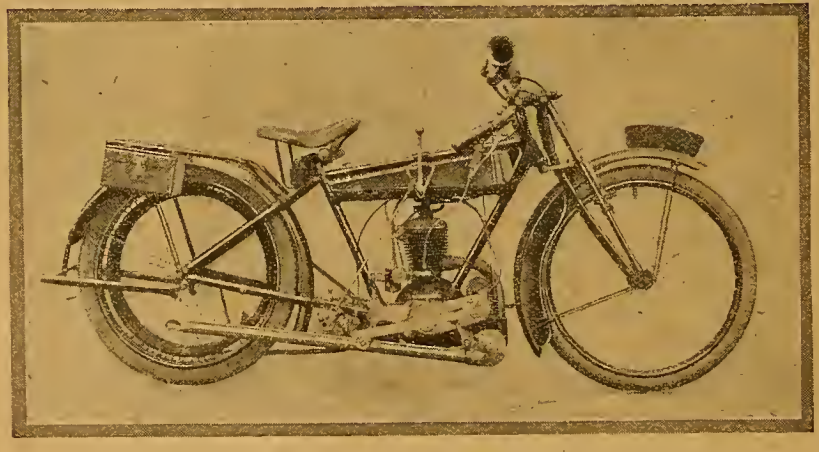


The Matchless kick-starter which auto matically raises and drops the exhaust valve by means of a cam.

which is of cylindrical shape, secured to the frame by means of two substantial metal straps. Final drive is through a Renold $\frac{5}{8}$ in. by $\frac{3}{8}$ in. roller chain. Both chains are enclosed in separate easily-detachable and oil-tight cases. Oil is supplied to the crankcase through a Best and Lloyd semi-automatic pump, lubrication to the big-end and main bearings being under pressure on the well-known J.A.P. system of utilizing crankcase compression for the purpose.

The unique feature of the machine is the rear suspension, the back and sidecar wheels being linked together by means of a tubular truss, carried on compression springs, which arrangement prevents leaning when rounding corners. This design provides extraordinary resilience, and should on no account be missed. The tyres are 28 ins. by 3 ins., mounted on detachable and interchangeable wheels. Another item of interest is the method whereby the exhaust valves are lifted by the free movement of the kick-starter crank, the valves being allowed to return to their seats at the moment when the greatest purchase is being obtained. This does away with the need for the usual valve lifter lever, and as the ignition lever is situated on the left-hand side of the tank, a remarkably clean handlebar is the result, the only levers in that position being those actuating the front brake, gas, and air.

The sidecar is a most roomy and luxurious affair, the body being mounted on laminated springs at the front and coil springs at the rear, which, in conjunction with the special springing system inculating both rear and sidecar wheels, provides extraordinary comfort. The body is built up of sheet metal panels, and has a large tool compartment under the seat, while a large locker in the back accommodates the spare can of petrol, rugs, etc.

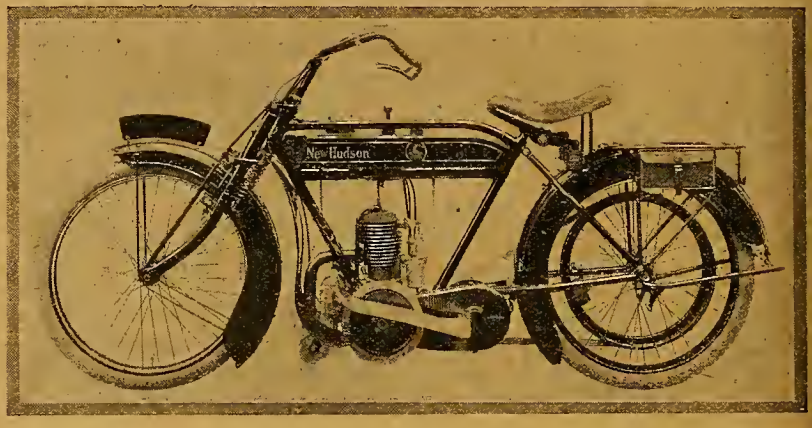


The Metro-Tyler two-stroke is a soundly designed and powerful lightweight. It hauls a light sidecar quite satisfactorily.

Stand No. 65.
Tyler Apparatus Co., Ltd., Banister Road, Kilburn Lane, North Kensington, W. 10.

THREE models of the Metro-Tyler two-stroke are to be seen at this stand, the single-speed all-belt drive model, the two-speed chain-cum-belt, and the new 1920 chain-cum-belt model. All three are equipped with a $2\frac{1}{2}$ h.p. two-stroke engine of 70 mm. by 70 mm. bore and stroke respectively.

The new model embodies a number of unique features which include a welded frame. The engine is of the three-port variety having an inspection trap over the transfer passage. The whole power unit, two-speed gearbox, and magneto comprise a complete unit and are mounted between steel housing plates. These in position form part of the main frame. The gearbox may be moved along slotted holes in the plates for chain adjustment, and the magneto, which is secured to an aluminium bracket between engine and gearbox, may be moved in a similar way. The machine is equipped with Brampton forks, X-L-All saddle, 26 in. by $2\frac{1}{4}$ in. tyres, and a particularly neat toolbox between the number plate and rear mudguard. The price will be £70.



The New Hudson two-stroke, 24 in. wheels are standard, which result in a very low riding position.

Stand No. 74.
New Hudson Cycle Co., Ltd., Icknield Street, Birmingham.

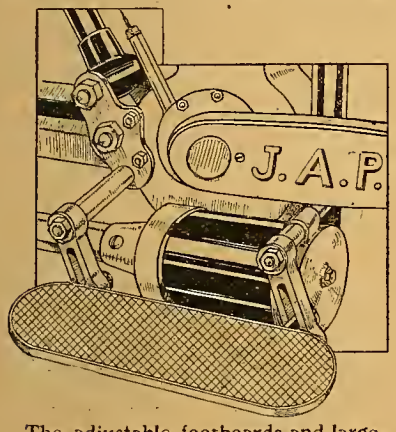
THE New Hudson policy for 1920 consists of the manufacturing of two-stroke motorcycles, both models of which are shown on this stand. The power unit has several interesting features, which were described fully in a recent issue of *Motor Cycling*. Transmission is by chain in an oil-bath case to the countershaft two-speed gearbox, and thence by belt to the back wheel. The whole machine is of very smart appearance, and an especially low riding position is obtained by the use of 24 in. wheels. Footboards and knee-shields are standard on the touring model, whilst the sporting model is fitted with footrests and T.T. bars.

New Imperial Innovations—The Norton Special Speed Models.

Stand No. 60.
New Imperial Cycles, Ltd., Princip Street, Birmingham.

ON this stand are shown three models of the New Imperial motorcycles that are to be standardized for 1920. These are as follow: — Model 1, 2¾ h.p. two-speed; Model 2, 2¾ h.p. two-speed, clutch, and kick-starter; and an 8 h.p. combination.

The two lightweight machines are fitted with J.A.P. four-stroke engines,



The adjustable footboards and large silencer now fitted to the New Imperial.

with bore and stroke of 70 mm. by 76 mm., B. and B. carburetter, E.I.C. magneto, 26 by 2¼ Dunlop tyres, and pan-seat saddle are used. The tank has been enlarged, and now has a capacity of 1½ gallons for petrol.

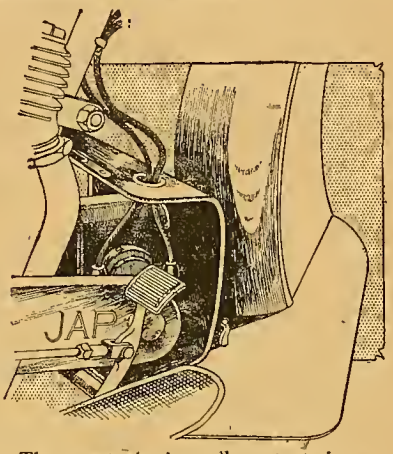
The combination has an 8 h.p. twin J.A.P. engine, three-speed countershaft gearbox, and all-chain drive; 28 in. by 3 in. Dunlop tyres are fitted, and the ground clearance of the engine is 6 ins. The chassis of the sidecar is strongly built, and the body is well upholstered.

The prices of New Imperial motorcycles are as follow:—Model 1. 58 guineas; Model 2, 65 guineas; and the 8 h.p. combination 138 guineas.

Stand No. 115.
Norton Motors, Ltd., Bracebridge Street, Birmingham.

A FULL range of Norton models are shown, with either all-chain or all-belt drive. The "Big Four" Norton is rapidly becoming a very popular sidecar machine, but is also a taking solo mount. It has a bore and stroke of 82 mm. by 120 mm., giving a capacity of 633 c.c. Heavy Druid forks and 650 mm. by 65 mm. heavy Dunlop tyres are standard. Transmission is effected by chains and a three-speed Sturmey-Archer gearbox is fitted, containing kick starter and hand-controlled clutch. A large tank is employed, with a capacity of two gallons for petrol and three pints for oil. Lubrication is by semi-automatic drip feed. The makers claim that it is capable of 50 m.p.h. with a loaded sidecar, and undoubtedly it makes a very handsome and sporting combination.

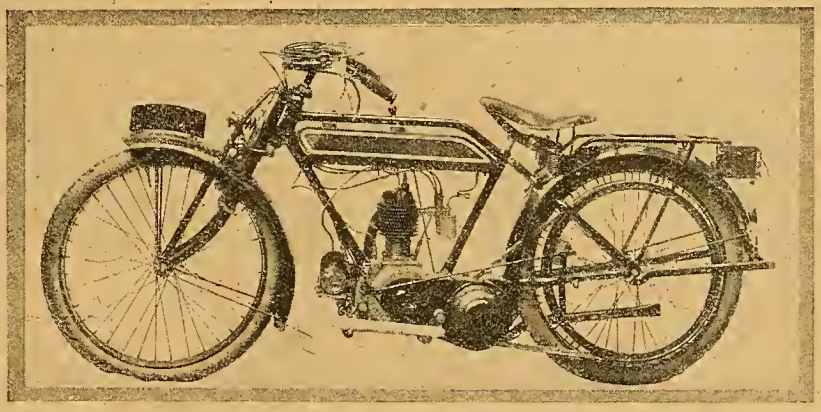
A 3½ h.p. Sports Norton is also shown, the bore and stroke being 79 mm. by 100 mm. = 490 c.c. It has all-chain drive, with three-speed Sturmey gearbox. The gears fitted are 4½, 7¾, and 13¼ to 1, and the machine is claimed to be the fastest



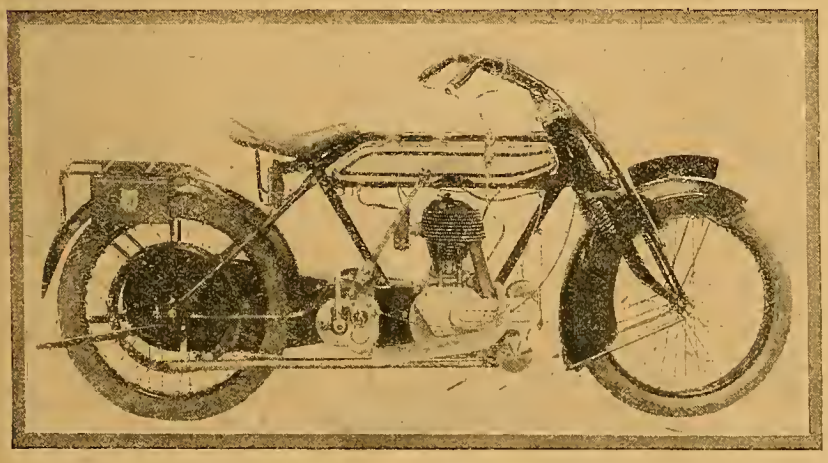
The magneto is well protected on the 8 h.p. machine.

touring model made. The tank, tyres, etc., are the same as on the utility model.

Three machines which always shine at hill-climbs and speed events are the Speed Norton, the Brooklands Road Special, and the Brooklands Special, exam



The 2¾ h.p. J.A.P.-engined New Imperial lightweight which is fitted with Saxon forks.



The 4 h.p. long-stroke Norton is an ideal all-purpose machine.

ples of which are the centre of a knot of speed enthusiasts. The 3½ h.p. machine is fitted with direct belt drive from an adjustable pulley, and spring forks, 26 in. by 2¼ in. Dunlop tyres, footrests, B. and B. carburetter, dropped handlebars, long exhaust pipe with detachable silencer are standard. Lubrication is by hand pump. A low centre of gravity and special attention to weight distribution have evolved a machine which is very steady at high speeds. An epicyclic two-speed gear may be had on the Speed Norton if desired. Adjustable tappets are now fitted.

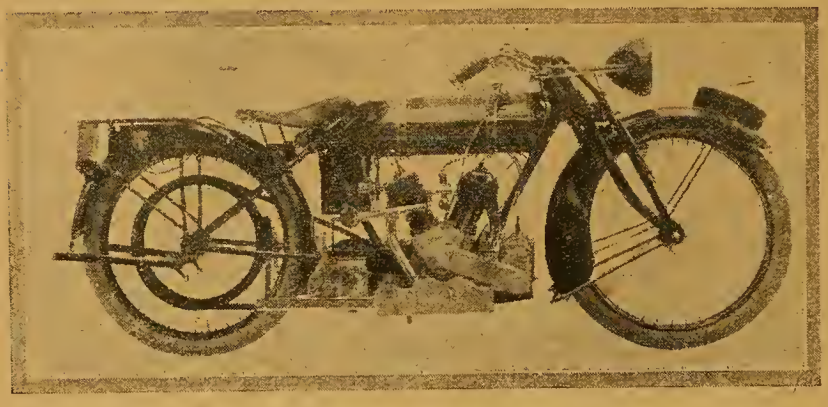
Sidecars are catered for in the Utility combination with Norton de luxe sidecar. The rear C springs are three-leaf and shackleless, with quarter-elliptic toe springs. The deep-green upholstery is spring padded and the finish is green with black band. A model with a more commodious body extension forming a child's dickey seat and also a sports combination are shown.

The New N.U.T.—The Cheapest Motorcycle (O.K.)—Omega Models.

Stand No. 116.
Newcastle-upon-Tyne Motor Co., Ltd., St. Thomas Street, Newcastle-upon-Tyne.

THE N.U.T. machine has been entirely redesigned, and is now presented in one model only—a medium-weight twin. The engine is a 3½ h.p. 50-degree V twin N.U.T., with cylinders of 64.5 mm. bore and 76 mm. stroke. The mainshaft runs on ball bearings on the driving side, and on a phosphor-bronze bush on the timing side. Side-by-side valves with adjustable tappets are fitted, and lubrication is by special automatic pressure feed in the crankcase. Ignition is by Lucas Magdyno, which also provides current for the electric lights.

The gearbox is a Sturmey-Archer three-speed, with kick-starter and hand-controlled clutch, and chain-cum-belt transmission is employed. The gear ratios are 4, 6½, and 10¾ to 1.



The N.U.T. has been a long time on the way, but now it has arrived it fulfils expectations.

The frame is of very low build, and the tank oval in shape, is help in position by two nickel-plated straps. The top of the tank is recessed, so that the top tube does not project above the tank. A Druid spring fork is fitted; the foot brake is a Ferodo-lined pad which works in the V of the belt rim. Even pressure over the whole surface of the shoe is ensured by a compensating device.

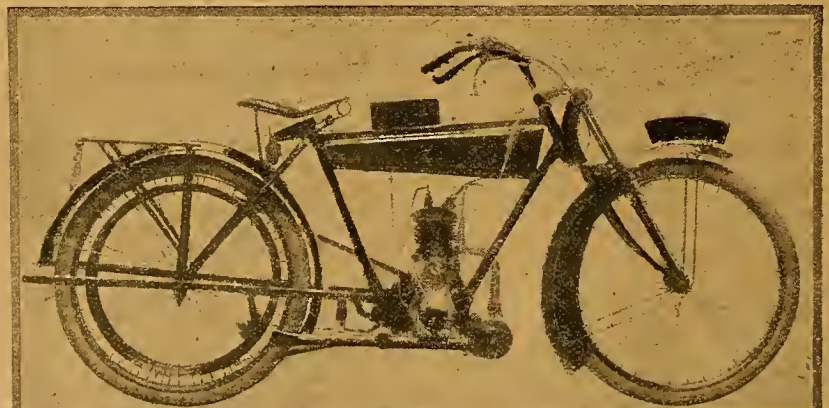
Every machine is equipped with the Lucas lighting outfit. The accumulator is fixed in a metal box on the seat tube, and is kept charged by the Magdyno.

A 5 in. headlamp is fitted, the clips for which are brazed to the handlebar, and the switch is placed at the rear end of the tank.

Mudguarding is very efficient, and the carrier strong and well-designed. Palmer cord 26 in. by 2½ in. tyres are fitted as standard, and a Brooks' saddle and pannier bags complete the equipment.

Stand No. 86.
Humphries and Dawes, Ltd., Hall Green Works, Birmingham.

MESSRS. HUMPHRIES & DAWES are this year concentrating on two models of lightweight motorcycles, both of which are exhibited at Olympia. One is a 2¾ h.p. single-geared two-stroke model, and the other a 2¾ h.p. horizontally-opposed four-stroke twin. The machines are known as the O.K.-Union, Mark VIII, and the O.K. Junior, respectively.



The cheapest motorcycle at Olympia—the O.K.-Union, selling at 38 gns.

The O.K.-Union is a remarkably cheap motorcycle, selling at the low price of 38 guineas. It is fitted with a Union engine, with a cubic capacity of 293 c.c.; 26 in. by 2 in. Hutchinson tyres, and Dunlop belt, are supplied, whilst the spring fork is the patent O.K., with the flat laminated circular spring. The low price is attained by the mass production system which is employed.

The O.K. Junior has a horizontally-opposed engine, with a cubic capacity of 347 c.c. The fork is of similar design to the two-stroke type, and the wheels are 26 ins. by 2¼ ins., and are easily detachable. The brakes are internal-expanding, as used in car practice. Foot boards with engine shield in one are fitted, and the mudguards are domed, well-valanced, and of ample size. A two-speed gear with gate change, clutch, and kick-starter is provided.

Stand No. 46.
Green, W. J., Ltd., Hill Street, Coventry.

THE Omega machines for next season have many small improvements. The principal one is the placing of the engine forward a little further for the purpose of stability on grease. Mudguards are now very much wider, that on the front wheel being 5 ins. from edge to edge. The chain is now adjusted by sliding the gearbox along a special bottom bracket instead of the front tubes. Footrests are of aluminium in place of rubber. The head lug has been strengthened considerably.

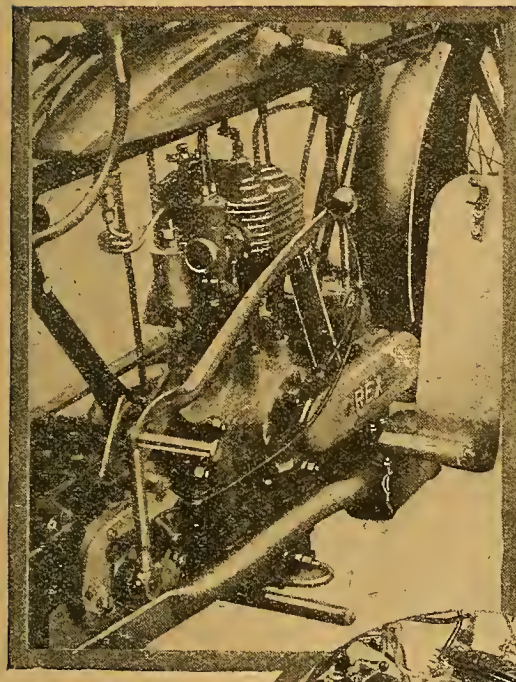
There are three standard models. Model A has a two-speed gearbox, but no clutch, and touring handlebars. Model B is similar, but has T.T. bars, nd model C, which is similar to mode A, but has the addition of a clutch and kick starter.

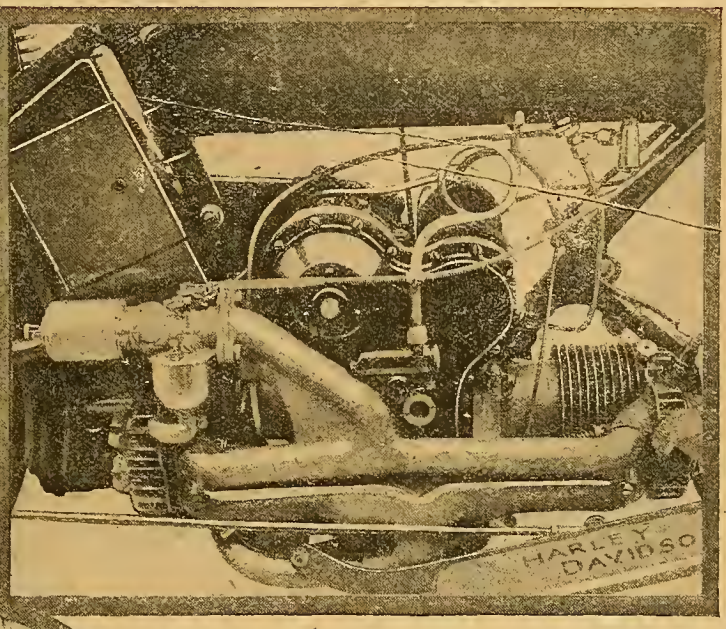
The engine is a 2½ h.p. J.A.P. (70 mm. by 76 mm., 292 c.c.), with internal exhaust lifter and adjustable tappets. A B. and B. lightweight carburetter is fitted, and a C.A.V. or M.L. magneto. The gearbox is a Burman two-speed, with pinions constantly in mesh, high and low gears being engaged by dogs of good size conducted by a lever in a gate on the right-hand side of the tank. The forks are Brampton Biflex, and the tank is finished maroon and black, having a capacity of 1¼ gallon of fuel and 1 quart of oil. Its rear panels are sunk slightly to accommodate the rider's knees. Lubrication is by a hand pump inside the tank.

Transmission is by ½-in. by 3-16-in. roller chain to the countershaft and ¾-in. Dunlop belt over larger diameter countershaft pulley to the back wheel. Chain and belt pulley are well protected by an aluminium guard. The wheels are all black, and one model is shown with discs which may be had for 50s. extra; 26-in. by 2¼-in. Dunlop studded tyres are fitted. The handlebars may be either nickel-plated or black finish at purchaser's option. The front brake is the ordinary rim pattern and the rear one a heel-operated brake gripping the outside of belt drum below the stays.

Prices are as follow:—Models A and B, 58 guineas; Model C, 68 guineas.

SOME OF THE LATEST POWER UNITS.

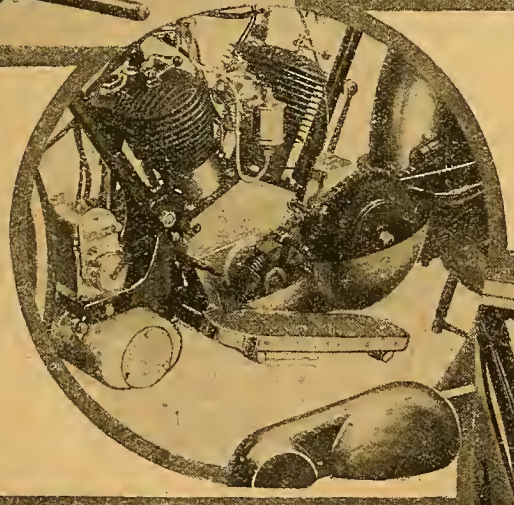


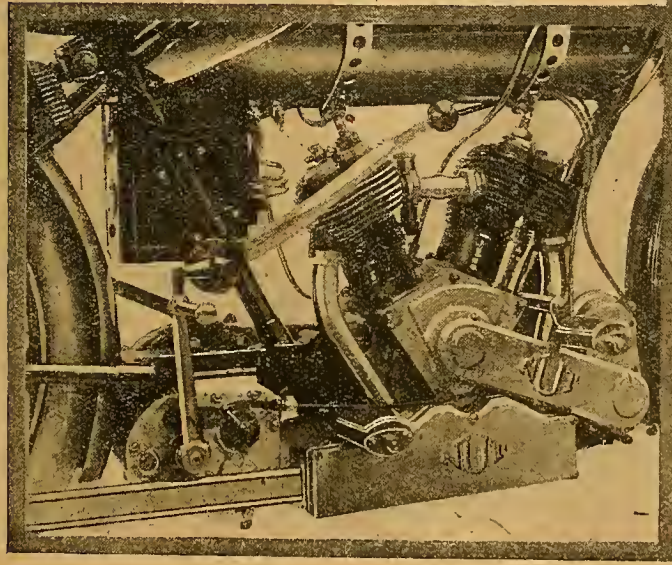


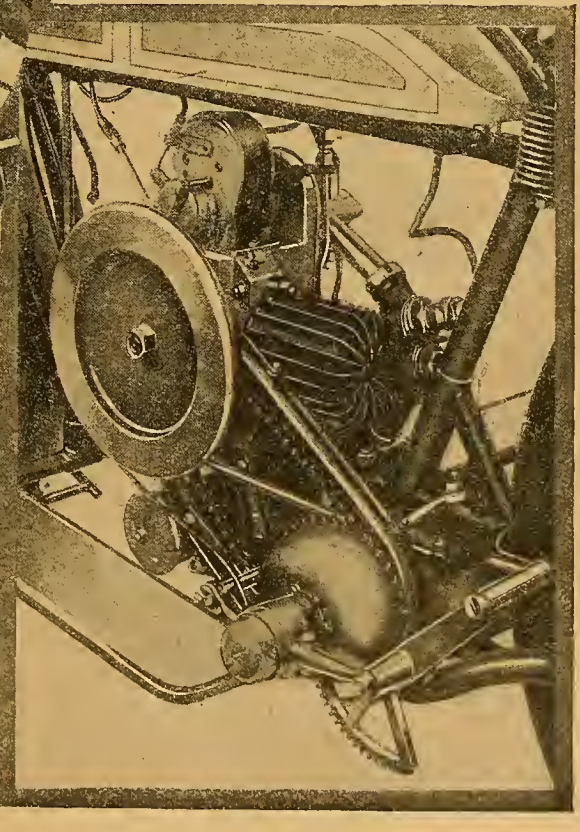
Centre: The twin B.S.A. with case removed, showing cush drive.

Bottom: The N.U.T., showing unusual silencer, and the 2¾ h.p. kick starter model Douglas.

Top: The Rex "sidecar single," and the h.o. twin Harley-Davidson.







The Immaculate P. and M.—The Spring-wheel Paragon.

Stand No. 63.

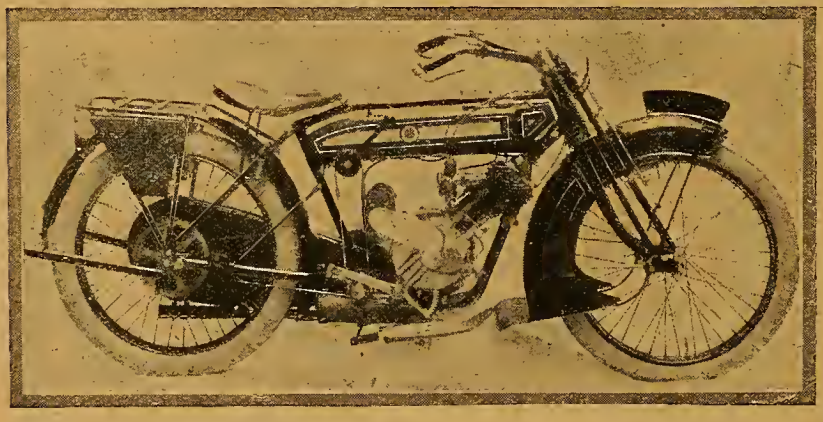
Phelon and Moore, Ltd., 4 Berners Street, London, W. 1.

THIS exhibit is sure to attract a good deal of attention if for no other reason than that of the declared policy of the concern in the matter of price, which is that all machines delivered prior to March 31st next will be sold at £95. This is a point that could be copied with advantage by other manufacturers, as it spares riders waiting for delivery the anguish of seeing prices advance perhaps a few days before the machine arrives.

In general outline the P. and M. remains more or less unchanged, although there are a number of valuable detail refinements which indicate that the manufacturers are alive to the necessity of keeping abreast with the times. The first point which attracts attention is undoubtedly the new design of cylinder, which has the radiating fins placed parallel with the ground, while internally the valve ports have been perfectly streamlined and the valves themselves are larger. This has resulted in a considerable increase of power.

Another departure is the fitting of a mechanical lubrication pump which runs at one-fortieth of engine speed, and is driven by a worm from the back of the exhaust cam wheel. The plunger delivers oil alternately to the left-hand main engine shaft (thence to the big-end), and to the rear of the cylinder. The provision of independent lubrication to the piston has resulted in the complete eliminaton of piston slap. The bore and stroke are the same as before, viz., 84.5 mm. by 88.9 mm., giving a capacity of 498 c.c.

The P. and M. toolbag has room for a spare tube and can be securely fastened.



The P. and M. has mechanical lubrication and a re-designed cylinder.

The new kick-starter is of the quadrant and pinion type, and the crank, being exceptionally long and carried well back, renders it an easy matter to start the engine, the half compression device which has so long been a feature of the Phelon and Moore assisting this materially.

The spring fork has been slightly altered, the new design incorporating two external tension springs in place of the single encased compression spring hitherto fitted. The action of the fork has been greatly improved by giving it increased movement, and it is claimed to be entirely proof against sidecar drag.

The rear external contracting brake is operated by a pedal and lever, which are interconnected, the latter working in a ratchet quadrant which holds it in any desired position. This is a very valuable feature, as it enables the machine to be left standing on a hill without any danger of running away.

Two large tool bags, which are fitted to the carrier, are secured by means of spring steel strips, a distinct improvement on the orthodox strap or lock fastenings, the latter in particular being prone to give trouble. The machine has an all-weather finish, even the handlebars being celluloid covered. The tank is enamelled in royal blue with light blue lines and grey panels, the royal blue harmonizing with the finish adopted by the makers for their sidecar bodies.

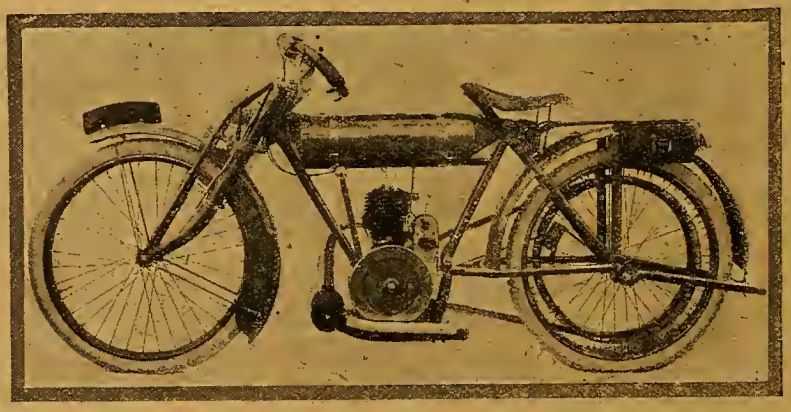
Stand No. 70.

Paragon Motor Manufacturing Co., Manningtree, Essex.

THE Paragon motorcycle takes the form of a 3 h.p. single-cylinder two-stroke, the engine forming one unit with the gearbox, mounted in a neatly-sprung frame.

The cylinder is of 76 mm. bore and with stroke of 79 mm. gives a capacity of 349 c.c. It operates on the usual two-stroke principle, with crankcase compression, but a feature is the automatic air valve mounted on the transfer port, which permits of a small quantity of air being sucked in on the upward stroke of the piston, and thus entering the cylinder in advance of the explosive charge. It is claimed that this absolutely eliminates "four-stroking" under all conditions on the road. A two-speed gear is incorporated, and the final drive to the rear wheel is by $\frac{7}{8}$ in. belt.

The back wheel is sprung in a vertical direction by means of coil springs housed in the large diameter carrier support, which permits of a movement of 2 ins. to the wheel. For all practical purposes the belt tension is unaffected in any position of the wheel. The spring fork is a Saxon, fitted with rim brake, the foot brake working on the outside of the belt rim. An oval tank fastened to the frame by metal straps holds 1½ gallons of petrol and 3 pints of oil.



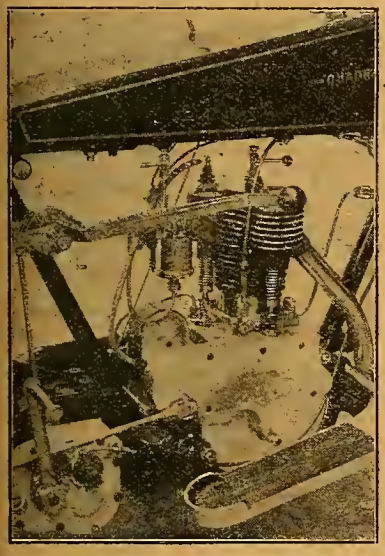
The 3 h.p. Paragon two-stroke, which has a neatly-sprung rear wheel.

Unconventional Engine Design—The Precision and New Quadrant.

Stand Nos. 207-95.
Baker, F. E., Ltd., "Precision" Works, King's Norton, Birmingham.

AN unorthodox machine which bristles with interesting features, the Precision motorcycle, attracts considerable attention, and it is well that Messrs. F. E. Baker, Ltd., have provided ten models for examination. The machine was described in detail in our issue of October 15th, so that it will suffice briefly to point out the interesting features which should be noticed.

The pressed steel tank forms the horizontal frame member and the head and seat lugs. The tank is formed in two halves and welded together, and as it has only one compartment, for petrol, there should be no trouble with leaks.



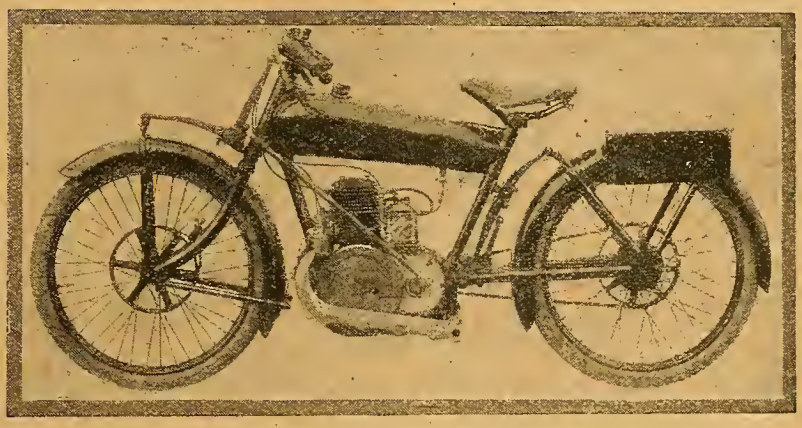
Quadrant engine and gearbox. Note the unusual position of the valves.

The front and rear springing by semi-elliptic leaf springs is very original, the front spring has been accommodated by cutting it in half and fixing the two halves at right angles to one another in the pivoted cradle.

The large mudguards are pressed from 18-gauge steel and are riveted to the frame, thus strengthening it considerably, The carrier consists of a metal box welded to the rear mudguard. The power unit is the standard 74 mm. by 81 mm. 3½ h.p. Precision two stroke.

The engine and gearbox are formed as a single unit, and the gears are obtained on the same principle as the Enfield gear. Two chains and sprockets take the drive from the engine, and by an expanding wedge bar either sprocket can be put into use. The ordinary rear brake is replaced by a contracting band brake, which works on the countershaft.

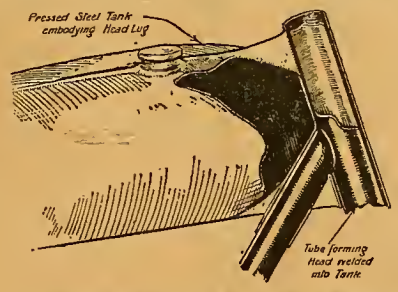
The engine and gear casing carries the oil supply, which is distributed by the magneto driving chain, and accordingly no trouble through under lubricating of the gears is possible. To absorb shocks in the chain drive devices are incorporated in the countershaft and back wheel sprocket.



A machine constructed throughout on unorthodox lines—the Precision.

Stand No. 121.
March, Newark and Co., Ltd., 45-53, Lawley Street, Birmingham.

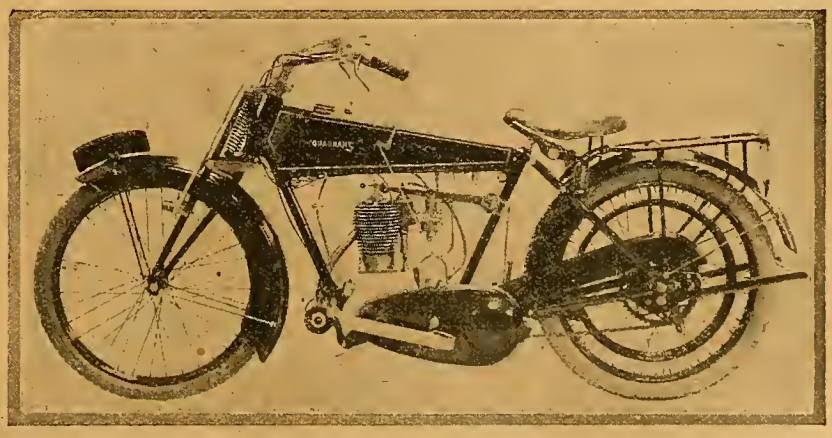
QUADRANT machines are well known as being one of the pioneers of motor cycling, and the latest models, as seen on this stand, are worthy of the high reputation they have to support. The two motorcycles are big singles, the 4 h.p. model having a bore and stroke of 87 mm. by 110 mm., giving a cubic capacity of 653 c.c. The top tube is straight, and is enclosed by the large saddle tank finished in black, with gold lines. The drive is all-chain, a slipping device being incorporated with the engine sprocket and a cushion drive with the rear wheel sprocket. The first step of the transmission is totally enclosed and the rear chain has a guard, thus making the final drive easy of access. The Sturmey-Archer three-speed gearbox is fitted, and the clutch is handlebar controlled.



The original Precision head design incorporating the front of tank.

The big 6 h.p. model has a bore of 95 mm. and stroke of 110 mm., giving a cubic capacity of 780 c.c., and it is noteworthy by reason of the combined engine and three-speed gearbox unit. Both Quadrant engines retain their unusual valve arrangement of the inlet valve at the rear of the engine and the exhaust valve at the side. The inlet valve is actuated by a small camshaft carried across the engine, and on the big 6 h.p. engine this is strengthened and provided with gearwheels, as it forms also the layshaft of the gearbox. By this means there is a considerable saving in material and in space, and the big engine fits exactly the same frame as the 4 h.p. pattern. The clutch on this model is a large Ferodo-lined cone, situated in the back wheel. The brakes actuate on V rims both front and rear.

Another interesting Quadrant production is the scooter, which has a two-stroke engine arranged in front of the rear wheel, and drives direct by a single chain. A saddle is provided, and the machine is very well mudguarded. The footboards and fork are both sprung.



The pleasing lines of the new single-cylinder Quadrant.

Arrival of the Raleigh—Radco Improvements.

Stand No. 64.
Raleigh Cycle Co., Ltd., Lenton, Nottingham.

ALTHOUGH this is the first time a Raleigh motorcycle has been exhibited at Olympia, the machine has been undergoing exhaustive road tests for nearly five years, so that prospective purchasers need not be afraid of getting a new and untried design.

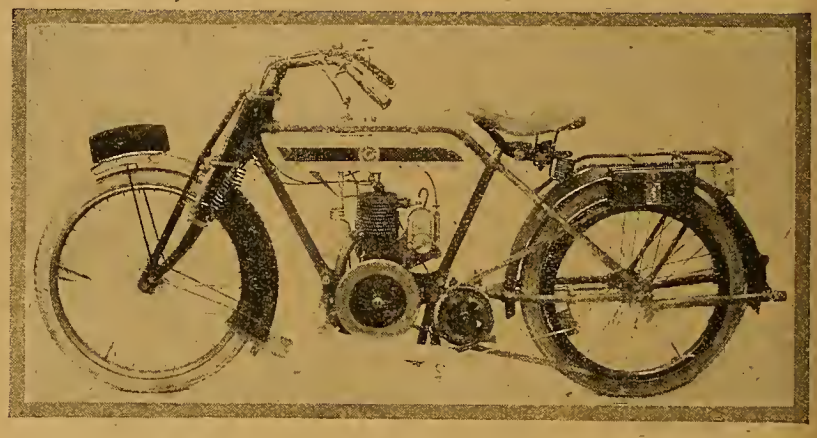
The engine is of the horizontally-opposed pattern, placed lengthways in the frame. Rated at 5 h.p., the cylinders have a bore and stroke of 77 mm. by 75 mm. and a total capacity of 700 c.c. The combustion heads are detachable and the valves are placed side by side and operated by a very simple timing gear, which employs no intermediate rockers. The tappets are adjustable, and the valve springs are conical in shape. Attention should be paid to the method of casting a portion of the induction pipe integral with the timing cover, to which the carburetter (A.M.A.C. one or two lever to order) is bolted direct. Thus only a short length of exposed induction pipe is necessary. Also, it allows the carburetter to be kept well out of the way of the rider's legs.

The forks pass through the front mudguard on the Raleigh, and so allow of a very wide guard being used.

The frame is of the duplex-tube type, and is very efficiently sprung at the rear on horizontal leaf springs. The gearbox is cast in bronze, and forms an integral part of the frame, as the rear portion hinges on lugs cast in it. As this hinge is in communication with the interior of the gearbox it is kept continually lubricated. Adjustment of the front driving chain is effected by sliding the engine, this being a simple matter. A spring shock absorber is located in the sprocket on the engine shaft. Both chain cases are solid affairs, and oil-tight. The clutch is of the cork-inset type, and operated from the handlebar.

Both wheels are easily detachable and also interchangeable, the drive being taken through a coned joint, which entails no backlash. The rear brake is internal expanding, working in the rear chain sprocket, and the front one consists of a pad wedging into the V of a dummy belt rim.

Three speeds are provided, operated by a long lever pivoting on the seat tube. Different gear ratios will be supplied, according to whether the machine is required for solo or sidecar work. A low saddle position—28 ins.—is obtained by virtue of the sloping top tube and tank; nevertheless, the latter holds 2¼ gallons of petrol and has exceedingly large fillers. The finish of the whole machine is in black, with tank lined red and gold. Its weight is 280 lb. and it will sell for 130 guineas.



The 2¼ h.p. Radco two-stroke has been improved in detail for next year.

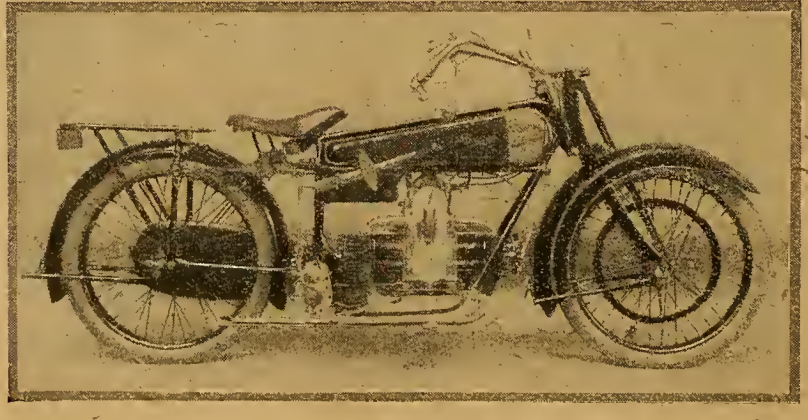
Stand Nos. 206-66.
Radnall, E. A., and Co., Dartmouth Street, Birmingham.

A VERY neat lightweight is shown on this stand by Messrs. E. A. Radnall and Co., Most motorcyclists will remember that the Radco, when it was first introduced in about 1912, was priced at 23 guineas, and although, unfortunately, the price is no longer possible, the workmanship and finish are as good as ever.

The engine is the well-known 2¼ h.p. Radco two-stroke, and is similar to earlier models, with the exception of one or two detail improvements. The frame has been improved considerably, especially in respect of the rear portion, which is built up with round tubes, giving a very large wheel clearance. The rear fork ends are constructed to take 6 in. heavy-type hubs, and the whole of these alterations add considerably to the rigidity of the machine.

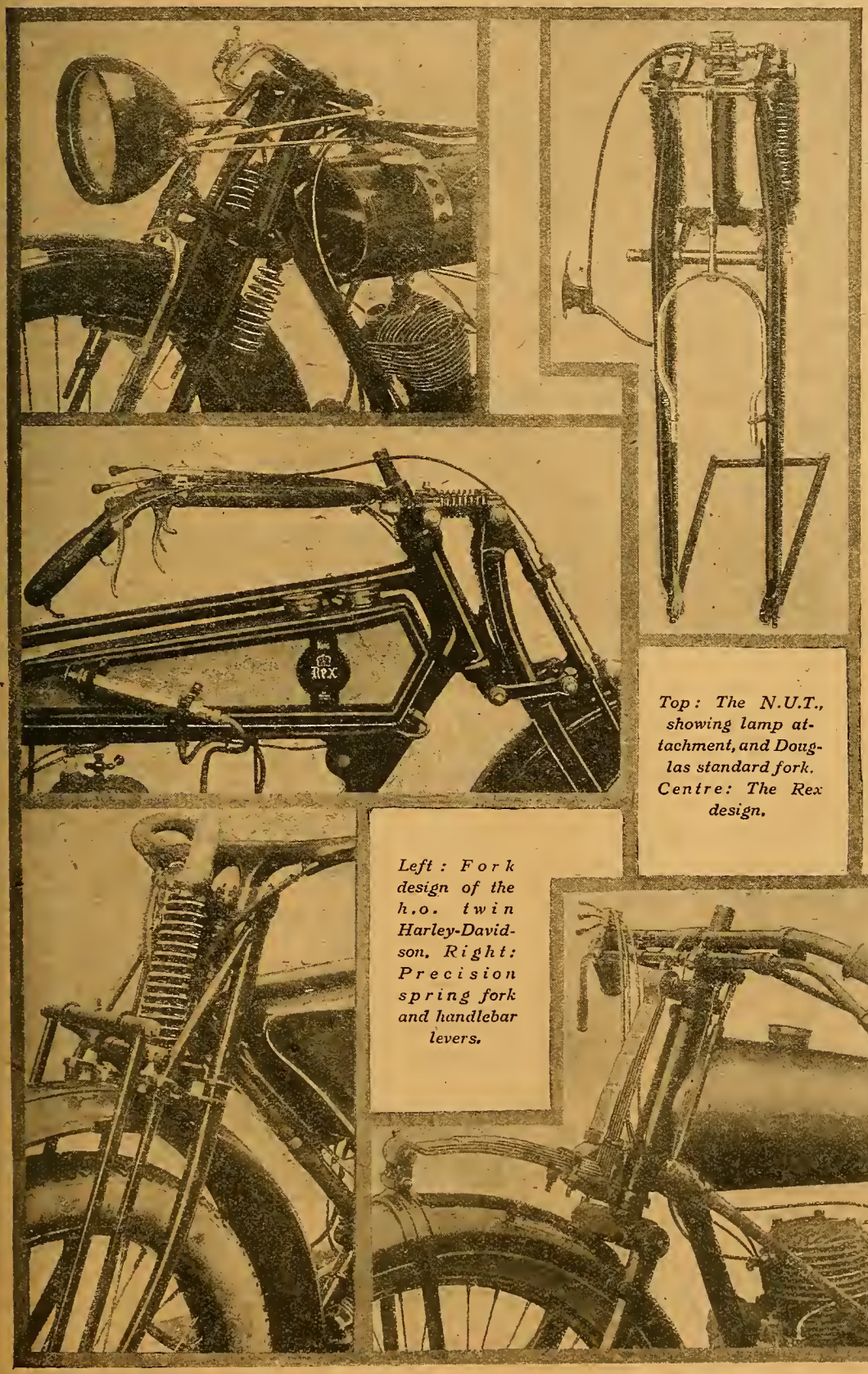
Round tubes are now employed in the rear portion of the Radco.

Footboards are fitted as standard, and these are supported on rubber-cushioned rods—a device which deadens all vibration to the foot. The toe pedal to the rear brake has been discarded, and the new models are fitted with an improved heel brake, which is much more convenient and get-at-able.



The 5 h.p. Raleigh is second to none on the point of appearance.

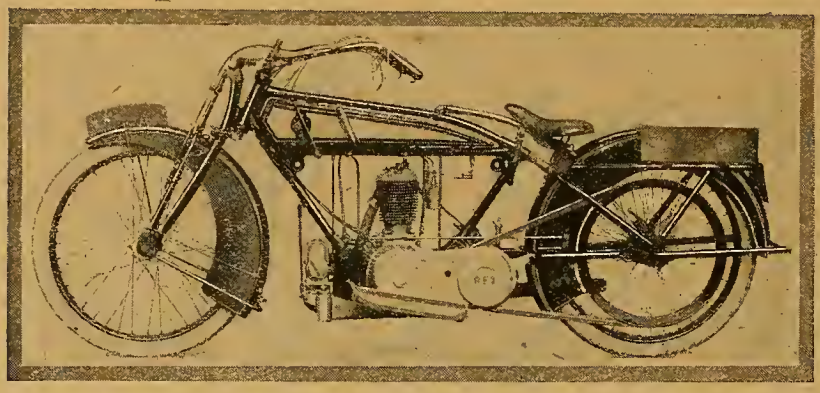
SOME HANDLEBAR AND FORK DESIGNS.



Top: The N.U.T., showing lamp attachment, and Douglas standard fork. Centre: The Rex design.

Left: Fork design of the h.o. twin Harley-Davidson. Right: Precision spring fork and handlebar levers.

Reading Standard Improvements—Rex Sidecar Single.



The 4 h.p. Rex is a single-cylinder mount equally suitable for solo or sidecar work.

Stand Nos. 119-195.
Watson, Stanley J., Berners Works, 37, Sheen Road, Richmond, London, S.W.

THE Reading Standard has improved out of recognition since its original introduction to this country, and the models exhibited will be found to be of most advanced design. The engine is of large cubic capacity—3⅜ ins. bore by 4 ins. stroke—and is rated at 10 h.p. It follows standard American practice to a great extent, and incorporates what is rapidly being recognized as an essential feature—mechanical lubrication. The power unit is especially commendable for its clean and well-arranged appearance.

A three-speed gearbox with gear wheels and sliding dogs of very ample proportions is fitted, and a noteworthy feature is the inter-connecting of gear control and clutch lever, so that a change cannot be made until all driving load is off the engine. The kick-starter is on the off side, thus conforming with English requirements.

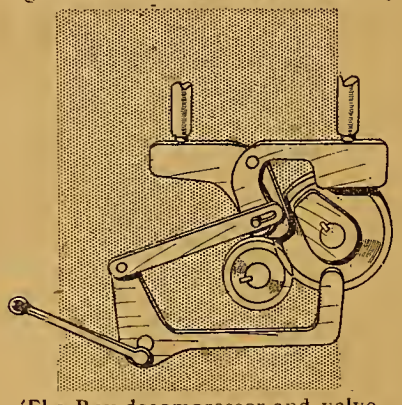
Visitors to the stand should particularly note the large tanks fitted (three gallons of petrol and three quarts of oil can be carried), the high quality of the mechanical and general finish of the machine of the popular large-powered sidecar machines.

We have heard nothing but praise regarding the performance of the first few 1920 machines which have seen road service so far, and feel confident that the Reading Standard will speedily become one of the popular large-powered sidecar machines.

Stand No. 55.
Rex Motor Manufacturing Co., Ltd., Earlsdon, Coventry.

EVER since the birth of the motor-cycle, the Rex Co. has been famed for its design, and the Rex of the season 1920, which, except in small details, is the Rex of 1919, is true to its forerunners.

For this season the concern is concentrating upon the single-cylinder model, which, although very little heavier, if at all, than the average single, has a sufficiency of power for sidecar work. The cylinder capacity is 550 c.c., the bore being 84½ mm. and the stroke 98 mm. The mainshaft runs on roller and ball bearings, while the crank pinion has twin cage rollers. Lubrication is studied very seriously, and is carried out on car lines by a mechanical pump through crankcase and sump to the sight feed on the side of the tank, whence it runs through a distributor to cylinder, piston, and bearings, and back again to the sump. The tank is finished purple, and with a purple sidecar to match certainly makes one of the most handsome outfits in the Show. It is sloping and tapered, and has a capacity of 2½ gallons.



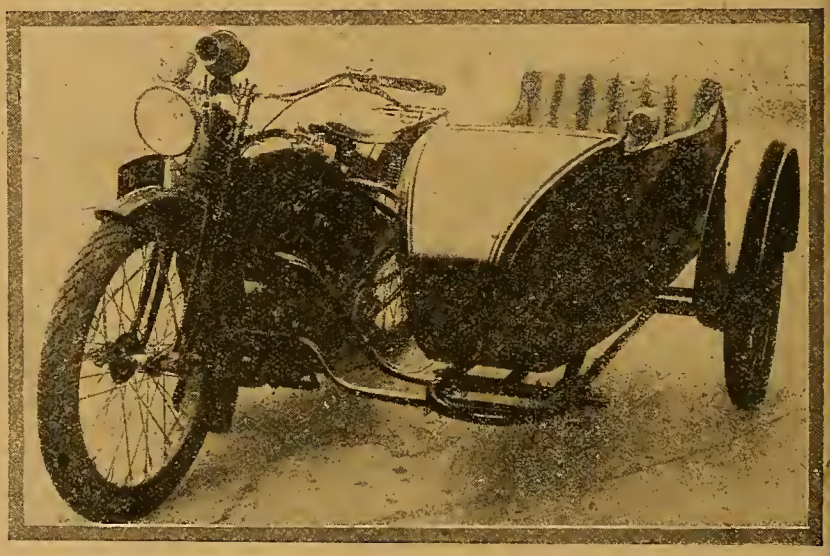
The Rex decompressor and valve gear.

The gearbox is a Sturmey-Archer three-speed, having a hand-controlled clutch, and with 28 in. wheels gives ratios of 5.2, 8.3, and 13.6 to 1. Other features to be noticed include the cantilever-sprung seat pillar, large carrier with permanent box, detachable wheels, and business-like footboards.

The single-lever A.M.A.C. carburetter is standard, as also are Brampton front forks. Sidecar lugs are cast integral with the frame lugs, and are so disposed as to allow the fitting of the sidecar on either side.

While limiting themselves to a single model as regards the machine, plenty of variety is found among the sidecars. In addition to the English models, a Continental pattern is shown fitted to the right of the bicycle in accordance with the rule of the road of the rest of Europe. The registered design of boat body promises comfort and area for the passenger, spacious accommodation for tools and spares, without appearing the least ungainly. The spare wheel is carried at the rear in a strong bracket, and having its tyre held by the lower fixture, cannot vibrate against the body on the worst roads. The chassis is attached to the machine at four points; the connections are braced by a tube running from the forward coupling to the rear.

Developments in the commercial sidecars are exhibited, and embrace tradesmen's carriers and the newspaper cars which have done, and are doing, yeoman service among town and country journals. Another interesting item is a sidecar designed for extra heavy work, with a steel body and 28 in. by 3 in. tyre.



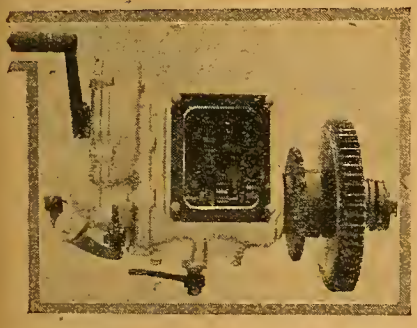
The 10 h.p. Reading Standard outfit is probably the highest powered combination on the market.

Rover Detail Improvements and New Sidecar Body.

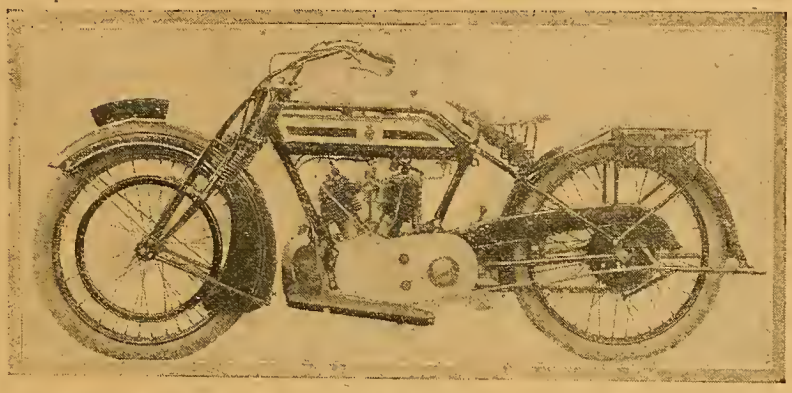
Stand No. 79.
The New Rover Cycle Co., Ltd., Queen Victoria Road, Coventry.

THE most noticeable alteration in the Rover for 1920 is the redesigned fork, which is now very much wider in order to accommodate the new mudguard without excessive trapping. The spring links, taking end shocks, are fitted with larger bearing surfaces, and sideplay has been positively eliminated.

The 3½ h.p. standard model has now an all-chain transmission in place of the chain-cum-belt, though the popular T.T. model still retains its simple belt drive, and may be had either with or without a Philipson pulley. Two chains are used on the standard: a silent chain from engine to gearbox and a Brampton spring chain to the back wheel. This latter embodies in itself the functions of a shock absorber, and under test has been found in every way satisfactory. It is serpentine in form, and its springs automatically take up any shock that might prove harmful to an ordinary roller chain. The conventional front rim brake of last year's model has been superseded by one of the dummy belt-drum pattern now coming to the fore on account of its simplicity combined with practically no inconvenience to wheel removal. The rear brake follows last season's practice on the chain-driven model, operating internally on the chain sprocket. The big-ends are now equipped with roller bearings in place of the phosphor-bronze bushes previously fitted, and a less important item worthy of notice is an increase in the size of the toolbags.



The three-speed countershaft gearbox.

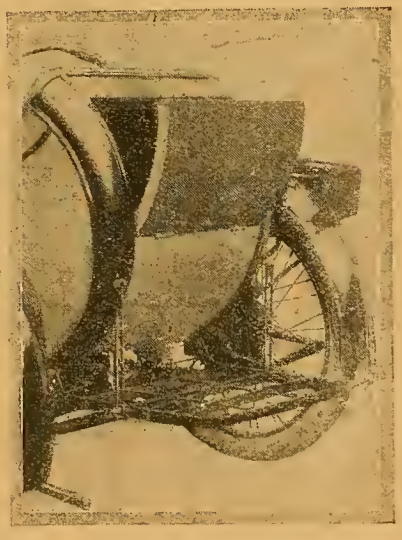


Transmission side of the 5-6 h.p. twin Rover. The dummy belt rim front brake will be noted.

Apart from the new fork and front brake, little alteration has taken place in the 5-6 h.p. twin, except in the matter of chain protection, the totally-enclosed rear system having given way to a chain guard over the upper portion of the chain, which quite sufficiently protects it from the elements, and renders the back wheel easily detachable. The tyres on the twin are 28 in. by 3 in. Dunlops, while the single has 650 mm. by 65 mm.

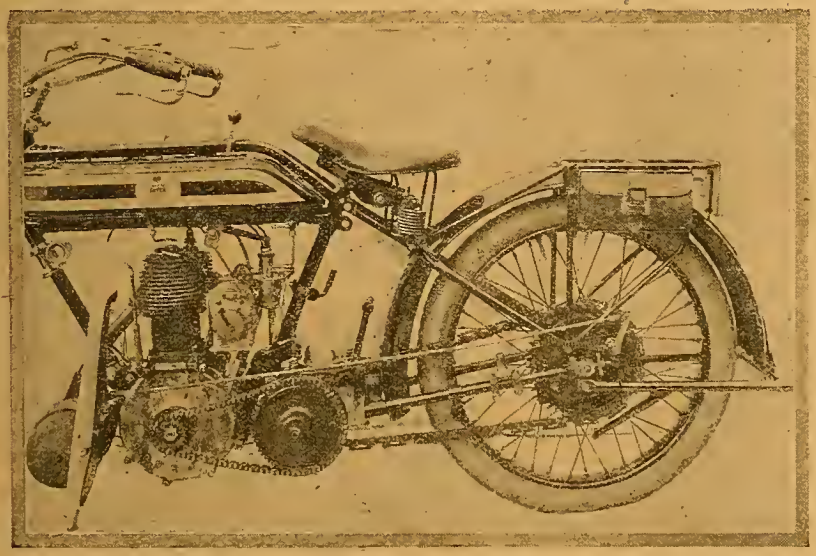
All models have received attention to their mudguarding arrangements, the new blades being very handsome and of 5-in. dome section. The gearbox is unchanged on either model, but the clutch, instead of cork insets, is of the Ferodo ring pattern, which stands up better in the hands of a careless driver, and every concern has, of course, to study possible unfeeling pilots. The gear lever is still taken up through the centre of the tank, where it is out of the way, yet close to the hand. The gear ratios are, on the twin, 5½, 9, and 17 to 1, while on the single they are 5, 8½, and 15 to 1. Cylinder dimensions are, for the single 85 mm. by 88 mm., and for the twin 70 mm. by 85 mm., their respective capacities being 499 c.c. and 654 c.c.

A notable improvement is observable in the Rover sidecar. The body has been entirely redesigned, and is now much longer and roomier, with far more leg room than previously. Also, a commodious locker is located in the bulbous back, which forms a means of carrying a can of petrol in addition to other sundries. The finish is quite up to the high Rover standard of coachwork, and the same may be said of the upholstery.



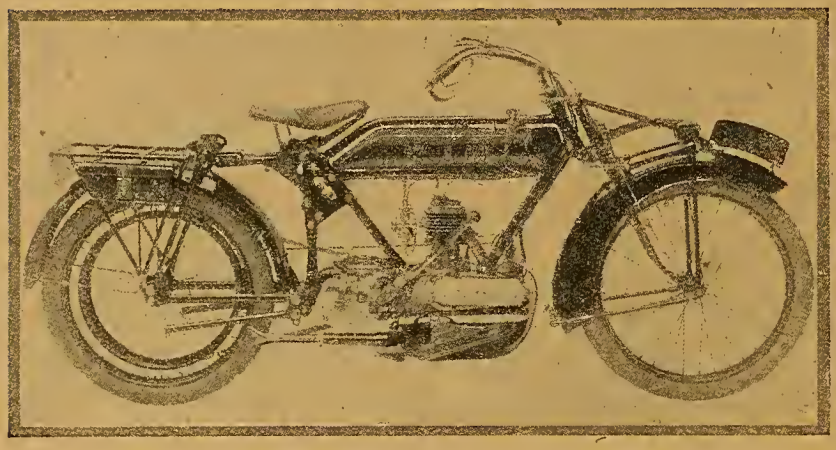
An improvement in the Rover sidecar is the new bulbous back body.

Altogether the Rover outfit, whether 3½ h.p. or 5-6 h.p., is one of those dignified-looking combinations that invariably attract admiration in any company.



The 3½ h.p. Standard Rover is now fitted with chain-drive. The Brampton spring chain forms the shock absorber.

The New 3 h.p. Royal Ruby—Rudge Programme.



The new 3 h.p. Royal Ruby embodies an inconspicuous spring frame.

Stand No. 101.

Ruby Cycle Co., Ltd., Cannel Street, Ancoats, Manchester.

ON this stand will be found examples of the latest 3 h.p. spring frame Royal Ruby (which was fully described and illustrated in our last week's issue), together with the spring frame 8 h.p. twin passenger machine.

The principal feature of the new 3 h.p. model is the spring suspension, both fore and aft, of the frame. To obviate wear no links are employed in connection with these springs, the eyes working on special roller bearings. Incidentally, should a spring frame not be desired, it can be converted in a few moments.

The 3 h.p. engine has a bore and stroke of 74.5 mm. by 80 mm., giving a capacity of 349 c.c., and operates on the four-stroke principle. It is made throughout by the company, as is the gearbox, which provides two speeds and is located on the countershaft. Transmission is by chain and belt, and a handlebar clutch and kick-starter are provided.

The chain is easily adjustable, and is enclosed in an aluminium case. The foot brake works on the belt rim, and has a device which ensures even pressure throughout the length of the shoe. Mudguards of good size ensure reasonable protection for the rider, and adjustable footboards enable a riding position suitable to persons of different heights.

The 8 h.p. model is fitted with a J.A.P. engine, and has a spring frame. Noticeable features of this machine are the large size of the pannier bags and the patented additional safety (duplex) stays from the steering head to the engine. A Sturmey-Archer three-speed gearbox is located on the countershaft, and transmission is by all-chain fully enclosed. An ingenious eccentric device operated by a hexagon head slides the gearbox to effect chain adjustment.

A commendable feature of the sidecar construction is the ample provision made for luggage. In addition to personal luggage and the spare wheel, two tins of petrol are securely slung on the underside of the grid.

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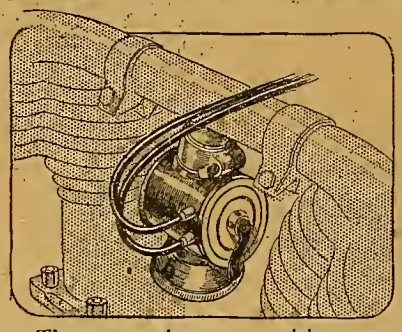
Stand No. 92.

Rudge-Whitworth, Ltd., Coventry.

THIS stand is very popular with everybody on account of the working models exhibited. The Multi gear cannot be properly demonstrated



The new carburetter position on the twin Rudge.

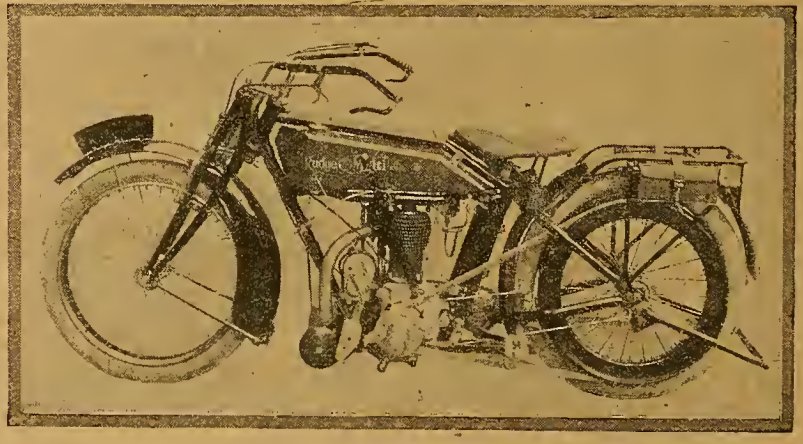
unless the machine is in motion, so Messrs. Rudge-Whitworth, ever enterprising, have supplied the necessary movement.

Practically no change has taken place in the Rudge machines for next year, but the sidecar is considerably improved. The body has been made wider in front and an adjustable foot piece to suit the needs of tall or short riders is placed under the mat. The chassis is a remarkably fine piece of work without any bent tubes, and the body quite luxurious. In addition to the seat locker there is another at the rear large enough to accommodate a suit case. The petrol can holder and luggage grid has the benefit of the springing, as does also the mudguard.

The Rudge engine has roller bearings to both ends of the connecting rod, and a single ring at the top and bottom of its pistons. The mainshaft runs on ball bearings. The 3½, 5-6 and 7-9 h.p. models have capacities respectively of 499 c.c. (85 mm. by 88 mm.), 750 c.c. (85 mm. by 132 mm.), and 998 c.c. (85 mm. by 88 mm.). The inlet valves are overhead and easily detachable, while the flywheels are large and carefully balanced. Vernier adjustment is incorporated in valve and magneto timing. The silencer is large and includes a long tail pipe.

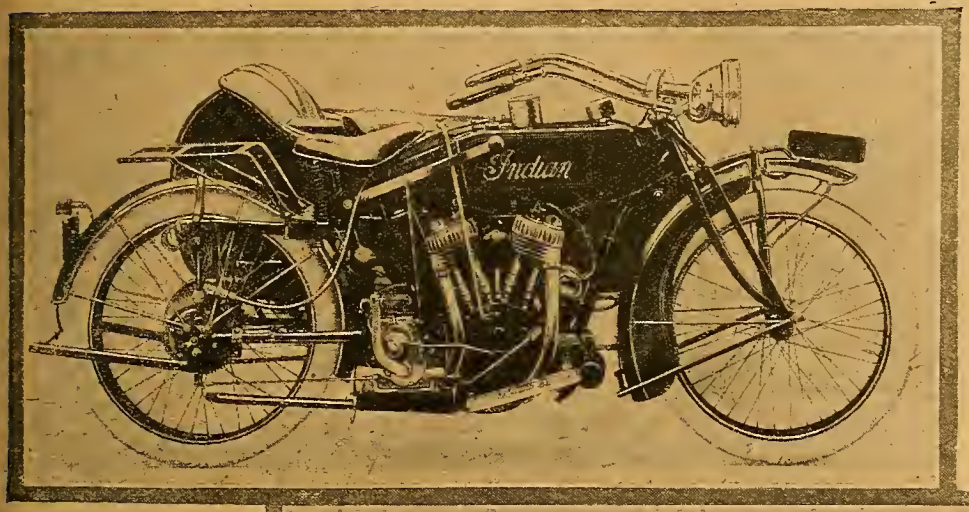
The tanks are finished in a dark olive and a paler green. The Isle of Man tank, as fitted to the T.T. and Multwin models, is particularly good, furnishing a very low saddle position. The filler cap should be inspected and the captive one on the oil tank, held in place by a spring, is also good. Carrying the oil in a separate tank gives the petrol tank a full two-gallon capacity.

The multi gear gives any ratio between 3½ and 7 to 1, 20 different positions of the lever being allowed for. The clutch is handlebar controlled, and footrests rubber covered. The pedals may be brought to their lowest position together to take the place of the second pair. The wheels are 650 mm. by 65 mm., with ribbed tyres and 10 gauge spokes. These tyres are identical with those on the T.T. winner of 1914. They are considered to be the fastest, safest, and most durable obtainable. The 3½ h.p. models Roadster or T.T. are priced at £90, the 5-6 h.p. single at £98, the 7-9 h.p. Multwin at £107, and the sidecar at £33 10s.



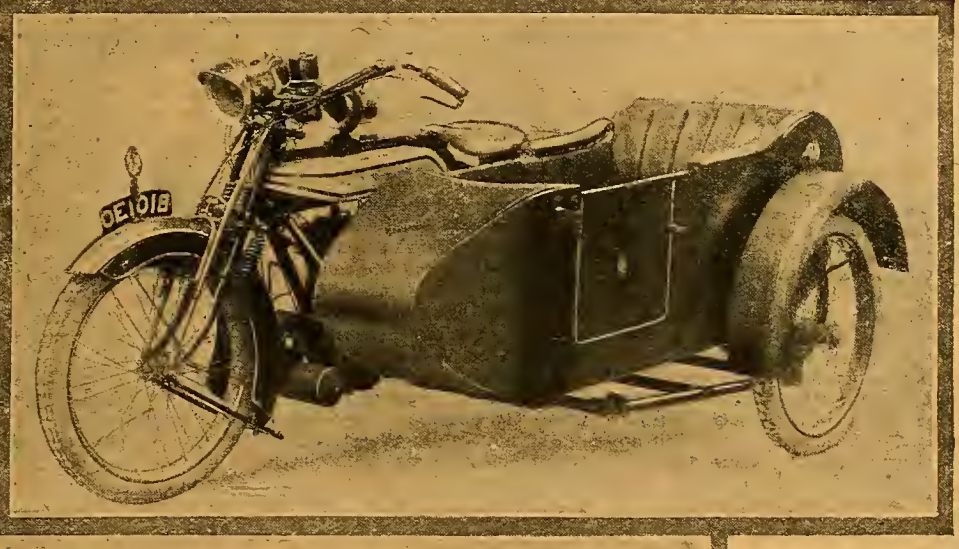
The 3½ h.p. T.T. roadster Rudge-Multi.

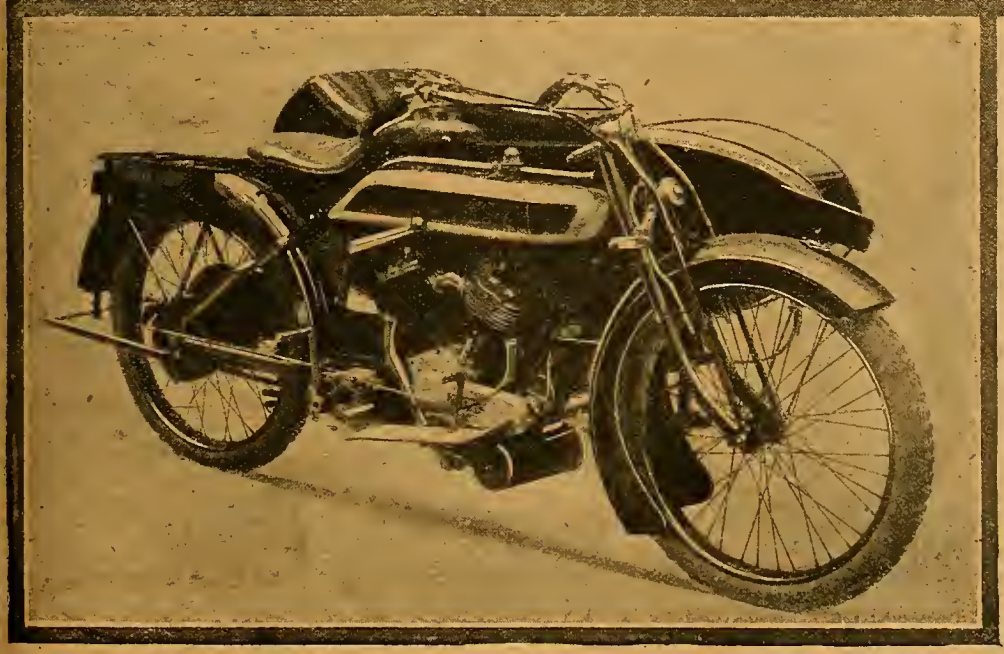
REPRESENTATIVE TYPES OF PASSENGER OUTFITS.



The 7·9 h.p. Indian incorporates leaf springing fore and aft and is particularly well equipped.

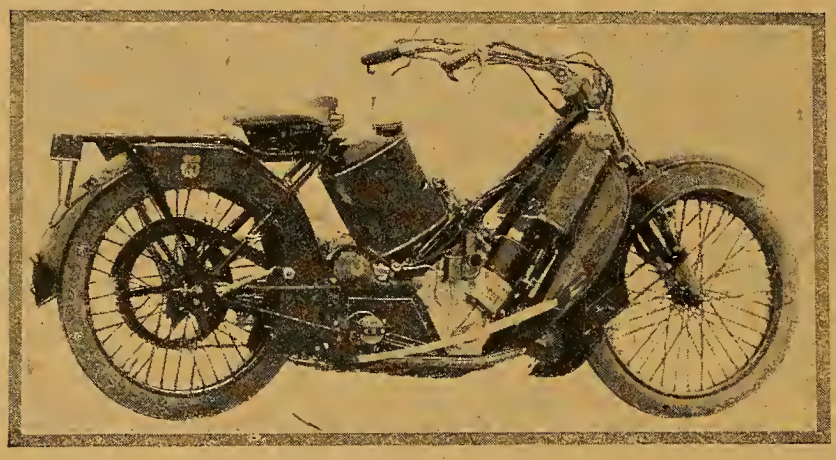
The famous "Big Four" Norton. All-chain drive and the Sturmey-Archer countershaft gear are standard.





The 8 h.p. Dot is of strong construction. The special frame design permits of a very low riding position.

Scott Improvements and New Features.



Still the sole representative of its class—the Scott water cooled twin two-stroke.

Stand No. 122.

The Scott Engineering Co., Ltd., Shipley Work, Saltaire.

FOUR models of this firm's two-stroke are on view, the touring model solo and with sidecar, another with semi-T.T. handlebars, and the T.T. machine. With the exception of the fitting of a double sight drip-feed lubricator at the foot of the tank just under the eye of the rider, practically no alteration has taken place in last year's design. Owing to its low engine position and scientific design of steering column and frame generally, the Scott is perhaps the finest to ride among all our excellent machines. Those who have seen it in competition will appreciate what can be done by a good "corner man," and its performances in the Tourist Trophy races are instances of its excellent behaviour in this respect.

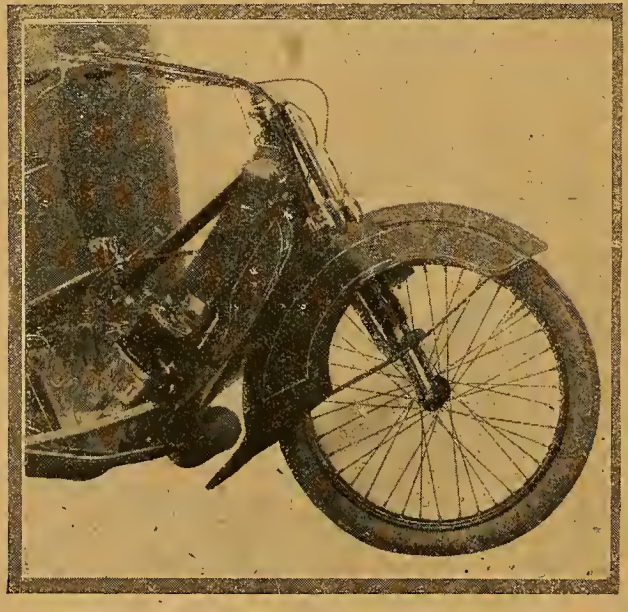
The engine is a water-cooled twin two-stroke, with side-by-side cylinders. It has a torque equal to a four-cylinder four-stroke engine, and consequently is light on transmission and tyres. The connecting rod big-ends are fitted with roller bearings, the races being pressed in and removable when necessary, and the piston has three rings, two at the top and one at the bottom. A Binks carburetter and Thomson-Bennett magneto are fitted as standard.

The absence of loose clips of any sort is noticeable, everything requiring attachment to the frame having a special lug brazed up with the whole. We particularly noticed the stop to the kick-starter as an example.

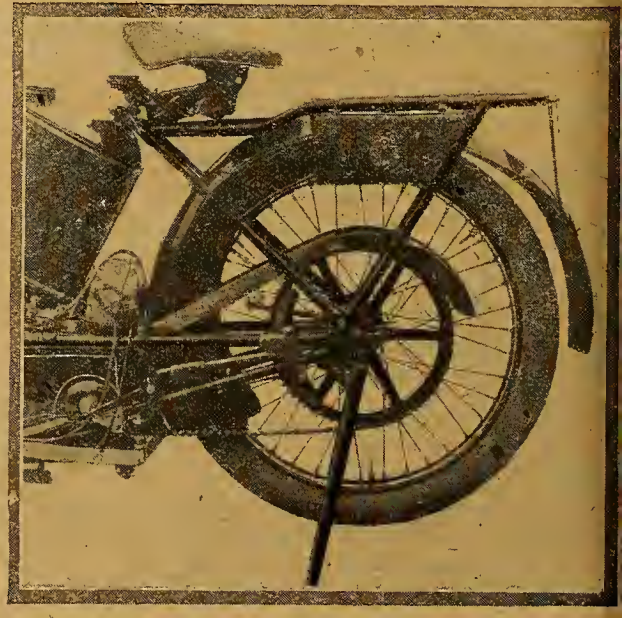
The two-speed gear is the simplest possible, relying only on two expanding rings, one for high and one for low gear. It will stand up to all sorts of abuse, and it is safe to say that nothing more reliable in the way of change-speed devices has yet been evolved. Two chains having different sprocket ratios constitute high and low gear between engine and countershaft, whence another chain takes the energy to the back wheel. This last chain is not cased in, but has a deep guard over its upper portion to protect it from the ill-effects of rain and mud.

Thorough mudguarding has always been a feature of this machine, and the new model is no exception. Wide valances are fitted to the rear as well as the front guards, the latter having a splasher in addition. Broad shields reaching below the curved aluminium footboards further protect the rider, while side and under shields all quickly spring into position, ensure a clean engine. Other noteworthy details include the seat pillar filler cap, the long shoe of the rear sprocket brake, and the concern's patent design of spring fork.

The sidecar, finished to match the machine, has a large comfortably-upholstered body, sprung on the cantilever principle. The moving parts are all phospbor-bronze bushed, and, with the screw-down greasers provided, should give indefinite service. The main portion of the chassis is an isosceles triangle, strengthened, of course, with extra members, attached to the machine at four points. The solo machine costs 110 guineas, while the combination is sold for 140 guineas.



The new Scott spring fork and front guard. The former has a sump containing a month's supply of oil.



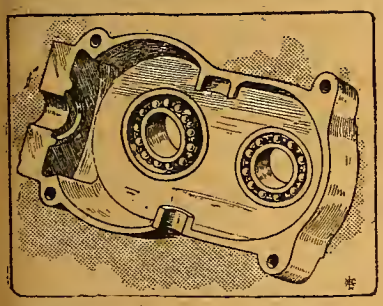
The protected position of the magneto is one of the many good points on the Scott.

Two representative two-strokes, the Sparkbrook and Sun-Vitesse.

Stand No. 77.

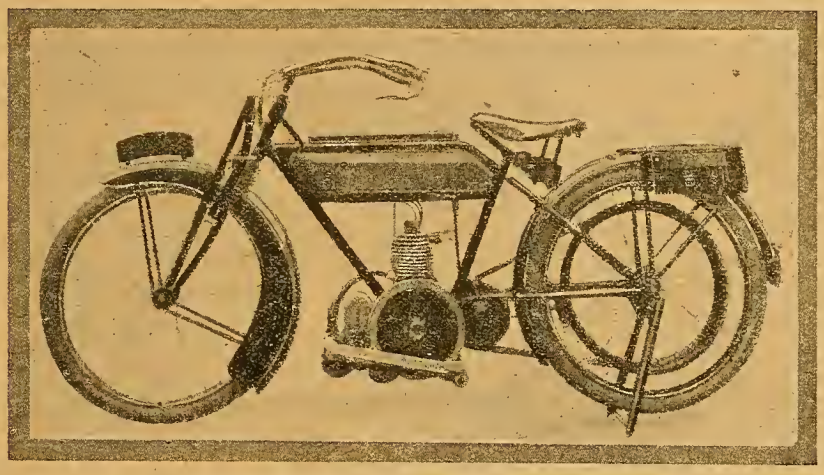
Sparkbrook Manufacturing Co., Ltd., Paynes Lane, Coventry.

HERE we find an exceedingly sturdy and well-finished two-speed lightweight of 2½ h.p., fitted with the well-known Villiers engine. The carburetter is a B. and B. two-stroke model and the magneto a C.A.V. KU1. The tank is attractively finished in green and black and is supported on brackets brazed to the frame, instead of the commoner top-tube clips. Mounted on the tank in a convenient position is a Best and Lloyd sight-feed lubricator, supplying oil to the engine. The wheels are 26 ins. by 2 ins., shod with Dunlop tyres; they have bearing caps and felt washers to exclude rain and grit. The spring forks have a specially-designed long bearing link, which ought to run many thousands of miles without developing play. The saddle is a Brooks B150. The transmission is chain-cum-belt over a large diameter rear pulley. The gearbox has its pinions always in mesh; these are made from special gear steel and run on self-aligning ball bearings. Lubrication is amply provided for in a small reservoir on the top of the gearbox, which slides along



The Sparkbrook gearbox has self-aligning ball bearings.

the bottom bracket tubes for the adjustment of the chain. This year the gear lever is mounted on a special lug brazed to the frame and works in a gate on the tank top. Long aluminium footboards are fitted, which, by the undoing of a single nut, may be swung back out of the way to facilitate cleaning or repairs. The finish is black as far as possible, including handlebars and hubs. Some half-dozen machines are exhibited. The price of the single speed is £59 and the two-speed model £65.



The 2½ h.p. Sparkbrook with Villiers 2-stroke engine.

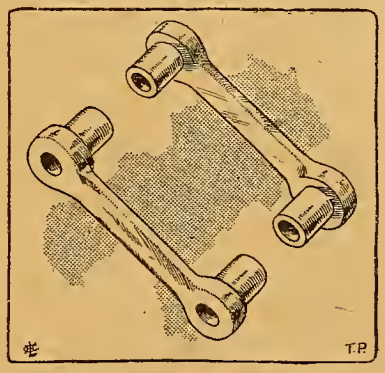
Stand No. 57.

Sun Cycle and Fittings Co., Ltd., Aston Brook Street, Birmingham.

1920 Sun-Vitesse motorcycles are displayed in their various models on this stand.

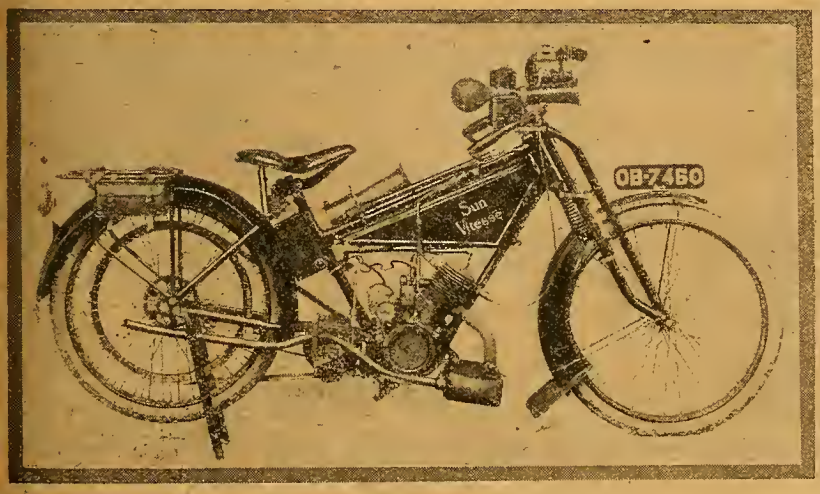
The engine is set on the slope, running parallel with the front tube. The principal claims made for the new model are the simplicity in the construction of the engine and the frame and the compactness in which the whole of the following important members are carried.

The cradle, which is cast in one piece, has three bolt holes for the engine, two bolt holes for the footboards, and further bolt holes on which the two-speed bridge is carried. By disconnecting the exhaust pipe and removing three nuts on the cradle, the engine, complete with carburetter and magneto, can be lifted bodily from the frame. Simplicity and efficiency in the engine have been aimed at by the construction of a one-piece crank chamber, with a single-bearing scientifically balanced crankshaft, which is so made that no crankcase compression can be lost. A sectional model of this engine is shown as well, so that those interested may see the exact working of it.



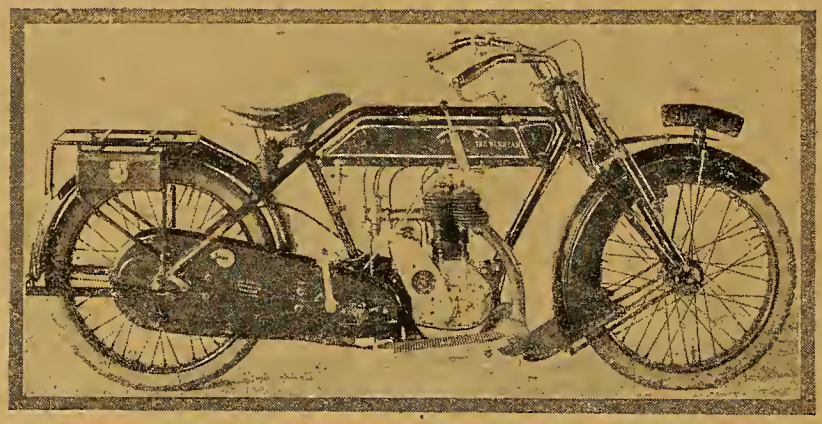
Specially long bearings are fitted to the Sparkbrook fork links.

The flywheel is in the usual position on the left-hand side of the engine, and the drive is by means of a chain to the gearbox and thence by belt to the back wheel. Between the driving sprocket and the engine is placed another sprocket for the magneto drive, the magneto being placed on the top of the crankcase just behind the cylinder. The back mudguard is of a 7¼ in. section, and the front, though narrower, is well equipped with side valances. The whole machine, of which single-speed and two-speed models are made, is tastefully finished in black and gold.



The 2¾ h.p. Sun-Vitesse is a distinctive-looking little mount.

Sunbeam's Adopt Detachable Wheels and Leaf Spring Fork on the 3½ h.p.



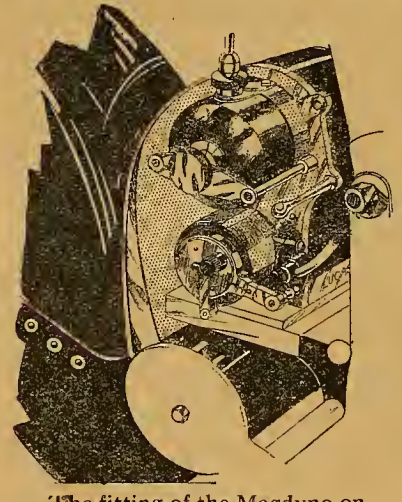
Note the new type of front fork fitted to 1920 3½ h.p. Sunbeams.

Stand No. 49.

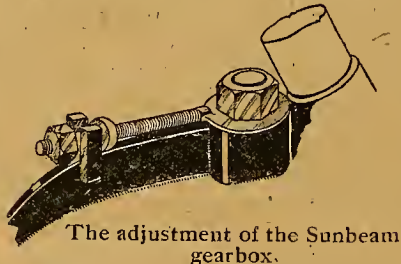
John Marston, Ltd., Sunbeamland, Wolverhampton.

WHILE the 8 b.p. model, except for the substitution of the Lucas Magdyno in the original magneto position, remains practically as last season, the 3½ h.p. has been modified in several ways, perhaps the most noticeable of which is the front fork. This is shown with a leaf spring parallel with the front mudguard, which is now 5 ins. in width, and has a large splasher at its foot protecting the engine from mud.

The silencer is now welded up in one piece, and the cylinder head fins are of slightly different formation from those of last season. Otherwise the engine is unchanged, its dimensions being 85 by 88 and its capacity 499 c.c. The carburetter is an A.M.A.C., while an E.I.C. magneto is standard. The new rear brake should be noted. It is now of the internal-expanding type operating on a drum formed by the rear chain sprocket, and is connected to its large size pedal by a Bowden cable. The front brake shoe also is worthy of a few minutes' attention for by unscrewing its securing nut half a turn or so it may be released from its slot, enabling the wheel to be pulled clear.

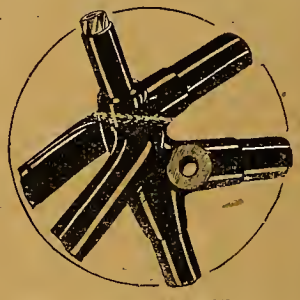


The fitting of the Magdyno on the Sunbeam.



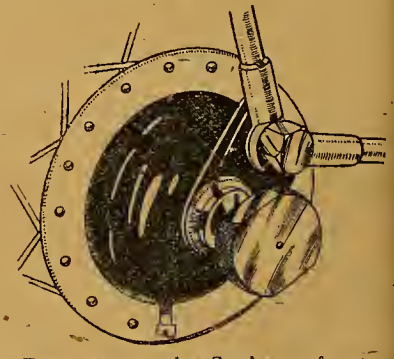
The adjustment of the Sunbeam gearbox.

The wheels are now detachable and interchangeable, a spare being optional on the sidecar outfits. The back wheel is secured to the rear sprocket by pegs meshing with holes in a flange of the hub instead of by the more usual dogs. By undoing a nut, withdrawing spindle and taking out a small distance piece, the wheel may be changed in a matter of minutes without disturbance to the sprockets or chain cases in any way. The wheels are 650 by 65, fitted with Dunlop tyres on the T.T. model and Bates on the roadster. The hubs are large and waterproof, the front especially having a neat deflector resembling more than anything else, a miniature shrapnel helmet, effectively throwing off mud running down the front fork.



Sunbeam seat pillar.

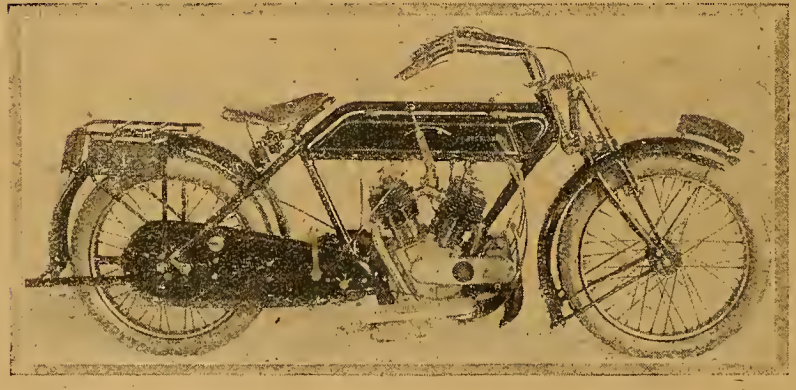
The same gearbox is used on either model and its works may be inspected in a skeleton model on the stand. It should be noticed that two separate sliding dogs are used and that all the six pinions are constantly in mesh. The ingenious cam system effecting the requisite right and left movement in the dogs should not be missed. The gears are oiled through the sight feed, which has a two-way tap to engine or gearbox.



Dust cap on the Sunbeam front wheel.

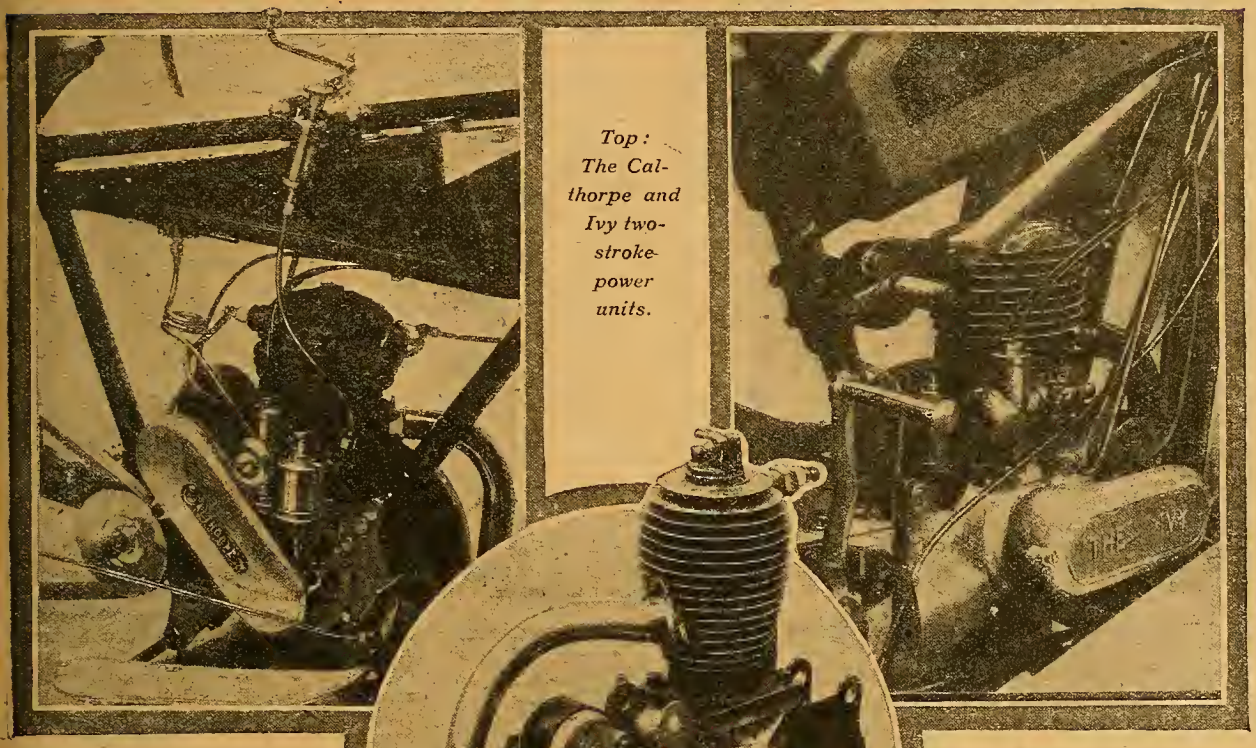
Both models have roller chain transmission in oiltight chain cases, the forward case being an aluminium casting. They are easily detachable, and the rear one has an inspection port closed by a circular cover.

Both sidecars are very handsome and roomy vehicles, the heavier model possessing every useful refinement ever crowded on a chassis. Sectional engines and individual parts are displayed in variety for the benefit of discerning purchasers.

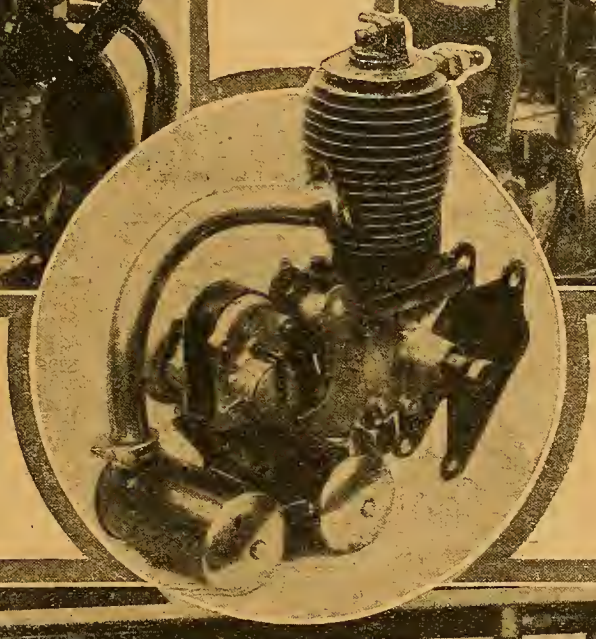


The luxurious 8 h.p. Sunbeam—an ideal passenger machine.

TWO-STROKE AND FOUR-CYLINDER ENGINES.

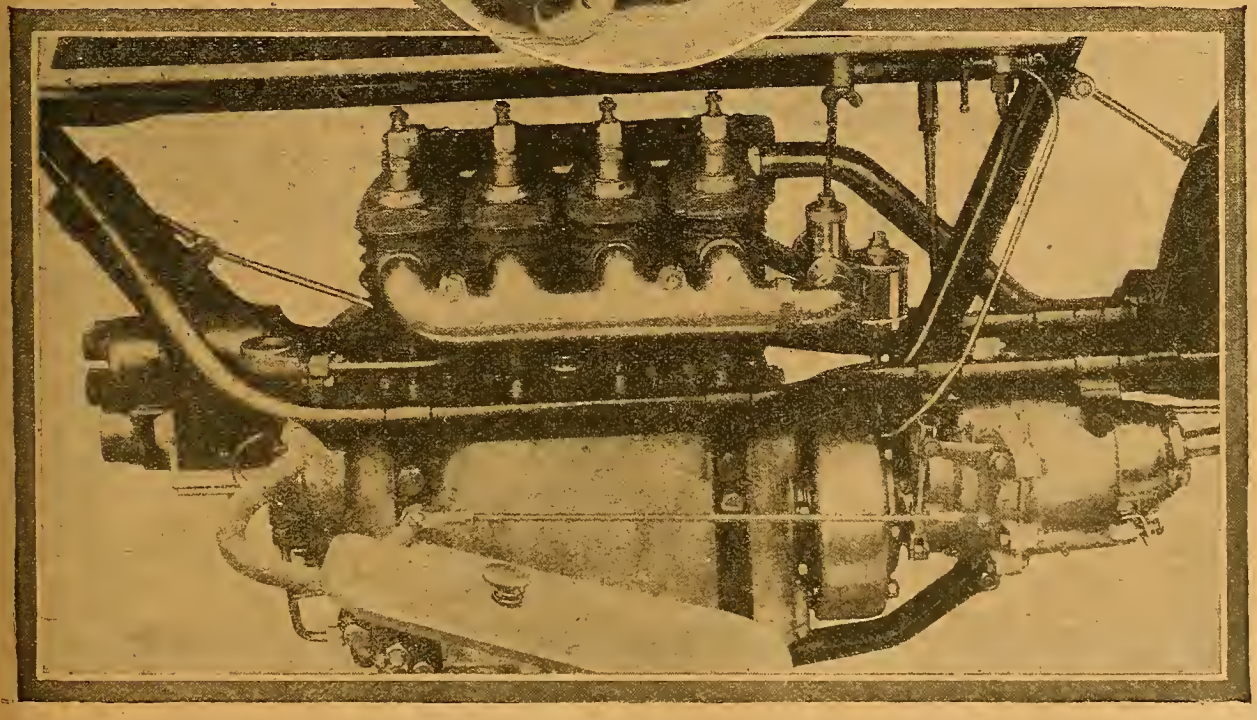


Top: The Calthorpe and Ivy two-stroke power units.



Centre. The popular Villiers two-stroke power unit. Note the dual silencers.

Bottom: The 7 h.p. four-cylinder F.N., which has made its re-appearance.



The Trusty Triumph Programme—Velocette Two-stroke.

Stand No. 96.

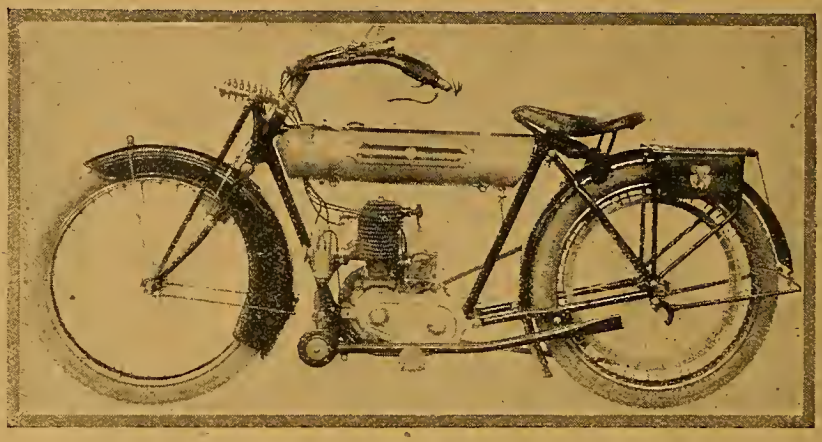
Triumph Cycle Co., Ltd., Priory Street, Coventry.

THREE Triumph models are shown—two being variations of the 4 h.p. model, and the other the lightweight. A new departure is seen in the all-chain drive machine, which has a gearbox of Triumph manufacture. It operates on the sliding gear-wheel principle, low gear being obtained by internal dogs engaging with projections on the mainshaft, middle by the teeth of the wheel meshing with another wheel on the layshaft, and top speed by the wheel sliding bodily into a larger wheel with internal teeth.

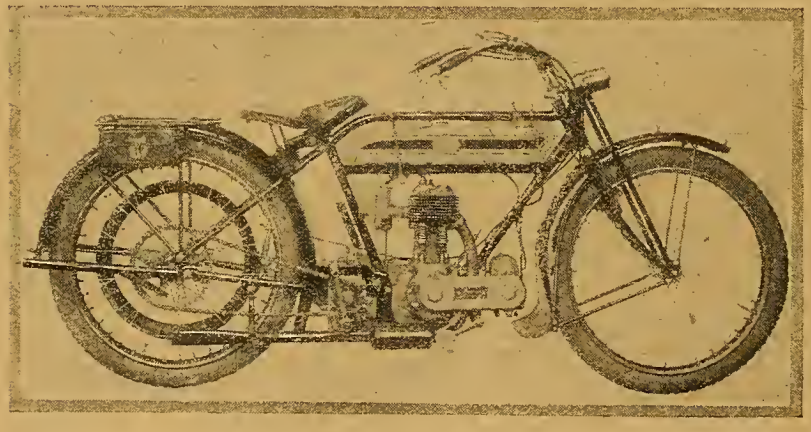
A very ingenious shock absorber is embodied, by means of which all engine snatch is absorbed by a strong spring. A metal plate clutch having alternate plates of copper and steel, and operated from the handlebar, is fitted, and particular notice should be taken of the chaincase, which encloses the front driving chain. This case is absolutely oil-tight, and it is from here that the gearbox receives its lubricant. The method is to pour a pint of oil into the case, when a correct quantity will pass into the gearbox by way of a hollow stud forming one of the anchorages for the chaincase. Thus the chain and plate clutch continually run in a bath of oil. The lubrication of the shock absorber is effected by a force-feed device, worked by the constantly meshing and revolving kick-starter pinions, which squeeze oil through special ducts and the hollow mainshaft to the desired point.

The plain barrel fork spring has been replaced by a device which eliminates the powerful rebound and so prevents breakage at this point. It has also been proved to have a very beneficial effect on front tyre wear.

The popular 4 h.p. engine remains unaltered. It is of 85 mm. bore and 97 mm. stroke, with side-by-side valves, operated by a single camwheel. A very efficient decompressor is provided, which greatly facilitates starting-up. The carburetter is of special design, and is of the two-lever pattern, although when on the road the air lever is opened fully and does not need touching, so that it may be truly called semi-automatic.



The Baby Triumph two-stroke, with handlebar control for the gears.



The new 4 h.p. chain-driven Triumph has an excellent shock absorber, and many other novel features.

The all-chain machine is called model SD, the other 4 h.p. machine being model H, and fitted with Sturmey-Archer three-speed gearbox and chain-cum-belt transmission, but otherwise identical with model SD.

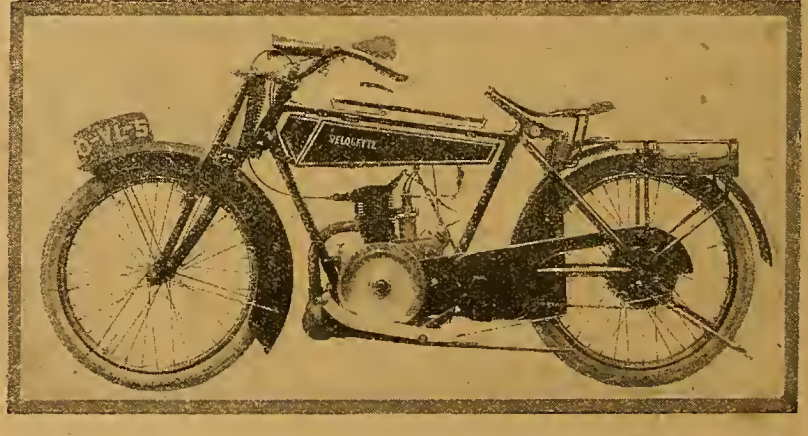
The Junior Triumph is a two-stroke lightweight of 64 mm. by 70 mm. bore and stroke, and 225 c.c. capacity. It is fitted with a simple two-speed gearbox controlled from the handlebar, and has no clutch or kick-starter. The wheels are 24 ins. by 2 ins., so that a very low saddle position is obtained, and the weight is only 125 lb. The frame is continued under the crankcase, and has a straight top tube, to which the round tank is attached by metal straps.

An annoying feature of many two-stroke machines—the noise made when the decompressor is operated—is eliminated on the Junior Triumph by providing a separate lead to the exhaust pipe from the compression release valve.

Stand No. 19.

Veloce, Ltd., Fleet Street, Birmingham.

MANY novelties are incorporated in the 1920 Veloce exhibited on this stand. First, particular attention should be paid to the simple yet efficient manner in which the engine is supported in the frame, the down tubes of which are duplex. The power unit itself is full



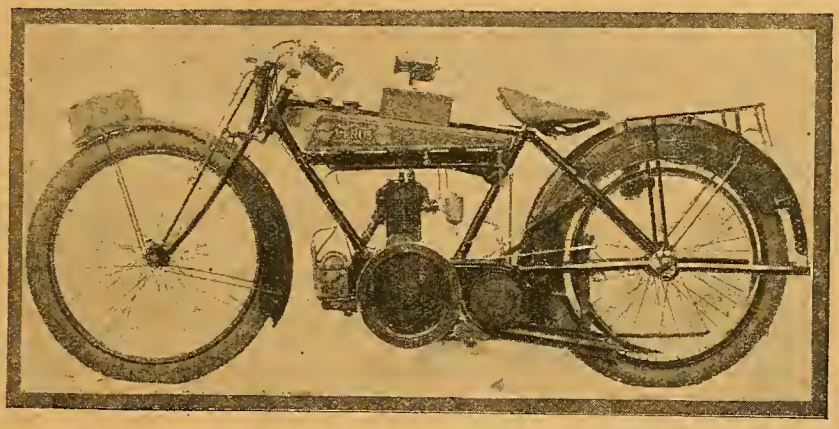
The two-stroke Velocette, which has a splendidly designed lubrication system.

The New Verus Models—A Heavy Sidecar Machine.

of appealing points, but space limits more than passing mention of the ample lengths of the main shaft bearings, the steel cylinder used in conjunction with an aluminium piston, and the unique crankshaft assembly. A new and entirely successful method of mechanical lubrication is utilized.

To turn to other features of the machine the gear change is noteworthy. The control is by means of a flat-shaped knob, which just fits the hand. The shaft to which this is attached passes through a bracket fitted to the top tube in a most get-at-able position, and the changing of the gears is obtained by partial rotation of the knob. The gear itself is a two-speed, although a three-speed box is being made.

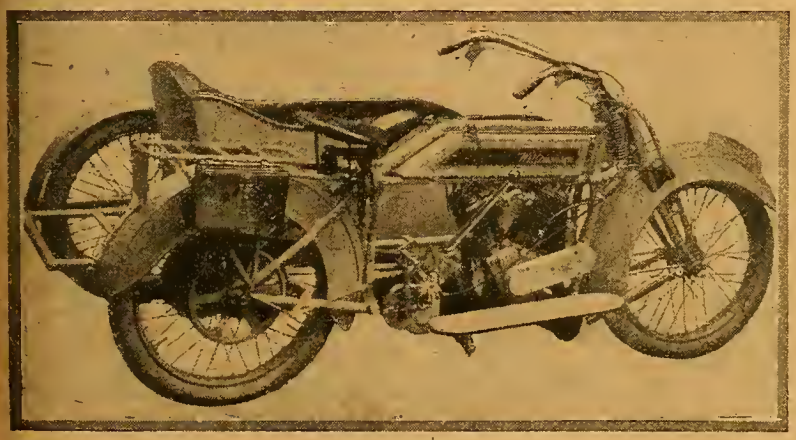
All workmanship throughout is unusually good, and the exhibit is worth the closest inspection.



The 4 h.p. Blackburne-engined Verus.

Stand No. 17a.
Wiseman, Alfred, Ltd., Glover Street, Birmingham.

FOUR very attractive Verus machines are to be seen on this stand. The single-speed 2¼ h.p. two-stroke model is to sell at a low figure, and will undoubtedly help to tap a huge market. The 2½ h.p. two-stroke with two-speed gearbox, kick-starter and chain-cum-belt drive is a good example of the modern light touring machine; it is priced at £75. A very interesting feature of these two models is the amount of work actually carried out on them by the makers. The cast-iron cylinder and piston and aluminium crankcase and footboards are cast by Messrs. Wiseman in their own foundry. The other two models are fitted with 2¾ h.p. and 4 h.p. Blackburne engines, the more powerful machine having a Sturmey three-speed gearbox. The colour scheme and lines of all models are very taking, a purple tank with gold lines being fitted. Attention to detail is very marked on these Verus machines. For example, the accessibility of the brake pedal, the strengthening of the tank, and the fitting of a small filter, as well as the usual filter gauzes, in the filler caps. These interesting machines were described in detail in our issue of October 29th.



The Williamson is ideal for sidecar work.

Stand No. 78.
Williamson Motor Co., Ltd., Earlsdon, Coventry.

THE Williamson Motor Co. are showing their 8 h.p. model, fitted with a well-tried water-cooled engine, harnessed to their sidecar, which shows many improvements for 1920. The water-cooled model has been with us for many seasons, and its general outlines will be known by those who follow the movement closely. It is fitted with an 8 h.p. water-cooled horizontally-opposed Douglas engine of 964 c.c., and Douglas three-speed gearbox, suitably strengthened for the additional horse-power. A Gallay honeycomb radiator is included in the design. Valves are horizontal and of large diameter, fitted with tappets which are easily removable. The company's duplex frame of great strength has shown up remarkably well in many competitions since 1913, and is too well known for a detailed description. It has a solid steel stamping ball head of a very substantial nature. Douglas forks of an extra heavy pattern are standard.

The tank has a petrol capacity of 2 gallons and ½ gallon of oil, which finds its way to the engine via a sight-feed semi-automatic lubricator fitted at the rear of the tank in a convenient position. The filler caps are 2⅛ in. diameter. It is finished in Ailsa grey with panel of royal blue edged with gold, and presents a very handsome appearance.

The carburetter is an Amac, and a B.L.I.C. magneto is used. The footboards are long and wide, carried on heavy cross tubes, the front pair being part of the frame and the rear pair secured to the bottom bracket.

The drive is all-chain, its cush drive being housed in the exceptionally large sprocket on the rear hub. Much attention has been paid to the mudguarding, and the front guard is a particularly thorough job. To the front wheel is fitted a front brake of conventional design; the rear one, however, is of the external-contracting pattern, having a drum 10 ins. in diameter, which should be capable of arresting the machine's progress on any hill where the surface is sufficiently good to provide a grip. The tyres are 700 mm. by 80 mm.

An innovation is the 6 h.p. air-cooled model, fitted with a J.A.P. V-twin engine and bottom bracket three-speed gearbox giving ratios of 5, 7, and 13 to 1 approximately. This model follows the general design of its bigger brother with a few detail alterations incidental to its construction. The frame has been suitably altered to accommodate the shorter limits of the engine plates. The magneto platform is carried on two short tubes of the frame, which supplies rigid and accessible adjustment to the magneto chain. Adjustment of the driving chain is on similar lines, the gearbox sliding along two tubes at the bottom bracket. The clutch on this model is handlebar-controlled, and the kick-starter mechanism is partly enclosed by the chain guard.

The Williamson sidecar for 1920 has been redesigned, and is now rather more roomy, with a shorter apex at the front. It is finished up to the usual Williamson standard, and the colours on the stand are eloquent of the firm's good taste. Some half-dozen sidecars are shown unattached, and a sidecar chassis alone is also exhibited. It will be noted that not a single bent tube is used in the chassis design, and the springing is of an exceptionally high order.

The Wolf Lightweights—The Unorthodox Wooler.

Stand No. 118.
Wulfruna Engineering Co., Ltd., Great Brickkiln Street, Wolverhampton.

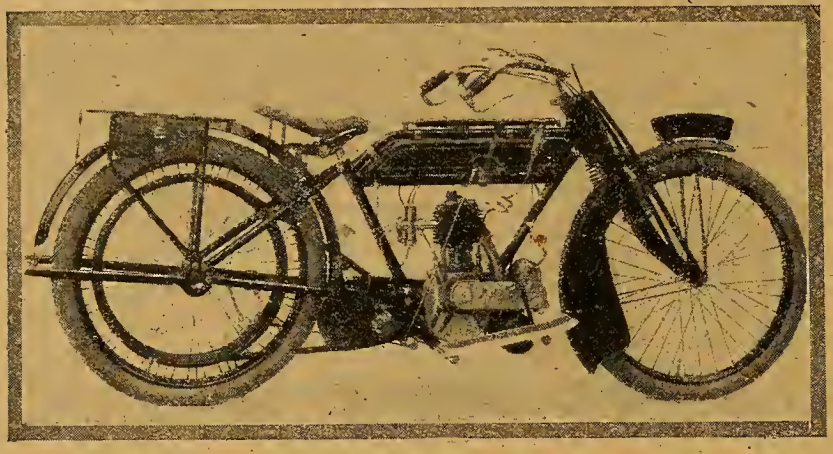
HERE are shown two exceedingly workmanlike lightweights, similar in design but differing as regards power unit, Model B having a Villiers two-stroke engine of 2½ h.p., while model C has a standard 2¾ h.p. J.A.P. engine.

Model B has an Albion two-speed gearbox of the constant mesh sliding dog type, while model C is fitted with a Burman gear, clutch and kick-starter.

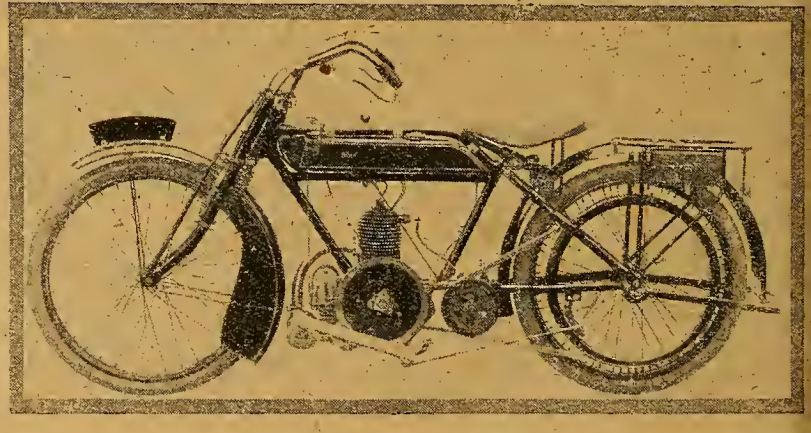
The carburetters on the machines displayed are A.M.A.C. lightweight models, but a Senspray can be supplied without extra cost to those who prefer it. Ignition is effected by an E.I.C., M.L. or O.A.V. magneto.

The frames are of exceptional strength, built up from weldless steel tubes, and are guaranteed to stand the worst Colonial roads. The spring forks are either the Druid or Brampton, the company being fully satisfied as to the merits of both forks. The wheels are 26 ins. by 2 ins., fitted with Dunlop studded tyres, and are amply mudguarded for the worst weather.

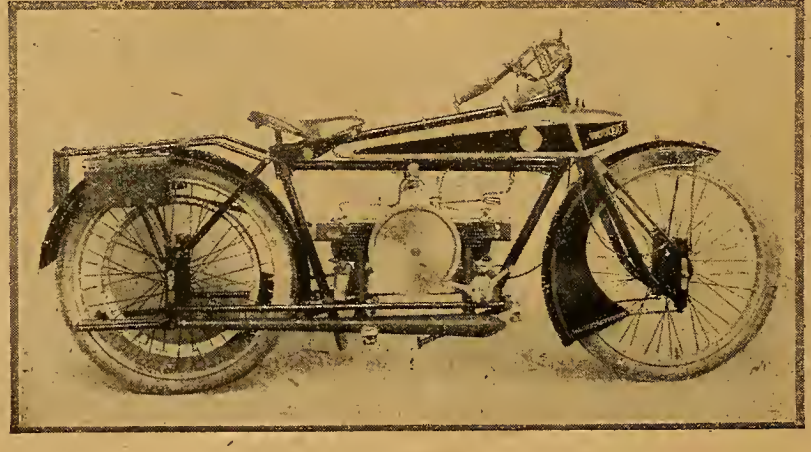
Model B with Albion gear costs £59 10s.; Model B with Sturmey-Archer or Burman and kick-starter, £65 10s.; Model C with Albion gear, £64; Model C with Sturmey-Archer or Burman and kick-starter, £70.



The Wolf is fitted either with two- or four-stroke engine. This model has the 2¾ h.p. J.A.P.—



—while this has a 2½ h.p. two-stroke Villiers.



The 2¾ h.p. Wooler has many original features and an unusual appearance.

Stand No. 47.
Wooler Engineering Co., Ltd., Alperton, London.

TWO models of the new horizontally-opposed 2¾ h.p. Wooler motorcycle are on show at this stand, the T.T. model which has dropped bars and foot rests, and the roadster with upturned bars and wide footboards.

A special working model is on view, which clearly indicates the action of the nine-speed variable pulley gear and the special lubrication system employed for the engine. As is well known, the principal features of the horizontally-opposed Wooler are its extreme accessibility and economy in running. The actual engine can be taken to pieces in the remarkable time of 6½ mins., which fact is demonstrated. Side exhaust valves are fitted and overhead inlet valves. The valve gear is self-oiling, owing to the valve tappet rods being hollow, and thus conducting an ample supply of oil to neat oil-tight chambers containing the valve rockers. The oil is raised from a sump beneath the engine by means of an endless chain elevator, which throws the oil into the timing gearcase. From here it drains through ducts to the crankcase, which is fitted with overflow pipes, thus ensuring a constant level. The lubrication of the cylinders and the bearings is effected by the splash method. A pedal on the right-hand side of the machine operates the gear. The pulley is under-geared and of large diameter.

A very satisfactory form of springing is incorporated, both wheel spindles being mounted on a system of springs giving a vertical movement. Each spindle passes through a pair of sliding pistons working in cylinders at the side of the wheel, coil springs being interposed above and below the pistons. No side play can possibly result from this method.

The road wheels are provided with hollow hubs and knock-out spindles and are consequently easily detachable. The front portion or nose of the tank forms a reserve petrol receptacle, which ensures the rider against any possibility of running short of petrol.

The present price of the Wooler is £85, and deliveries at the rate of 40 a week are anticipated.

The New Horizontal-Twin Zenith and its Brothers.

Stand No. 108.

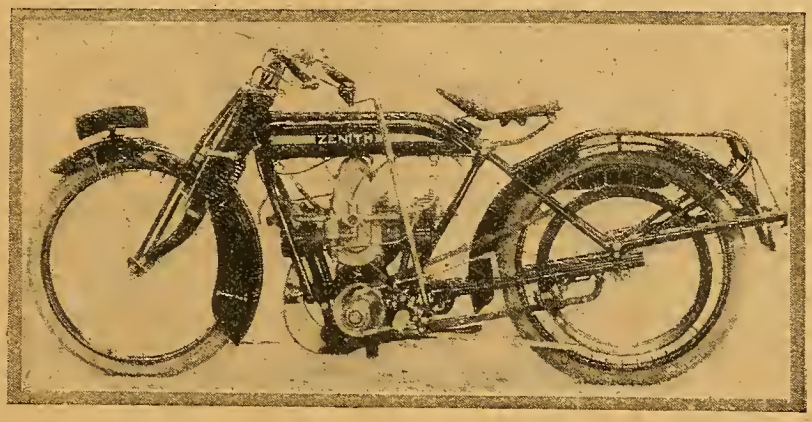
Zenith Motors, Ltd., Hampton Court.

ZENITHS are showing three types of machines—the 2¾ h.p. horizontally-opposed twin, the 5 h.p. sporting, and 8 h.p. passenger models. Of these, the first-named is naturally the centre of attraction.

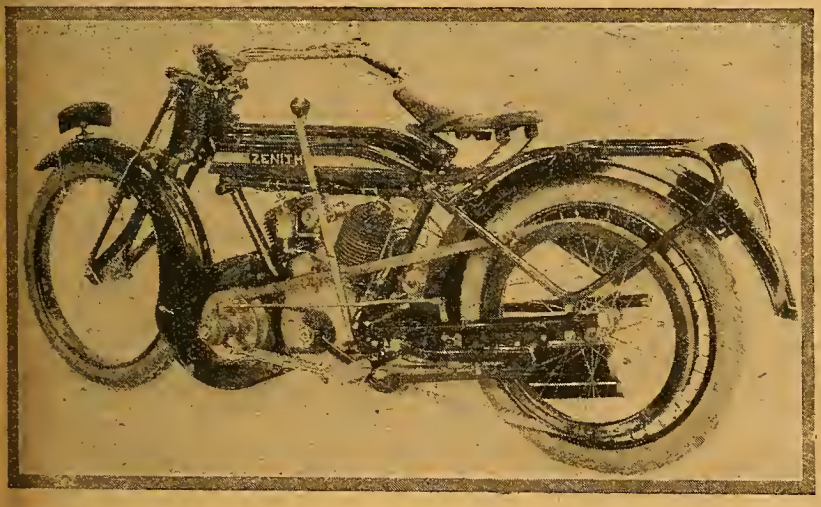
It has an engine with a bore and stroke of 58¼ by 65 mm. respectively, giving 347 c.c., fitted with an outside flywheel, side-by-side valves on top of the cylinders slightly inclined.

The drive is transmitted through a chain to a countershaft running on Skefko double row ball bearings, on the left hand end of which is fitted the well-known Gradua gear, which on this model gives a range of speeds from 5¼—1 to 11—1. The air release pipe is bent so as to discharge on to the driving chain, which, together with the Gradua gear, is well protected from mud by a large shield.

The frame embodies duplex front and rear down tubes, and is a successful attempt neatly to accommodate a type of engine notoriously difficult to house. This type of frame, in addition to possessing a symmetrical appearance, allows the cylinder to be detached without disturbing the crankcase. The rear stand is pivoted about 3½ ins. above the centre of the rear axle, with the idea of providing the extra leverage necessary for jacking up the machine easily.



This new Zenith model is the centre of many admiring crowds.



The 8 h.p. Zenith has a J.A.P. engine, and is intended for passenger work.

The saddle on all three models is mounted on quarter-elliptic springs, two supporting the rear, and one, with a roller end working in a groove, the peak. The old method of operating the back brake by means of a Bowden wire has been abandoned in favour of a system employing rods throughout. All models will have the back stays and carrier in one unit, immensely strong and easily detachable in case of accidental damage.

The 5 h.p. and 8 h.p. models are developments of similar machines marketed by the concern for many years past, and contain many detail refinements. The 5 h.p. has a J.A.P. engine of 70 mm. by 85 mm. bore and stroke, and is intended to be used as a sporting solo machine. It is direct driven through the Gradua gear, giving gear ratios of from 3½—1 to 7½—1.

The 8 h.p. Zenith is intended for passenger work, and is fitted with a J.A.P. engine of 85 mm. bore and 85 mm. stroke, driving by chain to a countershaft placed in front of the engine, incorporating a clutch and kick starter. Touring bars are fitted on this model.

An extremely large mudflap and undershield is a feature, protecting the chain and Gradua gear mechanism from the elements. The finish on all models is excellent, being black and grey.

Visitors to this stand will be interested in the many little detail improvements and departures from the orthodox, which a close inspection will reveal. As an instance of the latter, we would draw attention to the new pattern stand clip on the horizontally-opposed twin model, which does away with the ordinary method of attachment to the rear mudguard. On the two other types shown, the stand is fixed just behind the engine, and this position being almost the point of balance, the front wheel can be very easily lifted for cleaning.

It will be within the recollection of our readers that Zenith machines were very favourably commented on in the recent A.-C.U. trial on the score of silence.

The cylinder, camshaft and crankshaft assembly of the 2¾ h.p. Zenith engine.

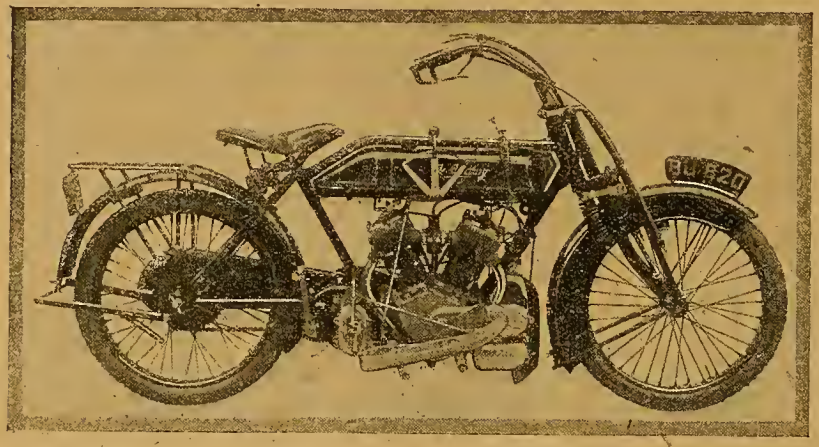
E51

LATE ARRIVALS AT OLYMPIA—The Kingsbury, Olympic, and Victoria.

Stand No. 1.
London and Midland Motors, Ltd., 445, Oxford Street, W. 1.

THE well-known Kingsbury scooter, with and without seat, and a new production in the form of the Kingsbury motorcycle are exhibited on this stand.

The Kingsbury scooter is fitted with a two-stroke engine developing 2¼ h.p. A particularly good feature is the position of the engine, which is placed neither over the back wheel nor over the front, but centrally in the frame, thus assuring good balance and stability. The drive is conveyed from the engine to a ball-bearing countershaft by chain, and thence by chain to the rear wheels. The wheels are disc and are fitted with 16 in. by 2⅜ in. tyres. The brakes are of the band type on the back wheel and are controlled by heel and Bowden lever. The price is 40 guineas, and a seat can be supplied for a small extra charge.



The 6 h.p. twin Bradbury which is described on page 117.

The Kingsbury Motorcycle.

THE Kingsbury motorcycle is fitted with a single-cylinder two-stroke engine with bore and stroke of 68 mm. by 70 mm., giving a cubic capacity of 254 c.c. High-speed white metal bearings are fitted to the big-end and main bearings of the crankshaft. A 9½-in. flywheel ensures steady running and an efficient silencer with tail pipe is fitted. The magneto is chain-driven and rapidly adjustable and Senspray or A.M.A.C. carburetters are optional. Transmission is all-chain, through a two-speed gearbox fitted at countershaft and a special cushioning device to absorb engine shocks. The spring forks are of Kingsbury design, and two pairs of footrests are fitted as standard. The tank tapers from front to rear and has a capacity of 1½ gallon petrol and 1 quart of oil, semi-automatic sight-feed lubrication being employed.

One of the most interesting features of all is, however, the price, which, at £50 only, comes several pounds below the majority of motorcycles of this type. Deliveries are expected shortly after the Show.

£50

Stand No. 123.
Olympic Cycle and Motor Co., Ltd., Granville Street, Wolverhampton.

LIGHTWEIGHT enthusiasts should not pass this stand without an examination of the 2½ h.p. Olympic. Perhaps its most original feature is the frame, which has a patented design of gearbox suspension, adaptable to any make of gearbox, providing positive, simple, and instant adjustment to the chain portion of the transmission by merely turning a conveniently-placed bolt.

The gearbox, during the process of chain adjustment, can swing for a limited distance around the forward bolt, and thus provides an arc of travel more than equal to a whole link in the length of chain, therefore, it should not be necessary to carry half links in the tool kit, as the entire process takes only a matter of seconds.

Straight tubes only are used in the frame construction, the rear as well as the head being reinforced with a web. The bridge for the rear mudguard is exceptionally strong, and permits of very wide guards being used where necessary. The stand support is also ingenious, having two flat surfaces in contact when in operation.

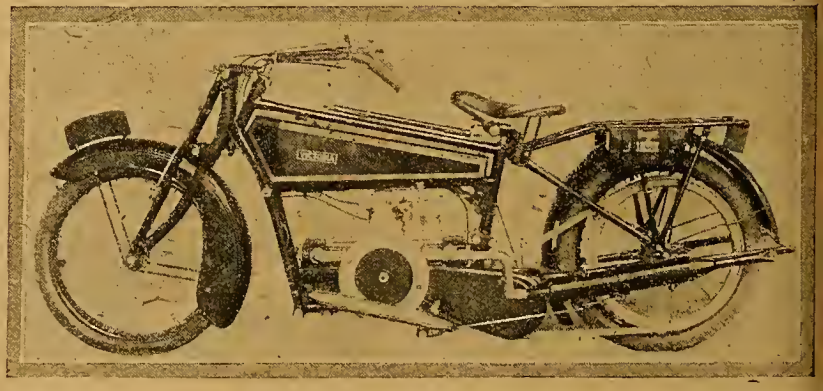
The gearbox on the model shown is a Burman two-speed, with kick-starter and hand-controlled clutch. The power unit is a Verus of 2½ h.p., its dimensions being 70 mm. by 70 mm., and its capacity 296 c.c. It is of the three-port type, and has clean, tapering fins to its cylinder, while the sparking plug placed at an angle of 40 degrees requires the shortest possible high-tension wire.

The wheels are 26 by 2¼, and are fitted with Red Streak tyres and all black hubs.

Stand No. 87.
Victoria Motor and Cycle Co., Ltd., Dennistoun, Glasgow.

The exhibits on this stand consist of Victoria motorcycles, and attention is directed principally to the 5-7 h.p. horizontally-opposed twin model. A Coventry Victor engine, with outside flywheel, forms the power unit, and this is supplied with gas from a single-lever Amac carburetter fixed in an unusual position above the induction pipe. Full details of this engine will be found in the engine section of this issue.

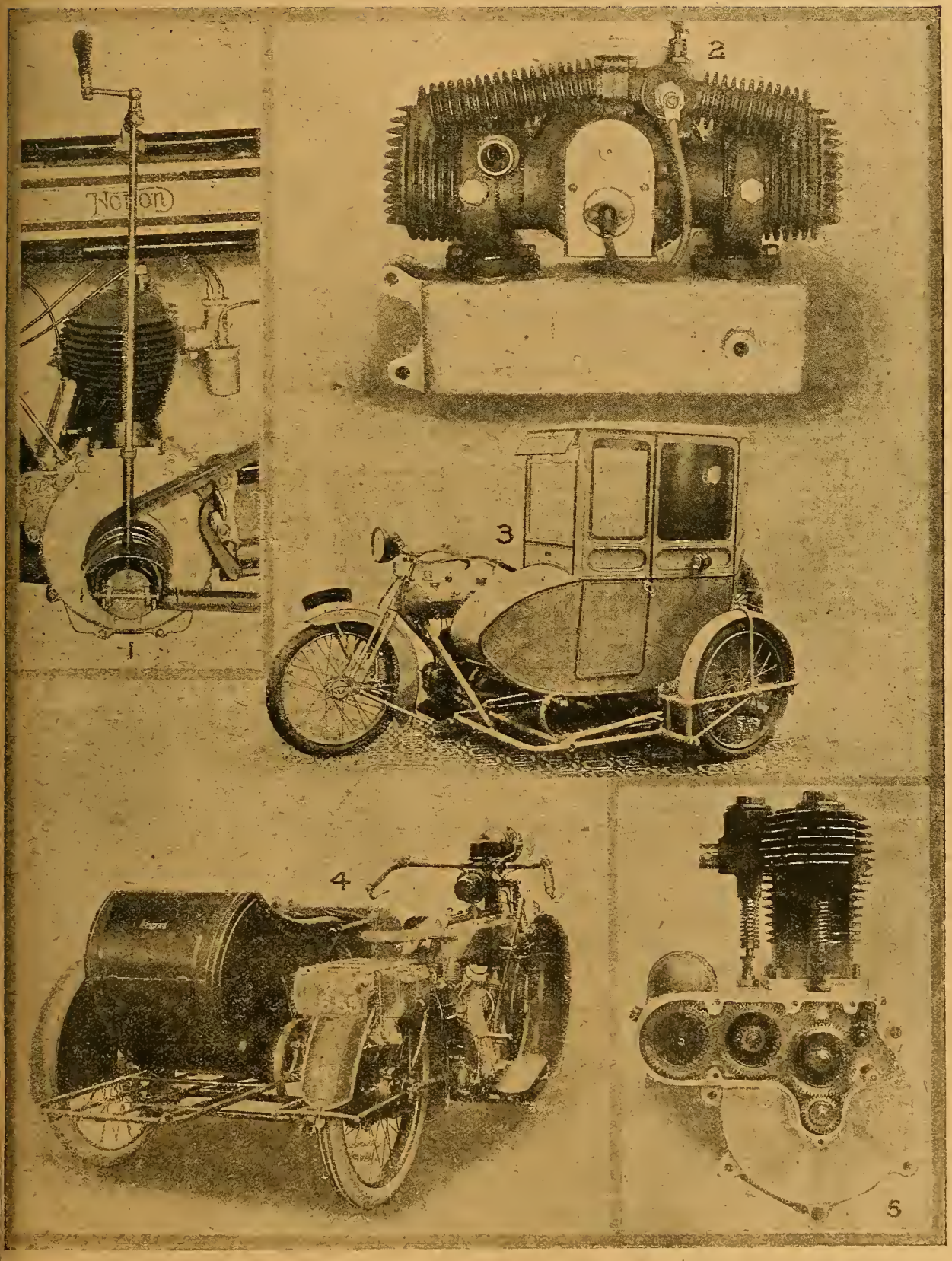
The frame has a sloping top rail, thus allowing a low saddle and a lengthy wheelbase. Duplex front down tubes support the parallel stays which form the engine cradle, and Brampton forks are fitted, with the usual rim brake. A three-speed Sturmey-Archer gearbox is located at the countershaft, with kick starter and handlebar-controlled clutch. Chain-cum-belt transmission is employed. A noticeable point is the large silencer, which is attached to the near-side chain stay. The gas enters it from the engine by a single exhaust pipe with two right-angled bends, and reaches the atmosphere by a short fish-tailed pipe. The petrol tank is of good capacity, and lubrication is by hand pump. The machine is finished in black, with gold-lined tank.



The 1920 Victoria is a horizontal twin with Coventry Victor engine and countershaft gear. Note the novel silencer design.

Another Victoria model is the 2½ h.p. two-stroke lightweight, which has a Villiers engine. Three types of this model are made, one a fixed gear, another having a two-speed countershaft gear, and the third a similar gearbox with clutch and kick starter.

INTERESTING EXHIBITS AT THE SHOW.



1. The Bradbury gear fitted to the speed model Norton. 2. The horizontally opposed twin engine of the Black Prince. 3, Studying the lady passenger's comfort—the Bat cabriolet. 4. A rear view of the handsome James combination. 5. The Quadrant engine showing the unusual valve position.

LATE ARRIVALS (contd.)—Private Shows.

Stand No. 230.
Midland Gear Case Co.

A LARGE selection of leather goods of interest to motorcyclists is shown on this stand, including leg shields and tool bags. The leather knee-grips for fitting to the tank are worth examination.

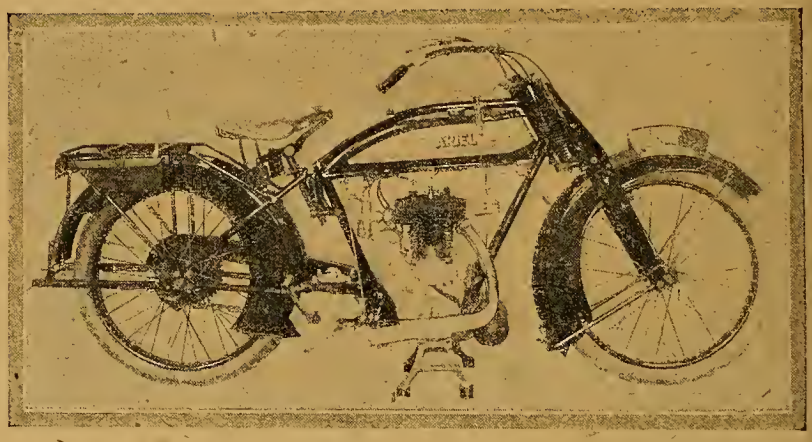
Stand No. 174.
Perry and Co., Ltd., Tyseley, Birmingham.

ALTHOUGH the majority of exhibits on this stand are of pedal cycle goods, there are one or two items that are of interest to motorcyclists. Two sizes of chains are made, viz., $\frac{5}{8}$ in. by $\frac{1}{4}$ in. and $\frac{5}{8}$ in. by $\frac{3}{8}$ in. Free wheels for motorcycles are also made in two types, for 20-tooth and 22-tooth sprockets. All the articles are well up to the Perry standard of manufacture and finish.

Stand No. 228.
British Lighting and Ignition Co., Ltd., B.L.I.C. Works, Cheston Road, Aston, Birmingham.

THE B.L.I.C. magnetos are well known, and six models of this instrument are shown, the ZA1 for small single-cylinder engines, the ZE1 for large singles, the ZEV for twin-cylinder engines, the ZE2 for horizontally-opposed engines, the ZA2, a similar model for Bowden control, and the ZA4 for four-cylinder motorcycle engines.

In design and construction the B.L.I.C. magnetos are particularly sound, as may be seen from the many component parts on view. Armatures, carbon brush holders, distributors, contact breakers, and other component parts are all on view.



An entirely new Ariel, the 4½ h.p. single with chain drive, new forks and redesigned frame.

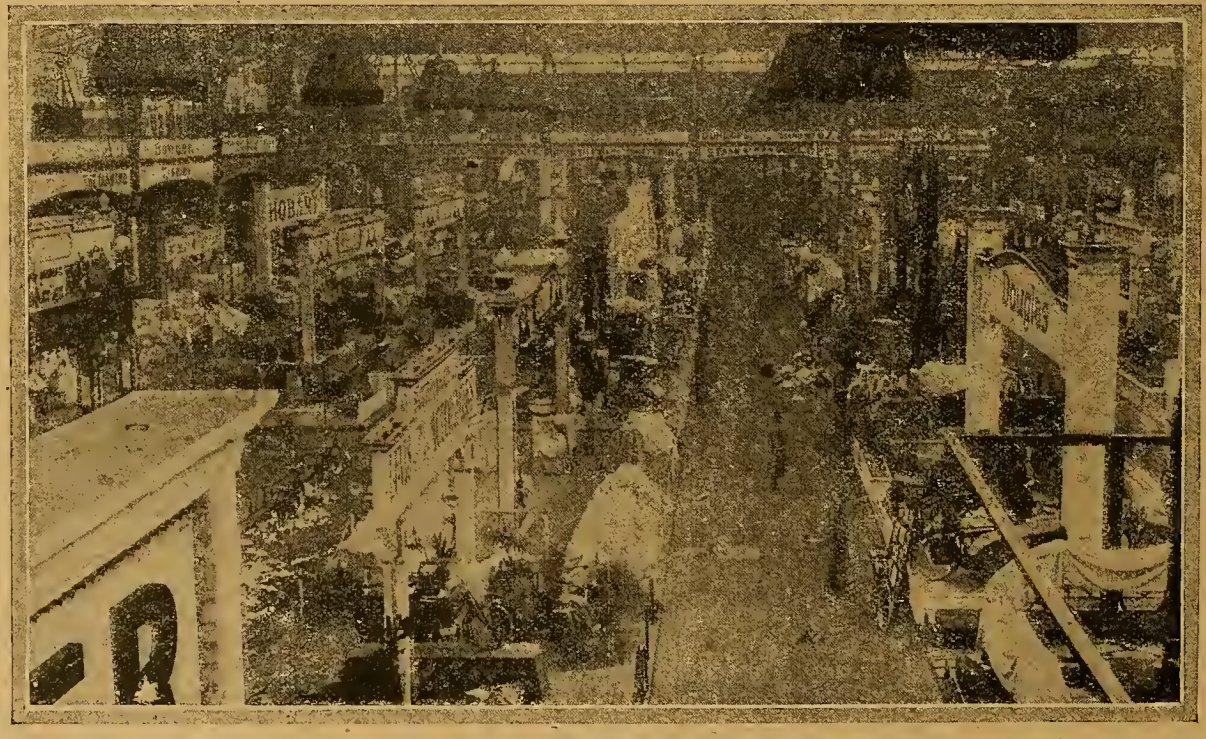
Stand No. 13.
The Red Streak Tyre Co., 62, Basinghall Street, London, E.C. 2.

THE motorcycle tyres here shown have a tread of the finest red rubber, the wearing qualities of which have been demonstrated during past seasons, while the walls are of tough white rubber. This combination is claimed to have a life unattained by any other pattern, and is expected to appeal to hard riders who grudge time spent on changing covers. Both ribbed and studded treads are on view. Another exhibit, costing a little less, is their No. 6 studded cover of the same high-grade materials as the former, but all grey on conventional lines.

Crowded Out.

MESSRS. Burney and Blackburne have been unfortunate enough to be crowded out. At their Shaftesbury Avenue showrooms a full range of their productions is on view, and they cordially invite all motorcyclists to pay them a visit.

MESSRS. Pearson and Sopwith, the makers of the P. and S. motorcycle, have also been crowded out. It will be remembered that the P. and S. was recently described in *Motor Cycling*. Messrs. Pearson and Sopwith are holding a special show at their showrooms at 60, Mortimer Street, London, W.,—to which all interested are invited.



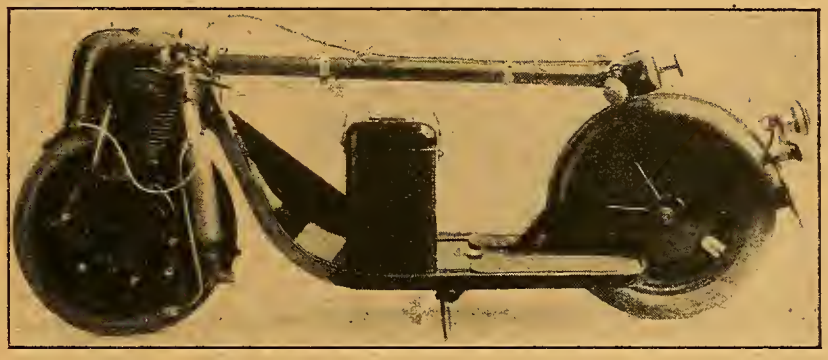
What Olympia looked like just before the opening. Last minute preparations in progress.

OF INTEREST TO LADIES, CYCLISTS, AND SCOOTER RIDERS.

SECTION 2.—Scooters and Lightweight Sets.

Stand No. 28.
W.T.T. Eng. Co., Ltd., 6-10, Dalling Road, Hammersmith, London, W.

THE Autoped scooter and the British Johnson Motor Wheel attachment for bicycles are exhibited here. The Autoped scooter is controlled principally by the steering column. Pushing the steering column forward engages the clutch, and when pulled right back the brake is put on. Twist-grip control is fitted for the throttle, and large diameter tyres are used. The complete weight of the machine is somewhere in the neighbourhood of 100 lb. The steering column can be folded down to form a handle for carrying, and consequently the machine can be stored in almost any small space. The Johnson Motor Wheel consists of a small twin-opposed engine, which is complete with a magneto and electric lighting generator fitted into the flywheel. It will propel an ordinary cycle at the rate of 35 m.p.h., and is capable of 150 m.p.g.



The Autoped scooter, shown on the W.T.T. Engineering Co.'s stand.

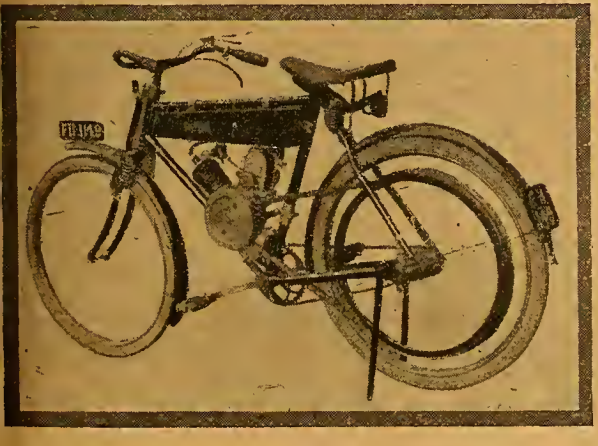
Stand No. 40.
Chas. Day Manufacturing Co., Ltd., 221-222, Shoreditch, London, E. 1.

THE only item likely to be of interest to motorcyclists at this stand is the Dayton motor-driven invalid tricar. This has been designed to meet the needs of the disabled. The power unit employed is the Dayton two-stroke engine, and the transmission is effected by chain and belt. The engine is geared down to give a maximum speed of 8 m.p.h., and the steering is by a lever operating on a ratchet. The petrol consumption is very low, being approximately 75 m.p.g., consequently the running cost is very small. The price is 80 guineas.

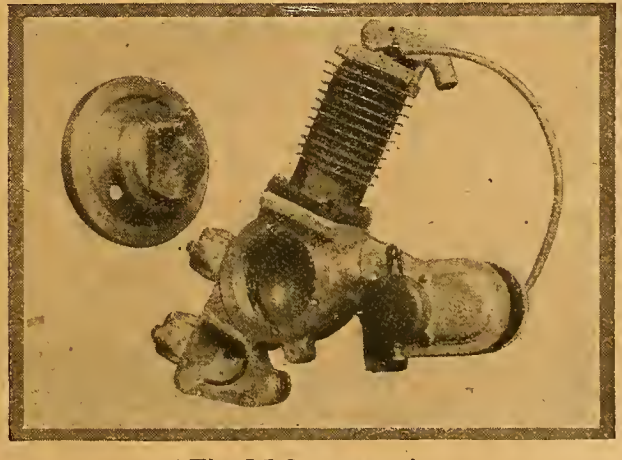
Stand No. 39.
J.E.S. Motor Works, Worcester Street, Gloucester.

LIGHTWEIGHT motorcycle enthusiasts will find plenty of interest in the latest 1½ h.p. J.E.S. attachment and motorcyclette, on view at Stand No. 39.

The J.E.S. is exhibited both as a separate auxiliary motor attachment ready for fitting to an ordinary cycle, priced at 23 guineas, and in the complete form with special cycle, engine, tank, etc., at 38 guineas. The 1919-20 model contains many improvements over the previous models. An interesting new feature is the patent single-lever floatless carburet-



The J.E.S. motorcyclette.



The J.E.S. power unit.

The Simplex-engined Motorped—Commercial Skootamotas.

ter, which is claimed to give 200 m.p.g. on a gearing of 8 to 1. The inlet valve is mechanically operated by a lever situated in the inlet pipe. An oil sump, containing a quantity of oil sufficient for nearly 300 miles, and incorporating a mechanical oil pump, is a feature of the latest model. The engine has a bore and stroke of $2\frac{3}{16}$ ins. by $2\frac{3}{8}$ ins. respectively, and develops a full $1\frac{1}{2}$ h.p. An aluminium piston is incorporated, and the gudgeon pin floats in the piston, instead of in the connecting rod, as is usual. A new method of cooling and oiling the gudgeon pin is embodied.

Stand No. 36.
Patrick Engineering Co., Ltd., New Summer Street, Birmingham.

AT the present time anything which offers a prospect of providing cheap motor cycling for the million attracts unbounded interest. The Motorped cycles exhibited on this stand form a link between the bicycle and the lightweight motorcycle. The machine is an ordinary bicycle fitted with a Simplex power unit, and this was described at considerable length in our issue of September 17th, 1919. Briefly, a self-contained power unit, consisting of a 1 h.p. two-stroke engine with magneto ignition and clutch, is carried by suitable stays over the rear wheel, which it drives through an additional chain sprocket and roller chain. The tiny power unit is remarkable for the neatness of design and economy of space. The unit can be obtained separately for attachment to any machine; it weighs 22 lb. and costs £24 3s.

The Skootamota, made by Gilbert Campling, Ltd. Commercial Scooters are also on view.

Stand No. 41.
Campling, Gilbert, Ltd., 1, Albemarle Street, London, W. 1.

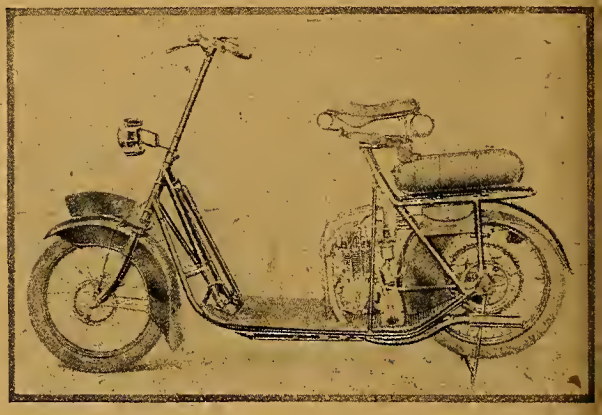
THE A.B.C. Skootamota is the only exhibit at this stand. Two commercial types are shown, having a box for parcels fitted in place of the usual seat. A spring saddle being attached direct to the top of this. A tropical model is also shown, enamelled in light colours, and fitted with a canopy. Three standard models are exhibited, one of which is nickel-plated all over. As is well known, this scooter is fitted with a small four-stroke engine of 124 c.c. The cylinder is placed horizontally over the back wheel, and is fitted with a detachable head, while the transmission is direct by chain to the back wheel. The valves are both located in the head, the inlet valve being at the side and the exhaust valve overhead. The power is transmitted through the camshaft, which allows of a sufficiently low gear being obtained without the use of sprockets of undue size, the wheels being 16 ins. by $2\frac{1}{2}$ ins.

Stand No. 17.
T. and T. Mtr., Ltd., 52a, Condnit Street, London, W. 1.

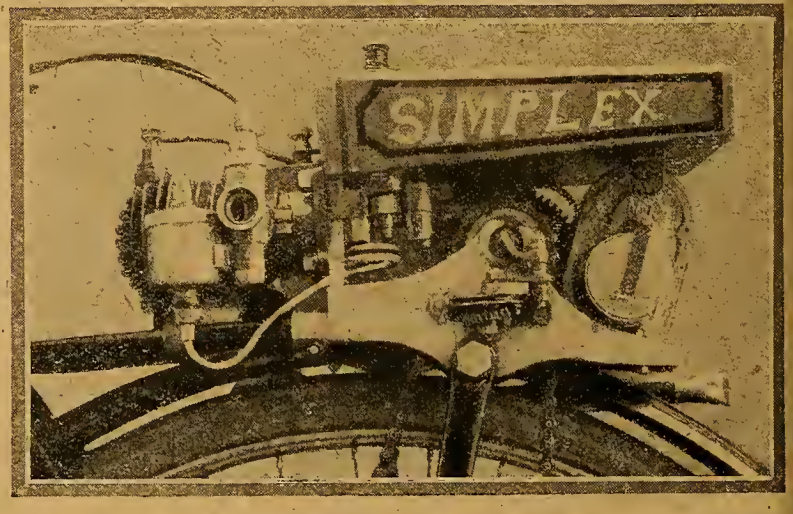
THE Silva scooter is shown at this stand. It is fitted with a modified Auto-Wheel power unit, the small road wheel of which forms the front wheel of the scooter. The footboard is mounted on springs and covered with rubber corrugated matting. The rear wheel is 12 ins. in diameter and fitted with 300 mm. by 60 mm. special Palmer tyres. A working model of the engine in section is also on view. The present price is £55, or with a seat £56.

Stand No. 1a.
Sumner, Vaughan and Co., 28, Victoria Street, Westminster, S.W. 1.

TWO models of the Whippet motor scooter, together with one of the power units employed, are shown on this stand. The scooter is a well-made article, the frame is of the duplex type, and the engine, a four-stroke of $1\frac{1}{2}$ h.p., is built on advanced aero lines. The transmission is effected by a roller chain from the engine to a countershaft, and from thence to the rear wheel. Both chains are easily adjustable, and a shock absorber is incorporated. The wheels are quickly detachable, and are fitted with 18 in. by 2 in. Palmer cord tyres. Internal-expanding brakes are fitted to both wheels, the rear being foot-operated and the front by handlebar grip. The machine is equipped with a Runbaken magneto, Amac carburetter, and the price, which includes free registration and one year's free insurance against all risks, is 47 guineas. The Whippet should not be missed.



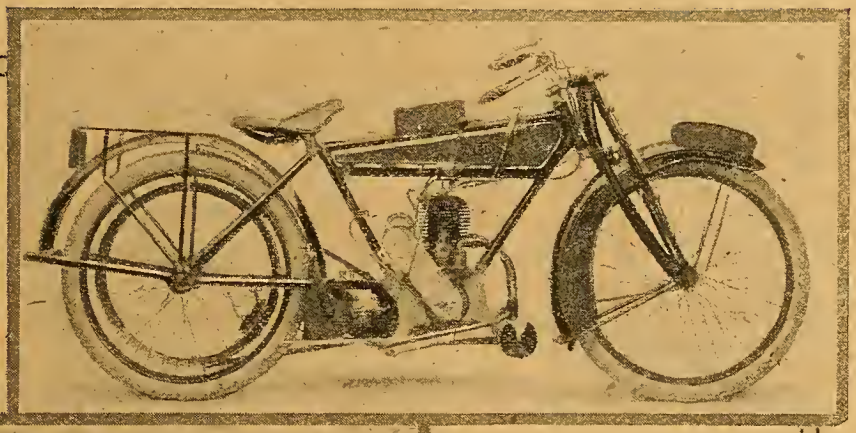
The Whippet scooter of $1\frac{1}{2}$ h.p.

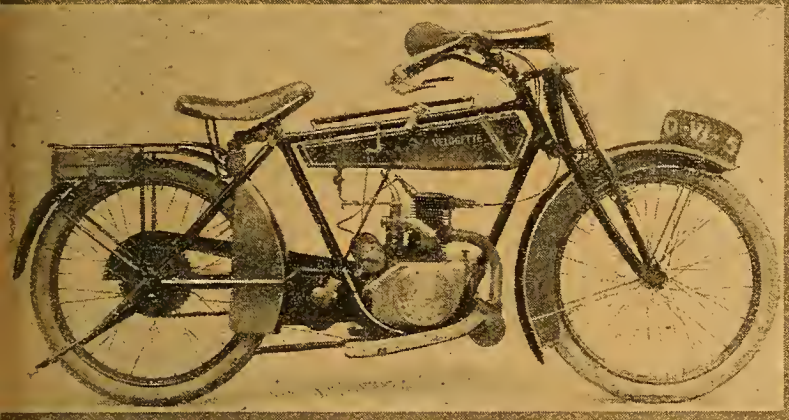


The Simplex power unit, which is placed over the back wheel of the Motorped.

TYPICAL TWO-STROKE LIGHTWEIGHTS.

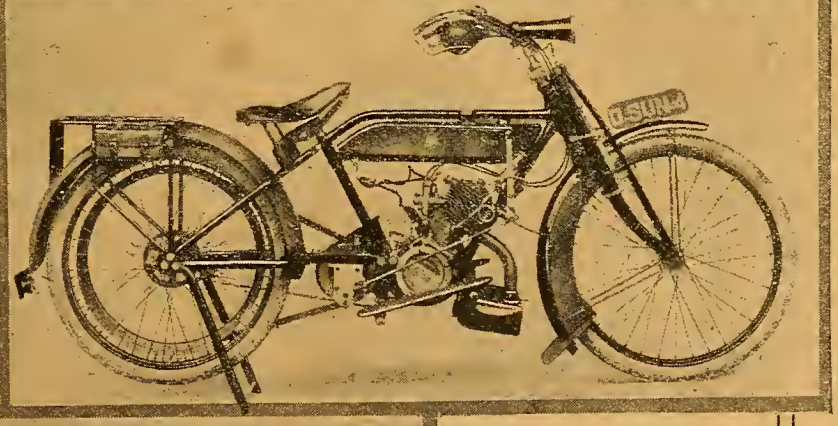
The Verus which is equipped with a 2½ h.p. two-stroke engine, Brampton forks and Burman two-speed gear.

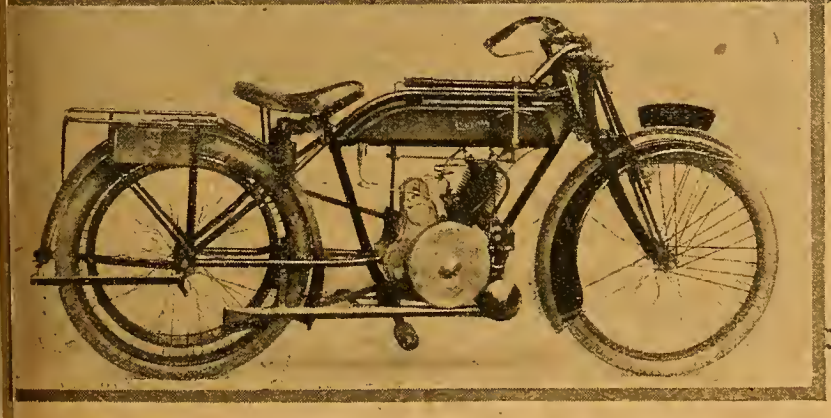




The Velocette, one of the few all-chain driven lightweights, incorporates an automatic lubrication system. The two-stroke engine has many novel and ingenious features.

The Sun two-stroke is fitted with a two-stroke engine of efficient and simple design. The crankcase is a one piece casting.





The Clyno two-stroke, a well made lightweight, in which the engine and gearbox form one unit.

SECTION 3—SIDECARS.—Mills-Fulford—Grindlay.

Stand No. 53.
Mills-Fulford, Ltd., Crown Works, Coventry.

EVER since we have had sidecars, the above names have been inseparably associated with the movement. We therefore looked for something of exceeding merit, and can honestly say we found it. The De Luxe model is a sidecar of exceptionally fine construction. The body is somewhat on the lines of this concern's very successful Empress model of a few seasons ago, but is roomier and has a larger chassis. This latter has a special double frame, and one might almost describe it as one chassis superimposed upon another. Deep springs in the back and seat, in combination with the large Cee springs of the chassis, insulate the passenger from road shocks. The luggage grid is quite novel; when not in use it is stowed out of sight in the back of the sidecar, and is hinged and merely let down when it is desired to carry luggage. This device does not interfere with the seat locker. This model has been introduced to meet the desires of big-twin enthusiasts, such as riders of Harleys, Indians, Zeniths, etc.

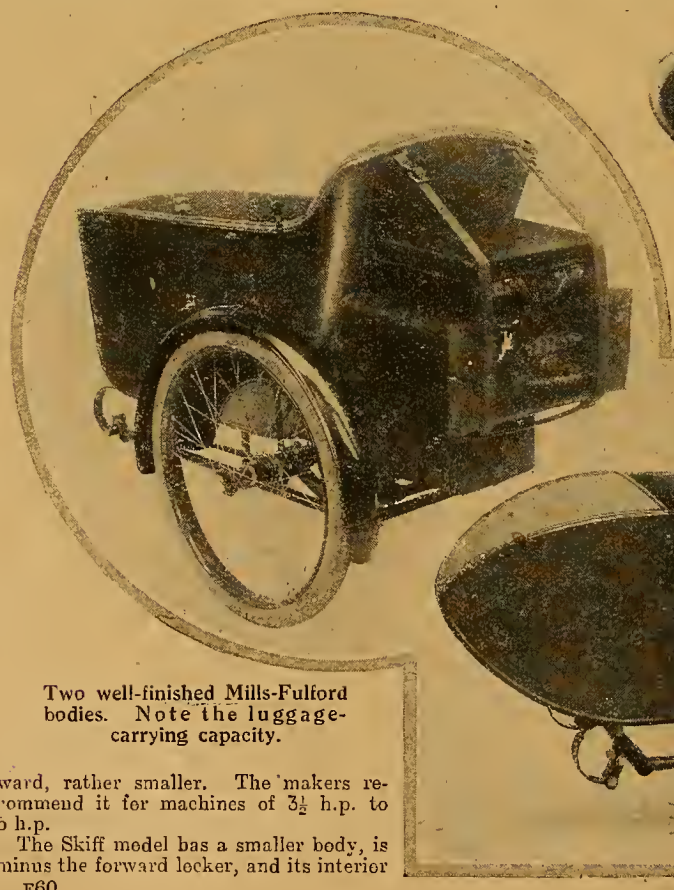
Four samples each of the Corvette and Skiff are shown. The first, which has been with us for eight years, was supplied to nearly all the Allies during the period 1914 to 1918. The body is roomy and thoroughly well upholstered. It has a locker under the seat and another forward, rather smaller. The makers recommend it for machines of 3½ h.p. to 6 h.p.

The Skiff model has a smaller body, is minus the forward locker, and its interior is not quite so well appointed as the car just described. It is intended for machines of low horse-power, where weight is a consideration, and is an excellent compromise between luxury and lightness. The Corvette costs £25 5s. and the Skiff £23. An Olympian Corvette, a larger model, is also shown for £26 5s., but deliveries do not commence until April next.

The Family model has an additional seat for a child and removable screen, and costs 28 guineas. It has also four points of attachment, while the above models have only three, although any model not so fitted can have a fourth attachment for an additional 30s.

The Double Purpose model should not be missed. While principally a tradesman's sidecar, it has a comfortable seat and upholstered back, and can be used for the conveyance of goods or persons. It is constructed of wicker, and in common with the rest of the exhibits here, is well finished. The price is £23.

Screens and hoods are shown, the former at £3 5s. and the latter at £4 4s. A new luggage grid and petrol can holder are two other interesting items on view.

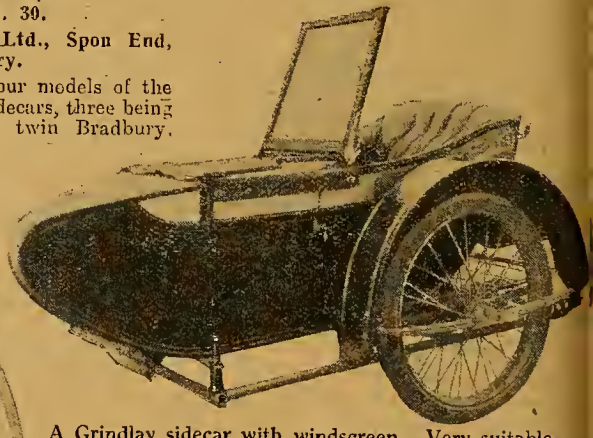


Two well-finished Mills-Fulford bodies. Note the luggage-carrying capacity.

Stand No. 30.
Grindlay (Coventry), Ltd., Spon End, Coventry.

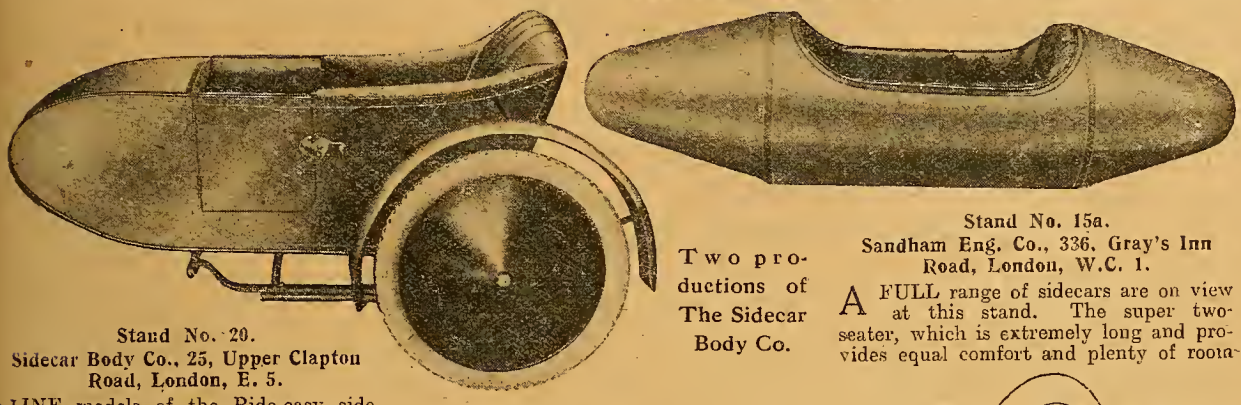
ON this stand are four models of the double-sprung sidecars, three being attached to Triumph, twin Bradbury, and Harley-Davidson motorcycles and one unattached. The 1920 models have their new windscreen (protected), which is adjustable to any position and makes allowance for the accommodation of a second passenger. This model has a new form of luggage grid and petrol-can holder on very novel lines. The chassis of a patented design is constructed of weldless tubing with not a single bent tube. The wheel is sprung with half elliptic springs shackled at rear ends. It boasts a very substantial mudguard 7 ins. wide with side valance. This is fixed to body and not to wheel, thus getting the benefit of the whole system of springing.

The body is of exceptionally roomy proportions, of handsome appearance, soundly upholstered, on cantilever springs (patented system). The front panel is of aluminium. In addition to the locker under the seat, a small one is provided in the dash. This model sells at £33 (approximately), hood, screen, luggage grid and petrol-can holder being obtainable at extra cost. The additional cost of a 28 in. wheel instead of 26 in., making the sidecar suitable for American machines, is £2. Purchasers have the choice between Dunlop and Palmer tyres.



A Grindlay sidecar with windscreen. Very suitable for Harley-Davidsons.

Sidecars for all Purposes—A Spring Wheel Suspension.



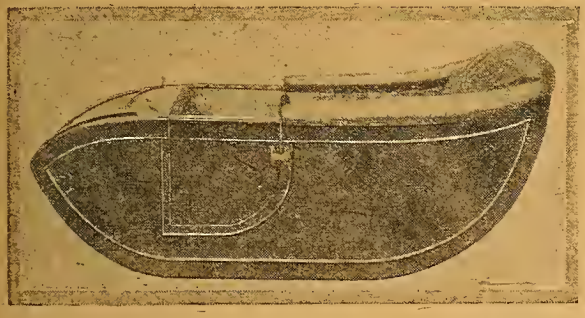
Two productions of The Sidecar Body Co.

Stand No. 20.
Sidecar Body Co., 25, Upper Clapton Road, London, E. 5.

NINE models of the Ride-easy sidecar bodies and chassis constitute the programme of this concern for 1920. The standard body has a very neat underslung chassis, which is beautifully finished and well sprung. A novelty is the projectile super-sporting body, which is made of aluminium to the exact shape of a shell. The nose, which is polished, is spun out of one piece of aluminium. To give it a realistic effect, copper bands are fitted to the side. Although strongly built, this sidecar is very light and comfortable and has ample locker room.

much on the lines of the boot of a car. The tourist will be particularly attracted by this, as there is also room for more luggage on the lid of the locker. The comfort of the passenger is assured by the springing system, which is by coil buffer springs at the front and by large three-leaved C springs at the rear, additional coil springs also being used for a very heavy body. On both models the upholstery is carried out in the best leather cloth with spring cushion and back.

The R34 is designed for the sporting



A smart sidecar body by Birch Aircraft described on page 167.

Stand No. 25.
Watsonian Folding Sidecar Co., Ltd., 129-131, Conybere Street, Birmingham.

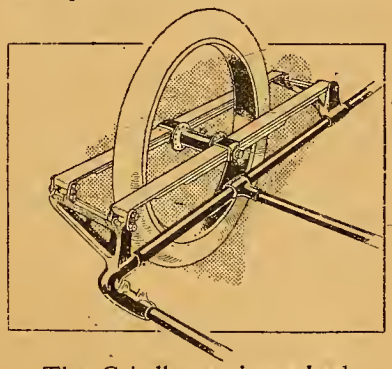
WATSONIAN sidecars are well known for their comfort and sporting appearance, and the chief interest on this stand centres round the new chassis known as model U and the two new bodies known as the Monarch and R34 or Zeppelin. The chassis is triangulated and gives the greatest strength for the weight. It has four-point attachment and is suitable for machines of 4 h.p. and upwards, being capable of resisting the severest stresses occasioned by bad roads or a powerful machine.

The axle is very strong and is of the best steel reinforced by double D-section tubes. The wheel is built on an extra wide hub, designed to exclude dust and grit and retain oil. The mudguard is intended to be fitted to the bodywork, and is of large size and dome-shaped. The two bodies are both on sporting lines, and great attention has been given to wind resistance.

On the Monarch there is a large luggage locker in the tail, formed very rider, and, as its name suggests, it is cigar-shaped. A locker is arranged behind the seat, the back of which hinges forward to give access to it. The standard colour is Watsonian blue, and so finished the appearance of both models is very attractive.

Stand No. 15a.
Sandham Eng. Co., 336, Gray's Inn Road, London, W.C. 1.

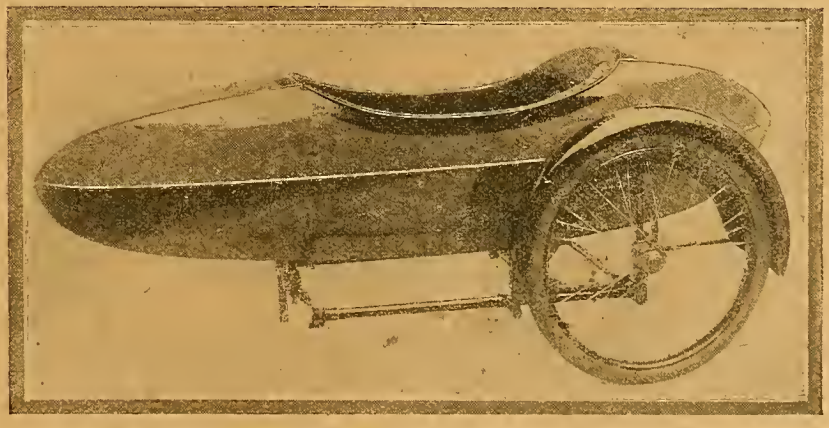
A FULL range of sidecars are on view at this stand. The super two-seater, which is extremely long and provides equal comfort and plenty of room



The Grindlay spring wheel suspension.

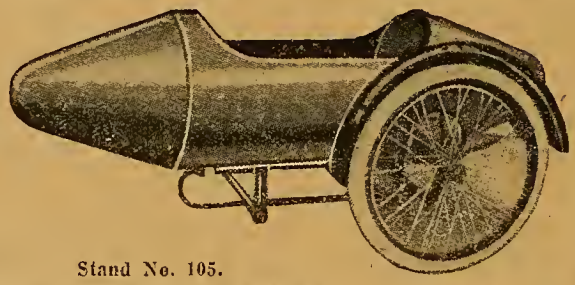
for two passengers, is fitted with a double springing system at the back, and is priced at £32 10s. The model Elite is designed to give the greatest possible comfort. A novelty is the upholstery at the back, which is shaped so as to fit the back of the passenger. The sidecar has a bulbous back, and a very large luggage compartment, the price is £26.

The model de luxe is a well-equipped sidecar provided with hood and screen, and is very suitable for all-round touring purposes. It is priced at £22 10s. A sporting outfit suitable for Indian spring frame machines with an all-metal body costs £22 10s. A novelty is the single or two-seater body. The upper part of the nose can be lifted out, and, being upholstered underneath, forms the second seat, a folding back being provided.

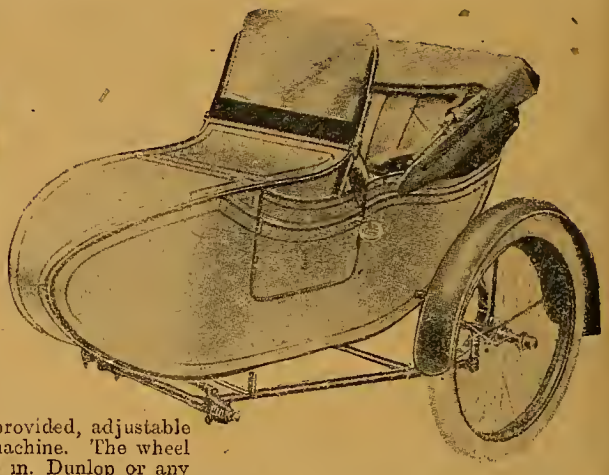


An attractive Watsonian sidecar, known as the R34.

Various Types of Montgomery Sidecars—The Luxurious Henderson.



For the speedman: the Sandum sporting body.

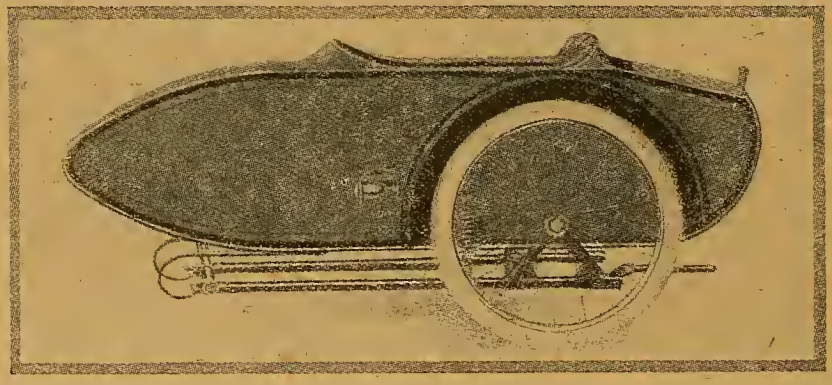


One of the latest types of Montgomery sidecars.

Stand No. 105.
Montgomery, W., and Co., Lower Ford Street, Coventry.

ONE of the pioneers of the sidecar movement was the Montgomery Co., and that it is still keeping in the front rank is evinced by the three excellent models to be seen on this stand. A few improvements are noticeable over the previous productions, one being that by a new back attachment the sidecar axle may be brought parallel with the ground, irrespective of the varying tyre or wheel sizes. Another is the new design luggage-grid and petrol-can carrier, which is fitted as an extra. Yet a third is found in the new method of upholstery springing and hinged seat.

As to the actual models shown, No. 1 is the most luxurious, and possesses a handsome coach-built body, finished to order in either green, grey, buff or black, suspended by leaf-springs on an underslung weldless steel tube chassis. Four-point attachment is provided, adjustable to fit any make of machine. The wheel is 26 ins., with a 2⅞ in. Dunlop or any other best make of tyre to order, amply mudguarded by a 5 in. blade with inside valance, firmly anchored to prevent rattle. The length of the body is 60 ins., and the weight of the complete sidecar is 136 lb. A locker is provided under the seat.



The handsome body and straight-tubed chassis of the Henderson sidecar.

Model No. 2 has a similar chassis, but a slightly shorter body, 58 ins. in length. The weight of this sidecar is 122 lb.

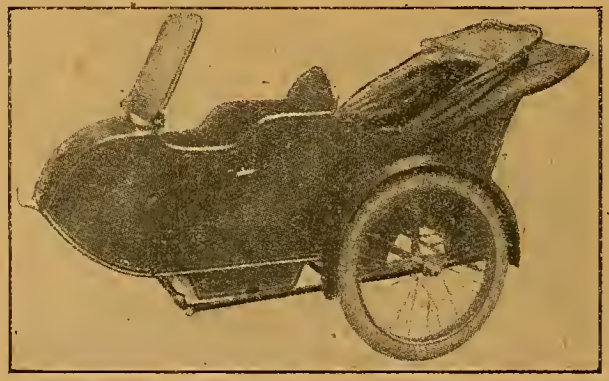
Model No. 3 is a much cheaper and lighter type than the others. The chassis is not underslung, and three-point attachment is provided. The mudguard is 4½ ins. wide, and has no valance, but the quality of the tubing and fittings is maintained. The body is 58 ins. long, but the weight complete is but 110 lb.

Extras, which can be fitted to all models, are: 28 in. wheel, Triplex glass screen, luggage grid.

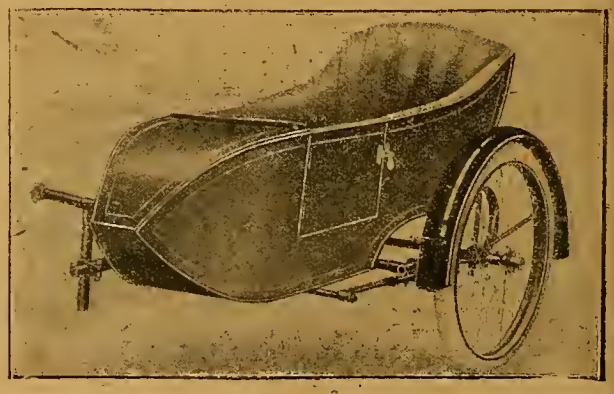
Stand No. 27.
Henderson Sidecar, Aero Works, Fitzwilliam Street, Sheffield.

THE Henderson sidecar has been designed on most attractive lines, and its graceful appearance and high-grade finish will make a strong appeal to the æsthetic. The body, while being roomy and very handsomely upholstered, is by no means clumsy or unwieldy. It is fitted with a bulbous back, which masks a compartment large enough to take quite a quantity of luggage.

Refinement in detail has been studied, and an instance of this is the extremely neat method of housing the lamp, which the law now compels all sidecar users to carry, under the small step shown in our illustration on the side of the body. The chassis is composed entirely of straight tubes, and the method of springing employed ensures a low centre of gravity. The new spring frame model, which is exhibited for the first time, is well worth special inspection.



For the family man—the tandem-seated Montgomery.



A simpler and lighter type of Montgomery sidecar.

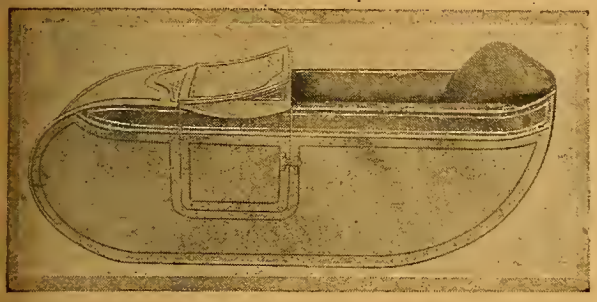
Sidecars for all Types of Machine—Two New Spring-wheel Suspensions.

Stand No. 98.

Mead and Deakin, Rushey Lane, Tyseley, Birmingham.

MESSRS. MEAD and DEAKIN are exhibiting a range of their sidecars for 1920. It will be remembered that this firm was the first to introduce coach-built sidecars on streamline ideas, and the models shown come up in every way to the high standard of design and efficiency for which the firm is noted.

The ordinary Minor, Sporting, and Standard models are shown, and in addition there is one called the Military, which, although it has been manufactured before, has not as yet been put upon the market. This has a somewhat larger body than the Standard, and is fitted with Cee springs instead of the usual Canoelet laminated springs. An entirely new model with body made of sectional stampings acetylene-welded together, with a new system of springing, is under construction to be ready soon.

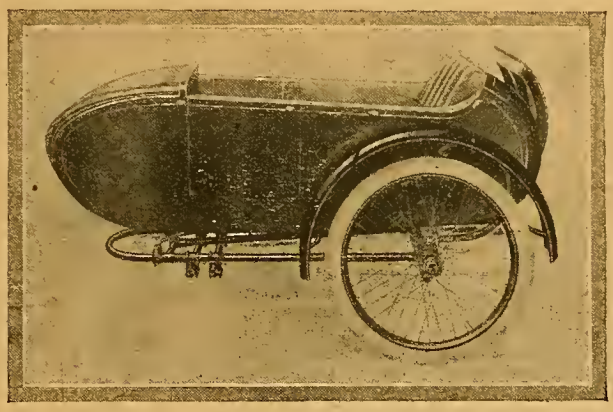


A well-finished sidecar by the Birch Aircraft Co.

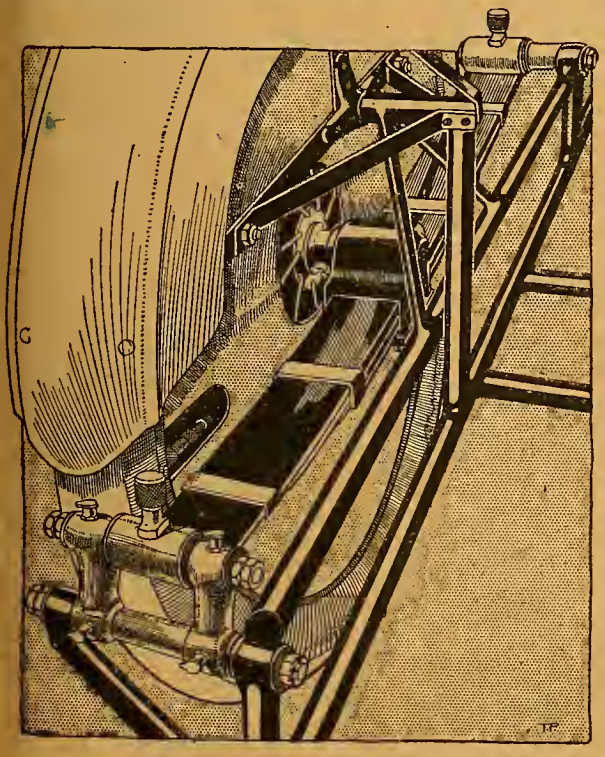
Stand No. 35.

The Birch Aircraft Manufacturing Co., Ltd., 169-171, High Road, Willesden Green, London, N.W.

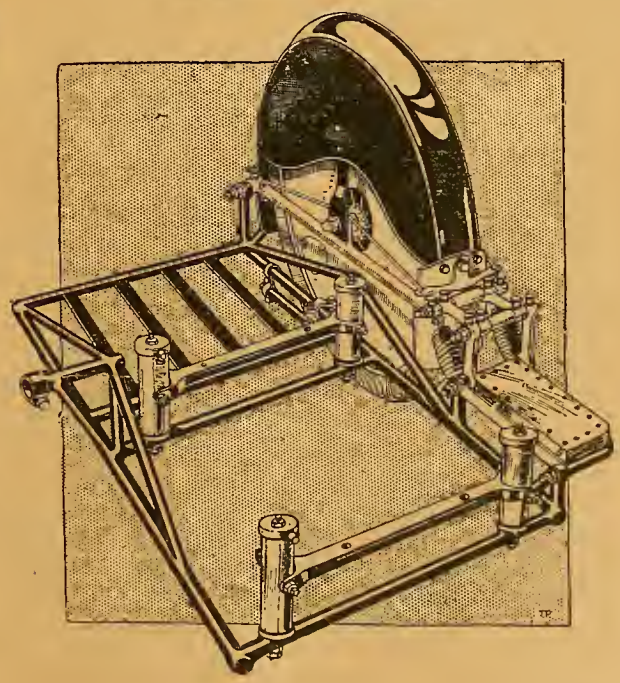
THE objects of principal interest on this stand are two very well-designed spring-wheel sidecar chassis. One of these incorporates a single leaf spring, to which the wheel is attached direct. The spring is carried in a tubular framework, and is provided with a substantial shackle of large dimensions at the near end. All the spring bearings are provided with large grease caps, and are of hardened steel. The other model is fitted with two coil springs. The wheel, which is easily detachable, is mounted in a rectangular framework, which is pivoted at the rear end. At the foremost extremity are two links, which are attached to a small rectangular member pivoted on to an extension of the chassis. Two coil springs are interposed between the framework carrying the wheel and the rectangular pivoted member. The springing action can be better understood by referring to the accompanying sketch. During the war this concern has had considerable experience in oxy-acetylene welding in aircraft work, and they have now applied this to the production of their sidecar chassis, which are quite free from lugs, all the tubes being welded together. The neat aluminium step fitted is a useful adjunct, and adds considerably to the appearance.



The well-known Canoelet sidecar, which has the mudguard attached to the body, and a very capacious locker in the back.



Two novel spring-wheel suspensions to be incorporated in Bamco sidecars.

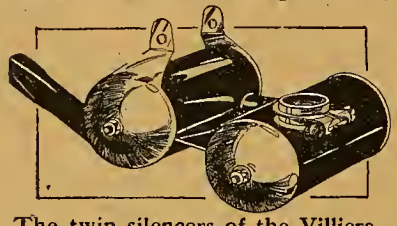


SECTION 4.—ENGINES: Villiers, M.A.G., Abingdon and Stanger.

Stand No. 234.

Villiers Engineering Co., Ltd., Blakenhall, Wolverhampton.

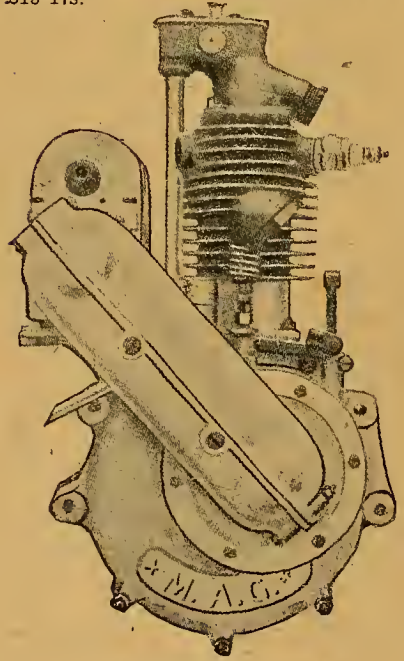
THIS company has many specimens of its successful 2½ h.p. engines on the stand, yet seldom is the quantity sufficient to go round among the many



The twin silencers of the Villiers.

inquisitive visitors who besiege it. In common with all two-strokes, simplicity is the keynote of its design, and on this example it is accompanied by substantial construction without superfluous masses of metal. Special attention has been paid to the contour of the piston baffle, this counting for so much in two-stroke engines, the makers only adopting the present piston after strenuous and exacting tests. Three piston rings are used, two at the top and one at the bottom; all are pinned to avoid the gaps coming in line. The big-end of the connecting rod has roller bearings, while the main bearings are of phosphor-bronze, of good length and positively gastight. Oil is led direct from the supply to the engine through a hollow crankcase bolt, the system being patented by the Villiers Co. The cylinder capacity is 269 c.c., the bore and stroke being equal to 70 mm. by 70 mm.

M.-L. or C.A.V. magnetos are fitted, the choice of carburetter being left to the several manufacturers building machines with this unit. The price is £19 17s.

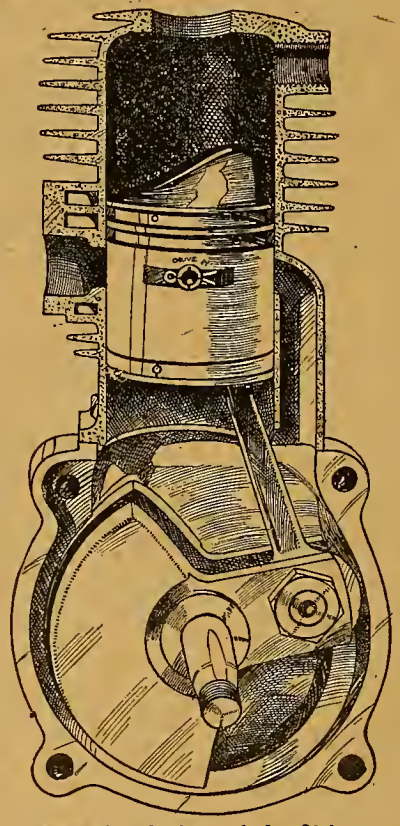


An interesting 2½ h.p. M.A.G.

Stand No. 202.

M.A.G. Engine Co., Ltd., Harrow Road, Willesden Junction, N.W. 10.

A FEATURE of the new M.A.G. engines is the starting handle, which is connected direct to the crankshaft. Being of large dimensions, it renders it possible, if one so desires, to swing the engine over compression when starting up. The push rods operating the overhead inlet valves on all models will in



A sectional view of the 2½ h.p. two-stroke Villiers.

future be fitted with enclosed adjustment at the top in the same way as it is carried out on the M.A.G. engines fitted to Morgan runabouts.

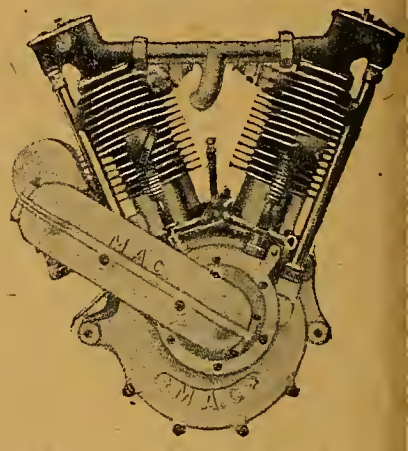
Two V-twin engines are shown, an 8 h.p. and 3½ h.p. An interesting little engine is the 2½ h.p. single. All three types will be imported into this country in large quantities during the coming season. M.A.G. engines were deservedly popular before the war, and have an even finer future before them. They are noted for their excellent finish and cool running.

Stand Nos. 34-140.

Abingdon-Ecco, Ltd., Tyseley, Birmingham.

THIS exhibit includes, in addition to the famous 6-7 h.p. Abingdon Ecco twin-cylinder engine, a variety of the components and accessories which will appeal to motorcyclists on account of their fine quality and their fitness for the purpose for which they are intended.

Prominent among them will be found the King Dick spanners and tool kits—the former "guaranteed for ever"—also the well-known King Dick belt fasteners, and representative assortments of



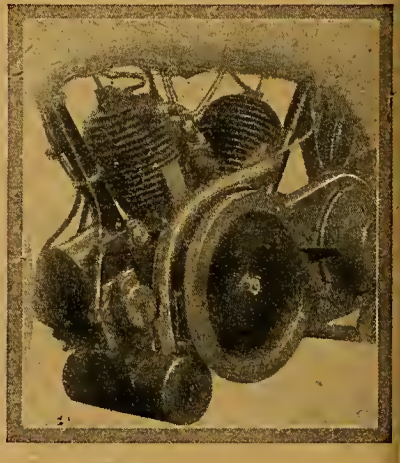
Two twin M.A.G.s are shown—a 3½ h.p. and an 8 h.p.

finished articles, such as lubricators up to 2 ins. diameter, petrol needle valves, petrol filler caps and sidecar hubs.

Stand No. 28a.

Trotman Patent Dandy and Co., Ltd., Dandy Works, Wood Green, London.

A NOVELTY on this stand is the Stanger V-twin two-stroke engine. The cylinders are set at an angle of 45 degrees and are staggered. The crankcase is divided longitudinally, thereby providing two compression chambers, one for each cylinder. The crankshaft is set at an angle of 180 degrees. The engine is rated at 5 h.p., and is suitable for fitting to most types of standard frames. A. Hazelwood and also a P.V. spring frame machine are shown at this stand, fitted with this power unit. It is hoped that deliveries will commence immediately after the Show.



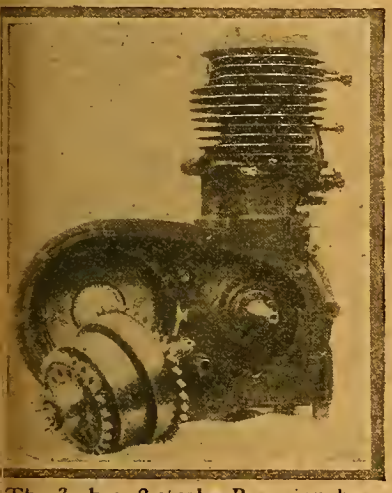
The twin two-stroke Stanger, which has a two-throw crankshaft and twin crankcases.

ENGINES. – Precision and Coventry-Victor.

Stand No. 207 (Gallery).
F. E. Baker, Ltd., Precision Works, King's Norton.

ON this stand are shown the latest products from the Precision works. The twin engines are entirely new, and three of them are shown, suitable for heavy outfits or cyclecars.

The 8 h.p. engine has a bore and stroke of 85 mm. by 85 mm., which gives a cubic capacity of 964 c.c. The other two have a longer stroke, 96 mm., the bore being the same, 85 mm., which gives a capacity of 1,096 c.c. Excepting in size, the three engines are similar in design, with large valves placed side by side. The timing gear has been completely re-designed. The fins on the air-cooled models are cast square in place of the more usual concentric fins.



The 3½ h.p. 2-stroke Precision has an ingenious lubrication system.

A feature which makes for easy starting and slow running is a stuffing box device on the inlet valve stems; this entirely eliminates air leaks at this vital point. Lubrication is by splash, and the crankcase is fitted with a simple but effective breather which acts as a non-return valve. The timing case is lubricated through this breather and superfluous oil is carried quite clear of the engine by an oil vent from the timing case

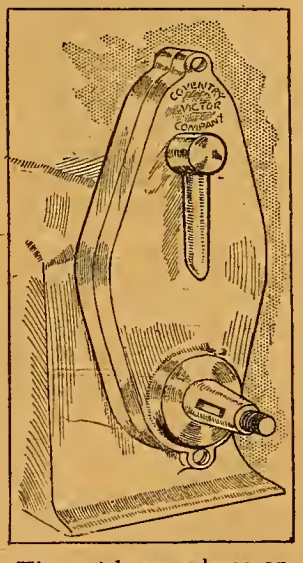
Stand No. 145.
Coventry Victor Motor Co., Ltd., 137, Cox Street, Coventry.

WE find here two models of the Coventry Victor 5-7 h.p. horizontally-opposed twin engines, one air-cooled and one water-cooled. The dimensions are identical in both cases, namely, 75 mm. by 78 mm. (688 c.c.). The crankcases present a remarkably clean appearance, and are supported in the frames of their machines by two parallel grooves which fit frame members to which they are clamped.

A Coventry-Victor connecting rod.

The crankshafts are the customary two-throw pattern of this type of engine, and the big-end design is ingenious, having its bushes in the form of a D, which facilitates their removal when eventually necessary. The valves are large, and situated at the top of the cylinder, working horizontally with adjustable tappets. Mixture is furnished by the new pattern Amac carburetter, while either a Thomson-Bennett or C.A.V. magneto supplies the spark. At £38 10s. this engine is an attractive proposition.

Another exhibit here is the Speedway two-speed gearbox, a very workmanlike job with constant mesh pinions and sliding dogs. When the cover is taken off the whole internal mechanism may be removed without taking the gearbox from its frame. The Warner patent rear spring fork should also have a few minutes' attention, embracing as it does several novel features of which space forbids description.

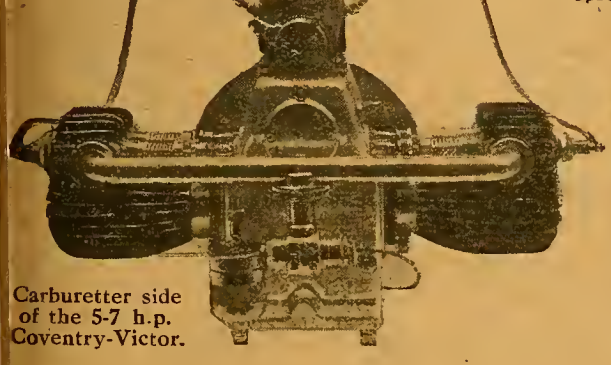


The crankcase release on the Coventry-Victor blows oil on to the front sprocket.

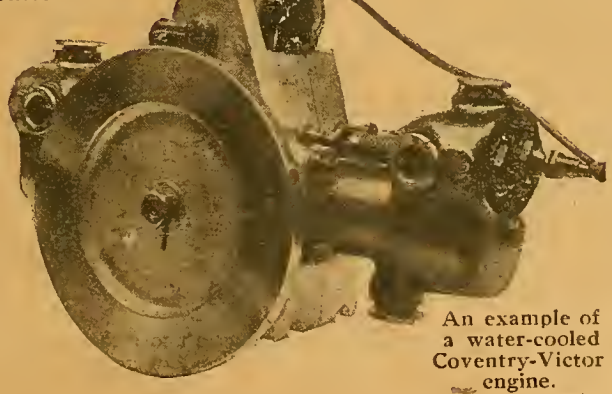
Another view of the 3½ h.p. 2-stroke Precision.

Stand No. 172.
Hobday Bros., Ltd., 23, 25, 27, Gt. Eastern Street, London, E.C. 2.

THOSE who favour the two-stroke engine would do well to inspect the latest Dalm engine shown on this stand. It is a 3 h.p. two-stroke of particularly sound construction. There is also a large display of most of the leading lines of accessories



Carburetter side of the 5-7 h.p. Coventry-Victor.



An example of a water-cooled Coventry-Victor engine.

SECTION 5.—IGNITION AND LIGHTING APPLIANCES.

Stand No. 166.

Vandervell, C. A., and Co., Ltd., Warple Way, Acton Vale, London, W. 3.

THE two chief items of interest on this stand are two new types of magneto—the K.U.1 and the K.U.2. The former is a lightweight magneto for single-cylinder four and two stroke motorcycles up to 3 h.p. It is sold complete with high-tension terminal at £6 12s. 6d. The K.U.2 is for twin-cylinder motorcycle engines up to 3 h.p., firing at 180 degrees. The price of this model is £7. These two new models have been designed to take the place of the original C.A.V. magnetos, models 3U1 and 2U2 in the case of machines of low horse-power, where small weight and size are important considerations. They are of the single-magnet type and totally enclosed. It is practically impossible for water to enter under any circumstances; in fact, it is possible to immerse them in water and still obtain satisfactory running. These magnetos embody the same type of armature as the larger models and the well-known C.A.V. contact breaker. Another point worthy of note is the carbon brush holder and terminal, which are made in one, and thus ensure a secure electrical connection, which is quite waterproof.

Section of a C.A.V. high-tension brush.

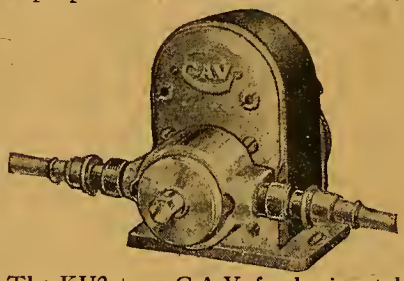
Stand No. 213.

M.L. Magneto Syndicate, Ltd., Victoria Works, Coventry.

THE M.L. Magneto Syndicate was one of the first to take up the threads of the German industry in 1914, and produce a thoroughly reliable article of all-British manufacture. During the war they supplied no fewer than 50,000 magnetos to the authorities, many of which were fitted to W.O. Triumphs. On one part of the stand is shown a magneto actually running and functioning properly under water.

Another position is devoted to the display of separate parts, and shows the various stages of manufacture from the raw material just as it arrives at the works to the finished article ready for fitting. Armatures and condensers are shown in the many stages through which they have to pass before completion, and sectional models help the uninitiated to understand the relation of one part to another. A further section demonstrates testing processes for regularity of sparking both at high and low speeds. Individual parts are also shown under test, notably the armature, which is subjected to a high frequency alternating current of 1,500 volts.

The complete magnetos displayed include a full selection suited to motorcycle engines, from the P.M.1 and P.M.2 for single and twin lightweights respectively, to the C4 for engines having four cylinders. The special features which should be examined are the laminated pole shoes, a new pattern condenser, jump spark distributor, and the non-hydroscopic pivot bush in the contact breaker.

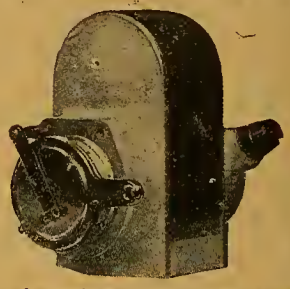


The KU2 type C.A.V. for horizontal twins.

Stand No. 151.

Sphinx Manufacturing Co., Bradford Street, Birmingham.

ONE of the most popular of sparking plugs is the Sphinx Speed model, which is on view with all the other types of this well-known make. All have been improved in detail, and it must be remembered that the experience gained during the war has taught us much in relation to internal-combustion engines and their equipment. A new model is on view, known as the Bor type. Two circular bars are placed at right angles, forming the electrodes. It is claimed that a weak current is concentrated between fine points, the nearest approach of the two bars to one another, as a little thought will show. When the current increases the makers claim that the gap increases also, thus easier starting and slower running should be given, with the maximum efficiency at high speed. The plug is made with either mica or ceramic insulation, and is said to be suitable for all varieties of engines.

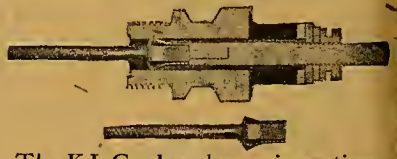


Another view of the M.L. single-cylinder magneto.

Stand No. 204.

E.I.C. Magnetos, Ltd., Sampson Road North, Sparkbrook, Birmingham.

THE E.I.C. Co. are exhibiting magnetos for single or twin-cylinder motorcycles. These are shown in various types: Type A, which weighs 6½ lb., has proved very satisfactory on two-stroke engines; type "A Ref. D," weighing 7¼ lb., is specially designed for large single-cylinder engines, and gives a hot flame spark at low speeds, whilst remaining efficient at any speed the engine is capable of developing. Twin-cylinder magnetos are represented by the type "A2" for 180 degree small twin-cylinder engines, such as the 2¾ h.p. Douglas, and the type "A2 Ref. D" for 180 degree large twin-cylinder engines.



The K L G. plug cleaner in section.

The design is in accordance with well-tried practice. The insulation is tested at each stage of building up, and the armature windings and condenser are perfectly balanced. E.I.C. magnetos are constructed in such a manner as to require no oil, and the danger of over-lubrication is thus avoided.

Stand No. 83.

Chater Lea, Ltd., 74-84, Banner Street, London, E.C.

A NEAT high-tension cable terminal which, although not particularly well known, has yet been on the market for some time, is a little speciality of this concern. To fix the cable, it is only necessary to bare about an inch of the wire, and push it well home into the terminal, and give the slotted portion a sharp tap with a hammer. This holds the wire securely in position.

A group of M.L. magnetos, showing (left to right) the single-cylinder, lightweight and twin-cylinder types.

The Lucas Magdyno, Thomson-Bennett Magneto and Some Plugs.

Stand No. 191.

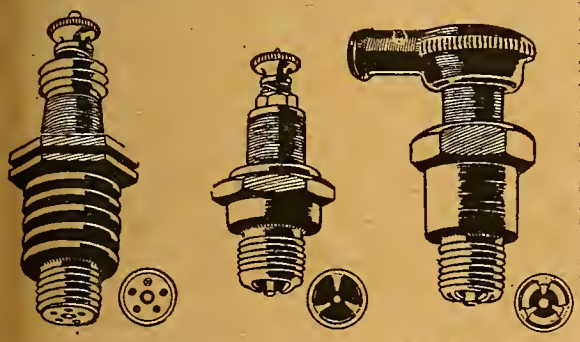
Lodge Sparking Plug Co., Ltd., Rugby.

SINCE the very earliest days of motoring Lodges have been inseparably associated with plugs, and their several types to suit all engines are known to all patrons of the petrol vehicle.

The standard model is the C3, suitable for nearly all English motorcycles. Its construction permits of its being taken apart for cleaning purposes. Model C9 is a similar plug, but is non-detachable. Both these types are sold at 5s. The Model MB is also suitable for most English machines, and adds to its merits security against bad weather conditions, its high-tension parts being all enclosed and so protected from rain, and at 7s. 6d. is excellent value for money.

The smallest pattern, CE2, specially made for machines of small tank clearance or small engines, such as scooters and auto-wheels, where a large plug looks out of place, is retailed at 6s. The KR3 is an aero type suited to racing by virtue of its constructional facilities for cooling, which permit of its use in very high compressioned engines without fear of pre-ignition or other troubles. This model is priced at 8s. 6d.

A new plug, embodying a priming device, is also shown, priced at 13s. 6d.

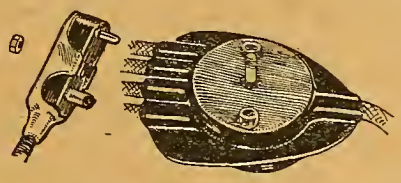


Lodge motorcycle plugs, showing the Aero. Baby (for lightweights) and waterproof types.

Stand No. 189.

Lucas Electrical Co., Ltd., Birmingham.

THE famous Thomson-Bennett magnetos which have assisted in so many aerial exploits and are equally well known in the motor-cycling world are seen here, as the Lucas Electrical Co., Ltd., are the successors to Thomson-Bennett Magnetos, Ltd., and are now undertaking the electrical side formerly handled by the parent company, Joseph Lucas, Ltd. In addition to the magnetos, much interest centres round the new Lucas Magdyno. This is a combination of the Lucas 6-volt lighting dynamo and the Thomson-Bennett magneto, and although both instruments are combined in a single unit, they are electrically separate. The small cylindrical dynamo is on standard Lucas lines and is housed in the magnet of the magneto and driven through a train of gear-wheels from the magneto shaft. The necessity of a separate drive for the dynamo is thus eliminated and a saving in weight is also effected.



The Magdyno junction box.

This, one of the most interesting novelties at the Show, was described fully in a recent issue. The junction box and switch are of particularly neat design, and the instrument as a whole appears to be singularly well thought out.

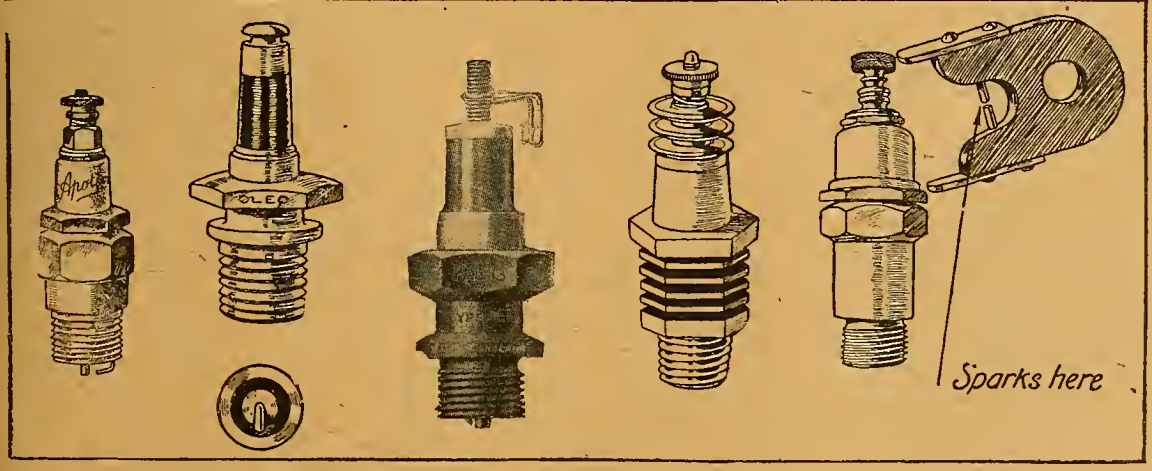
Stand No. 214.

Ripault, Leo, and Co., 1, King's Road, St. Pancras, London, N.W.

THE chief items of interest here are the Ripault lever compression tap and the Oleo plugs. The compression tap is operated by means of a screw-down tap and is perfectly gastight when closed. The aviation type Oleo plugs are of particular interest, as they were selected by the Air Ministry in favour of all other plugs for super-compression engines. The insulation of the mica is tapered, forming a perfect joint, while the electrode is of nickel steel of high tensile strength which is guaranteed against pre-ignition and oil.

The switch of the Magdyno is operated by one knob.

The Oleo waterproof terminal is suitable to attach to any plug fitted with a spigot end and can be easily connected or disconnected. It is unaffected by vibration and consequently always remains in perfect contact. This is sold for 1s. A novel plug tester is also on show. The construction of this will be easily seen from the accompanying illustration. It forms an easy method of testing the plug whilst in the engine. If the plug is short circuiting no spark will appear between the electrodes of the tester. This is priced at 2s. 6d.

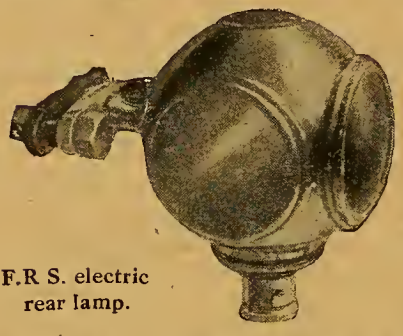


From left to right: The Apollo aviation plug, the single-point Oleo, the K.L.G., the racing Forward, and the Leo Ripault spark tester.

WELL-KNOWN LIGHTING SETS: F.R.S., Hunt, Smith, and Lucas.

The F.R.S. Lamps, Pershore Street, Birmingham.

MANY riders have facilities for charging accumulators easily, and the F.R.S. combination electric lighting set appeals very strongly to such. It consists of headlamp, side lamp, tail lamp, aud accumulators, and a pressure of 4 volts only is utilized. The headlamp is strongly constructed, and is 7 ins.

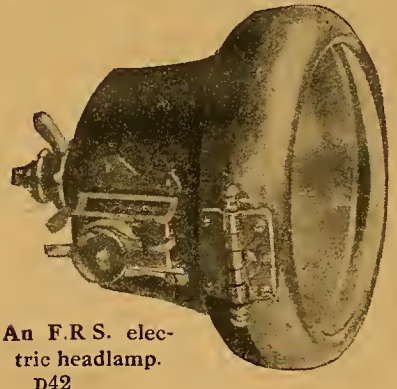


F.R S. electric rear lamp.

in diameter. It has adjustable side sockets attached to handlebar fittings. The secret of the success of the lamp is the parabolic reflector in conjunction with the special filament bulbs. The focus is adjustable, and the bulb may be removed while still alight from the rear of the lamp, thus providing a ready and useful inspection lamp.

The side lamp has a small screw bulb which is also removable while alight, and the tail lamp follows the same practice. The accumulator is carried in a stout teak box, and provides current for 20 hours light. The standard set is priced at £8 8s., but with 6-volt battery it costs £9 10s. A set for solo machines has a 5½ in. diameter headlamp, with the accumulator carried in a black polished box which fits on the top tube of the machine. This is priced at £6 10s. Other useful exhibits are the adapters to allow electric lighting to be used in existing gas lamps. This is a small clip, carrying a 3½-volt bulb and small reflector, which fits over the existing burner. The mirror lens of the lamp is used and the focus is not disturbed. The price of this small fitting is 4s. 9d.

The well-known F.R.S. system for utilizing the primary current of the magneto for lighting purposes is again on sale. A small side and tail lamp set for sidecars is also interesting. The side lamp is egg-shaped and the tail lamp is spherical, both are fixed in position by a single bolt and nut which projects from the lamp body.



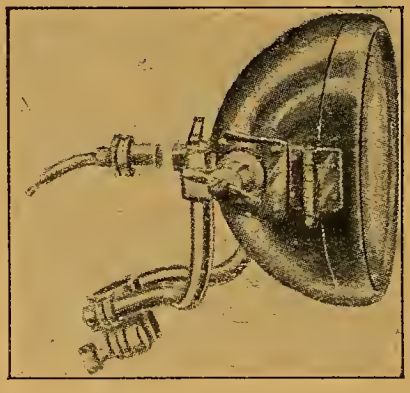
An F.R S. electric headlamp.

D42

Stand No. 178.

Hunt, A. H., 115-117, Cannon Street, London, E.C. 4.

A LARGE selection of accessories are on view at this stand, including electric lighting sets for cyclecars, motorcycles and sidecar combinations, which are complete in every way, and include lamps, batteries or accumulators and carrying cases for solo machines. A particularly good electric headlamp is the Daylight, made either for attachment to the handlebar stem or the cross member. There is a large variety of electric rear lamps with and without combined switches. Most types of the Hellesen dry battery are on show, and accumulators of special design to stand road vibration such as is met with on motorcycles. Other items are metal and leather battery carrying cases, ignition coils, high and low tension cables, Morse signalling lamps, and voltmeters and amperemeters, which are particularly well finished with jewelled movements. Amongst the novelties are special A.A. badge clips for attaching the A.A. badge to the number plate, handlebar match boxes and route card holders.



The Daylight lamp, by Hunts.

Stand No. 209.

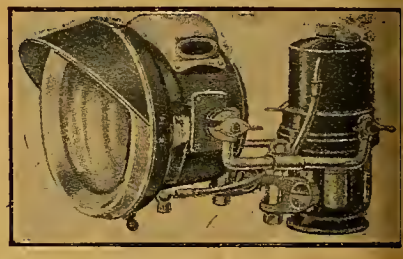
Smith, S., and Son (M.A.), Ltd., 179,185, Great Portland Street, London, W. 1.

THE Smith equipment comprises a very complete and up-to-date range of motorcycle accessories. Every article offered by this concern is built for the highest standard of quality and efficiency, and is guaranteed thoroughly reliable in operation. Their exhibits include speedometers, revolution indicators, carburetters, lighting systems, electrical, mechanical and bulb horns, mascots, tyre pumps, and also M.L. magnetos, K.L.G. sparking plugs and Euk easy starters, for which this concern are the only selling agents. The now famous K.L.G. plug, the standard model of which will be adopted on post-war Rolls-Royces, is priced at 5s., and many other models for various type of engines are shown at 5s. 6d. and 10s. 6d.

Stand No. 189.

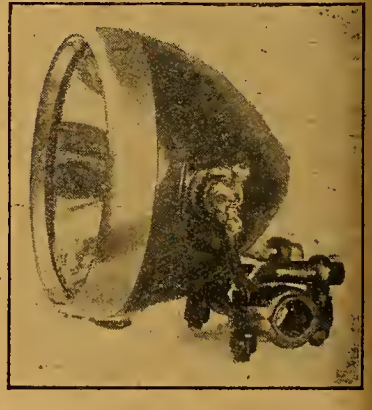
Lucas, Joseph, Ltd., Gt. King Street, Birmingham.

LUCAS equipment in every variety is handsomely staged, from the tiny but ever-useful "Girder Minor" spanner to the latest Lucas 6-volt. lighting set. The advantages of electric lighting are many, but perhaps the chief one is the absolute immunity from trouble. For such as prefer acetylene, or cannot afford



Lucas King of the Road set.

the luxury of an electrical outfit, there is the famous King of the Road headlight set with its many refinements, Mangin lens mirror, adjustable double bracket, instantaneously-removed carbide container, etc. The smaller pattern for lightweight machines, the King's Own, is also shown, and a variety of sidecar lamps, tail lamps, etc. The clean lines of the cyclorns, with the coiled tube contained in the body of the horn, are always admired, and a forced-feed oiler is an accessory which every rider should have in his private garage, as it



A Lucas electric headlamp.

ensures a positive supply of oil to the bearings, and is also very useful for lubricating Bowden cables, as shown in a recent article in these pages.

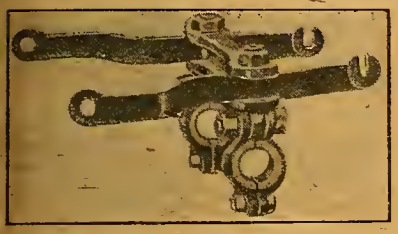
Lucas' Motoralities have long been held in high esteem by all riders, and there is no need for us to enlarge on their merits, except to say that the construction and finish are quite up to expectations.

Miller and Powell and Hanmer Lighting Sets—Cooke Plugs—B.L.I.C.

Stand No. 193.

Miller, H., and Co., Ltd., Miller Street, Birmingham.

A VERY representative display of electric and acetylene lighting sets is on view. Two patterns of acetylene lamps



The fixing of the Miller lamp set.

have been concentrated on, and these are known as 31H and 22H. The former set is fitted with a mangin lens mirror of 4 ins. diameter, and is supplied with a patented bracket for bearing both the projector and the generator. The strength of this carrier is such that al case of breakage is unknown. This desirable result is attained by careful selection of the material employed and the patented details of the design.

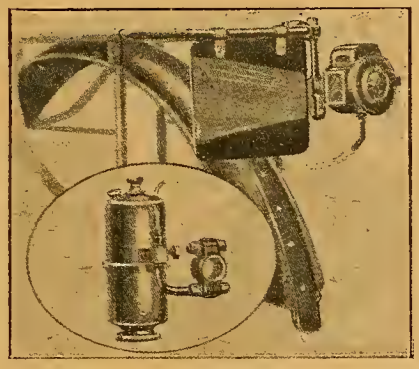
Both lamps and generators are made from the finest materials. The 22H model is similar in design and construction, but is smaller. The reflector is 3½ ins. diameter. The very neat tail lamp exhibited is particularly strong, and the neat carrying bracket, which is adjustable, is worthy of attention.

Stand No. 187.

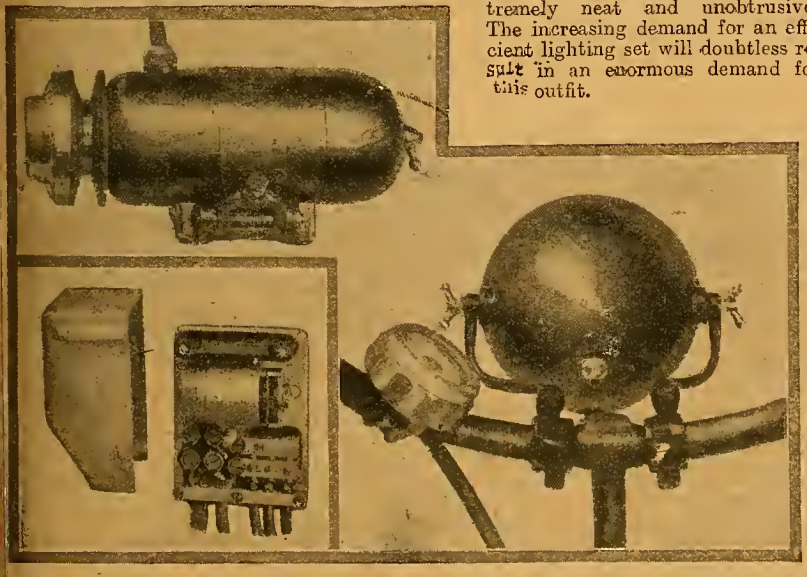
Powell and Hanmer, Ltd., Chester Street, Birmingham.

A FULL range of the well-known P. and H. lamps and generators is to be seen on this stand, and their sturdy construction is worthy of note. The chief interest lies in the dynamo lighting set, however. The dynamo is designed to give its full output of 6 volts 6 amps. at 1,440 r.p.m., and no matter what the speed of the motorcycle be the speed of the dynamo is kept constant by the use of the P. and H. patented control which works as follows:—

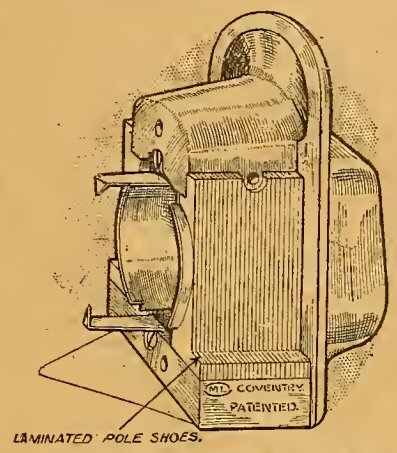
The control is in reality a patented clutch, consisting of a driving face and a driven face held together by the action of a spring acting through a toggle. Now for a certain output the power required can be calculated and the spring set accordingly. Should the speed of the machine rise the spring is unable to cope with the increased torque of the armature and the clutch accordingly slips. It is claimed that by this means a more efficient generator is possible than when electrical control by means of a third brush is relied upon. A very neat switch with an ammeter combined is also shown; it is designed to clip on to the top tube or the handlebar, and in addition to being waterproof is extremely neat and unobtrusive. The increasing demand for an efficient lighting set will doubtless result in an enormous demand for this outfit.



Showing the method of attaching the Miller rear lamp to the carrier.



The P. and H. dynamo set. A slipping clutch device is embodied in the driving pulley. Note the neat handlebar switch.



The maximum magnetic field is obtained on M.L. magnetos by the use of laminated poleshoes.

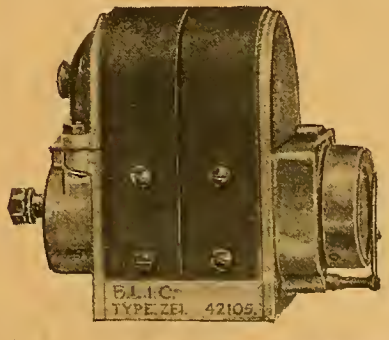
Stand No. 212.

Cooke, Howard S., and Co., 116-118, Northwood Street, Birmingham.

A FULL range of Cooke sparking plugs are on view, and as these plugs have lately made a name for themselves by functioning perfectly on an engine which has proved itself a devourer of plugs they deserve the attention they receive. Type B is particularly suitable for motorcycle engines, and is strongly constructed, its length overall is 3 ins. Having regard to the severe conditions of winter riding, the most interesting exhibit is the new Cooke weatherproof plug, which should entirely eliminate all trouble from this source.

Our own experience of these plugs used on a Harley-Davidson combination was very satisfactory, although a large number of other makes that had been tried had failed.

In addition a very neat terminal for the h.-t. wire is shown. This consists of a vulcanite bush, into one end of which the h.-t. wire slips. Into the other end a brass slotted hook screws. A portion of the h.-t. wire is bored and passes through a small hole in a partition in the vulcanite bush, being gripped between the partition and the shank of the hook. This fitting is easily assembled on the h.-t. wire, and no tools are necessary beyond a knife to bore the end of the h.-t. cable.

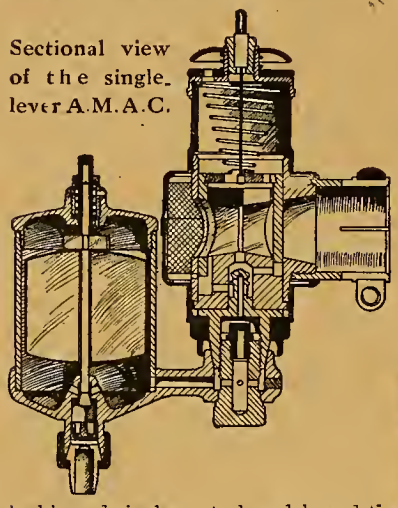


The B.L.I.C. single-cylinder magneto.

SECTION 6.—CARBURETTERS: A.M.A.C., Senspray and Everest.

Stand No. 152.
A.M.A.C., Ltd., Aston Cross, Birmingham.

THE most interesting exhibits on this stand are undoubtedly the new model carburetter. Special interest attaches to single-lever instruments at the present time, for which there is undoubtedly a growing demand. Four distinct types are shown: the vertical



Sectional view of the single-lever A.M.A.C.

double and single control models and the horizontal double and single control models. The same principle underlies all the types, that is, a submerged jet which merely serves to regulate the flow of petrol, and a vaporizing device. Air passing six minute holes forms a vapour with the petrol, and the manufacturers claim that liquid petrol never finds its way into the main inlet passage. The models are very similar in construction, but an adjustable air valve is found on the single-lever instruments, while the float chambers of the vertical and horizontal types differ slightly. Sectioned instruments show the action of the controls.

Stand No. 154.
Pugh, Chas. H., Ltd., Whitworth Works, Tilton Road, Birmingham.

LARGELY as a result of experience gained in the rapid strides made in aviation during the war, the internal-combustion engine of 1920 is a vastly improved unit, and possesses a degree of efficiency to which the improvements effected in carburation are in no small measure attributable.

Messrs. Charles H. Pugh, Ltd., who are well-known as the manufacturers of the carburetters fitted to the winning machines in both the Senior and Junior T.T. races of 1914, have effected several material improvements in the Senspray carburetter, and various examples of their 1920 models are shown at Olympia.

The most noticeable alteration at first glance is in the material now employed in their manufacture. The main body and the throttle chamber caps are now aluminium die castings, the latter being fitted with gunmetal bearings in which the throttle barrel spindle is housed. These end caps are detachable, and are held in position by a flat spring pivoted on the side of the body. The throttle barrel itself is now a gunmetal casting accurately machined.

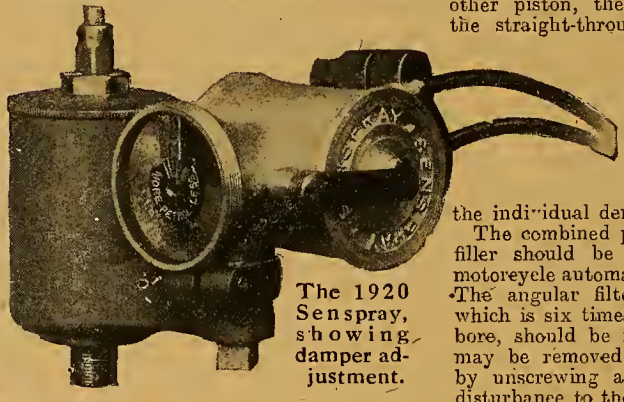
Appearance is not everything, however, and closer examination reveals the fact that the internal construction has

The new jet arrangement and slides of the two-lever A.M.A.C.

been improved by the introduction of a damper principle so arranged that it is proportionately and automatically cut out of action as the throttle is opened, and provides perfect slow running and economy.

The damper ports are adjustable by simple means as easily effected by the novice as by the expert.

The main characteristics of the old Senspray, viz., the straight-through



The 1920 Senspray, showing damper adjustment.

way, and the method of obtaining atomization are retained in the new models.

Of topical interest is the set of R.R.C.H. (Eagle) carburetters, as manufactured by Messrs. Pugh, and fitted to the Rolls engine on the aeroplane which accomplished the first successful transatlantic flight.

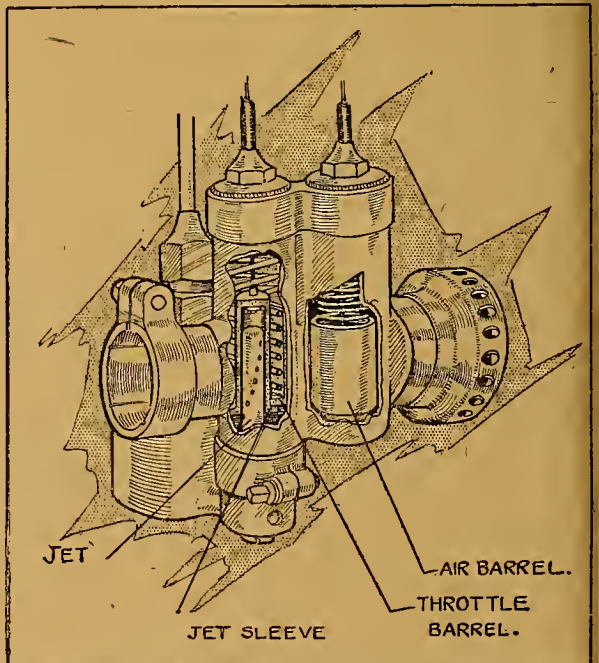
A variety of the well-known Alfred Appleby and Atco roller chains for motor and ordinary cycles, and a selection of stamped steel pressings, frame lugs, etc., complete this exhibit.

The Senspray carburetter had an enviable pre-war reputation as regards efficiency and economy, which the latest models should enhance considerably, both the finish and workmanship being excellent

Stand No. 184.
Messrs. Rotherham and Sons, Coventry.

THE Everest carburetter here shown has many points of refinement embodied in its design, and now has an additional barrel forming a separate control to the air supply. This is closed only for starting up, after which it may be left fully open, the other barrel controlling air and throttle opening simultaneously. The jet orifices are situated in the face of the jet tube in spiral formation, and a sleeve working in conjunction with the throttle uncovers one or more according to engine requirements. The throttle piston also controls the air supply subject to the position of the other piston, the carburetter being of the straight-through pattern. This instrument, recently, on a 3½ h.p. machine over give-and-take roads registered a consumption of 120 m.p.g., and by virtue of its construction is easily adaptable to the individual demands of any engine.

The combined petrol gauge, filter and filler should be seen, nor should the motorcycle automatic oil pump be missed. The angular filter, the gauze area of which is six times greater than the pipe bore, should be inspected. This gauze may be removed for cleaning purposes by unscrewing a hexagon cap without disturbance to the unions.



The Everest carburetter, made by Rotherham's of Coventry.

The Binks Carburetter—The B. and B. Variable Jet Model.

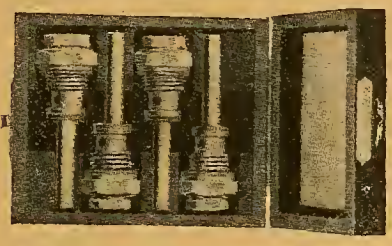
Stand No. 209.
Brown and Barlow, Ltd., 8, Laurence Pountney Hill, Cannon Street, London, E.C.

THE various models of the famous B. and B. carburetters are on view, and include the B.S.V. modet, the single jet model, the universal model with variable jet, the two-stroke carburetter, and a two-stroke model with variable jet. The B.S.V. model has a needle attached to the throttle slide. This needle works in the jet orifice and, being tapered, the jet is varied in size according to the throttle opening. The jet is situated in a small choke tube, and over the jet is a cap in which several small holes are drilled. The petrol spray and air have to pass through these small holes, and are still further broken up and mixed together, thus ensuring perfect vaporization.

The single jet model is practically automatic in action, and, having started the engine, the air lever is thrown open to a position depending upon the size of the jet. The carburetter is then automatic in action, and is controlled only on the throttle lever until a severe overload of the engine, such as on a hill, calls for a reduction in the air supply. The two-stroke carburetters are on this principle.

Stand No. 220.
Binks, C., Ltd., Phœnix Works, Eccles, Manchester.

ON this stand is exhibited a varied assortment of motorcycle accessories, of which, perhaps, the best known is the Binks carburetter. Practically no



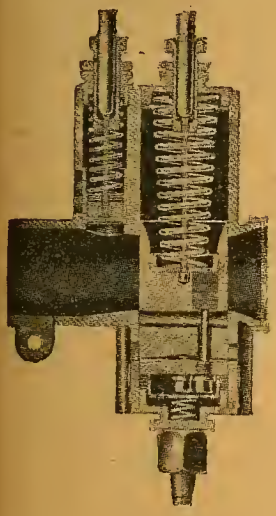
B. and B. jets can be obtained in a neat case to fit the waistcoat pocket.

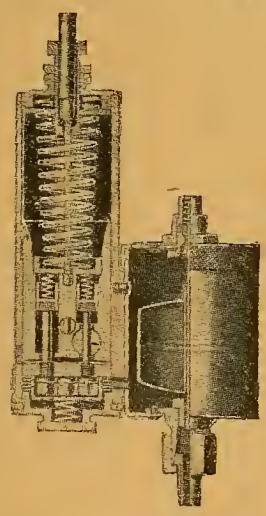
alterations have been made for next year, the three-jet principle, with damping device, still being employed. The action is as follows: when the throttle is practically closed, and the engine just ticking over in neutral, only a very small pilot jet is in use, but as the throttle is opened up so two larger jets are successively uncovered and supply more petrol to carburet the greater volume of air admitted. Two levers are provided, so that the extra air supply can be regulated. Great petrol economy and efficiency are claimed for this carburetter.

For Scott machines a special two-jet model is recommended.

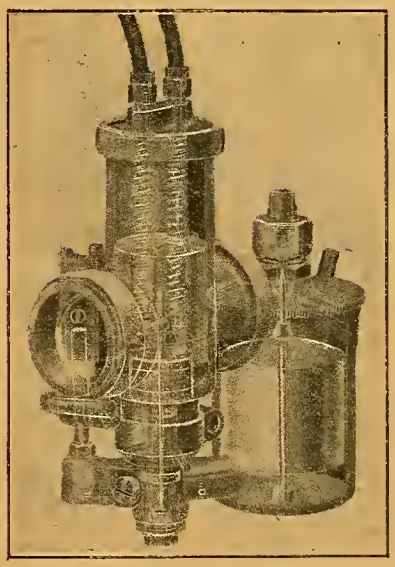
A new departure for this concern is the manufacture of a sparking plug, the special feature of which is a quick-detachable high-tension terminal that can be operated when the engine is running, in order to test if the cylinder is firing properly. The wire is held by a spring-loaded insulated knob, which has only to be lifted to release the wire. It is impossible for the wire to detach itself.

Silencers, filters and hot-air muffs are also to be found amongst the exhibits on this stand.





A sectional view of the Binks carburetter.



The B. and B. variable jet model.

Stand No. 146.
Stonehouse Works Co., Spon Lane Mills, Houghton Street, West Bromwich.

VARIOUS specialities and accessories are displayed on this stand, and they are especially interesting as they are produced by the manufacturers, who have their own rolling mill, from the raw material. Very extensive works and plant development is nearing completion, and the output will shortly be trebled. Motorcycle belt rim brakes were a speciality of this firm before the war, and although they had to be dropped to give place to urgent war material their manufacture is again well under way.

A strongly-constructed tyre pump is also shown, and although apparently of celluloid it is in reality a metal pump with celluloid covering. Another exhibit of interest to the rider who prefers to do his own small repairs is a very strong hacksaw frame.

Stand No. 7.
Roberts, Alfred, and Sons, Ltd., Gripwell Works, Gt. Lister Street, Birmingham.

A FULL range of this company's manufactures is shown on Stand 7. In addition to their well-known goods some new and interesting lines are exhibited. These include gaiters, plasters, horn bulbs belts, repair outfits, motorcycle covers and tubes, radiator hose, gas tubing, valve parts, prepared patches, security bolts, vulcanizing materials, brake blocks, rubbers for footrests, lamp and pump washers, rubber solution in tubes and tins, reinforced liners, and all moulded and tubed goods.

Stand No. 201.
Bowden Brake Co., Ltd., King's Road, Tyseley, Birmingham.

ON this stand are shown all types of Bowden wires and casing, including the well-known Bowdenite and Bowdenoir, which are almost universally used for controls of motorcycles from the smallest two-stroke valve lifter to the heaviest flexibly-controlled back brake. In addition are exhibited complete sets of Bowden handlebars, fitted with controls, including various models of valve lifter, magneto, carburetter, and clutch controls. The various appliances are in such profusion that they defy adequate description

SECTION 7.—TYRES, etc.: Dunlop, Kempshall, Avon and Bates

Stand No. 67.

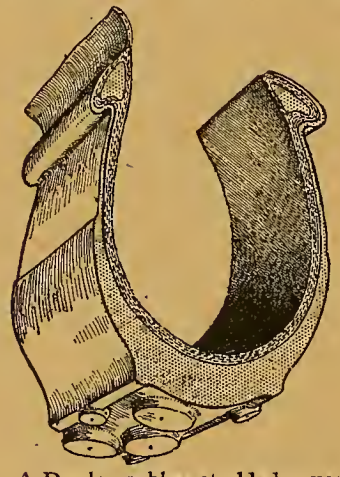
Dunlop Rubber Co., Ltd., Aston Cross, Birmingham.

THE Dunlop Rubber Co. are showing a complete range of their motorcycle tyres. These include the famous rubber-studded type, which are made in two-ply for solo work, three-ply for heavy solo work, and four-ply for passenger work. Rubber and steel covers are also exhibited, as well as the three-ribbed pattern. Various sizes in flat and rounded-topped motorcycle belts, as well as their usual range of accessories, are on view.

Stand No. 10.

Kempshall Tyre Co. (of Europe), Ltd., 97-98, Long Acre, London, W.C. 2.

A COMPLETE range of Kempshall tyres is exhibited. The round-tread anti-skid cover is now made with a solid tread, and is of heavier weight



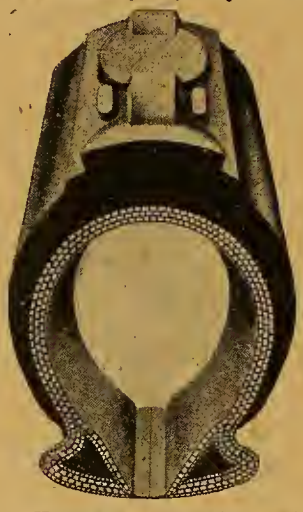
A Dunlop rubber studded cover in section.

in all sizes. The square-tread non-skid cover has also been improved, and in addition to gripping by suction, it now has transverse grooves in the tread, making it a still more effective non-skid cover. During the coming season all these tyres will be made under a special patent process, whereby the rubber is considerably toughened, and the life of the cover increased by at least 25 per cent.

Stand No. 44.

Avon India Rubber Co., Ltd., 19, Newman Street, Oxford Street, London, W. 1.

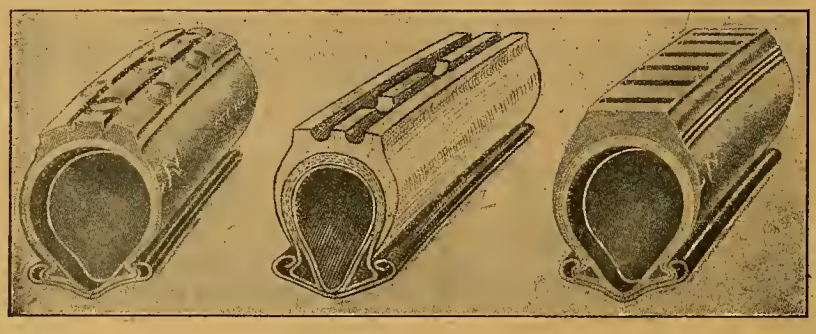
NO particular novelties are on view at the Avon stand, but the company are exhibiting very fully their well-



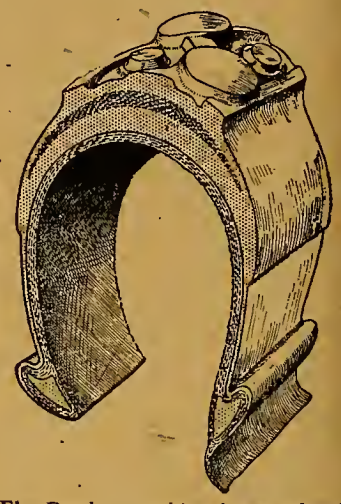
The Kempshall anti-skid tread.

known range of motorcycle tyres and accessories. Among the features of interest is the new Avon three-ribbed cover for high-powered machines with voiturette (motor flat base) rims, and the Avon Combination, a non-skid tyre combining rubber bars and steel studs, suitable for machines up to 5-6 h.p. Two types of Auto-Wheel covers are also worthy of notice, the six-line and the studded pattern, specially made for use on cycles fitted with motor attachments. These tyres can in a number of cases be used for scooters.

Also on view is the rubber compound and canvas belt, with Watershed top to conduct water safely beyond the engine pulley. Another interesting exhibit is the Avon Dome-end tube, a novel device ensuring perfect locking, absolutely air-tight, and quickly detachable. The Avon Co.'s useful motorcycle gaiters and shaped motorcycle plasters, specially intended for tyre cuts or bursts, are worthy of notice among the items on view.



Three types of non-skids. From left to right—Avon Stonehenge, Bates and Avon Sunstone.



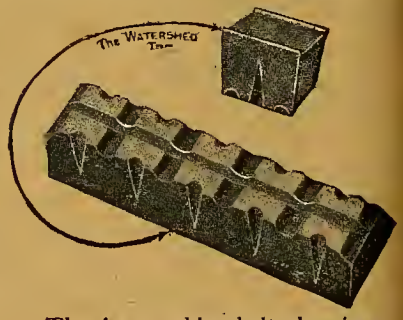
The Dunlop combination steel and rubber tread.

Stand No. 131.

Bates, W. and A., Ltd., St. Mary's Mills, Leicester.

TYRES, belts, repair bands, gaiters, etc.

Among a representative exhibit of this company's many products probably the well-known Bates tyres and belts will have the largest share of attention from motorcyclist visitors. The Bates No. 1



The Avon rubber belt, showing the Watershed top.

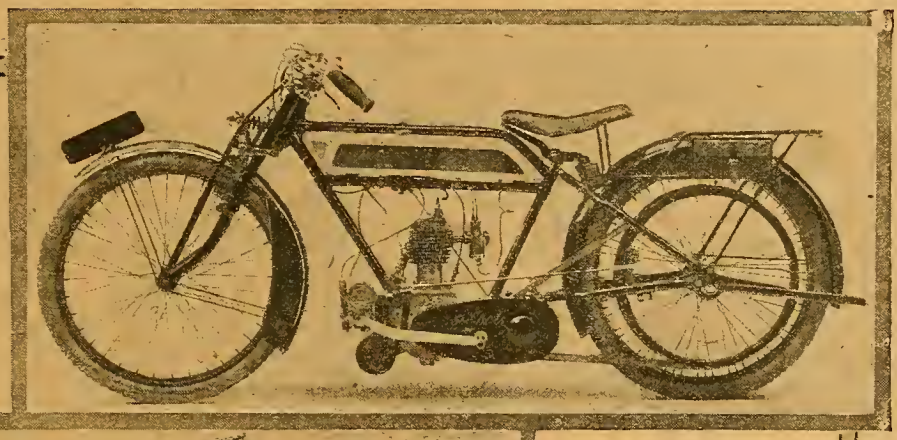
pattern, which has been with us since 1911, is of special interest on account of its recent success in the Johannesburg-Durban race revived this year. Messrs. Bates claim that, taking mileage into consideration, this production is the cheapest tyre obtainable, though its first cost is rather more than some of its competitors.

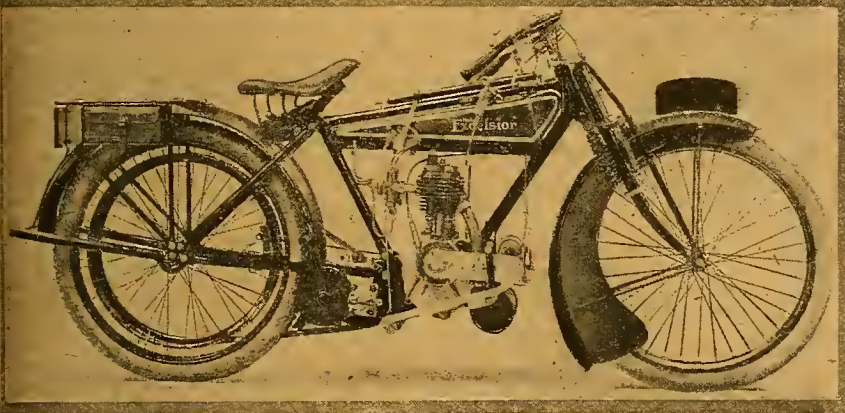
The No. 2 pattern is of the same quality, but has a three-rib tread, the centre rib being fluted at intervals of about 5 ins. A 26 in. by 2¼ in. cover costs 58s. and a tube 10s. The motorcyclette tyre at 23s. for the 24 in. by 2 in. size, and the sidecar tyre at 27s. 3d. for 26 in. by 2¼ in. are cheap tyres for low-powered machines.

The belts are full section, and the rubber is evenly distributed round the core. In their manufacturing process W. and A. Bates claim to have reduced stretch to a minimum without loss of flexibility.

SOME FOUR-STROKE LIGHTWEIGHTS.

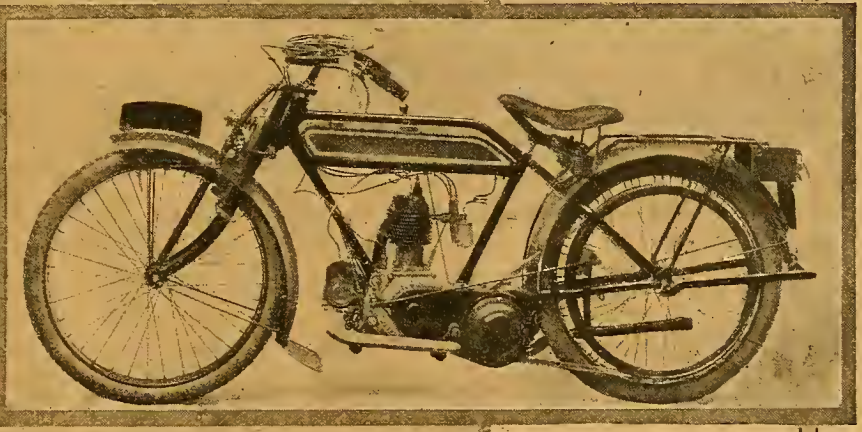
On the 2¾ h.p. Dot J.A.P. Saxon forks and the Albion two-speed gear are standard.

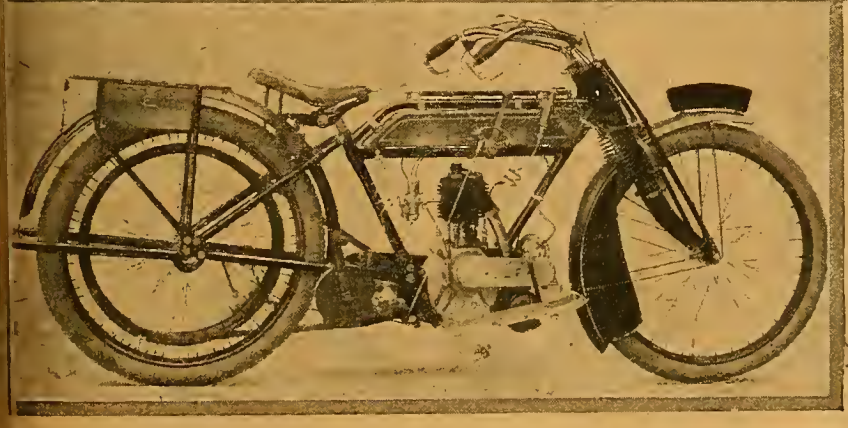




The Excelsior lightweight incorporates a Burman two-speed gearbox and a 2½ h.p. J.A.P. engine. A two-stroke lightweight is also made.

The popular New Imperial lightweight is fitted with a J.A.P engine, Saxon forks, and two-speed gear.





A Burman two-speed gear is fitted to the Wolf machine, which has efficient front mudguarding.

Various Types of Tyres for the All-weather Rider.

Stand No. 137.
David Moseley and Sons, Ltd., 19-20, Holborn Viaduct, London, E.C. 1.

PROMINENT among the exhibits of Messrs. David Moseley and Sons is the Moseley grooved tyre. This has been considerably improved of late, and has now a much greater air capacity. As is fairly well known, the Moseley grooved tyre, when new, comes into contact with the road on two of its five ribs. As these are worn down the other two are called into commission, consequently this type greatly reduces the tendency to skid on greasy roads. Other exhibits are steel-studded tyres, tubes, tyre gaiters, garage hose, matting and other rubber manufactures of interest to the motorcyclist.

Stand No. 134.
The Thames Rubber and Leather Co., 199, Upper Thames Street, London, E.C. 4.

A COMPREHENSIVE selection of rubber and leather goods, including such items of special interest as tyres, Rich Patent Tubes, motorcycle clothing and accessories, is on view at the Thames stand.

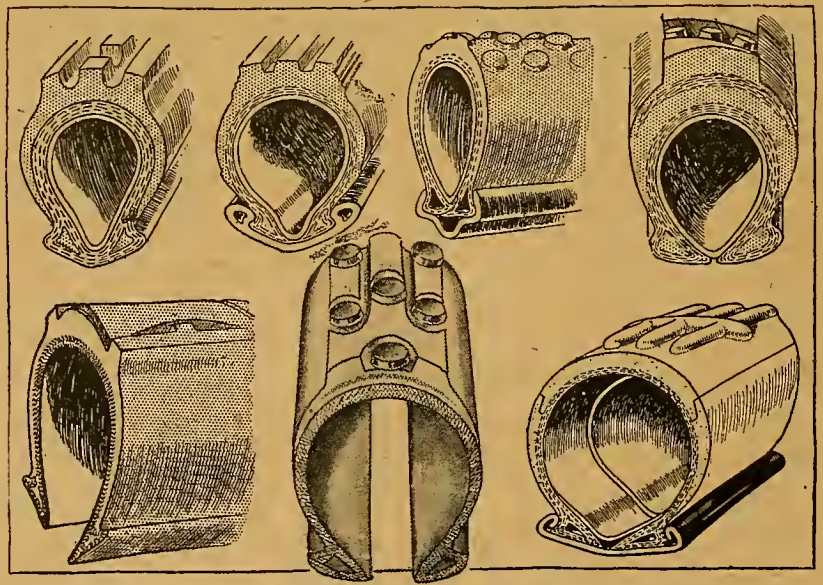
A variety of covers are exhibited, among which may be noted the Thames heavy, extra strong motorcycle tyre, for strenuous driving wheel work, rubber studded, and the Passenger, specially designed for high-powered machines and sidecar work. This cover is of the three-ribbed type, with four-ply casing. The Thames sidecar tyre, a seven-ribbed pattern, is of particular interest. It is made from the finest material, and is of ample thickness. Of special interest at the present time is the Thames Double Texture motorcycle suit, with double-breasted coat, warmly lined throughout, storm collar and cuffs, and ankle-leggings to match. Thames mud splashers, in imitation or real leather, are also among the exhibits.

Stand No. 68.
Etablissements Hutchinson, 70, Basinghall Street, London, E.C. 2.

FOUR interesting grades of motorcycle tyres, ranging from a light solo to the really heavy pattern, are noticeable among the Hutchinson exhibits. Commencing with the light covers, the Brooklands is shown for very easy work; next comes the Tourist Trophy, a medium cover for solo machines. For heavy sidecar work, in either the three-ribbed or rubber-studded pattern, the Passenger is on exhibit, while a still heavier type, made specially for use on motorcycles fitted with voiturette rims, is the Hutchinson three-rib, a really hefty cover, which is specially adapted to punishing work on the driving wheel. This tyre is supplied for machines fitted with round rims only.

Stand No. 6.
The R.O.M. Tyre and Rubber Co. (1909), Ltd., 35 and 36, Brooks Street, Holborn, London, E.C.

A PLEASING variation of tyres to suit all types of motorcycles, from the lightweight to the heavy sidecar machine, is to be found on the R.O.M. stand. The R.O.M. Co. particularly advocate their oversize tyres for passenger machines, much trouble having been experienced in the past with rear driving covers which were too light and small in section. One of the most interesting among the exhibits is the R.O.M. combination non-skid tyre, which is advocated to render the machine practically free from punctures, being, at the same time, "skid proof." The heavy tyres for flat-base rims, 700 mm. by 80 mm. and 650 mm. by 65 mm., are worthy of note. The R.O.M. rubber stud non-skid and rubber car covers are very serviceable-looking, all-rubber non-skids, with attractive treads and at moderate prices.



Top (left to right) : Bates, Hutchinson Passenger, Thames, R.O.M. Bottom : John Bull, Clincher, Goodrich.

Stand No. 90.
The North British Rubber Co., Ltd., 257-259, Oxford Street, London, W. 1.

THE North British Rubber Co.'s stand contains a selection of tyres for every type of vehicle. The Dreadnought passenger extra heavy tyre has a particularly strong tread, and is very suited to sidecar work. The Deluxe extra heavy rubber non-skid and the Deluxe heavy are both suitable for heavy motorcycle use. Tyres for lightweights are the Junior Deluxe rubber non-skid and the Dreadnought three-ribbed. Clincher Flexis motorcycle belts are also exhibited.

Stand No. 125.
The B. F. Goodrich Co., Ltd., 117-123, Golden Lane, London, E.C.

THE Safety Tread Goodrich tyres which are on show at this stand are made from the same rubber and cotton fabric as the famous safety tread motor tyre, and possess the same perfect balance and resiliency. These tyres are some of the strongest of their kind on the market, and are eminently suited for sidecar work. Goodrich rubber solution and vulcanizing compounds, such as used in the manufacture of the tyres, are also on show. Gas tubing for lighting sets and reel hose for garage use is also worth examination. The former are exhibited in all sizes in red and black. The hose is of the two-braided construction variety, and is extremely durable, and cannot kink. It is obtained in any length up to 250 ft.

Stand No. 89.
The Leicester Rubber Co., Ltd., Post Office Place, Leicester.

HERE we find a profusion of everything made of rubber, useful to the motorcyclist, including John Bull compressed rubber tyres in ribstud and cross-groove tread, in various sizes up to 650 mm. by 70 mm. by 65 mm. and 28 in. by 3 in. for American heavy passenger outfits. The John Bull tubes are made from the finest Para rubber, and their Tourist Trophy, a tube of double thickness, is attractive to those riders who find the average tube insufficiently stout for their needs. The John Bull deep-drive belts, which helped Pullin on the winning Rudge in the last T.T. to achieve his victory, are claimed by the company to have increased driving surface and greater gripping powers than any other belt. John Bull compound and sticky patches are exhibited and demonstrated, some well-equipped repair outfits are shown, also the John Bull strip patches, which are purchased in a roll and cut off as required.

The Mend-a-Tear outfits, indubitably the most satisfactory method of repairing motor-cycling waterproofs, are shown and explained to those interested.

In addition to all the above, visitors will find footrest rubbers, clipping gaiters for outer covers, pedal rubbers, insulating tape, retreads for motorcycle tyres, valve seatings, overalls, handlebar grips, horn bulbs, and a host of other things too numerous to record.

Wood-Milne, Moseley, and Palmer Tyres.

Stand No. 129.
Wood-Milne, Ltd., and George Spencer, Moulton and Co., Ltd., 42, 44, 46, Wigmore Street, London, W. 1.

AT stand No. 129 are to be seen exhibits of the Wood-Milne motorcycle covers, tubes, and belts. Among the covers, an interesting exhibit is the Keygrip, a popular racing tread, which is shown in two patterns, three-ply and four-ply. A heavier cover is on view in the form of the Four-ply Combination; this steel-studded tyre is specially advocated for reliability and lasting wear. Motorcyclists who have suffered from excessive belt trouble will find on Stand No. 129 an article worthy of notice in the Wood-Milne motorcycle belt, specially designed to overcome this hugbear of all-weather riders. Wood-Milne motorcycle tubes to fit the covers referred to above are also on view.

Stand No. 137.
Moseley, David, and Sons, Ltd., 19-20, Holborn Viaduct, London, E.C. 1.

TWO items in this exhibit are of particular interest to motorcyclists. One of these is the Moseley heavy motorcycle tyre for medium-powered machines up to 6 h.p., which is of the three-rib-tread variety. This tyre has a foundation of a special weave heavy motor tyre-canvas of three or four plies, according to the size. The other is the Moseley rubber-studded motorcycle tyre, which is suitable for lightweight motorcycles of two strokes, up to 3 h.p., with or without sidecars. This tyre, although designed for light work, is made of full thickness extra tough grey rubber, and has a foundation of three plies of heavy woven canvas. A complete range of cycle and motorcycle tyre accessories is also shown.

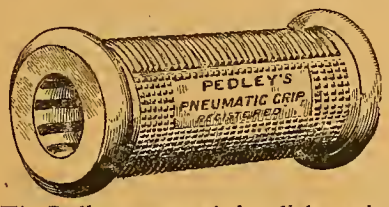
The three-rib Moseley motorcycle cover.

Stand No. 182.
Patchquicks Patents, Ltd., Tiverton, Devon.

THE Patchquick exhibits at Stand No. 182 will include samples of the famous tyre patches, made in numerous sizes and shapes to suit every puncture or burst likely to occur, together with the special Fix to be used in conjunction with the patches. The complete tyre-repairing outfits, containing patches, tube of Fix and other necessities, will also be on view.

Stand No. 45.
Pedley, J., and Son, Ltd., Oxford Works, Gt. Charles Street, Birmingham.

ON this stand a full range of the articles manufactured by J. Pedley and Sons, Ltd., is exhibited. The well-known Pedley three-rib heavyweight motorcycle tyre is shown, as is also the inner tube, the Pedley belt, and specially prepared tyre patches. An item of interest to all motorcyclists is the pneumatic handlebar grip, which is so constructed as to prevent almost all vibration on the handlebar from being transferred to the rider's wrists and arms.



The Pedley pneumatic handlebar grip.

Stand No. 9.
Capon, Heaton and Co., Ltd., Hazelwell Mills, Stirchley, Birmingham.

A GREAT variety of tyres and tubes is found on this stand, all sizes being shown and various pattern treads. Everything, in fact, for the rubber equipment of the motorcycle is shown, handlebar grips, footrest rubber pads, footboard matting.

Stand No. 160.
Surridge, R., 73, Church Street, Camberwell, London, S.E. 5.

IN addition to the well-known Holdtite tyre patches and repairing outfits, Messrs. Surridge's Patents are showing two interesting novelties at their stand.

All users of lighting apparatus other than electric will be interested in the new design of aluminium rear and sidecar lamps which, it is claimed, are immune from accidental blowing out. Another useful patent is shown in the form of a novel design of head and rear bag connectors. A full range of Holdtite specialities is exhibited, also patches, solution, inflators, belts, overall suits, etc.

Stand No. 4.
Clipper Tyre Co., Ltd., 52-60, Steelhouse Lane, Birmingham.

ON this stand are shown the well-known Clipper motorcycle tyres. These are made in two models, the ordinary Clipper for average weight motorcycles and the Reflex-Clipper Ideal tyre, which is specially constructed to meet the requirements of high-powered engines. Motorcycle tyre repair kits are shown, including the Silent outfit, which is supplied in a leather roll.

Stand No. 111.
Cuthbe, Chas. L., and Co., 37, Gt. Eastern Street, London, E.C. 2.

THE Max Cycar tyre is of a particularly sturdy nature and very suitable for sidecar work. The Max End-to-End and lightweight tyres are also exhibited.

Stand No. 8.
Midland Rubber Co., Ltd., Ryland Street, Birmingham.

A VARIED array of goods will be exhibited by the Midland Rubber Co., who earned a reputation as rubber manufacturers before motorcycles were considered practicable machines. Foremost amongst the motorcycle tyres is the Britannic and Studded tyre, and this is followed by the Midland, which is made in three types—ribbed, grooved, and studded. In addition to tyres, several small rubber accessories of interest to motorcyclists are exhibited.

Stand No. 133.
Macintosh, Chas., and Co., Ltd., 22-23, Jewin Street, London, E.C.

A FULL range of motorcycle tyres is exhibited at this stand. The Chain pattern cover is worthy of note, and is made of best Egyptian canvas and best quality rubber. This particular tyre is made in all the usual sizes.

Stand No. 112.
Palmer Tyre, Ltd., 119, 121, 123, Shaftesbury Avenue, London,

THIS exhibit comprises Palmer motorcycle tyres of varying grades, Palmer two-ply tyres for sidecar use, and the Palmer Scooter tyre. No particular change of programme is indicated by the Palmer tyre display, but certain grades of the tyres shown are identical with those used by winners of numerous trials and competitors during the past year. It is noticeable that the requirements of sidecar users are now fulfilled by Palmer two-ply tyres, instead of the sidecar tyres which were hitherto advertised. An interesting and novel feature of the exhibit is the Scooter tyre, the demand for which has been enormous.

The well-known Palmer cord tyre.

Stand No. 132.
Self-Sealing Rubber Co., Ltd., Ryland Street, Birmingham.

THE well-known Hermetic specialities are on view, and amongst other exhibits are seen the specially moulded heavy motorcycle tyres known as the Hermetic Peerless. Three other grades of Hermetic tyres are also exhibited, and the Fixkwik compound patches for tubes and tyres. Everything relating to tyres is to be seen, including repair outfits, plasters, gaiters, and repair bands. Horn bulbs and motorcycle belts of all sizes are also shown.

SECTION 8.—Lubrication and Tank Fittings.

Stand No. 221.
The Anglo-American Oil Co., Ltd., 36, Queen Anne's Gate, London, S.W. 1.

ALL grades of motor spirit, together with illuminating oils and fuel oils, are exhibited at the Anglo-American Oil Co.'s stand. Of special interest to motorcyclists will be found Pratt's Perfection spirit, in the familiar green can, the standard grade of motor spirit for all classes of motor vehicles, and Anglo's Benzole, a very popular fuel. Victory Spirit, a well-balanced petrol-benzole blend, is another interesting feature.

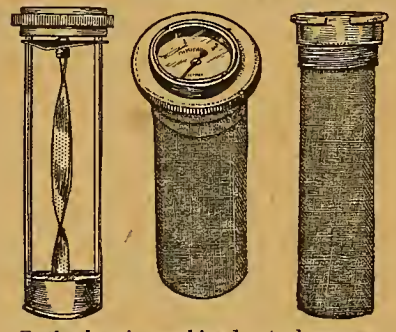
Stand No. 181.
Challenge Oil Co., Ltd., Howard Works, Howard Road, Stoke Newington, N.

THE Challenge Oil Co. are exhibiting a good variety of motor oils for air-cooled and water-cooled engines, all types of greases, carbide, petroleum jelly, French chalk and many lubricants.

Stand No. 171.
Price's Co., Ltd., Belmont Works, Battersea, London, S.W. 11.

AT Messrs. Price's new stand, No. 286, is to be found a comprehensive range of the oils produced by this concern to meet the varying conditions of internal-combustion engines of all types.

Among the exhibits are shown such well-known brands as Motorine, Huile de Luxe, Hub Lubricant, Oleogene, Belmogene, etc. Messrs. Price's are exhibiting a novelty in hub lubricants, entitled Hub Lubricant Stiff. This material, of a new grade, is particularly suitable for use in motorcycle ball bearings where it is required, not only for lubricating purposes, but also to act as a preventive to the admission of water, mud, and dust. It is also advocated as admirable for leaf springs, whether exposed or enclosed.



Rotherham's combined petrol gauge, filter and filler, to be seen at Stand No. 214.

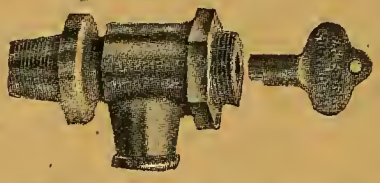
Stand No. 141.
Vacuum Oil Co., Ltd., Caxton House, Westminster, London, S.W. 1.

LUBRICATION requirements of all makes and models are provided for at the Vacuum Oil Co.'s stand.

Riders requiring a light-bodied oil are recommended to use Gargoyle Mobiloil "A," the "B.B." grade has a heavy body, while "B" serves where an extra heavy oil is required. The "T.T." grade is designed for use in racing machines. Besides these varieties there is on exhibition the Gargoyle clutch oil and Mobilubricant, a medium-bodied grease, freed from particles, for covering chains, packing wheel hubs, and similar purposes. Motorcyclists visiting the stand are recommended to ask for a copy of the new edition of "Correct Motorcycle Lubrication," which, besides technical information and advice upon the subject of lubricants, contains the company's chart of recommendations applicable to all their makes.

Stand No. 167.
Wakefield, C. C., and Co., Ltd., 30-32, Cheapside, London, E.C.

A FULL selection of standard Castrol motor oils and greases will be on show at this stand. This will include the celebrated Castrol R, the lubricant used on each of the transatlantic flights. Castrol Gearcase and Castroleum will be among the greases exhibited. The patent locking tap suitable for both drums and barrels is of particular interest. All Castrol drums and barrels are now supplied fitted with a hermetically-sealed aperture in which the patent locking tap is inserted. No cutter is required and one tap will serve any number of barrels or drums. Only the one size of tap (⅜ in. bore) is needed for both receptacles. The tap is simply inserted in the aperture and screwed home by hand in a few seconds. The present price is 5s. 9d., and it can be obtained from all Castrol agents.



Wakefield's locking tap for oil drums and petrol barrels.

Stand No. 149.
Coventry Movement Co., Ltd., Spon Street, Coventry.

THIS company provides a display of screws, studs, ball joints, nuts, grease cups, brass taps, etc., of excellent finish. Their patent spring-lid lubricators are shown in all sizes from the smallest to a monster 8 ins. in diameter, which they jestingly affirm is intended for magneto bearings. One of the most interesting features from the motorcyclist's point of view is their petrol or oil-level indicator. It comprises a cork float having an up-and-down movement, held in place by a tube passing through its centre. Inside is another tube having a spiral slot, which causes a turning movement as the float falls and rises with the level of the liquid in the tank. Fixed to the spirally-cut tube is a white disc, the relative position of which shows the amount of petrol or oil through a glass on the tank top. It is undoubtedly a great convenience to be able to see at a glance the amount of petrol in the tank, and the number of indicators in the Show, of which this is a typical example, is a sign of the times.

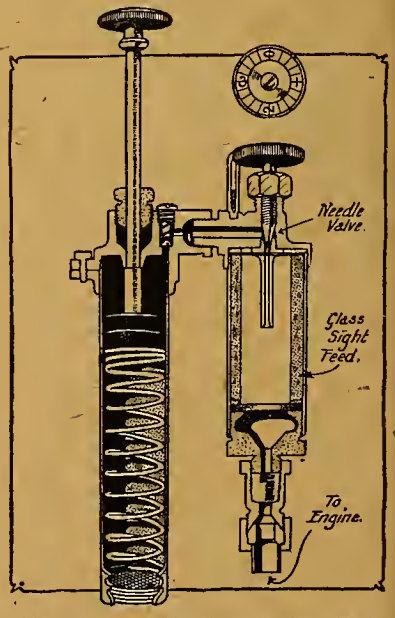
Stand No. 203.
Best and Lloyd, Ltd., Cambray Works, Handsworth, Birmingham.

THE semi-automatic drip feed, now so popular on motorcycles of all sizes from two-strokes to big twins, is to be seen here, and interest centres in the new mechanical oil pump, which is designed to work in conjunction with it.

The Coventry Movement Co.'s petrol or oil indicator.

This we recently described, and it may be remembered that an ingenious reduction gear of 60 to 1 drives a small pump plunger which takes in and delivers oil through the valves of the hand pump. The chief advantage is the elimination of the human element, and the provision of a regular and constant flow of oil to the engine. The adjustable stroke of the pump makes it suitable for all conditions of engine load, and it may even be connected to the throttle if so desired. Other interesting exhibits are tank fittings of many varieties, glass-topped filler caps, screw and bayonet joint filler caps, petrol gauges and filters, petrol taps for one, two or three-ways, everything, in fact, for the convenience of the rider as applied to petrol tanks.

This concern is one of the best known in its own particular sphere of activity, and visitors should make a point of inspecting this representative stand, particularly the mechanical oil pump described in the foregoing.



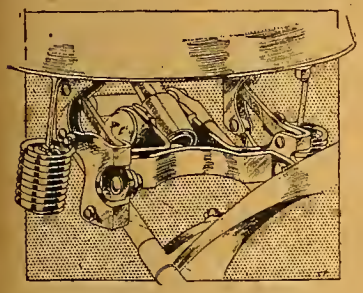
The Best and Lloyd hand sight-feed oiler.

SECTION 9.—SADDLES AND OTHER LEATHER GOODS, etc.

Stand No. 236.

Brooks, J. B., and Co., Ltd., Great Charles Street, Birmingham.

J. B. BROOKS AND CO., LTD., have always specialized in saddles, and this year several types are exhibited. Most of them are fitted with the well-known Brooks compound spring, but the B220 has laminated springs, anchored in the centre, and giving free movement at either end of the spring. This saddle is particularly suitable for spring-frame machines, or for riders who require a low seat position for speed work. Another saddle particularly recommended is the B400 type, which is made with springs of several different

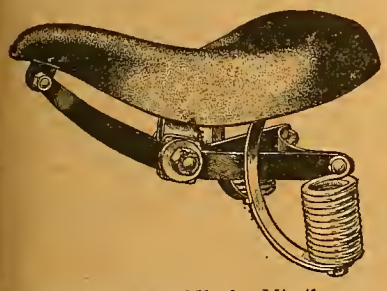


The Brooks B400 saddle.

strengths, to suit riders of varying weights.

Various tool and carrier bags are shown, including the Brooks motorcycle carrier bag. The outside dimensions of this are 16½ ins. by 10½ ins. by 6½ ins., and it is made in two parts, the outside part being permanently fixed on the carrier. The inner case and its contents are thus kept dry and free from dust, and when required can easily be removed.

The Brooks spring-on leggings are also exhibited. These are made in various sizes, and they can be clipped on, or removed, in a few seconds—a fact which everyone who has struggled out of the ordinary type at the end of a wet ride will much appreciate.



A well-sprung saddle by Middlemore and Lamplugh.

Stand No. 138.

Middlemore and Lamplugh, Ltd., Little Park Street, Coventry.

THIS stand, while catering very largely for cyclists, has upon it a great deal to interest motorcyclists. The Lamplugh saddles especially have been known for many years past, and visitors will do well to inspect the merits

The Brooks spring-on leggings are very easy to remove.

of the motorcycle saddles Nos. 970-1 B and 975-6 B. Two very businesslike tool bags are shown, one being metal covered and having straps in addition to its spring fastener and lock. The strap undoubtedly relieves the lock from a certain amount of strain, more especially so when the bag is rather full, which usually happens early in its career. The mudguards have deep valances on the front, and an extension piece at the edge of the rear one, are well finished and fitted with stays of stout gauge.

One of Tan-Sad's pillion seats.

Stand No. 229.

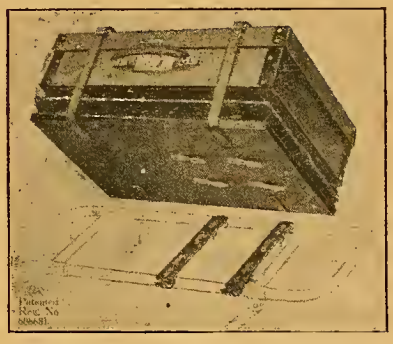
Leatheries, Ltd., Sampson Road North, Sparkbrook, Birmingham.

MOTORCYCLE saddles, pannier bags, belt and tube cases, back rests, fixed and folding, carbide carriers, plug cases and carrier touring bags, are shown on this stand. All of them are made of the best materials, and are listed at competitive prices.

The saddles exhibited are the Nos. 73,

A tube and belt case by Leatheries.

87, and 91. These incorporate the company's patent double hangers, shock absorbing links, and pressed steel anatomical bases. The models comprise a suspension seat, which yields to the rider's weight along its entire length, independently of the under frame. Any vibration or shock is absorbed before it can reach the rider, whilst any tendency towards bouncing is eradicated, even on the roughest roads.



A Leatheries bag for attaching to the carrier.

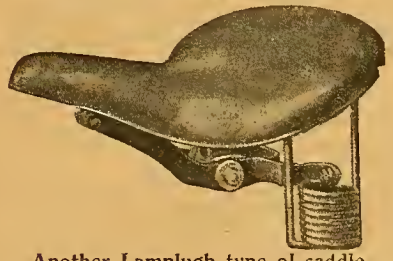
Stand No. 211.

Tan-Sad Works, 9, Freeman Street, Birmingham.

PILLION riding is a much debated practice, but undoubtedly any risk is greatly lessened when the passenger is provided with a comfortable seat. The Tan-Sad seat is well known, and it is shown on this stand in various forms, with back rest, foot rests, tool bag carrier, petrol can carrier, etc., all built up round the central idea.

A further development is a saddle which fixes to the carrier of the machine. The pivotal point is placed as far behind the rider as possible, and six coiled springs are utilized for the suspension. This combined saddle and pillion seat is claimed to provide all the advantages of a spring frame.

This saddle is also shown with a collapsible back, which can be raised by the



Another Lamplugh type of saddle.

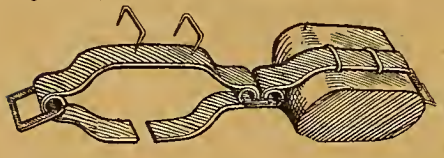
rider when on the machine, and a further development is a footboard attachment by means of which the feet are sprung in conjunction with the saddle. A new departure for the Tan-Sad works is a rear lamp combined with a number plate in one piece, thus avoiding all chances of the lamp working loose through vibration. The burner is mounted in a slide held by a spring and connected to the lamp top, which can be raised to expose the burner when lighting-up time comes.

Saddles continued—The Chain Association's Work.

Stand No. 183.

Lycett Saddle and Motor Accessories Co., Ltd., Bromley Street, Birmingham.

ON this stand are shown various models of the well-known Lycetts La Grande saddles. The manufacture of the ordinary type belts has been discontinued, and a new rubber link belt has been introduced in place, the main features of which are shown clearly in our illustration. The body of the belt is composed of V-shaped pieces of solid rubber. Round the centre of each piece is a spring steel clip, which is attached by means of two small staples on the top. These clips are held together by links, which cannot become detached



A novelty in belt construction—the Lycett rubber link.

unless the staples and the rubbers are removed. Flexibility is obtained by means of the spring clips, and as the main wearing part of the belt is composed of solid rubber, almost indefinite life should be assured.

The saddles are on similar lines to the 1919 productions. A very interesting feature is that they are hinged at the front and at the top of the rear tension springs. By this means a straight pull action is obtained.

Stand No. 208.

Gough and Co., 180, Park Road, Hockley, Birmingham.

GOUGH productions do not differ to any great extent from those which have been on the market during 1919. There is, however, one innovation in the form of a patent leaf spring saddle, which gives a very low and comfortable riding position. The well-known Gough semi-pan seat saddles are shown, as are the company's usual range of leather toolbags, tube and belt cases, carbide carriers, and the like.

Stand No. 219.

X-L-All, Ltd., Hall Green, Birmingham.

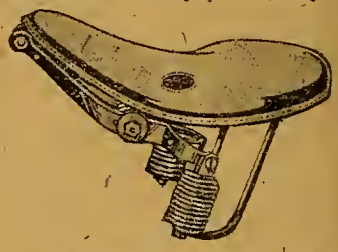
VARIOUS types of the well-known X-L-All saddle and two types of sparking plugs are shown on this stand. The 1920 saddles are designed on particularly substantial lines, and embody several special refinements. The underwork of the saddle is constructed in steel, and the various fitments which were previously riveted are now acetylene-welded to the main portion. All the types are of the parallel-spring motion with the exception of model S2, which is designed to meet the demand for a comfortable saddle at a low price. An innovation is a folding back rest, which, when not in use, can be folded over the saddle, completely covering it. This should be most useful in wet weather.

The well-known X-L-All detachable plug is shown. Large insulating porcelains and adequate cooling fins are provided, and the upper portion can be removed for cleaning purposes when required and screwed back without the position of the centre electrode being disturbed. This model retails at 6s., and the X-L-All standard non-detachable plug, which is suitable for all ordinary purposes, at 3s. 6d.

Stand No. 223.

Wilby, A. E., Ltd., 113-115, Holloway Head, Birmingham.

A COMPLETE range of Wilby saddles and other leather goods for motorcycles are shown on this stand. The sound yet simple design and substantial construction are worthy of note, only the



For lightweights—The Lycett No. 6 saddle.

finest materials being employed. Pannier bags in many different shapes and sizes are also exhibited, the strong flaps being a commendable feature. The importance of a strong pannier bag for the retention of the tool kit is highly necessary, and one has only to glance at the dilapidated pannier bags of an old machine and then at the latest examples as shown on this stand to realize the strides that have been made in this and similar directions.

CHAIN TRANSMISSION.

Stand No. 179.

Association of British Driving Chain Manufacturers, Bassishaw House, Basinghall Street, London, E.C. 2.

AS the various manufacturers of driving chains are exhibiting specimens of the new standard sizes at their respective stands, literature only is to be found at the stand of the Association of British Driving Chain Manufacturers.

Stand No. 155.

Alfred Appleby Chain Co., Ltd., Whitwork Works, Tilton Road, Birmingham.

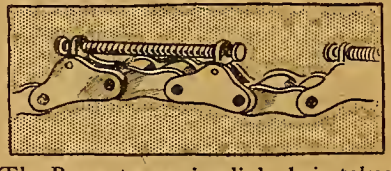
ON this stand is shown a full range of motorcycle chains, stamped steel pressings, frame lugs, fork crowns, etc., used in the manufacture of motorcycles. The well-known Alfred Appleby and Atco roller chains are prominent.

Stand No. 190.

Brampton Bros., Ltd., Oliver Street Works, Birmingham.

NOW that chain drive is becoming so popular, particular attention must be paid to the quality of the chains. On Messrs. Brampton Bros.' stand, all types of roller chains are on view, and in addition there are various sizes of the inverted tooth, or, as it is usually called, silent types. The latest Brampton chain is the "spring" type, which can be adjusted very tight, the springs being an excellent substitute for a shock absorber. Numerous models of motorcycle hubs, for belt or chain-driven machines, are also shown, including the patent dust-proof hub.

Five models of the Brampton Biflex spring fork may be seen; these are suitable for motorcycles from 2¼ h.p. to 10 h.p.



The Brampton spring-link chain takes the place of a shock absorber.

Stand No. 165.

Coventry Chain Co., Ltd., Spon End Works, Coventry.

ON this stand are photographs of the Coventry inverted-tooth chains. These include engine to countershaft, magneto, camshaft and lighting-set drives. This type of chain is slowly but surely coming to the fore on account of its silence, long life and kindness to sprockets. Among other concerns, the Rover and Matchless companies are taking the drive from engine to gearbox on chains of this pattern, in preference to the older and noisier roller variety.

Stand No. 192.

Renold, Hans, Ltd., Burnage Works, Didsbury, Manchester.

SOME examples of countershaft and rear drives are exhibited, suitable for all powers—from lightweights to 9 h.p. models. The countershaft drive for the heavier models is of the inverted tooth (silent) type, with segmental bush bearing. This chain is of new design, and provides a greater bearing area, together with improved bearing surface, than any previous design. The construction of this bearing permits of extreme accuracy of pitch and, as the full bearing area is utilized the moment the chain is put into service, a longer chain life is assured.

Self-contained means of lubrication, maximum bearing area, minimum weight of chain for given bearing area, and improved bearing surface, are outstanding features of the above chains. The rear drive chains are of the roller pattern, and, by the use of special alloy studs and heavier links, the minimum breaking strength is increased by 50 per cent.

SECTION 10.—SPEEDOMETERS.—Watford, Cowey, Bonniksen, Jones, Stewart, and Smith.

Stand No. 210.

North and Sons, Ltd., 14, Soho Square, London, W. 1.

ONLY two models of the well-known Watford speedometers are on exhibit at the makers' stand. Model 42 is a black finish, nickel-plated bezel speedometer, priced at £5 5s. The dial is black with white figures and indicates speeds up to 60 m.p.h., the total mileage counter running up to 10,000, when it repeats. A quickly reset trip counter up

The Watford.

to 100 miles, showing tenths, is incorporated with this model. Model 40, priced at £4 15s., corresponds in all details to the former, with the exception of the trip counter, which is not supplied with this model.

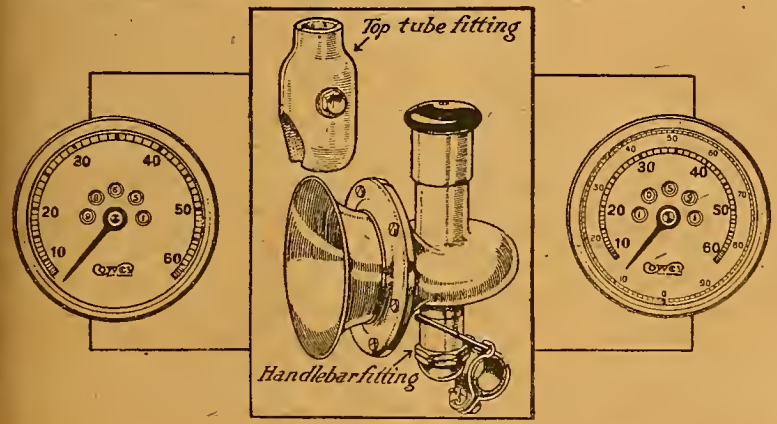
Stand No. 196.

Cowey Engineering Co., Ltd., Archer Works, Kew Gardens, Surrey.

VARIOUS models of Cowey speedometers and mechanical horns are on exhibition at Stand No. 196. Model B speedometer, finished in nickel or black according to taste, indicates speeds from 5 to 65 m.p.h., and is priced at £4 15s. Model B.T. is identical with model B, but has the addition of a trip counter. This model is priced at £5 5s. Speedometers calibrated to 80 m.p.h. may be obtained for 10s. extra.

One model only of Cowey mechanical horns for motorcycles is on view; the model B, finished in nickel or black, and fitted with top tube or handlebar bracket as preferred. It gives a particularly loud and piercing note, and is priced at £3.

The Cowey Speedometers and Mechanical Horn.



Stand No. 175.

Markt and Co. (London), Ltd., 98-100, Clerkenwell Road, London, E.C. 1.

THE Jones speedometer (now under the control of the Johns-Manville Co.) is little altered from the original pattern, the only difference being a circular form of scale instead of the old Jones short arc. The speedometer reads up to 60 m.p.h. with total and trip mileage, but is without the old maximum-hand feature. There is no change to record in the Veeder cyclometer, save in price. The star wheel and striker type of motorcycle cyclometer is now 20s., and the Harley-Davidson model 32s. 6d. The gear-driven instrument with axle fitting is 35s.

Other items of interest are the Long mechanical motorcycle horns and the Delta electric lamp with top-tube battery. There is a large variety of wrenches, including the Mossberg revolving dome and Sterling rotary axle dome type.

Stand No. 184.

Rotherham and Sons, Ltd., Coventry.

Bonniksen Isochronous.

THE Bonniksen Isochronous speedometer is governed by a balance spring, as a watch, and is positively unaffected by vibration. Its dial is calibrated in miles up to 50 m.p.h., after which it repeats, thus its reading powers are actually unlimited.

Stand No. 215.

Cooper-Stewart Engineering Co., Ltd., 11, Broad Street, Bloomsbury, London, W.C. 2.

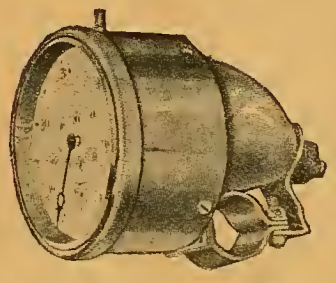
TWO MODELS OF THE STEWART SPEEDOMETER.

These can be obtained with or without trip mileage.

THIS season's Stewart speedometers are modelled more on the lines of their successful car type, which has a white dial. Two models are shown, No. 43, which is without trip and costs four guineas, and No. 42, incorporating a trip and priced at five guineas. These speedometers are for front-wheel drive only, and register from 5 m.p.h. to 60 m.p.h.

Stand No. 200.

Smith, S., and Sons (M.A.), Ltd., 179-185, Great Portland Street, London, W. 1.



Smith and Sons' speedometer.

THE new Smith speedometer is a great improvement on the pre-war model. The dial has been entirely redesigned, giving a perfectly clear reading, while the hand is claimed to be as steady as a clock hand at all speeds. The speedometer, which can be obtained in nickel or black finish, is priced at £4 10s., including the drive.

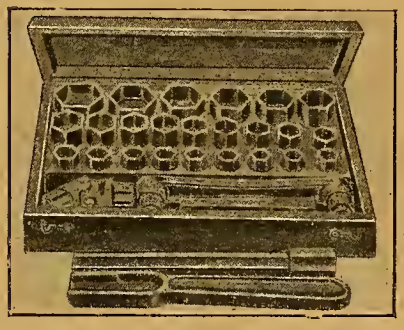
Some particularly well-made mechanical horns are shown, which are extremely strongly made and will withstand the hardest wear. They are supplied in ebony or black enamelled finish at £1 15s. or with nickel-plated trumpet at £2 7s

SECTION 11.—MISCELLANEOUS ACCESSORIES: A New Sturmey-Archer Gearbox.

Stand No. 163.
Sturmey-Archer Gears, Ltd., Lenton, Nottingham.

THERE is always a number of visitors to the Show specially interested in the Sturmey-Archer exhibit, for, though they are mostly well acquainted with the outside of the Sturmey-Archer gearbox, only a comparative few of them have had an opportunity of examining the internal mechanism and thereby finding out the how and why of the gear itself.

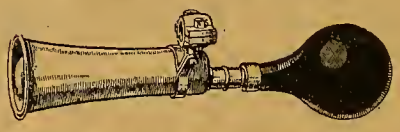
At the stand there are shown the three-speed countershaft gear and the two-speed countershaft gear for motorcycles. Each of these gears is sectionized to show the working parts, and very little explanation is required for anyone of a mechanical turn of mind to grasp the method by which the gears work.



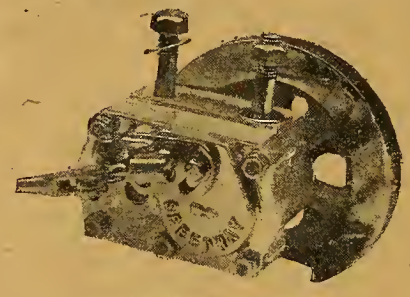
Lake and Elliott's Millennium box spanners.

The three-speed countershaft gear, which has done such wonderful work in every battle area during the war, is perhaps too well known to make any long description necessary. The only slight alteration that has been made recently is in the control, which is now carried on the down tube just underneath the tank, and is protected from wet, mud, etc. It consists of a circular disc, on the face of which are cut V-shaped notches which correspond to the gear positions. Another circular disc having similarly-shaped projections machined on its face is held in position in the notches mentioned by means of spring pressure. This disc is securely fastened to the long gear lever which takes up a horizontal position in bottom gear, along the tank, and is thus more conveniently placed than the old gear lever carried on the box itself. The lever can be set in different positions to suit individual taste.

On the new control the levers actuating the gears are made longer than on the old type, so that wear on the pin joints will not affect the positioning of the gears to anything like the same extent as obtained with the old control. Arrangements have also been made internally in the gearbox to allow a greater latitude between the gears in the neutral position. The gearbox itself is much neater and can easily be kept clean. Interest will be specially centred in the new two-speed countershaft gear, which is intended for use on lightweight motorcycles. The main principle in this is similar to the three-speed, the gears being in mesh all the time, and the change being effected by sliding dogs.



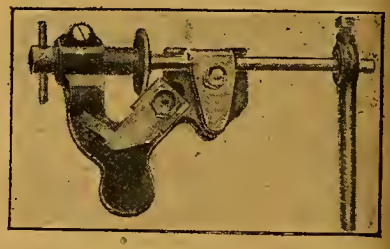
Lucas straight pattern horn.



The Speedway gearbox.

Stand No. 142.
Lake and Elliott, Ltd., Albion Works, Braintree, Essex.

SOME very useful tools for the use of repairers or the man who is lucky enough to have a well-equipped private garage are shown. A Universal valve truer for the facing up of badly-pitted valves, also a cutter for the valve seatings are very interesting. Valve spring lifters and gudgeon pin removers are two other useful tools. The keen rider will also be interested in the tools and appliances which are used in the manufacture of his machine, such as wheel truers, spoke cutters, and screwing machines, all of which may be seen.

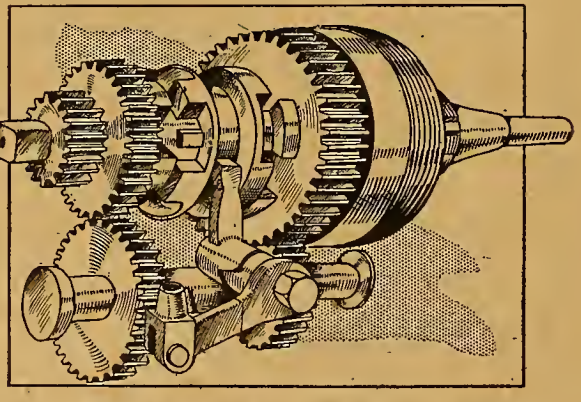


The Universal valve truer.

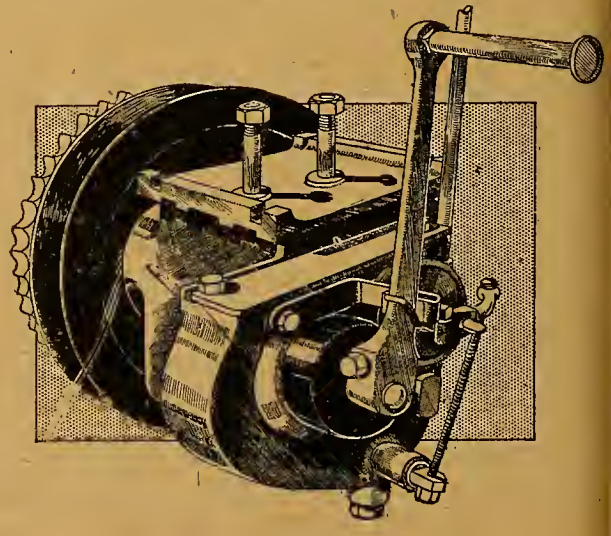
Stand No. 225.
Dover, Ltd., Northampton.

A NOVELTY here is the Dover warning signal, introduced to prevent the needless stoppage of kindly-disposed drivers under the impression that a car or motorcycle merely held up for a few minutes requires assistance. This device consists of one triangle displaying the letter R (resting), with another showing D (disabled), and, according to which is displayed, the passing driver knows definitely if he should stop. Normally, both triangles fold back out of the way, and fittings are supplied for motorcycles as well as cars.

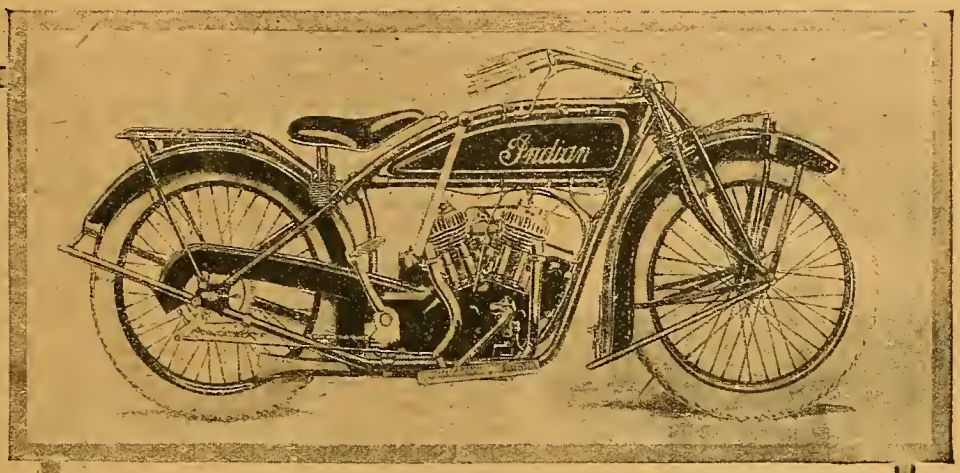
Another item, interesting in these days of electric lighting, is an accumulator repair outfit, while the company's pumps, grips, gear handles, etc., should be noticed.



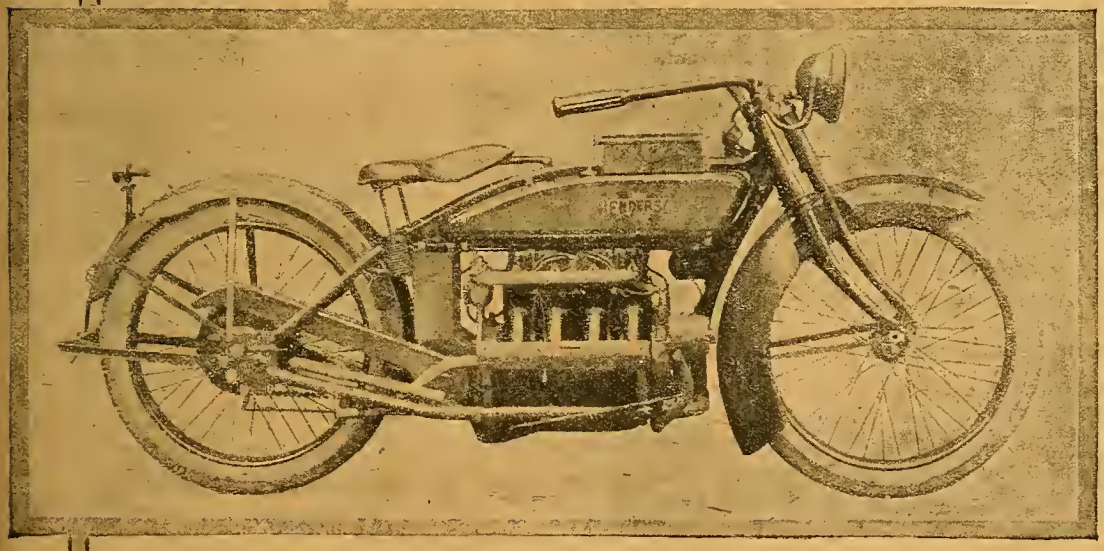
The gearwheels and dog clutches of the two-speed Sturmey-Archer and (right) the complete box.



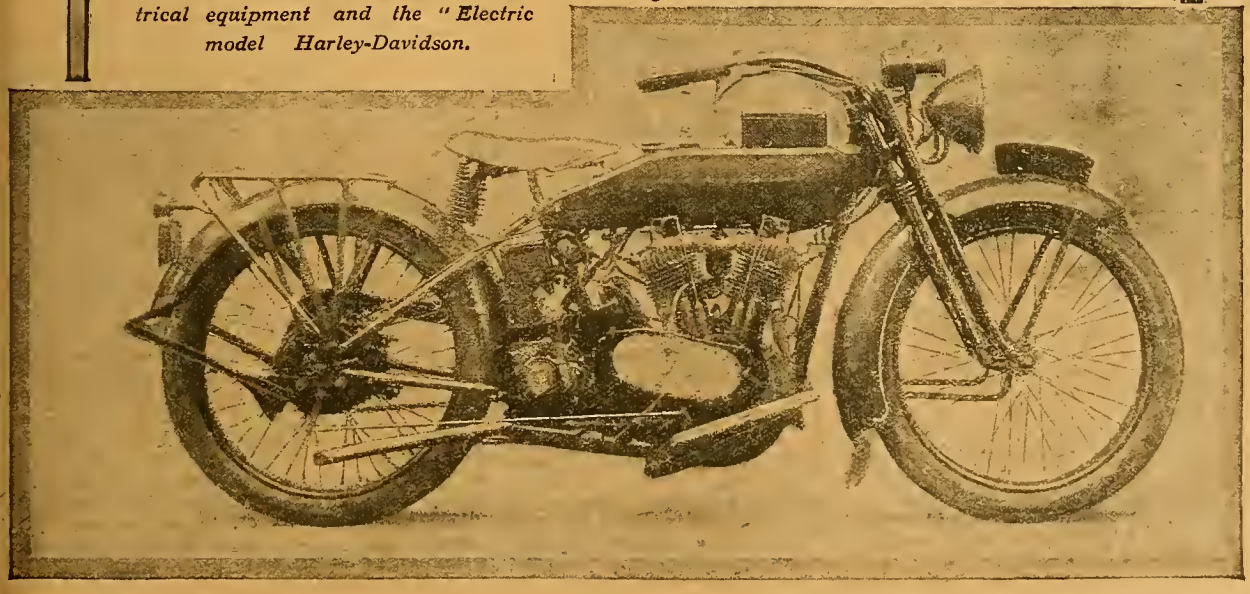
THREE POPULAR AMERICAN MACHINES.



The sports model 4 h.p. Indian which has gear and chain drive.



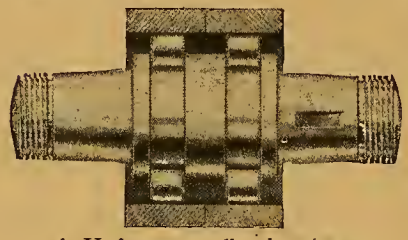
The four-cylinder Henderson with electrical equipment and the "Electric model Harley-Davidson.



SECTION 11.—MISCELLANEOUS ACCESSORIES: The Lamplugh Throttle-controlled Oiler.

Stand No. 235.
Hoffman Manufacturing Co., Ltd., Chelmsford, Essex.

A COMPLETE range of the standard sizes of ball and roller bearings and steel balls and rollers is exhibited. Special prominence has been given to those sizes and types which are most suited for use in the construction of motorcycles.



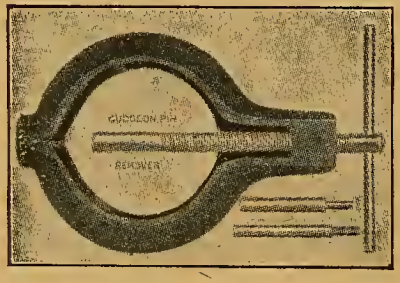
A Hoffmann roller bearing.

Stand No. 158.
Davenport, G., and Co., Ltd., 99-105, Clerkenwell Road, London, E.C. 1.

A LARGE range of accessories is on show here, including driving mirrors, watches, and cases for fitting to the handlebars, goggles, and a lighting and ignition dynamo. There are also several new designs in mileage recorders and speed indicators.

Stands Nos. 186-88.
Dunhills, Ltd., 359-361, Euston Road, London, N.W. 1.

THREE important new sidecar chassis are on show here, one suitable for featherweight sidecars, one specially constructed for touring purposes, and a very strongly-made article which is designed to carry a large coachbuilt body, suitable for two adult passengers and luggage. A selection of touring lightweight and two-seater bodies is displayed; also windscreens, triple or single, with



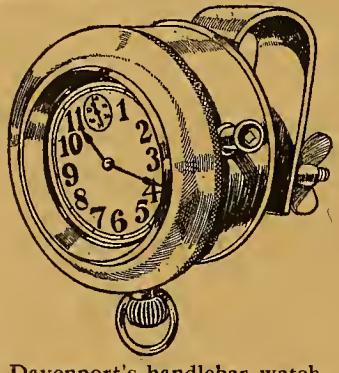
Lake and Elliott's gudgeon-pin remover.

polished walnut frames and celluloid windows with brass or nickel fittings. There is also a selection of motor-cycling clothing, which includes waterproof, leather and tweed jackets, also caps, gloves, leggings, goggles and handlebar muffs, many of which were described in our Winter Equipment Number. In the way of accessories there are lamps of all descriptions, mechanical and bulb horns, and many other accessories of a useful and practical description.

D64

Stand No. 176.
Lombard Rim and Tube Co., Lombard Street, Birmingham.

COMPONENTS for the manufacture of motorcycles and sidecars are seen on this stand, and possess many points of interest for the man who takes an intelligent interest in his machine and likes to know how it is manufactured. Rims for wheels are on view of various types, and one interesting pattern is seen to have specially formed depressions to accommodate the heads of the spoke nipples. This allows the nipples to bed down into the rim and lessens the possibility of trouble with inner tubes. Rims for scooters are also shown, and the family man may find even perambulator rims interesting. A large selection of handlebars is shown, and any type or shape can be obtained. Seat pillars, luggage carriers of all sizes and patterns, and back and front wheel stands, are some other specialities. Exhaust pipes of every shape and size appeal to the speed merchant.



Davenport's handlebar watch.

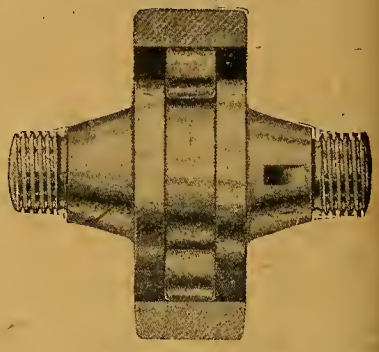
Stand No. 161.
Bluemel Bros., Ltd., Wolston near Coventry.

ONE of the most attractive exhibits here is the patent sidecar windscreen, which in design is far ahead of the average, offering very little resistance to the wind, at the same time thoroughly protecting the passenger by its curved edges and side panels. Instant fitting and detachability are two of its merits, and its sliding adjustment of 12 ins. to suit different passengers and varying weather conditions will be readily appreciated by those used to a rigid screen. Its finish and lines rather enhance the appearance of the sidecar than otherwise, and its weight is practically negligible.

The Bluemel pump is really too well known for comment, but we might remind readers that its barrel is steel lined to guard against warping if carried near a hot engine, and its substantial stirrup lessens the fatigue of inflating a large section tyre. Other interesting items are celluloid-covered handlebars and a large variety of grips, amongst these latter probably the "Autogrip," with a hook at its extremity, and the "Suregrip," fashioned to accommodate the fingers, are likely to make the strongest appeal to most riders.

Stand No. 218.
Bowden Wire, Ltd., Bowden Works, Victoria Road, Willesden Junction, N.W. 10.

AS usual, a very comprehensive range of this concern's productions are on show at their stand. Operating mechanism for all types of motorcycle brakes, gears and clutches are exhibited, also the Bowden extra air device.

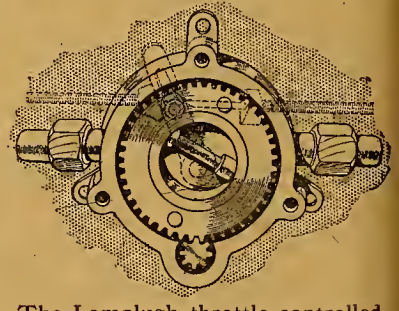


A Hoffmann single-cylinder big-end roller bearing.

Stand No. 173.
Lamplugh, S. A., Ltd., King's Road, Tyseley, Birmingham.

MESSRS. S. A. LAMPLUGH are showing a variety of petrol taps, compression taps, drain taps, etc., but their chief exhibit is the new throttle-controlled mechanical oil pump.

The body of the pump is made from an aluminium die casting, and is machined out to take a revolving drum, which also carries a double-ended plunger and a spur gearwheel. The drum is rotated by a spur pinion, which gives a reduction of about 7 to 1, and on the outside edge of the drum is machined a channel, into which the oil is alternately sucked in and pumped out by the double-ended plunger. The plunger is a sliding fit in



The Lamplugh throttle controlled lubricator.

the hole provided for it, and is machined across the centre to take the eccentric. The position of the eccentric controls the amount of oil that is delivered to the engine, the exact position being actuated by the throttle wire. When the throttle is closed, the position of the eccentric is such that no action is imparted to the plunger. As the throttle is opened, so the pump plunger throw is increased, and oil passes in proportion.

SECTION 11.—MISCELLANEOUS ACCESSORIES: Tubing and Fittings.

Stand No. 199.
Elephant Chemical Co., Ltd., 174-176, Neate Street, Camberwell, London, S.E. 23.

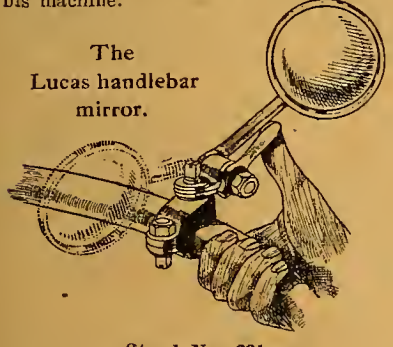
ELEPHANT specialities are well known for quality and reliability. A full range of their productions are on view, including oils, greases, enamels and products for the workshop, such as Brazine brasing flux, Caseardine compound and soldering fluxes.

Stand No. 170.
Coventry Plating and Presswork Co., Ltd., Raglan Works, Coventry.

THIS concern makes a good show of motorcycle petrol tanks of several sizes and in a variety of stages. Heavy and light steel pressings, brass spinnings, belt drums, carburetter floats, chain guards, and a host of other component parts of interest to the man who likes to compare details apart from the machine as a whole. Mudguards, bridges and stays are here in great profusion in patterns and sizes to suit every make of machine.

Stand No. 153.
Accles and Pollock, Ltd., Oldbury, Birmingham.

ACCLES AND POLLOCK, LTD., are exhibiting all types of steel tubing used in the manufacture of motorcycles. The tubing is shown in its plain form and also in single and double-butted tubing of the various components, such as steering tubes, handlebars, lugs, seat pillars, chain stays, fork blades, etc. There are also all types of box spanners. This stand cannot fail to attract the motorcyclist who takes an intelligent interest in the manufacture of his machine.



The Lucas handlebar mirror.

Stand No. 221.
Manufacturers' Accessories Co., Ltd., 85, Gt. Eastern Street, London, E.C. 2.

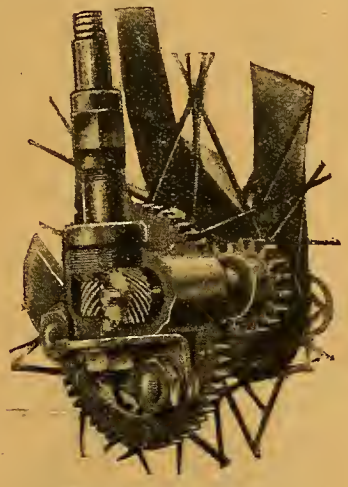
A LARGE number of accessories are on view at this stand bearing the familiar trade mark M.A.C. and M.A.C.O. The display is divided into three distinct sections: motorcycle fittings and accessories, tools and bicycle fittings. The motorcycle section embodies sidecar parts, hoods, windscreens, sidecar lamps, speedometers, tyres, clothing, etc., and a full complement of replacements, such as piston rings, washers, split pins, etc., and in the tool section pliers, twist drills, hand and breast drills, brazing lamps and garage appliances of types and sizes which should make a strong appeal alike to professional and amateur repairers.

Stand No. 157.
Stourbridge Rolling Mills, Ltd., Stourbridge.

THIS firm has on view samples of cold-rolled bright steel for press parts for motorcycle construction, together with specimens of pressings lent by their customers.

Stand No. 159.
British Hub Co., Ltd., Clyde Works, Weaman Street, Birmingham.

VARIOUS types of hubs are made by this company, and the majority of them are exhibited on Stand No. 159. The company has been obliged to abandon the manufacture of axles, steering heads, steering arms, etc., in order to concentrate on their hubs. Foremost of these are the "3B car hub," which has a width over flanges of 3¾ ins., and is drilled for 40 spokes, 10-gauge; and the "Motor hub No. 2" series, which is drilled for 36, 12-gauge spokes for front wheels and 40, 12-gauge spokes for back wheels.



The Jones speedometer drive. British agents are Markt and Co. (London), Ltd., 98-100, Clerkenwell Road, E.C.

Stand No. 144.
Kerslake, Ltd., Kyron Works, Deodar Road, Putney, S.W. 15.

AMONG the Kerco Specialities of interest to motorcyclists at Stand No. 144 are an all-brass tyre inflator and a patent duplicator for reproducing small drawings, tracings, and details, etc.

The makers state that they are capable of producing this inflator, a high-class, nickel-plated, all-brass solid drawn article, at the rate of 10,000 weekly, and they are exporting it to all parts of the world. The inflator is priced at 42s. Amateur designers will be especially interested in the Kerco Swiftograph Duplicator, a wonderfully simple machine, which is claimed to do all the work of a £25 article, with the same speed and efficiency. The duplicator is sold in box, with accessories complete, at £3 17s. 6d., quarto size, and octavo, £3 3s.

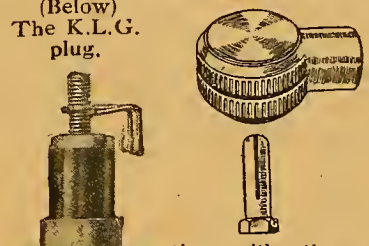
Stand No. 231.
East London Rubber Co., 29-33, Gt. Eastern Street, London, E.C. 2.

A FULL range of the well-known Kerry motorcycle goods is on exhibit at this stand.

The exhibits include Kerry motorcycle accessories in great variety, together with Kerry sidecars and chassis. Kerry tools, specially made for motorcycle work, are also on view, and in connection with these is shown a comprehensive range of stocks and dies. In the cover and tube line, all types of machines are provided for by such popular makes as Ideal, Saxon, Sterling, Celtic, County, and Duros. A feature of the exhibition specially of interest to all motorcyclists at the present time is the inclusive range of Kerry motorcycle wear suitable for all climates.

(Right) The Lodge quick detachable high-tension terminal.

(Below) The K.L.G. plug.



Stand No. 216.
County Chemical Co., Ltd., Chemico Works, Bradford Street, Birmingham.

A REPRESENTATIVE display of Chemico products contains, amongst other items, the following:—Chemico carbide and the useful leather case designed to accommodate a spare half-pound tin of carbide, rubber solution, tyre stopping, and complete repair outfits for tyres. Sunproof tyre paint will interest any demobilised men who have had experience of riding under an Eastern sun. Tyre repair bands and plasters, the well-known Chemico blow-out patch, Reliance patches, and all other tyre accessories and necessaries are also shown. Those riders who like to touch up any faulty enamel and preserve the appearance of their machines will find various enamels and the famous Robbialac of interest.

Stand No. 226.
Micrometer Engineering Co., Ltd., Spon Street, Coventry.

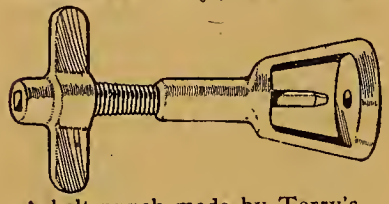
THE chief item of interest here is the company's patent Flexo waterproof motorcycle saddle, a novel feature of which is the waterproof flexible top absorbing all bounce and road shocks not taken up by the springs. This saddle top has a pleasing polish and is fastened to its frame without the aid of unsightly rivets. Sections and frames are exhibited showing its construction. The motorcycle size sells for 38s. 6d.

A Plethora of Useful Accessories.

Stand No. 232.
Ashby, Frank, and Co., Charlotte Road, Stirchley, Birmingham.

AMONGST a variety of fittings and small accessories is a very useful range of lamp brackets for use on either the machine or the sidecar. Brackets for the sidecar are not always easy to obtain, but whatever be the shape of the body there is sure to be a bracket to fit from amongst the selection on this stand. Three varieties are shown suitable for fitting to the coachwork, one of which is useful if it is desired to carry a lamp on the nose of the sidecar.

Another useful bracket is arranged to clip to a tube or spring. A fitting for which there should be a good demand is an adjustable bracket for carrying the tail lamp. It is arranged to bolt-securely to the carrier, and, being very substantial and of heavy gauge steel, it is capable of supporting quite a heavy lamp. The whole range of brackets are very solidly constructed and nicely finished in black.



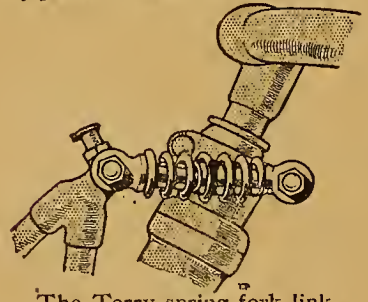
A belt punch made by Terry's.

Stand No. 185.
Terry, Herbert, and Sons, Ltd., Novelty Works, Redditch.

IT will astonish but few people to know that the valve springs which played their part in the famous Atlantic flight of R34 emanated from the house of Terry. Valve springs of all descriptions are seen on this stand, and in addition springs for every other purpose of a motorcycle.

A neat metal clip which supports the bulb of a horn and so prevents the rubber cracking through incessant vibration, a small wire brush for cleaning choked acetylene burners, and a novel set of tyre clamps which simplify the task of removing and replacing very stiff covers are cases in point.

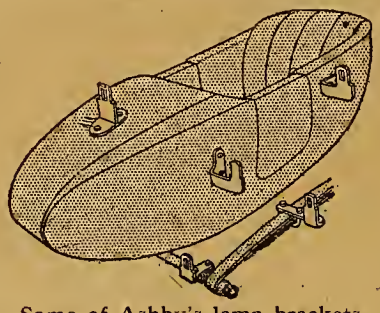
An ever useful set of spanners consists of five double-ended spanners for ⅛ in. to ½ in. Whitworth nuts. They are made of tempered steel and are very light and durable, the finish is plated or oxydized, and when complete with a small leather case they form an extremely neat set for pocket use, thus often saving the rider from unpacking his pannier bags and disturbing his carefully-packed tools and small spares.



The Terry spring fork link.

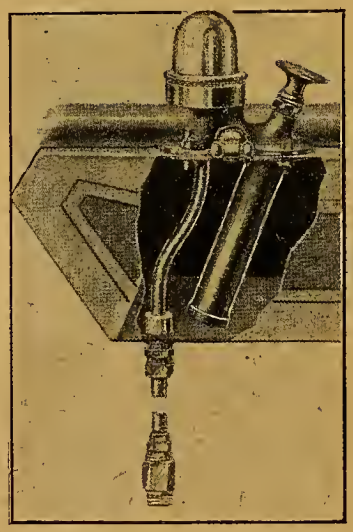
Stand No. 177.
Atkey, A. R., and Co., Ltd., Trent Street, Nottingham.

INTENSE interest centres round the Fault Finder exhibited here for the first time. By its aid it is possible for anybody, whether novice or expert, to



Some of Ashby's lamp brackets.

locate leakages and shorts in magnetos, dynamos, and, in fact, every conceivable form of electric appliance. Magnetos can be tested on high or low tension circuits, and it is equally useful applied to lighting sets in car or house. Demonstrations are held more or less continuously, and interest never seems to flag. The whole instrument is encased in a polished wood box, 18 ins. by 15 ins. by 6 ins., thus adding portability to its other merits. The company are in the happy position of being able to deliver this and their other specialities, including tools, spanners, etc., ex stock.



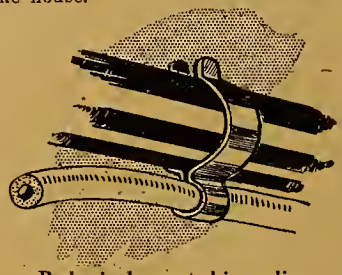
Enots sight-feed lubricator.

Stand No. 168.
Benton and Stone, Ltd., Bracebridge Street, Birmingham.

THE tank fittings which bear the trade mark "Enots" are well known, and are found in profusion on this stand. Seasoned motorcyclists will see all the well-known patterns of petrol taps, filler caps, etc., and, in addition, a few new patterns of considerable interest since they were largely called into being by the demands of the Air Force.

In particular there are some cork disc-seated taps which never leak and which never bind; the ease of manipulating them is wonderful. Quite the neatest petrol filter yet offered to motorcyclists is also shown, and is in reality a combination of petrol cock, filter, and drain tap. This is a small cylindrical body which carries an inlet and outlet pipe. The inlet pipe screws into the tank and the outlet pipe is connected to the petrol pipe to the carburetter. The tap has three positions: on, off, and drain.

The Enots automatic lubricator is too well known to need description, but it may be mentioned that valve spring lifters, tyre pumps, filler caps, spare tyre carriers for sidecars, and many other diverse accessories emanate from the same house.



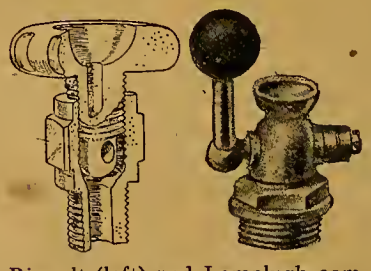
Ryley's lamp tubing clip.

Stand No. 164.
Brown Bros., Ltd., Great Eastern Street, London, E.C. 2.

AS is their usual custom, Messrs. Brown Bros. show a very comprehensive range of all types of motorcycle accessories. An interesting line is the Duco spring gaiter, which is now made for motorcycles embodying spring frames and spring forks of the leaf spring type. Only one model of the Vindec motorcycle is being shown; this is a Villiers engined two-stroke.

Stand No. 147.
Ryley, J. A., 73, Weaman Street, Birmingham.

AMONGST the various Ryley specialities shown at this stand, such as speedometers of various kinds, lighting sets, lamps, and horns of all sizes and descriptions, both bulb and mechanical, there is a very neat clip for attaching the rubber tubing from the generator to the lamps to the frame of the machine. This is a simple clip of spring steel in which is formed a loop to carry the rubber tubing. It is easily sprung over the frame member and securely holds the tubing.



Ripault (left) and Lamplugh compression taps.

Motor-Cycle Tyre's remarkable three years' record.

A Moseley motor-cycle tyre has done 23,400 miles in three years and is reported to be in excellent condition with lots of service still in it.

It is one of the rubber studded motor-cycle tyres, 26 x 2, and was fitted to a lightweight machine in December, 1915.

It was returned to us in January, 1919, with the information that during this period of 37 months it had been in continuous service and had covered an average distance of 150 miles weekly. When we received the tyre it was in excellent condition, there being a full one-eighth of an inch of rubber left on the tread.

MOSELEY

Complete Cycle and Motor-Cycle Tyre List, post free, from
DAVID MOSELEY & SONS, LTD
CHAPEL FIELD WORKS : ARDWICK : MANCHESTER

MANCHESTER: 2, 4 & 6, New Brown Street; LONDON: 19 & 20, Holborn Viaduct, E.C.1; GLASGOW: 126, Ingram Street; BIRMINGHAM: 4, Lancaster Street, Corporation Street; NEWCASTLE-ON-TYNE: 44 & 46, High Bridge; DUBLIN: 16, William Street.

Olympia Cycle Show, Stand No. 137.

C.W.H.

Motorcyclists cannot carry away our Building, but can obtain the BEST VALUE IN OUTFITTING

"GOOD SERVICE" OILSKINS do not crack or stick, and are durable. Our Service Grey D.B. Belted Coats at **32/6**, Seatless Trousers, **21/-**, and Overalls, **10/6**, are absolutely the very best value obtainable.

"GOOD SERVICE" All-weather D.B. Belted Coats, **47/6**; Seatless Trousers, **27/6**. Heavy make, strong and durable in wear, thoroughly waterproof.

GAUNTLET GLOVES Tan, Asbestol lined, **17.6** Best Quality Nappa, **18/6** One Finger Mitts, lined, best quality, **22/6** Fur Gauntlets, cape palms, strap wrist, **42/-**

HORSE-HIDE MITTS, Woollen Wrists, lined, **3/9**; **TAN HIDE MITTS,** One Finger, Woollen Wrists, lined, **8/6**; One Finger Mitts, Sheepskin, waterproof backs, **7/6**; One Finger Mitts, double palm, lined, **4/6**.

ROBI HANDSHIELDS:
Khaki Mac, cloth lined **12/6**
Black Mac, cloth lined **16/6**
Black Mac, fleece lined **21/-**
Tan Cape Leather fur lined **39/6**
For ⅞ and 1 in. handlebars.

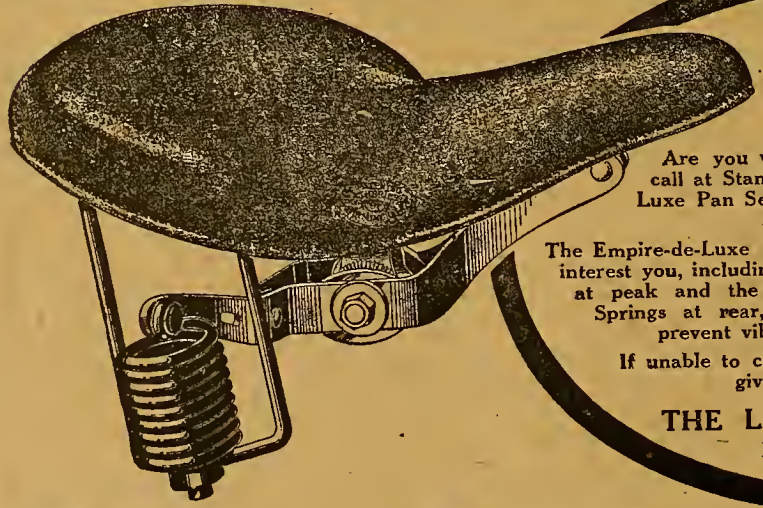
SERVICE WADERS.
Best quality, strong make, heavy rubber soles **27/6**
State size of boot worn.

LEATHER WAISTCOATS
S.B. Sheepskin Jerkins **11/6**
Best quality tan D.B. with sleeves, lined **70/-**
Tan Leather Throat Protectors... ... **6/6**

The Service Company Ltd (LONDON)

289-293, High Holborn, LONDON——————W.C.

EMPIRE-DE-LUXE



STAND 229

Are you visiting the Olympia Show? If so, call at Stand 229 and examine the Empire-de-Luxe Pan Seats—the most comfortable and durable saddles on the market.

The Empire-de-Luxe has many special features which will interest you, including the Patent Shock-absorbing Link at peak and the Double Hangers with Extension Springs at rear, which eliminate bouncing and prevent vibration reaching the rider.

If unable to call, write for Catalogue, which gives full particulars.

THE LEATHERIES LTD.
BIRMINGHAM.

HIGHEST GRADE

AT OLYMPIA

Lynn Motorcycle Repair Bench.

(Patented in all Countries).

Motorcycle Repairs Made Easy.
HANDY—SAFE—RELIABLE.

Simplicity Price: £3 17 6 (delivered). *Efficiency*

The Machine is wheeled on the Bench, raised on its own Stand and easily lifted by one person. Everything to hand. Legs automatically open or shut in raising or lowering. Drawer for nuts and small parts.

Makers—

A. E. W. GWYN, Ltd. (M.B.Dept.), 5, Budge Row, London, E.C.4.

Telegrams—"Asunder, Cannon, London." Telephone—7467 City.

The Veeder Trip Cyclometer for Motorcycles. . .

Gear Driven, Positive Drive.

Star Wheel and Striker Pattern. Price 20/- each.

Price 35/- each.

A substantially built : and reliable : instrument for accurately measuring the mileage.

THE WORLD'S STANDARD DISTANCE RECORDER

Stand 175 (Gallery), Olympia Show, Nov. 24th to 29th, 1919.

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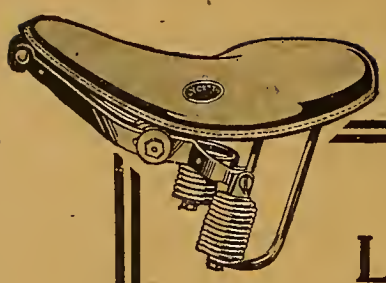

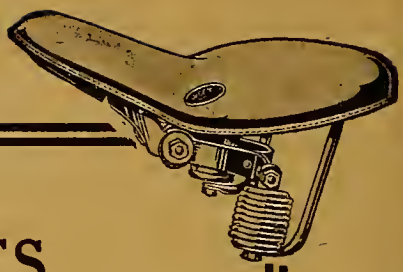

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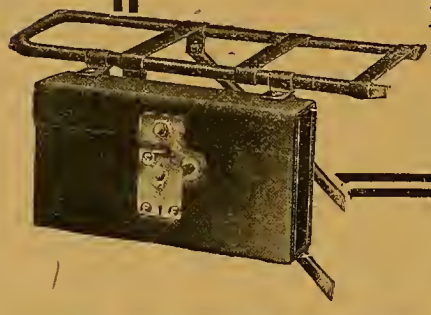

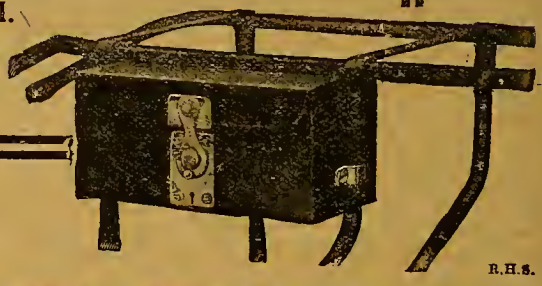

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NOVEMBER 27TH, 1919.

THE MOTOR CYCLE
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Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
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Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
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Olympia in 1919.

THIS is an age of records! Our minds have been broadened by the custom of dealing in huge figures during the war, and this has had the natural effect of exerting its influence in peace-time programmes. The Car Show at Olympia broke all records, both in the matter of attendance and the volume of orders placed. The present Motor Cycle Show promises to outshine any previous exhibition of the kind. Its widespread interest was manifest on the opening days, and the future outlook is of the rosiest kind. The potential field of buyers in the motor cycle world is enormous, and must be greater than in any other sphere of automobilism, since the price factor must ultimately exercise a preponderating influence upon the buying public. A pleasing fact in this connection is that the British motor cycle industry remains supreme; indeed, its supremacy has never been seriously challenged in the same manner that imported cars threaten to challenge the lofty position which British-made motor vehicles enjoy. In saying this, we are fully cognisant of the excellent mounts, particularly powerful twin-cylinder machines, which find their way across the Atlantic, and we have also recognised, already, the great strides our French allies have made, since the war, in the production of high-class motor cycles. Comment is free and unchecked in this country, and to that fact we attribute, in large measure, the perfection to which the motor cycle has attained. 1920 design once again displays notable progress. With few revolutionary designs, the all-round improvement in well-tried models is not difficult to discern. Increased engine efficiency, due to a better understanding of the requirements in the design of an air-cooled engine, improved lubrication systems, superior materials—particularly for valves, which now need never break, thanks to aero-engine disclosures—studied accessibility, protected kick-starter mechanism, more adequate bearings for gear boxes, stronger transmission systems; these and more can be observed among the distinct improvements in modern motor cycles.

Standardisation is the motto of most progressive firms, only one or two models at the most replacing the range of patterns frequently favoured in the past. Luxury is a relative term, and it can be correctly applied to the modern economical motor cycle, for electric lighting outfits, detachable wheels, spring frames, and a jack for every wheel, are features commonly encountered. The sidecar coachwork, too, is specially attractive, and the now popular windscreen for the passenger, combined with a neat hood, give to the sidecar outfit a new delight which ladies are not slow to recognise.

Future of the Lightweight.

In particular we note with joy the increased attention being paid to lightweight motor cycles: a type of mount which sooner or later must prevail. Sidecar outfits there are in abundance, and commendable examples at that, replete with all desirable and essential equipment for touring. "No extras" is a feature of 1920 mounts. In juxtaposition, one may examine three-wheeled runabouts of varying types, and the ultimate battle between the two forms of three-wheeled motor cycles will be interesting to watch, the three-wheeler starting wtih the real advantage that both occupants are protected from the elements.

Many years ago, when dynamos were introduced for cars, we urged that it would be but a matter of time before dynamo lighting formed part of the standard equipment of a motor cycle. The 1919 Show exemplifies the coming of this new pleasurable era, and the passing of the acetylene lamp.

To all who can conveniently attend the Show, we promise that the time expended will be well spent and enjoyable, besides an education in the progress displayed by this the most economical section of the great and growing automobile movement.

An Index to the advertisements in this issue will be found on advertisement page 94.

ENCOURAGE THE LIGHTWEIGHT !

An Article in favour of Developing the Genuine Lightweight Motor Cycle. Open Frame and a Limit of 112 lb. recommended.

Lightweights have competed most creditably with larger machines in the leading competitions, but the boulder and rock-strewn tracks, combined with the high average speed, have resulted in weights growing up to nearly 200 lb.

A PLEASING feature of the present Olympia Show is the increased number of lightweight motor cycles to be observed on the different stands. The lightweight is a desirable type of mount to be encouraged and developed, though the term "lightweight" is elastic and often misapplied.

Few experienced motor cyclists doubt that the motor bicycle of the future for solo use will be a lightweight scaling, say, less than a hundredweight. We are not, of course, likely to get a perfect machine for the million next year or the year after, but its ultimate advent is a certainty. Are we progressing fast enough toward that ideal ? Let us look back a few years and endeavour to trace its progress.

Looking Backward.

Twenty years ago the original motor cycles, such as the Werner, the Minerva and the 1¼ h.p. Quadrant, were lightweights, but they died a natural death on account of lack of engine power, and failure to maintain the limited efficiency they originally possessed. As engines improved in quality, fourteen or fifteen years ago, further attention was given to the attempt to evolve the genuine lightweight, but even those attempts were premature, for engines in those days still lacked staying power, whilst change-speed gears (which help to cover up or camouflage the shortcomings of an engine) were uncommon. Again, designers went ahead with the practicable go-anywhere motor bicycle, and lightweights were neglected, despite the insistent demand for a light machine easy to handle and easy to manipulate and store. The Fairy and the Dougl were two excellent attempts to solve the problem, bu the Douglas grew in size and weight to the fine go anywhere machine it represents to-day.

The Advent of the Two-stroke Engine.

Years rolled by, and the two-stroke engine came int the limelight, due to Mr. Alfred Scott's long-continue experiments, and tiny two-stroke single-cylinder engine of a capacity no bigger than a teacup were evolved b Levis, Connaught, Triumph, Villiers, and others. I the two-stroke motor, engineers saw the solution o the successful light power unit for the 100 lb. machin that so many thousands yearn for. But road com petitions seem to have developed them on th wrong lines, for too much has been expected of thes lilliputian mounts when matched against more expensiv and powerful machines. They were, too, alway classified by engine capacity only, the all-importan factor of *weight* being ignored. The man in the stree is not seeking a machine which will climb mountainou

Encourage the Lightweight!—

tracks or a mount possessed of great speed and ability to traverse boulder-strewn hillsides. He seeks reliability, easy starting, and reasonable comfort and protection. Up to the present, the Auto-Cycle Union cannot be congratulated in ignoring the existence of this huge potential field of buyers. Its contests have seldom given special encouragement and prominence to the doings of the little chaps, and their performances have always been overshadowed by the bigger mounts, and the result has been a glut of double-purpose solo and sidecar machines, with no prominence for the low-priced lightweights, except what their intrinsic merits gained for them.

Special Lightweight Events Necessary.—

A little 2 h.p. O.K., in the Six Days Trials in Yorkshire, in 1914, demonstrated the capabilities of the type, but still no event was arranged to develop the breed of the true lightweight. Half the craze for unproved scooters last spring was, in the writer's judgment, due to the absence of trials and propaganda in favour of the true lightweight motor cycle. The choice of a motor cycle to-day commences with a machine of about 160 lb. (the weight of a 3½ h.p. machine of ten years ago), with the exception of the J.E.S. This state of affairs must not continue!

The Motor Cycle has led the way with the offer of a challenge cup for a genuine lightweight Tourist Trophy Race in the Isle of Man next year, recommending that actual *weight*, not engine capacity alone, define the machines to be admitted. But a race alone is not sufficient.

An Open Frame Advocated.

If the A.C.U. is to be regarded as the progressive body it claims to be for the development of the breed of motor cycles, lightweight events must form an outstanding feature of the 1920 competition programme. Lightweight motor cycles for solo use are safe in grease, easily lifted up steps or kerbstones (which facilitates storage), are cheap to buy and cheap to run, and on that account must outlive all other types. We want a lightweight which is midway between the best of the open frame scooters and the best modern lightweights, preferably with an open frame, so that a big coat may be worn in winter. Those actual and prospective motor cyclists who agree with the writer's remarks will notice with pleasure the increasing attention being paid to serviceable lightweight motor cycles, and the frequency with which they are encountered at Olympia. It is left to the A.C.U. and enterprising clubs to organise events in order to encourage the type, and demonstrate their road-worthiness. Commercial travellers in their thousands, and elderly riders who find pedalling too tiring, quite apart from the myriads of pleasure-seeking riders, await developments with more than ordinary interest.

Revolution Counters and Multi-gears.

How the Use of a Tachometer may Increase Efficiency.

IT often seems strange to me that revolution counters have never become popular among the motor cycling fraternity. They really provide a much more exact and reliable method of keeping a machine up to concert pitch and of getting the most out of a machine than a speedometer, and they would considerably enhance the pleasure of riding, at least to an enterprising and careful motor cyclist.

Imagine the pleasure of finding the number of revolutions at which the engine develops its maximum power, and, in the case of, say, a Zenith-Gradua or any other multi-geared machine, keeping the engine turning over at that number of revolutions, or as near as possible while climbing a long hill. It is a known fact that most speedometers are only accurate within limits. I think "Ixion" once stated that at speeds above 40 m.p.h. few speedometers are reliable; in this I agree with him entirely. Tachometers, on the other hand, have been made absolutely accurate and reliable.

In the case of a long-stroke single especially it is often found that on a long hill the engine settles down to a regular steady beat, much slower than would be expected. This is the stage when the maximum power is being developed. As examples for a comparison, I will choose the 5 h.p. Rudge-Multi sidecar outfit and the 6 h.p. A.J.S. three-speed combination. The Rudge has as its lowest gear about 7 to 1, as given by the variable pulleys; a high bottom gear compared to the 16 to 1 bottom gear given by the A.J.S. Yet I should say there is not much to choose between the two on hills. One engine is turning over just over twice as fast as the other, yet both may be developing the same power. The comparison between these two machines would be well worth trying if both were fitted with tachometers.

Supposing we know that an engine develops its maximum power at 2,000 r.p.m., it is a waste of fuel to run it at a higher rate. Under touring conditions the gears should be arranged to suit the normal revolutions of the engine. If we wish to climb a hill at twenty miles per hour and the hill demands maximum power, we must gear about 7 to 1. This would mean that the engine can only exert full power at 20 m.p.h. If we have infinitely variable gears we can make the engine exert full power at any road speed, which is really the ideal condition of things.

Under racing conditions, and particularly in the case of speed test on a hill, the revolutions of the engine ought to be considered. To reach the top of the hill in the shortest time, the maximum power must be given off. With the aid of a revolution counter and the knowledge of the critical number of revolutions, the gear best suited to the hill can be found more rapidly than by experimenting with gear ratios against the speedometer.

With fixed gear ratios perhaps one would not appreciate a tachometer, and that is probably the reason why it is not in general use. Of course, on every aeroplane it is a standard fitting, and now that motor cycles are tending to be influenced by aeroplane design perhaps we may yet see it as a standard accessory for motor cycles. An increase in the numbers of infinitely variable gears would no doubt encourage its use; and to judge by the patent lists and press rumours we may expect several varieties of friction gears for motor cycles.

ARGON.

Some Experiences of the Six Days Trials.

E. W. Merrall, with his Morgan, on the virgin rock road approaching the hill, Stay-a-Little.

A HASTY DECISION AND AN UNLUCKY ENDING.

READING the preliminary regulations of the Six Days Trials in *The Motor Cycle* fired our enthusiasm, and my friend and I decided to see if we could not win a gold medal. It was no easy task we had set ourselves, for my machine was an ancient Morgan Runabout, made in 1915, fitted with an 8 h.p. air-cooled J.A.P. engine; it was the *de luxe* model, and consequently very heavy. I had purchased the machine second-hand some three months previously, and most of the parts, especially the body-work, seemed to be on the point of dropping to pieces, for the machine had covered many thousands of miles before it came into my possession. My friends ridiculed the idea of entering a machine they jocularly dubbed the "Bath Tub" in such an event as the Six Days, and their most liberal estimates gave us a couple of days in the trial.

The Bath Tub earns its Title.

We did what we could to get the machine into shape, but not being experts and having few tools and no shop, we decided to go to the works for a final overhaul. On the Saturday before the trial we called for the machine at the works, and we were informed that they had had to replace one cylinder, as it was badly worn. An engine with one brand new 1919 cylinder, fitted with thin valves, but with the old piston inside it, and one old 1915 cylinder, with the original heavy valves, did not impress us, and we began to have misgivings as to the balance being upset. However, a trial run up the Old Wyche at Malvern, which we climbed with ease, set all our fears at rest, and we started for Llandrindod Wells in pouring rain, with no hood nor screen, as we had removed these fittings at the works lest we should reduce our speed in the trials with extra wind resistance. The machine certainly earned its title of the "Bath Tub" on the way to Llandrindod, for everything was swimming in water before we got there.

Monday came at last, and at the appointed time we were sent off, thirty-fifth in the procession, feeling none too confident as to the result. The consistent driving test came upon us unexpectedly, but we managed to lose no marks, and on the fast section we completed the course at 18 m.p.h. on our bottom gear of eleven to one, so the engine was capable of a high rate of revs. The long ascent over the moors from Llangynidr later on was a severe test for an air-cooled engine, but we came up without a sign of overheating. After tea at Abergavenny came the lamp test, and a long easy run home. Everyone seemed to pass the lamp test easily enough, but I wonder how many could have repeated this test at the end of the week. I, for one, could not have done so without the aid of some soap or putty, for on the Wednesday the water chamber sprang a leak, and emptied its contents into my passenger's boots.

A Test of Frames.

Tuesday's run was a test of frames; the surface had been cut up by heavy timber traffic, deep ruts and corrugations crossing the road at all angles. We bumped, swayed, and bucketed over the awful track that once had been a road at twenty miles an hour, every moment expecting a frame breakage. With our three tracks, we could not pick a course, even had there been a course to pick, which there was not. Surely purchasers of 1920 makes that came through Tuesday's test should not be troubled with frame breakages in ordinary use.

Beaten by Bwlch-y-Groes.

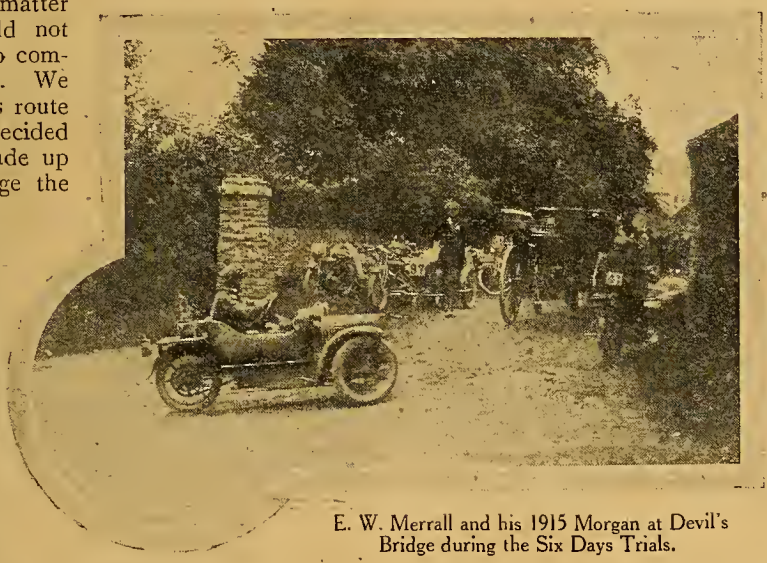
The Wednesday's route turned to be a test of hill-climbing; we climbed interminable hills till finally we reached the famous Bwlch-y-Groes Pass (1,790 feet). We went straight at the hill without any preliminaries such as cooling down and running out hot oil from the crank case, rounded the hairpin bend at the bottom on two wheels only, and roared up that first

me Experiences of the Six Days Trials.—

radient with ease, congratulating ourselves at having imbed the hill and wondering how far the lunch stop as. We changed up to top, rounded a bend in the ill, and our speculations about lunch froze on our ps, for there straight in front rose the second and orst instalment of the hill. I knew then that I had en over-confident; that fast drive to the foot of ie hill, rushing the first half, and the change up to p gear with its consequent wide throttle opening oved fatal to an air-cooled engine. A quick change wn to bottom again, and we went up the first bit; e engine was by now nearly red hot, there was not breath of wind on the hill, and the day was a velteringly hot one; we struggled on gamely till the igine petered out; my passenger dismounted, and I imbed the remainder of the hill alone. We reached e top in a chastened frame of mind, and resolved be more careful of Welsh hills in future.

A Change of Valves.

On Wednesday evening, my passenger and I con-lered the whole matter d decided we could not on with little or no com-ession in the engine. We udied the Thursday's route refully, and decided at time must be made up enable us to change the lves or grind them , so we started med with two spare lves and springs d a tin of grinding a s t e. Thursday orning gave us no portunity to make time anywhere, t, after lunch at the evil's Bridge, we d twenty-five miles splendid roads, t as far ahead of me as we dared, d stopped to change the valves outside Machynlleth. ortunately, I had a pair of Asbestol gloves on, but en then I burnt sundry other things, including my othes and my passengers' fingers in changing those hot lves. The new valve for the old cylinder left nearly eighth of an inch clearance between the valve stem d the tappet, and the tappets were the old 1915 fixed attern, so we decided not to use it, but to grind in the d valve. In this we were not very successful, though e certainly improved the compression; and it was ell we did so, for the biggest climb of the week omed in front of us, viz., Plynlimmon.



E. W. Merrall and his 1915 Morgan at Devil's Bridge during the Six Days Trials.

Atmospheric Conditions and Hill-climbing.

Fortunately for the competitors, there was a cold wind ith sleet blowing across the hill, amounting almost a gale near the top. Had the weather conditions n Plynlimmon been similar to those on Bwlch-y-Groes ie previous day, there would have been few clean scents of the hill, and we should certainly have been umbered amongst the failures. Later on in the after-oon, whilst climbing the little hill near Tylwch, the igh gear chain jumped off the sprocket through being too slack. It was most annoying to have a failure recorded against us on a hill we were romping up on top gear after climbing Plynlimmon. The subsequent repair to the chain cost us three minutes on the check outside Rhayader, a total loss of seven marks for the day; this, with four marks for failing on Bwlch-y-Groes, brought our total loss up to eleven for the week. This left us a balance of nine only if we were to secure the coveted award—none too wide a margin for the condition marks at the finish.

An Unlucky Day.

Friday's was the least picturesque run of the whole week: the district around Swansea seemed very uninteresting after the glorious scenery we had passed through on the other days. Friday morning and the first half of Friday afternoon were uneventful; we climbed all the hills, including Constitution Hill and Caio Hill, with ease, though the spectators on the first named gave us little enough room to pass a sidecar outfit crawling up on a very low bottom gear. Friday afternoon's course was rough and hilly, and most of the competitors lost time on this section, with the result that when a good piece of road did turn up it was a case of all out to make up the lost time. This proved our undoing. Near the village of Cilycwm, within thirty miles of the finish, and with a gold medal almost within our reach, we came to grief. Whilst travelling all out on a good piece of road, a large Welsh sheepdog suddenly darted into the roadway; the machine struck the poor animal with terrific force, though I did all in my power to avoid it. We swerved violently and collided with the bank, twisting the back wheel over at an angle of 45°; after that we struggled along, breaking and mending chains the whole way, and got up the consistent driving test hill at a speed of sixteen miles per hour on the fast section.

A Chapter of Accidents.

The petrol tank had sprung a leak owing to the collision with the dog, and whilst climbing a short hill outside Builth the engine "popped back" into the carburetter, and immediately the leaking petrol tank caught fire. We had a blaze, which my passenger extinguished with cap, gloves, coats, and anything he could lay his hands on.

Before the end of the day's run we broke yet another chain on that twisted back wheel, and finally landed home at Llandrindod Wells just over the hour late, and therefore counted as retired—gold, silver, bronze medals lost, back wheel twisted, and machine nearly lost through fire—all within thirty miles of the finish.

E. W. MERRALL.

Distinguo.

I BELIEVE it is a doctrine amongst Catholic schoolmen that any liquid may be used for purposes of baptism in an emergency, provided that liquid contains a major percentage of water. The story goes that a novice under examination in a seminary was asked whether baptism in soup was valid. His reply was, "Distinguo. If the soup be that supplied at the tutors' table the baptism might be valid; if the soup be that dealt out at our table, the baptism would unquestionably hold good." I should like to use his prefatory "Distinguo" to my critic, Mr. Henry Evans. In this column I necessarily deal with generalisations. Life is too short for me to cover 5,000 annually on a sample of every machine that is made. I write of machines as I find them. If they drip nuts, I generalise on this evil trait. It may well be that somebody makes a machine which never sheds a nut. If so, I have not ridden it. The last time I rode a Triumph in a trial, I shed four front brake shoes complete. (No, I was not robbed of my gold by the condition mark clause. I had previously shed similar parts in private riding, so I had a pocketful of spares.) I have not ridden a Sunbeam lately, so cannot join issue with Mr. Evans on that score. I will get hold of one, do a bit of road-burning, and report.

Three Types of Rider.

FROM a nut-shedding standpoint there are three types of owner. There is the man who treats his machine as an elderly spinster cherishes her one bit of Sèvres china—you must not breathe on it unless you have first taken a formamint. He counts the nuts every time he stops, and his bill for spares is small. The great majority of owners are less fiddley, but they are tolerably meek riders, and enjoy sufficient leisure to inspect the machine as often and as thoroughly as a regular company commander puts his men through it before the local general comes down. They do not drop very much on the road. Finally, there are madmen like myself. Nothing would please me better than to overhaul my mount nightly. But I simply have not time. I am the sort of fellow who burns the candle at both ends. I have two or three professions, a dozen hobbies, a score of public interests, and innumerable vices. My day is too short for a lot of wash-leather and spanner work. And I ride quite particularly "blue." It is cheaper for me to shed nuts than to make time to glance over the 'bus nightly or to pay somebody else to do it. Judged by this standard, I know no machine which is faultless. If it were difficult or impossible to prevent nuts from coming off, I would put the blame on myself, and hold my peace. But years of road experience have taught me that on several good machines there are only a few details which require periodic tightening. I kno those details, and *a fortiori* the makers know the better than I do, as their spare part orders reflect n experience raised to the *n*th power. It follows tha if these firms would apply one of the known and nume ous methods of securing the vulnerable details of the mounts, these machines would instantly become i vulnerable, even in the hands of such a 'bus-bust as myself.

And About Kick-starters.

THE same kindly critic chides me for anothe generalisation about kick-starters. Let it b granted that some kick-starters are better tha others: did I not impudently pat the P. and M. de signer on his broad back for that very reason? M main point was that the average is by no means goo enough. I select two illustrations from a bulgin memory. One is the mouth of my critic himself. H remarks, "the trouble is people do not drop the valv at the right moment." Exactly. (Or, rather, that i one of the troubles.) The average motorist is nc capable of getting the best out of an imperfect device Last week I watched the demonstrator of a famous ca company operate the electric starter of a brand ne chassis for some ten minutes by the clock withou getting a spit out of the engine. The week before friend of mine wrecked the battery of his new car b liberal use of his starter and head lamps during severa days with the dynamo permanently "off charge." M other illustration concerns a very famous rider indeed This summer I rode behind him for sixty miles on job which necessitated our stopping at very frequen intervals. He rode a very famous, very expensive out fit, which was so heavy that a kick-starter was essentia except when he started down a single figure gradient His machine had been most carefully and expertl tuned. Yet it was comparatively exceptional for hin to get it firing with one kick after a two-minute sto with a really warm engine. Awkward location of th kicker, insufficient leverage, poor tune, and a trick o dropping the valve too late prevent many motor cyclist from enjoying the potential blessings dormant in thei kick-starters. I fancy it is easier to devise a foolproo starter than to educate our community up to those w now have.

Why he did it.

SOME years ago I took delivery of a machine, and noticed that all its oil and petrol pipes, whicl were legion, included flexible insertions. asked the designer why he had incorporated these lengths of armoured rubber bound with wire. He le off some gas about frequent fractures due to vibra tion, which I denied hotly. Then he grinned, and said that the insertions were a manufacturing economy

Occasional Comments.—

—they saved a lot of expensive labour in fitting up. I never had sufficient curiosity to notice how such big firms as the Triumph and Douglas shape up their piping, but I am sure the large American factories use a jig. However, here is my point. I do not advise manufacturers to crib these insertions from aircraft practice. I have just spent a holiday in a rural fastness some ten miles from a garage, and all my insertions began to leak or even split, attaining decrepitude simultaneously. The local supply of tubing of any kind was scanty to a degree, and ranged from inflator connections, which were too small, to baby's bottle tubing, which was too weak, up to a formidable hosepipe which, I understand, had last been used for drenching a cow, whatever that may mean. I spent a very finicky half-day; and confess that I eventually made all tight by jointing the pipes with the tin portions of some cheap penholders, caulked with soap, and lagged with insulating tape. Incidentally, I discovered the real reason for the presence of these insertions on the machine. One of the oil pipes is—quite unpardonably—a three-branch or Y pipe, with very short arms. I will bet that the designer found these short stiff pipes snapped under vibration; and that if they did not snap, the task of registering three unions on one pipe was too much for his customers when they fell a-tinkering. So he solved that pipe difficulty by using rubber joints; and having by this time got fractured piping on the brain, he "dittoed" his petrol pipes for luck. I wish he had not.

The A.C.U. Hits Out.

EVER since the Llandrindod week, the trade and the A.C.U. have been engaged in a kind of billiard match. The trade broke the balls and scored a lot of points. Now the judges are at the table, and have piled up a big lead. I think the A.C.U. has emerged with the honours. It has conceded practically every point on which it was criticised, but, in return, it has shown a distinct gift for criticism. Indeed, some of the judges' strictures on modern design are so biting that it is almost a pity they have been published. Not because they are either exaggerated or untrue, but because for idealists the times are always out of joint, and the ideal machine for which the judges pine will not be produced for many a long day. Meantime the man in the street sees the report—it was condensed in many lay journals—and concludes that motor cycles are rotten. The case, rather, is that a good trials judge, exactly like a good technical journalist, should resemble an enthusiastic designer. All three men should cherish such high ideals that they are difficult to satisfy. On the other hand, the Six Days have their advertising side, and it is a blunder to utilise them for crabbing the machines which they are meant to foster, particularly when an average machine will do all that an average user can reasonably ask of it.

A Tale with a Moral.

THE other day I saw a distant push cyclist fall off his machine. As I approached at a rapid walk, he remounted, and fell off again. When I drew level with him, he repeated the performance. I saw at a glance that his pedalling chain had come off. Yet he made three separate attempts to ride on before he realised that his transmission had gone, and even then he had to examine the machine carefully before he realised what had happened. Now this individual was a member of the Metropolitan Police Force. Policemen are far above the average of the male population in intelligence. Men on the average are more intelligent than women in things mechanical. It follows that a motor cycle manufacturer builds machines for customers who are mostly fools. I think if I were a designer, I would get Gordon Crosby to make a sketch of the above incident, and I would hang it up in my drawing office.

THE PRINCE OF WALES'S VISIT TO MONTREAL.

The advance police guard in the procession from the station was mounted on sidecar outfits. In the U.S.A., too, the police, in their various spheres of operation, have long realised the value of the motor cycle.

CURRENT CHAT

Times to Light Lamps.

	Greenwich Time.
Nov. 27th	4.26 p.m.
,, 29th	4.24 ,,
Dec. 1st	4.23 ,,
,, 3rd	4.23 ,,

A New Record.

Once again *The Motor Cycle* establishes a new world's record in the circulation of motoring journals. The printing order for this Olympia Show Report Number exceeded 130,000 copies.

Accident to Col. Jarrott.

We regret that Lt.-Col. Charles Jarrott, C.B.E., President of the Motor Cycling Club, has suffered an injury to his foot, which has necessitated an operation. It is hoped that he will be sufficiently well recovered to attend the M.C.C. dinner on the 6th prox.

The Recognised Medium.

There is still great activity in the second-hand motor cycle market. 1,482 miscellaneous advertisements were published in the last issue of *The Motor Cycle*—more than three times the total appearing in any other motor cycling journal.

I.A.E. at Olympia.

Arrangements have been made for a special meeting of the Institution of Automobile Engineers for the discussion of the judges' report on the 1919 A.C.U. Six Days Trials.

The meeting will be held in the top room of the Princes' Suite at Olympia this (Thursday) afternoon, the 27th inst., at 2.30 p.m.

Summary of Lighting Regulations.

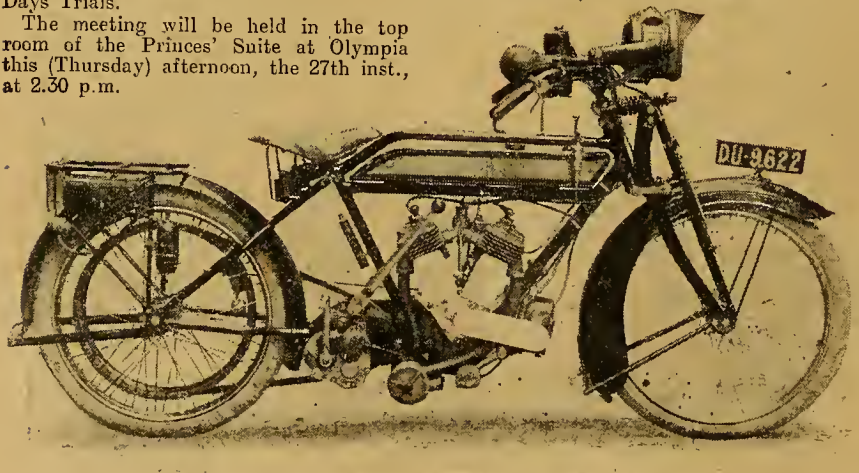
In the case of a motor cycle ridden solo, the following arrangement of lamps must be adhered to. *(a)* Lamp at front showing white light in direction which the machine is travelling. *(b)* Lamp at rear showing red light in the reverse direction. With a sidecar attached, two front lamps and one rear lamp must be used.

Contents of the Next Issue.

A continuation of the description of the Olympia Show exhibits will be published next week, when sidecar attachments and accessories will receive the same exhaustive treatment that the motor cycles and runabouts receive in this issue. Furthermore, critical articles upon the exhibits, by well known contributors to *The Motor Cycle*, will form a leading feature.

An Obstructive Cattle Drover.

At Petworth Police Court recently, the Automobile Association successfully prosecuted a cattle drover, under the Highway Act, 1835, for unlawfully preventing the free passage of the highway. The evidence showed that a motorist came upon a number of cows in the charge of the defendant, who refused to drive the animals to one side of the road and allow the car to proceed. He also stated that when driving cows he never gave way for cars to pass, and this statement was subsequently repeated to a police sergeant. The Bench fined the offender £1.



EX-POLICEMAN BUILDS AN ATTRACTIVE MOTOR CYCLE.

The photograph depicts a machine assembled by Mr. Challis E. Hircock, who has left the Coventry Police Force to open a garage in the City of Three Spires. The engine is a 5 h.p. J.A.P., and the equipment includes Sturmey-Archer gear, Brampton forks, Amac carburetter, and flexible exhaust pipes.

Special Features.

SHOW REPORT.
A PLEA FOR THE LIGHTWEIGHT
THE TREND OF DESIGN.

Metropolitan Police Activity.

We hear that the Metropolitan Poli are particularly active in seeing th motor cyclists are conforming to the ligh ing regulations. Particulars are beir taken with regard to the carrying of re lights and to the illumination of numb plates.

Life Membership of the A.A.

In response to a suggestion received b the Automobile Association, it has bee decided in all cases where a life membe has been "killed in action," to transfe such membership to the next-of-kin whe desired. Those interested are invited t communicate with the Secretary, a Fanum House, Whitcomb Street, Londor W.C.2.

Prominent Engineer Honoured.

Motor cyclists, especially those inte ested in Harley-Davidsons, will ur doubtedly join us in congratulating Mr Duncan Watson, managing director o the British interests of the famous Amer can firm, on his election to the Mayoralt of Marylebone.

Mr. Watson also, it will be remem bered, was recently elected a member o the Harley-Davidson Board of Director in America.

Manufacturing Facilities Wanted.

There are many new firms entering or about to enter, the motor cycle trade A glance at the Olympia Motor Cycl Show will show that some of them hav their programmes cut and dried, an their models well on the way toward production. At the same time our corre spondence shows that some firms, wh have recently decided to take up th manufacture of motor cycles, are hesitat ing as to which type of machine to adopt Such concerns will be interested to hea that we know of two recently demobilise officers who have almost completed th designs for a new motor cycle fitte with their own engine. Both thes gentlemen have sixteen years' experienc of motor cycles and have five years wa experience as D.R's., and added to thi they are responsible for the design of well-known and increasingly popula motor cycle.

We shall be happy to bring anyon who is interested in motor cycle construc tion into touch with the designers t whom we refer.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

A COMPETITION RIDERS' UNION.

Sir,—I should be glad to hear from enthusiastic competition riders, with a view to forming some sort of union for the purpose of determining what clubs and trials should be supported. Under the present system, the actual rider has no say in the matter, and I for one am very fed up with the methods of some clubs in their competitions.

ALBERT MILNER.

THE LIMIT.

Sir,—I quite agree with "Ixion's" comments on charges for accessories in last week's issue of *The Motor Cycle*.

The *6in.* King Dick pattern spanner is sold wholesale at 4s., and the retail price is 6s. Copper petrol tubing can be bought at 6d. per foot wholesale, and should retail at 1s. to 1s. 3d. easily.

I think it is about time some of the numerous trade organisations took up the matter of profiteering in the trade, and let the old price-cutting propaganda die out.

REG. SAMSON.

THE PARIS-NICE TRIAL.

Sir,—May I be permitted to draw the attention of both riders and manufacturers to the forthcoming Paris-Nice Trial, to be held in the early spring of next year.

This trial is likely to be very well supported, and will lead to a great amount of publicity apart from its own value. I feel that it is most important for us to realise in this country how large are the markets covered by a Continental trial of this kind, and I have been asked by one of the principal promoters to bring it to your readers' attention.

A. M. LOW, A.C.G.I., ETC.

AUTOMATIC CARBURETTERS.

Sir,—*Re* "Ixion's" first comment in your issue of November 13th, my experience in this direction may perhaps be of interest.

When cold my 'bus—a Coulson B (Capac carburetter)—absolutely refuses to fire unless the throttle is quite shut. When that is done, it starts quite easily without injection or flooding, but open the throttle only a little and one may push miles without success. Yet I can assure you that the carburetter is in perfect adjustment. I put it down to the fact that it is automatic, and that when really cold, unless the throttle is quite shut, the mixture is too weak. Shut the throttle, and the by-pass is able to supply sufficient juice to combine with the very small amount of air passing the butterfly throttle to produce a combustible charge.

As soon as the engine has fired a few times, and lost its first chill, the carburetter is perfect.

E. O. GURNEY.

VARIABLE GEARS AND BELT WEAR.

Sir,—I was glad to see the letter of "Rudge-Multi" in *The Motor Cycle*, and I too would like to help to dispel the hoary old superstition that multi gears are hard on belts. Properly used they are as hard wearing as any other system, and they are a perfect delight to drive. I have done over 6,000 miles on a Rudge-Multi in the last three years over some of the worst roads in Donegal, and I have yet to break my first belt. I must also say that the system is peculiarly easy on bearings and tyres. Usual disclaimer.

Co. Donegal. RUDGE-MULTI NO. 2.

Sir,—I read with interest "Rudge-Multi's" letter on the subject of belt wear with variable gears some little time ago. To my mind, the multi gear suffers from two disabilities: (1) belt wear; (2) belt slip.

As far as the former is concerned, I only got 1,500 miles out of my belt, and the next owner found the same, yet we both conscientiously tried to carry out the makers' instructions. When I meet a multi owner now I always enquire as to what belt mileage he obtains, and the great majority confirm my own experience, which convinces me that the average driver does not get normal belt mileage with this gear, while having to nurse the belt detracts from the pleasure of driving.

Now as to belt slip, this, I consider, is the more serious fly in the multi ointment. The pulley is smallest when belt grip is most required, *e.g.*, when *(a)* climbing a hill on low gear; *(b)* proceeding at a crawl owing to ruts and slippery surface. If the lowest gear position was still equal to a 6in. pulley, then the gear would be ideal.

I did a good deal of riding in hilly country and wintry weather, with lots of rain, slush, and snow, and it was the result of this experience which decided me finally to dispose of the machine.

In spite of these two disabilities, I should be the last to deny that the multi gear has a considerable charm, as witness the number of such machines on the road, whilst I myself, on a fine, sunny day with good roads, have felt it to be "a thing of beauty and a joy," but our British weather is unfortunately not always so.

J. D. MACDOWELL.

CARBURETTER BOOKLETS.

Sir,—We notice in *The Motor Cycle* of November 13th that Mr. E. R. Foyster says that he wrote to the makers of his carburetter for a descriptive booklet, in accordance with the invitation of their advertisement in *The Motor Cycle*, and has heard nothing from them.

As we invite our clients to apply for a descriptive booklet, we have gone to some considerable trouble to see if we have received a communication from the above named gentleman, but without result. We think, before statements of this kind are made, considering the conditions of the postal service at the present moment, it would be advisable for clients to follow up their request to see if their communication has been received in the first instance. We ourselves make a special point of dealing with all letters the same day they are received, and we should much appreciate your inserting a notice to this effect.

C. BINKS, LTD.

COMPRESSION RELEASE V. EXHAUST VALVE LIFTER.

Sir,—Referring to my old friend C. S. Burney's letter, in your issue of November 6th, he and your readers may be interested to know that several of the earlier motor cycle engines were fitted with a compression release and no exhaust valve lifter. At least one of the Minerva types was so fitted. The release took the form of a ball held against a coned seat by means of a spring with a Bowden wire operated bell crank and rod to force the ball off its seat against compression.

During 1904 I had a Forward motor cycle fitted with a 2¼ h.p. Cyclone engine, and, due to the nature of the gear operating the valves, an exhaust valve lifter was not convenient. I therefore fitted a large compression tap in the centre of the cylinder head with a lever and rod on the top tube to operate it.

I was present, with this so fitted, at the Auto Cycle Club's 100 miles passenger trial, starting from Hatfield on November 5th, 1904, when Julian Orde was the starter, and the event was won by Tom Sopwith (then about sixteen years of age) in a very masterly manner on a 6 h.p. water-cooled Pearson tricar.

HAROLD KARSLAKE.

PATENTS.

Sir,—I should like to draw your attention to a misstatement which occurs in the letter of your correspondent, Mr. P. Banham (October 30th), relating to methods of valve operation.

He says: "In the Beardmore . . . the rods are used only for opening the valves . . . which are closed in the usual manner, *i.e.*, by *spiral* springs."

In the Beardmore, however, the valves are closed by leaf springs, which, from my own experience in France with these engines, are much more satisfactory, and keep their strength much longer. In fact, I know of one engine in particular which did over 250 hours on one set of springs.

C. FURLONGER.

SILENCE.

Sir,—On reading the judges' report of the A.C.U. Trials, I was astonished to see that equal marks had been deducted from the Scott on the score of silence as from Triumphs, Ariels, and Nortons.

Surely Dr. Low's instrument is affected differently from the human ear.

I have ridden both the Scott and two of the singles above, and can easily give an approximation of their respective silence by the ability or otherwise of sustaining conversation with the passenger. The detonation of a single affects the human ear considerably more than the higher pitched hum of the Scott, even though the total noise may be about the same.

J. W. ROWLAND.

KICK STARTERS.

Sir,—In the issue for October 23rd there is an "Occasional Comment" by your contributor "Ixion" that is likely to give intending motor cyclists a totally wrong impression regarding modern kick-starter fittings. Apparently, it is his idea that there is not one really efficient one on the market. Personally, I have had two 1919 combinations this season, the first one a 4 h.p., on which machine the design and method of operation of the kick-starter left nothing to be desired, but, owing to the material employed, the teeth on the kick-starter sprocket wore very badly indeed, so much so that I disposed of the machine and obtained a new 3½ h.p. Rover combination. This outfit I have only driven for about 3,000 miles as yet, but the kick-starter, in common with the clutch and primary chain drive (three items which accounted for about 90% of my troubles on other well-known makes), has, up to now, given me no trouble whatever, and seems as near perfection as anything we can get in this imperfect world.

I may add that I have no connection with the Rover Co. other than as a very satisfied user of their products, but, being a manufacturer, although not in the motor line, I know what other people are up against in trying to give deliveries.

L.W.230.

Putney.

HONOUR TO WHOM HONOUR!

Sir,—Recently, through my carelessness in not keeping it properly adjusted, the whole hub, except the outer shell, of the back wheel of my 1914 Clyno went into "mash." How long it had been running like it before I discovered it, and how it managed to run at all, are mysteries to me.

I had to go across to London just recently, and broke my journey at Wolverhampton in order to get the wheel repaired.

Nothing could have been more courteous than the way in which I was received by Mr. Braine. He immediately started a man on the job, and then proceeded to enquire whether it was the firm's fault that the thing had gone wrong, as, if so, he would put it right free of cost. I have a shred of conscience left, so placed the blame in the proper quarter.

While the job was in hand he introduced me to Mr. Cocks, who, finding that I had very little time to catch the train, placed an experimental model sidecar outfit at my disposal to get to the station.

Usual disclaimer: though I must admit I have a big interest in the Clyno Co.—the interest any man takes in a firm that treats him decently.

H.J.S.

Dublin.

Sir,—A short time ago I bought a motor cycle from a friend. He informed me that the cylinder of the machine was cracked between the valve cap seatings and that the cylinder had been sent to Inverness to be welded. The firm there had retained it for *nine months*, and, after some correspondence, returned it to me *unrepaired* (stating that it was unrepairable). I at once sent it to Mr. Herbert Heap, 105, Bissell Street, Birmingham, who forwarded me *pro forma* invoice *three days* afterwards, and *within a week* I received the cylinder beautifully welded and rethreaded.

Such prompt and businesslike methods deserve commendation, especially when the great distance from here (Rossshire) to Birmingham is considered.

Usual disclaimer.

H. G. MACKENZIE.

DOUBLE CLUTCHING.

Sir,—I have never seen in your paper any reference to the process of "double-clutching" as applied to motor cycles, and it has occurred to me that if this method of gear changing were adopted more extensively, gears would benefit. Of course, I learnt it on a car, and have only tried it on a bicycle lately (2½ h.p. two-speed Imperial-Jap).

The application of this system to a clutchless bicycle makes the title seem rather inappropriate, but the method acts beautifully by using the neutral gear position instead of the clutch, and is easily acquired with a little practice.

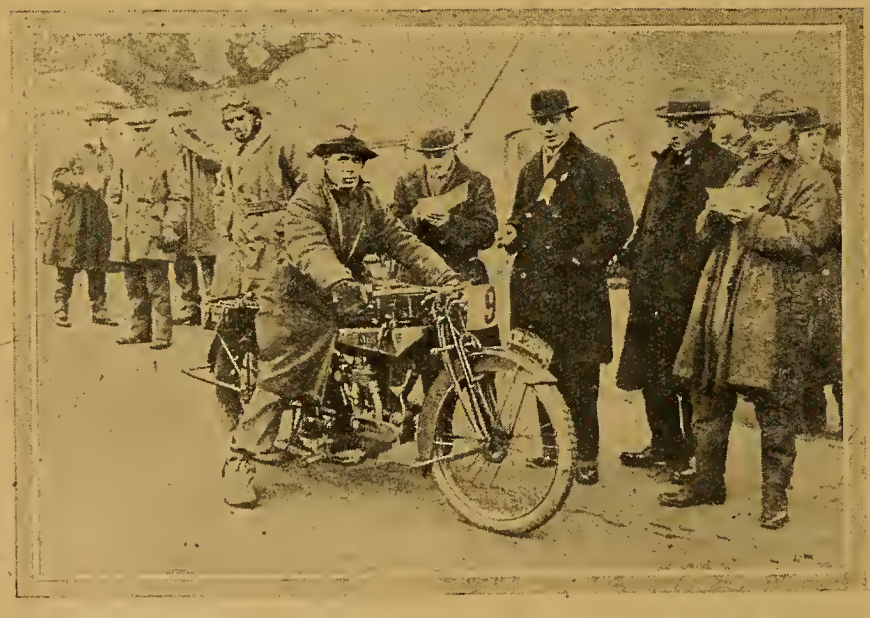
The process is (changing down only, of course):

(1.) With the controls set to a small throttle opening, lift the exhaust lever; (2) change to neutral; (3) drop the exhaust lever, then accelerating the engine to the speed it ought to go at when in low gear (this only for half a second); (4) lift the exhaust and change from neutral to low gear. The dogs engage without a sound, and the exhaust lever is then dropped in the usual manner.

Apropos "Ixion's" recent remarks on Army haversacks, I have found them invaluable, and have discarded tool bags, even the armoured (?) type, in their favour.

F.H.M.

Rugby.



A SCENE IN THE SOUTH BIRMINGHAM CLUB'S SANGSTER CUP TRIAL.

B. Kershaw, on a 2¾ h.p. Blackburne-engined Verus, checking in at the conclusion of the event.

FROM

North to South in November.

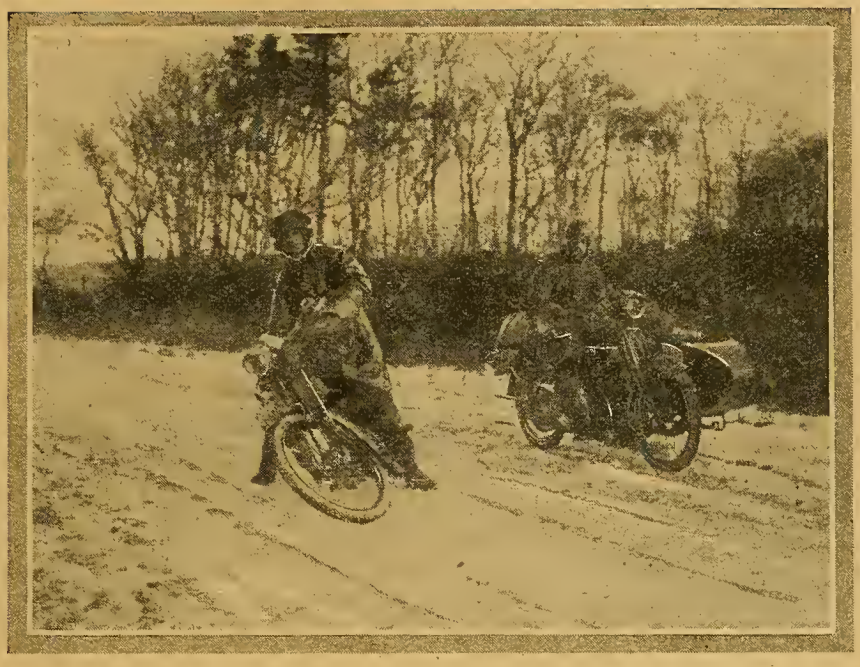
AN ENDURANCE TEST FOR MAN AND MACHINE.

750 Miles over Ice, Snow, and Mud on a New Single-geared Lightweight.

WHEREVER a wheeled vehicle can make progress the modern motor cycle is expected to go, and past trials and tests have proved that they are capable of such achievements. With three speeds, a powerful engine in relation to its weight, and a third wheel to prevent the possibilities of skids, a thousand miles run even in winter is within the scope of almost every owner of such a machine, but how many riders of a lightweight, single-geared and belt-driven, would care to undertake a winter ride from John-o'-Groat's to Land's End? The man who could accomplish such a run must be a very capable rider and a plucky one withal. There are many such men sufficiently enthusiastic to start on a ride of this character, but there are but few who could bring it to a successful conclusion.

But such a demonstration of endurance was carried to a successful conclusion last week, Messrs. Humphries and Dawes organising a John-o'-Groat's to Land's End run under A.C.U. observation. Capt. P. Pike was the chosen rider, the machine being a 2¾ h.p. O.K. with Union two-stroke engine.

Owners of machines costing from £100 to £150 should ask themselves whether they would care to undertake such a ride on their fully equipped mounts in the depth of winter, and then bring their mind to realise that Pike's machine costs but thirty-eight guineas. One may expect big things from a machine embodying everything designed to make riding easier, more certain and safe, but from a popular priced lightweight one naturally expects a more limited scope, and perhaps a little skimping in quality. But Pike has demonstrated that a low-priced machine is not necessarily shoddy, and the makers of the new O.K. have proved that good quality is possible at a low price by factory organisation permitting massed production.



For over 200 miles in Scotland, snow and ice covered roads were encountered.

Capt. Pike, with Mr. C. J. Cuffe, the A.C.U. observer, and Mr. S. Kempson Jones, the organiser of the test, journeyed to Wick, intending to start from John-o'-Groat's, but heavy snowstorms of a character responsible for long delays in the delivery of mails by rail and rendering the roads impassable necessitated a new starting point. The three "madmen," as they were harshly termed in the North of Scotland, made exhaustive enquiries regarding the state of roads south of Wick, but from everywhere north of Inverness reports were received

Through miles of traffic, fog and rain soaked roads, the intrepid rider of the O.K. was followed by the A.C.U. observer.

From North to South in November.—that road traffic was impossible, so the A.C.U. official refused to permit Pike to attempt the journey unless Inverness was made the starting point. Consequently the trial became a winter run from the Highland capital to the most westerly point of England, and a very rough journey it proved to be.

For the first 200 miles snow-bound roads were encountered, and in places ice made going exceedingly difficult, which resulted in several spills. For many miles the schedule speed of 20 m.p.h. was impossible.

The following extracts from telegrams despatched *en route* will convey some idea of the conditions Pike had to face :

First telegram, from Banff, reads :

"Roads snow, ice and water made progress slow—three hours behind shedule—travelling fifty miles east of route. Original route too dangerous, and A.C.U. would not proceed. Impossible to do any riding after dark; water in magneto which has now frozen solid, otherwise all O.K."

From Aberdeen :

"46 miles solid ice roads, change contact breaker owing to yesterday's flush, then rapid freezing, everything going O.K. Hope to reach Perth; polar bear wanted to complete arctic conditions."

From Perth :

"Welcome change in weather; wind, rain, sleet, and mud very bad; proceeding Dundee."

The rider recovering his machine after a skid on the ice bound road surface between Banff and Aberdeen

From Edinburgh :

"Reached Edinburgh ten o'clock after thirty miles blinding rainstorm."

From Newcastle :

"Roads very bad, much snow on Carter Bar, Berwick; though shows every sign of thawing at present."

After a further 250 miles in blinding sleet, the party arrived at Birmingham at 2 a.m., where they much appreciated the arrangements made for them at the Midland Hotel.

The following morning a restart was made in drizzling rain on the final stages to Exeter and Land's End. Pike was accorded a hearty send-off by Midland two-stroke enthusiasts who had turned out to see him off; in fact, in most towns where a short stop was made, readers of *The Motor Cycle* recognised him, and tendered good wishes for a successful run.

Captain P. Pike, 2¾ h.p. O.K.-Union, photographed on his departure from Birmingham. He was given a send off by local enthusiasts.

At the Show, Lady Motor Cyclists will be interested in—

The open frame Ixion.

The Sun-Vitesse open framed mount.

The Cedos lady's or gentleman's mount.

The oriental model Skootamota.

The various Lilliputian engined scooters.

The mirror in the dash of one of the Sandum sidecars.

The Bat limousine coupé sidecar for passengers of slender build.

The Mills-Fulford luxury sidecars, with tool compartments **not** under the seat!

Although it was noon before the party left the Midland metropolis, they reached Exeter (a distance of 160 miles or more) that night. Pike had the advantage of knowing the roads well, and, despite their muddy state, the original schedule speed of 20 m.p.h. was well maintained.

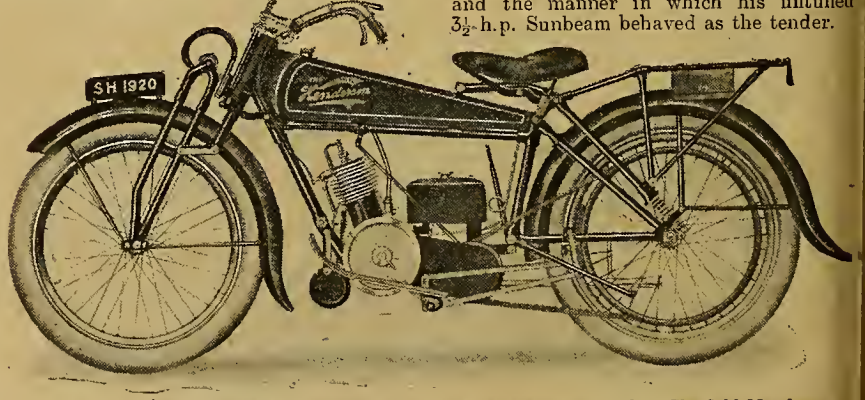
Early next morning *The Motor Cycle* received a telegram from the Devonshire county capital, from which the following is an extract :

"Going well now, leaving on last day's run of the trial to Land's End."

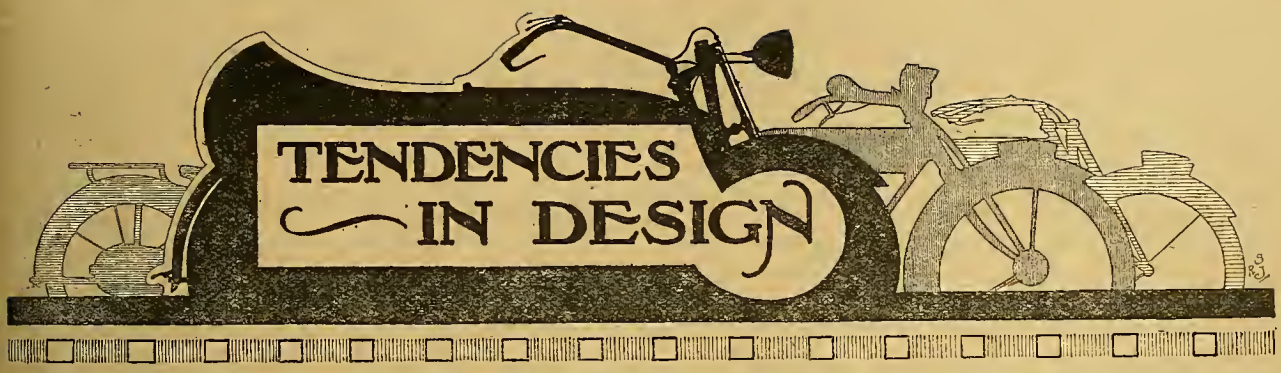
Then came the final message that the O.K.-Union reached Land's End on Saturday evening last. For the last four hours of the long journey thick mist and heavy roads were encountered—a fitting conclusion to a week during which not a mile of dry road was covered. All hills were climbed with power in reserve.

Pike's machine was immediately taken to Olympia, where it forms an attractive exhibit on the stand of Messrs. Humphries and Dawes.

We congratulate Capt. Pike upon the successful issue of his undertaking, and also Messrs. Humphries and Dawes upon the performance of their new machine, which makes its *début* to the public in such a praiseworthy manner. This record of a trying test would not be complete without some reference to the sportsmanship of the A.C.U. observer, Mr. Cuffe, and the manner in which his untuned 3½ h.p. Sunbeam behaved as the tender.



Designed by one who objects to the shackles of the convention, the 2¼ h.p. Sheffield-Henderson bristles with new features.



A Commentary on the 1920 Olympia Show from an Engineering Standpoint.

Predominant Features of 1920 Design: Flat Twin Engines—Spring Frames—Mechanical Lubrication—Countershaft Gears—All-chain Drive.

A ROUGH survey of the Olympia Motor Cycle Show is apt to convey the fallacious impression of a general rehashing of pre-war designs. Closer inspection will reveal the importance of various tendencies observable. One must remember that the last Olympia Motor Cycle Show took place in 1913, and it is with that event that the present exhibition should be compared, since the number of motor cycles produced for public use since that date is negligible. Motor cyclists, however, are notoriously keen on their hobby, and, in spite of the war, most of them have kept in touch with the doings of the motor cycle world. In consequence, they are apt to look upon the few experimental models produced during the war as accepted types, and to be disappointed at the lack of change in the standardised types displayed.

Manufacturers as a whole are only just able to concentrate upon their peace-time programmes, and their efforts to improve have been fruitful, as a little study will show.

As might reasonably be expected, the greatest novelties are staged by new firms, who are not handicapped by the necessity of scrapping existing patterns and machinery, in resolving upon a new model. It is probably true that these firms will, for a time, lead the way in departures from accepted design. Much greater strides may be expected in the next twelve months.

ENGINES.

Flat Twins.—The most pronounced tendency in four-stroke engines is the adoption of the flat twin—a tribute to the Douglas. Such additions as the new A.B.C., Humber, Brough, Zenith, Coventry Victor, Harley-Davidson, Raleigh, and Wooler make an imposing list, and clearly show which way the wind blows.

Two-strokes.—Another most noticeable feature is the increased number of small two-strokes, a type of engine which has been considerably improved in detail since the Show in 1913. These engines offer a simple manufacturing proposition, and can be sold cheaply, added to which they give excellent service, especially to that ever-growing section of the public which desires a machine simple to handle, and with a minimum of complication. Generally speaking, there is a lack of originality in two-stroke design except for minor details, the most striking exceptions to this rule being the Cedos, Dunelt, Black Prince, Velocette, Union, and Scott. The last-mentioned must be considered original in more ways than one, though it has undergone but little alteration since the last Show. Two-strokes of the larger size are becoming more numerous, of which the Dunelt (500 c.c.), Alecto (350 c.c.), Paragon (350 c.c.), and Precision (350 c.c.) may be mentioned.

Outside Flywheels.—The increase in flat twins and two-strokes is partly responsible for the fact that the outside flywheel is at last coming into its own, though the smooth running of the Blackburne engine is responsible for much useful propaganda in this respect. It is also significant that several small four-stroke engines on exhibition have outside flywheels.

Overhead Valves.—Enthusiasts will be disappointed at the small number of British engines fitted with overhead valves, but one may expect developments in the next year or so. There is already a tendency amongst new firms to incorporate this feature in their designs, and the sceptics will gradually be converted. The difficulty of fitting an overhead valve engine in a low frame has been the cause of a few firms holding back. There is a prevalent idea that overhead valves and gear are unreliable, but the sooner this notion is dismissed the better for the advancement of motor cycles.

Lubrication.—Fortunately for riders, the vexed question of lubrication is receiving more attention, and several firms are now marketing models with mechanical oiling devices, while many more are experimenting in that direction. The Humber (4½ h.p.), Douglas (3½ h.p. and 4 h.p.), Velocette, Clyno, Rex, J.E.S., B.S.A., P. and M., and Precision are amongst the British converts to mechanical systems, moreover the F.N. and practically all American machines are so fitted.

Composite cylinder construction is unusual, and is, in fact, limited to two or three examples in the Show, though a good deal of experimental work is being done in this direction, and aluminium pistons are beginning to make headway.

Protected Valve Gear.—There is still plenty of room for improvement with regard to quiet valve gear, and in this connection it is curious that more firms have not given their minds to enclosing tappets and valve springs. This can be done without materially detracting from accessibility, and it has the additional

advantage of reducing wear on valve tappet guides.

The growing popularity of the sidecar has caused a rise in cylinder capacity as regards single-cylinder engines, though in the twin class there are but few new 1,000 c.c. engines. The Clyno is perhaps the most striking example of up-to-date design amongst the new large engines on view.

GEARS.

Tourist Trophy races and experience during the war account for the disappearance of the hub gear. A light two-speed countershaft gear is the most favoured for lightweight motor cycles. Countershaft gears in one form or another are almost universal, the exceptions being those firms who stand by the simple belt transmission, such as the Rudge, Zenith, and Wooler, and even the Zenith may be said to possess a countershaft. One of the simplest and most efficient types of countershaft gears—the expanding ring type—as exemplified by Enfield, Scott, and P. and M. machines, has gained some new adherents, notably the Dunelt and the Precision.

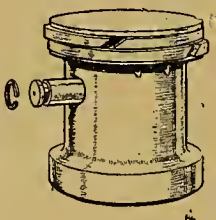
Three-speed countershaft gears may be considered to be standard for sidecar machines, but the majority of light solo mounts have two ratios only, the A.B.C. being an exception, with its four-speed box. Proprietary gears are more common than gear boxes made by the manufacturer of the motor cycle, and motor cycles as a whole give the impression of being assembled rather than designed. This criticism requires qualification, as the assembling of specialised parts is often desirable, provided that each part has reached a sufficiently advanced stage of development, and that the complete machine is well laid out.

Provision for Adjustment and Oiling.—Oil fillers for gear boxes are often too small, but more attention has been paid to the methods employed for moving the boxes to adjust the primary chain. The new Triumph micrometer adjustment is excellent, whilst the Cedos, Lea-Francis, and Matchless are also first-class in this respect. Some firms, notably the British Excelsior, fit simple micrometer adjustments to proprietary gear boxes.

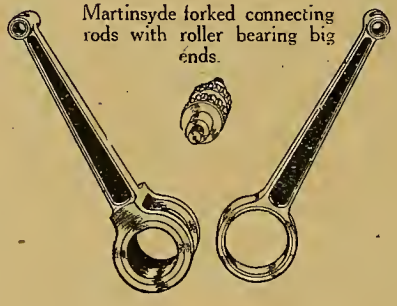
Epicyclic gearing is conspicuous by its absence, in spite of the fact that it is a very quiet form of gearing, and

INTERNAL FEATURES OF 1920 PATTERN ENGINES.

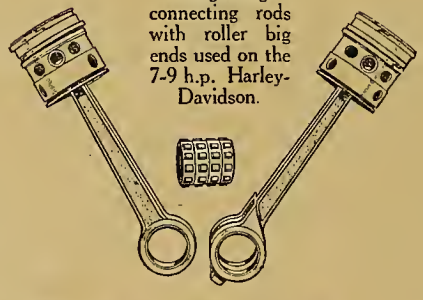
Heat insulator (sectioned) at top of valve springs on the 1920 3½ h.p. Sunbeam engine. Knife edges at points of contact with cylinder and valve guide prevent conduction of heat.



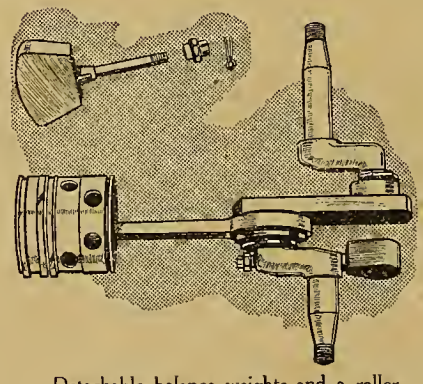
A deep waist is formed on the 6 h.p. Martinsyde piston. Note the gudgeon locking device



Martinsyde forked connecting rods with roller bearing big ends.



The single forged connecting rods with roller big ends used on the 7-9 h.p. Harley-Davidson.



Detachable balance weights and a roller bearing connecting rod are features of the Harley-Davidson flat twin engine.

provides a very smooth pick up; probably the difficulties of manufacture are responsible for its non-existence. Amongst the simplest forms of variable gear ratio, the Philipson pulley must not be forgotten.

TRANSMISSION.

We seem to be as far as ever from the weatherproof shaft drive of idealists, although this system of transmission is not entirely absent.

Variable pulley gears are in much the same position as in 1913. The firms who specialise in this form of transmission have retained their designs, and little change is discernible. Chain and belt drive is the usual form of transmission for the lighter machines; such exceptions as the Enfield and Velocette may be considered to prove the rule. This type of drive is still used on many of the larger machines, but all-chain drive has made considerable progress. In conjunction with a well-designed shock absorber, it forms an admirable transmission, especially for sidecar machines, and some of the shock absorbers now marketed are truly excellent.

Combined engine-gear units retain the position they held in 1913, although not necessarily by the same manufacturers. The big single Quadrant, Precision, and Paragon are among the new designs embodying this principle.

Little doubt exists that a totally enclosed chain running in an oil bath is the best form of primary drive, though there is still considerable divergence of opinion as to the desirability of totally enclosing the rear chain. To quote examples: The Triumph, Ariel, Indian, and others prefer an open chain protected at the top, while the Sunbeam, Lea-Francis, Raleigh, and Clyno, among others, believe in an entirely enclosed chain; whilst the Rover, after a year with an enclosed rear chain, now appears with a guard only. From the point of view of accessibility, the former scores, but rear chains should obviously last longer and need less attention when completely enclosed.

FRAME DESIGN.

The Motor Cycle has consistently urged the desirability of spring frames, and it is encouraging to note that this feature each year makes considerable headway. New spring frames are exhibited on the 3½ h.p. Douglas, the A.B.C., Matchless,

Raleigh, Indian, Royal Ruby, Precision, Paragon, Coulson, Wooler, and Clyno.

Many other firms are experimenting in this direction. The spring suspension of the type so well proved by the Bat and Edmund, in which the saddle and footboards are sprung, has also gained new support.

Spring saddle-pillars are found on the Ariel, A.J.S., B.S.A., Chater-Lea, and Rex; and the Barnes spring saddle, as fitted to the Zenith, creates a new departure, in that the springing is so excellent that some consider that it obviates the necessity of spring frames. Straight top tubes have gained a lot of ground, and amongst the many firms who have adopted this practice are the A.J.S., Clyno, Raleigh, Hobart, A.B.C., Allon, Excelsior, Chater-Lea, Dunelt, Coulson, Verus, Levis, Velocette, O.K., and Quadrant.

There is a noticeable tendency to use steel lugs instead of malleable castings; but beyond these points the A.B.C., Precision, and Black Prince form the most striking examples of original frame design. The Precision, in particular, is interesting in that, besides utilising the pressed steel tank as a frame member, the mudguards are specially heavy, and are used to triangulate the front and rear frames.

TYRES.

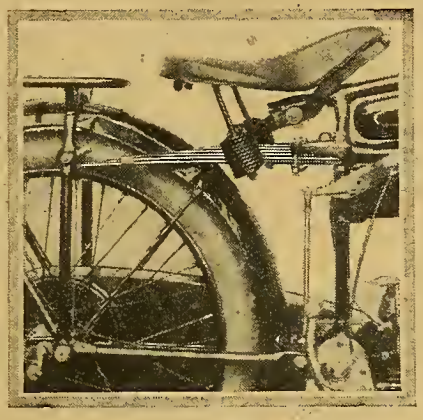
In almost every case, tyre sizes have increased: we record this with pleasure. The section which in 1913 was considered ample for a 3½ h.p. speed machine is now in almost standard use on 2½ h.p. lightweights. On passenger machines detachable and interchangeable wheels are becoming universal practice amongst the heavier machines, at any rate, and their diameters, too, have increased to 28in., whereas at the last Show this size of wheel was practically confined to American motor cycles.

MUDGUARDING.

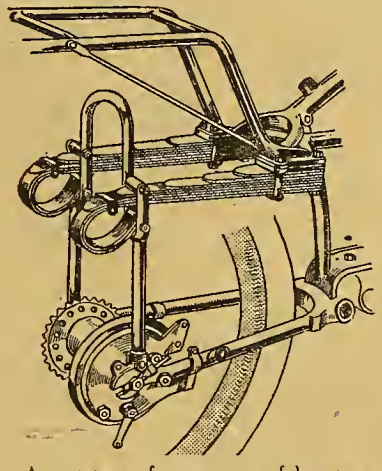
Mudguarding has received the attention due to it, large guards and better designs in valancing being obvious improvements on most new models, while the problems of accessibility have not been overlooked, although not entirely overcome, by many designers.

In finishing their machines, makers now show a decided tendency to reduce the number of plated parts, while tank decoration is more conservative, the black and gold finish being much in evidence.

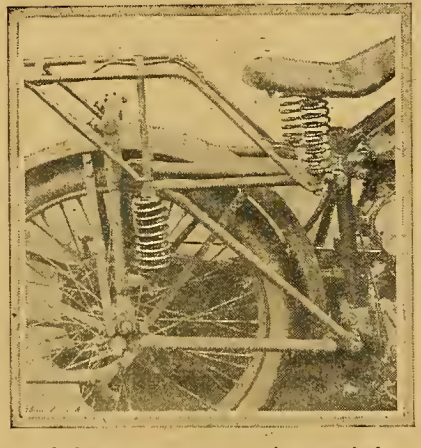
REAR SPRINGING SYSTEMS.



One of the few machines in which completely enclosed chains and a spring frame are combined is the 5-6 h.p. flat twin Raleigh.



A prototype of many successful systems of rear springing, the Indian cradle spring frame.



Coil springs are not often used for frame springing on heavy sidecar machines, although they are successfully employed on the Matchless.

SCOOTERS.

In the junior class of motor cycles, the scooter must not be overlooked. The several excellent examples of these miniature motor cycles attract their full share of attention, particularly those provided with a seat. As *The Motor Cycle* has often asked, why stand? Some of the most interesting engines in the Show are to be found among these lilliputian power units. The Whippet, for instance, with aluminium cylinder and overhead valves, is the only example of the steel lined cylinder with aluminium fins with which such progress was made during the war by aircraft engine experts.

CARBURETTERS.

Single-lever carburetters are shown on many makes of machines. This practice has been standard in America for years past, and has formed one of the great attractions of American motor cycles, and it is surprising that it is not, already, more common in this country. Two-lever carburetters are sure to be retained for some time by the speed enthusiast, but, without a doubt, the average rider will get as good or better results out of a single-lever instrument.

There are several new automatic carburetters designed specially for motor cycles, and as a proof of the satisfactory results obtained from them it is only necessary to note the names of the firms who are now standardising this type. Like most other mechanical devices, there are good and bad instruments, but, after several years' experience of automatic carburetters on motor cycles, it may safely be stated that good single-lever types are very good, and will be found to be a blessing which will be especially appreciated by novices and those who use their motor cycles for business purposes.

NEXT WEEK!

"THE MOTOR CYCLE" for December 4th will include a Review of the Sidecar Attachments and Useful Accessories at Olympia, besides other Special Articles commenting upon the Show Exhibits. It will be an enlarged issue.

Out on THURSDAY. 3D.

A REVIEW OF 1920 MODELS

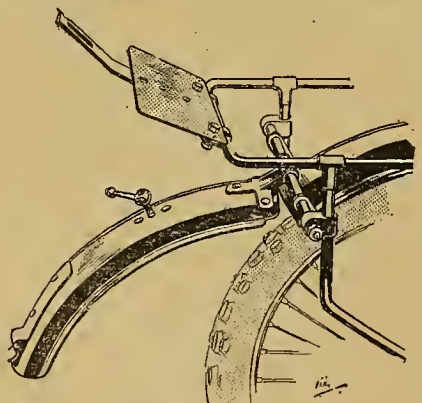
A STAND-TO-STAND DESCRIPTION OF THE MOTOR CYCLES, SCOOTERS, AND RUNABOUTS DISPLAYED AT THE MOTOR CYCLE SHOW (NOV. 24th-29th).

The reports have been prepared by the staff of "The Motor Cycle" after personal examination of the exhibits, and are arranged in three sections for the convenience of the reader.

ABINGDON, Nos. 34 and 140.

3½ h.p. single four-stroke MODEL: 85×88 mm. (499 c.c.); side-by-side valves; Amac carburetter; Thomson-Bennett magneto, chain driven; three-speed gear; chain-cum-belt drive; 26×2½in. tyres. Also single gear model.

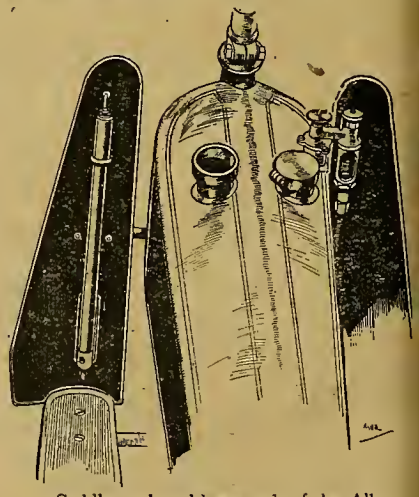
ABINGDON-ECCO, LTD., Tyseley, Birmingham.—Two types of single-cylinder motor bicycle are to be seen on this stand. The 3½ h.p. sporting T.T. model single gear belt drive, and the touring model equipped with three-speed gear, kick-starter, and chain-cum-belt transmission. Abingdon-Ecco, Ltd., are famous for their carefully made engines, of which the system of lubrication has been an outstanding feature for many years; in fact, their designer was one of the first motor cycle engineers to study the cutting of oilways in the bearings in an intelligent manner.



Hinged rea mudguard of the Abingdon King-Dick.

6-7 h.p. V twin four-stroke MODEL: 73×95 mm. (795 c.c.); side-by-side valves; Amac carburetter; Thomson-Bennett magneto, chain driven; three-speed sliding gear; chain drive; 28×3in. detachable wheels.

This is a medium price practical 6 h.p. sidecar outfit with chain-cum-belt drive,



Saddle tank and leg guards of the Allon two-stroke. Note the position of the inflator.

WHAT THE SHOW REVEALS.

ON other pages of this issue will be found an exhaustive review of the tendencies in design in 1920. For the benefit of those readers visiting Olympia with the object of studying the progress discernible in the new models displayed, a brief *resume* of the more notable features of the Show is appended:

(1) The large proportion of flat twin engines.
(2) A great increase in the number of machines fitted with two-stroke engines.
(3) The almost universal adoption of countershaft gears.
(4) The popularity of all-chain transmission.
(5) Improvements in lubrication systems.
(6) A desirable increase in tyre sizes.
(7) Improved mudguarding.
(8) The proportion of spring frames and saddle-pillars (in favour of which *The Motor Cycle* campaign will be recalled)
(9) Straight top tube frames.
(10) The remarkably complete equipment of sidecar combinations.
(11) More three-wheeled runabouts.
(12) The prevalence of dynamo lighting.

The Olympia Show.—

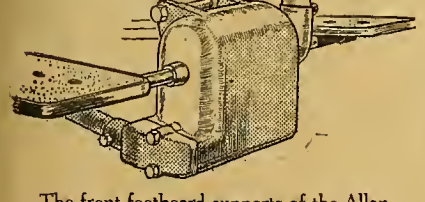
Transmission side of the 6-7 h.p. twin Abingdon power unit.

thoroughly well thought out, and is similar in its main details to the more elaborate chain-driven model which is an extremely handsome well-finished and solidly constructed sidecar outfit equipped with enclosed chain transmission, which is capable of going anywhere. The question of lubrication has been well studied, and to this machine the Benton and Stone new lubricator is fitted, with drip feed working by suction and incorporating a hand pump for emergencies. It is fitted with a mudguard in which a large section is detachable, allowing access to the major portion of the tyre. The lower portion of the mudguard is hinged and fastens against the back number-plate, which likewise swings back. This operation is effected by undoing one wing nut and only occupies a few seconds. This model is fitted with detachable wheels, and is well worth the attention of the sidecar enthusiast.

A.B.C., No. 23.

3 h.p. flat twin four-stroke MODEL: 69×54 mm. (398 c.c.); overhead valves; Claudel carburetter; C.A.V. gear-driven magneto; four speeds, sliding gear; chain drive; 26×2½in. Clincher tyres.

THE SOPWITH AVIATION CO., LTD., 65, South Molton Street, W.1.—The A.B.C.



The front footboard supports of the Allon pass through the silencer.

INDEX TO OLYMPIA EXHIBITS.

Descriptions of the various 1920 models at Olympia will be found on pages indexed below.

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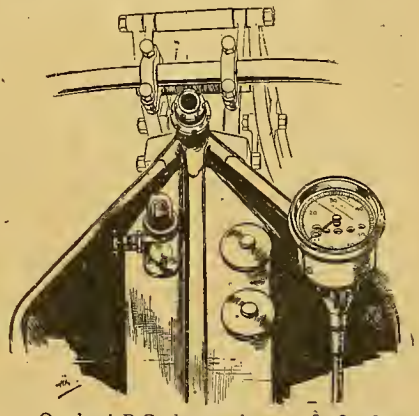
For Runabouts see page 684.

exhibit consists of five models, of which one is attached to brackets on a built-up wall, to which it is fixed by the sidecar lugs. The background is of white plush, and electric lamps cast their light upon the backgrounnd, and the machine stands out in relief against it—a very excellent idea. There is also a complete engine in section, and several black pyramids on which are shown the various component parts of the machine. For the first time the general public will be able to see the production model A.B.C., which has now really been brought down to its final stage. There are still points about the finished model upon which we have not yet dwelt. Among these we may mention a needle valve type compression tap at the foot of each inlet pipe adjacent to its union, an excellent accumulator box, the top and sides of which are quickly detachable, and provided with rubber studs, keeping the accumulator firmly in position. The accumulator box is carried on the sprung portion of the machine, and this is an important point. The electrically equipped model has a celluloid



On the A.B.C. the speedometer is fitted in a convenient position on the tank. The large tank-filler caps will be observed.

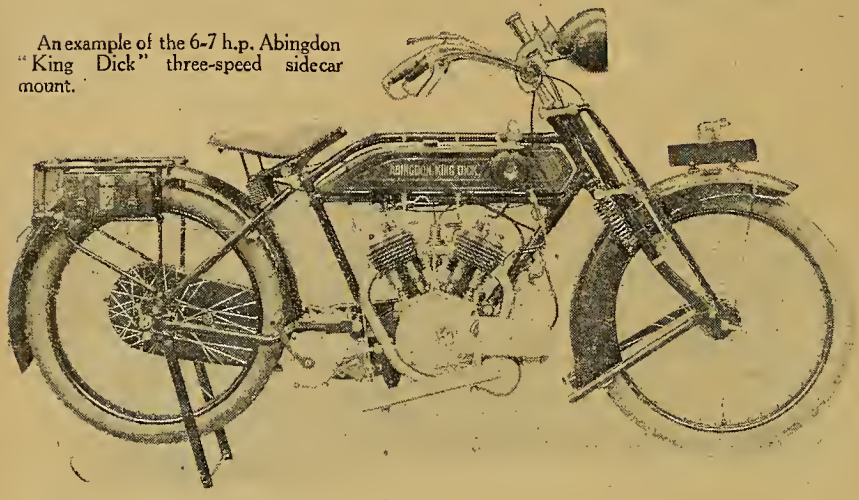
top fitted to the gear box, so that the interior mechanism may be clearly seen, but this is only for show purposes. Abaft the carburetter is the metal switch-box in which there is sufficient space for the carrying of bulbs and other spares, while underneath the engine is the tool-box containing two spanners for every nut on the machine. A kick-starter of novel design is also shown for the first time.

ARIEL, No. 59.

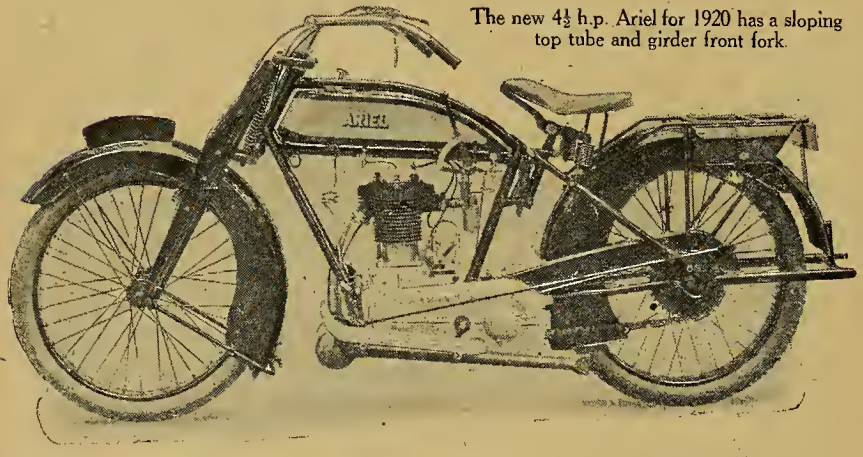
4½ h.p. single four-stroke MODEL: 86.4×100 mm. (585 c.c.); side-by-side valves (decompressor); B. and B. carburetter; E.I.C. chain-driven magneto; three-speed sliding gear; chain drive; 28×3in. tyres.

ARIEL WORKS, LTD., Bournbrook, Birmingham.—The success of the Ariel single-cylinder machine as a sidecar mount in the pre-war and post-war trials has induced Messrs. Ariel Works, Ltd., to introduce a new single-cylinder model with a larger engine. The engine follows the general lines of the 3½ h.p. model, but has a capacity of 586 c.c. instead of 500 c.c. As on the 3½ h.p.

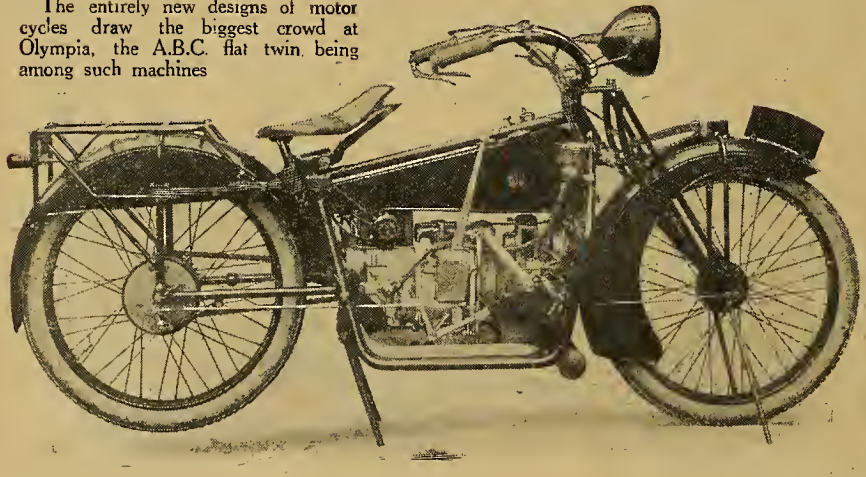
A Notable Trio of 1920 Models.



An example of the 6-7 h.p. Abingdon "King Dick" three-speed sidecar mount.

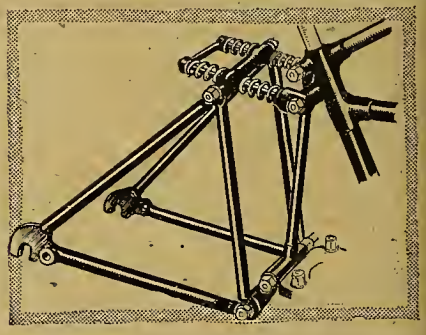


The new 4½ h.p. Ariel for 1920 has a sloping top tube and girder front fork.



The entirely new designs of motor cycles draw the biggest crowd at Olympia, the A.B.C. flat twin being among such machines

model, a decompressor is fitted, but for the first time the exhaust lifter lever is omitted. The gear box is the same that has been fitted to Aricls for the past few years, but here all resemblance to the later types disappears. The outstanding feature of the new models is the pressed steel front fork, which is of the parallel link type, and has two long coil springs, which are used in tension. The frame at first strikes one as being somewhat high from the ground, but the top tube has a pronounced curve, which commences almost at the head. The front part of the frame is of duplex construction, and is bolted directly to the front of the crank case. Another feature new to the Ariel products is the adoption of all-chain drive. The final chain is of the spring link type, and the hubs of all wheels have hollow spindles, and are lubricated through the outer nut of the spindle. The rear brake is of the internal expanding type, carried



An unusual type of rear suspension on the new Ariel.

inside the rear wheel sprocket. A feature which is more important now than it was before the war is the Ariel spring seat-pillar, which is fitted to all models; while the wide and detachable valanced guards also will be much appreciated.

3½ h.p. single four-stroke MODEL: 86.4×85 mm. (498 c.c.); side-by-side valves (decompressor); B. and B. carburetter; E.I.C. chain-driven magneto; single-speed; belt drive; 26×2½in. tyres.

This machine is identical in every way with the 1919 pattern, and is the one which has done so much to enhance the Ariel reputation as a single-cylinder sidecar mount. The engine is fitted with a decompressor, but on this model an exhaust lifter is also fitted, apparently only for the reason that deviation from the 1919 specification has not been made. The equipment of the machine includes Druid forks and chain-cum-belt transmission.

6-7 h.p. V twin four-stroke MODEL: 73×95 mm. (795 c.c.); side-by-side valves; Amac carburetter; E.I.C. magneto, chain driven; three-speed sliding gear; chain drive; Dunlop 28×3in. detachable wheels.

This model is in general outline similar to the 4½ h.p. type, but is fitted with a 6-7 h.p. long-stroke twin engine, and altogether forms an interesting addition to the range of big twins now available.

Stout Gent : "Excuse me, Sir, can you tell me the quickest way of getting to the Station ?"

Enthusiast : "Rather ! by far the quickest way to get there or anywhere else is to 'Rudge it !'"

In answering this advertisement it is desirable to mention "The Motor Cycle."

HUMPHRIES & DAWES

HALL GREEN, BIRMINGHAM.

OLYMPIA

STAND No. 86

O.K.-UNION

MARK 8.

O.K.-JUNIOR

MARK 7.

MOTOR CYCLES BY

MASS PRODUCTION

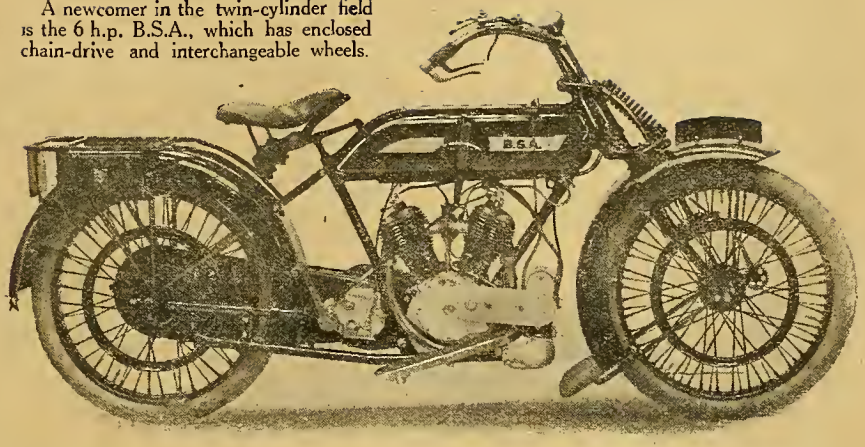
The Olympia Show.—

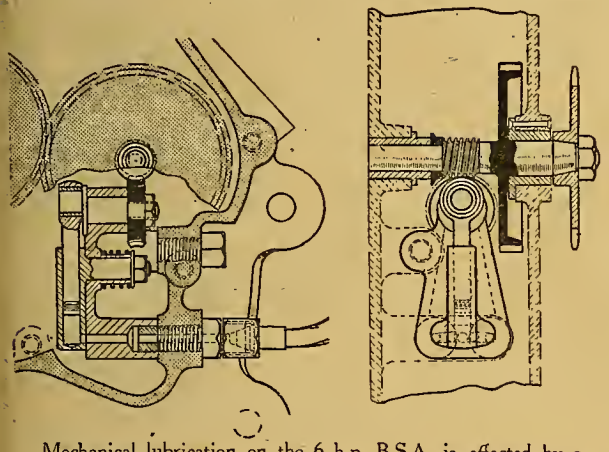
B.S.A., Nos. 75 and 188.

6-7 h.p. V twin four-stroke MODEL: 76×85 mm. (770 c.c.); side-by-side valves; Amac carburetter; E.I.C. magneto, chain driven; three-speed constant mesh gear; chain drive; 28×3in. tyres; detachable wheels.

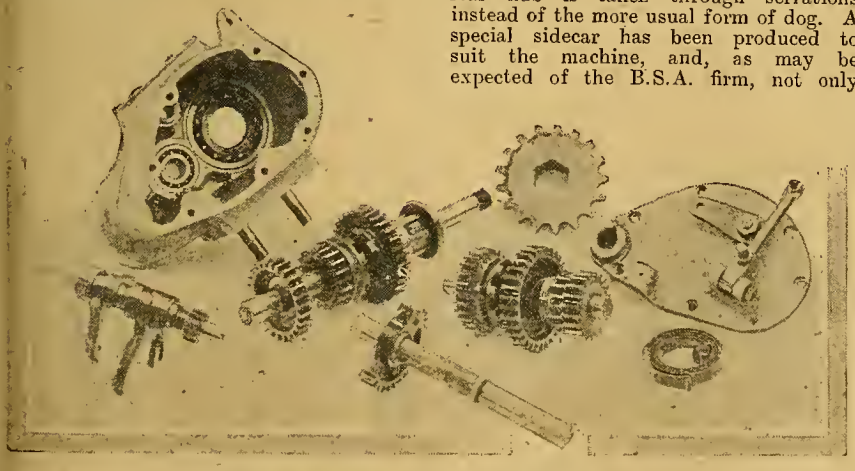
BIRMINGHAM SMALL ARMS CO., LTD., Small Heath, Birmingham.—One of the best designed additions to the sidecar class of motor cycle is the new 6 h.p. B.S.A., which is exhibited to the public for the first time at Olympia. The twin engine is a fine piece of work, with well thought out valve gear and ports, and in the timing case is incorporated a neat oscillating oil pump, which delivers oil to a distributing arrangement, whereby the front cylinder is assured of sufficient lubrication under all circumstances. In front of the engine is a large aluminium silencer with ample provision for cleaning, and above this is placed the E.I.C. magneto. Directly behind the saddle tube is a three-speed constant mesh gear box, in which is comprised robust kick starter mechanism. This gear box is a redesign of that already associated with B.S.A. practice. It is well carried out, and the engine may now be started in the neutral gear position. As is now almost the usual practice, the chain drive is entirely enclosed in aluminium cases, but special precautions have been taken to avoid inaccessibility. Mudguards of exceptional width are employed, and the edges are rolled over so as to form channels to lead away liquid mud. The B.S.A. spring fork has been somewhat modified to suit this model, and a single long compression spring is now used in place of the short compression spring and recoil spring. A very neat and efficient spring saddle-pillar is employed in lieu of spring frame, and quickly detachable wheels are fitted throughout. This last feature has been extremely well executed, and the drive from the sprocket to the rear hub is taken through serrations instead of the more usual form of dog. A special sidecar has been produced to suit the machine, and, as may be expected of the B.S.A. firm, not only is the chassis of extremely stout construction, but the finish is of the highest quality. Springing and upholstery are excellent, and there is ample room behind the seat for a petrol can and quite a large amount of luggage. The brakes fitted are of the rim type, a rim being attached to each wheel to render them interchangeable.

A newcomer in the twin-cylinder field is the 6 h.p. B.S.A., which has enclosed chain-drive and interchangeable wheels.

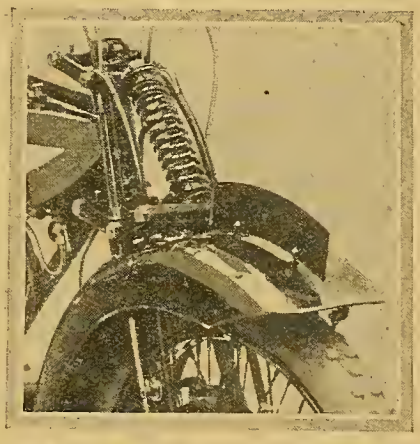




Mechanical lubrication on the 6 h.p. B.S.A. is effected by a small oscillating pump driven by skew gear from the half-time wheel.



The 6 h.p. B.S.A. gear box dismantled. The central member in the foreground is the kick-starter segment, which has a spring tooth.



A redesigned spring fork, on the B.S.A. on which is used a single coil spring of ample strength.

4¼ h.p. single four-stroke MODEL: 85×98 mm. (557 c.c.); side-by-side valves; B.S.A. carburetter; chain-driven magneto; three-speed sliding gear; chain drive; 26×2½in. tyres.

The 4¼ h.p. B.S.A. sufficiently distinguished itself by carrying off the team prize in the 1919 A.C.U. Six Days Trials. Beyond this it is hardly necessary to go any further, as it attracted so much attention through this performance that there are few who are not familiar with its details. The machine may be obtained either with all chain or chain and belt drive, but the main details of each type are similar. It follows the accepted lines of big single-cylinder engined machines, and is extremely well fitted throughout, both as regards mudguarding and accessories. The chains also are carefully protected. Brakes, front and back, are of

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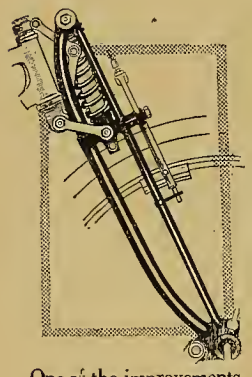
the internal V type, acting in dummy belt rims, and lubrication is through a sight feed drip.

The 3½ h.p. model B.S.A., having a bore and stroke of 85×89 mm., will now only be supplied in T.T. form, with a direct belt drive, and footrests in place of footboards. This is a fine example of a sporting machine, and will attract the attention of many solo riders.

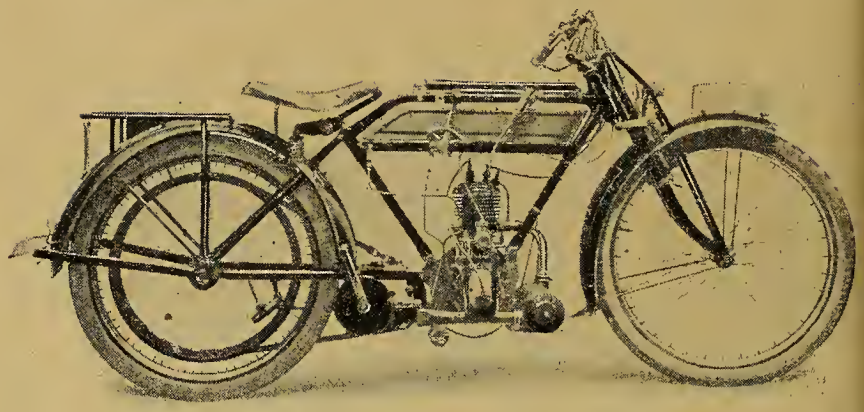
CHATER-LEA, No. 83.

8 h.p. V twin MODEL: 85×85 mm. (964 c.c.); side-by-side valves; Amac carburetter; chain-driven magneto; three-speed sliding gear; chain drive; 700×80 mm. tyres.

CHATER-LEA, LTD., 74-84, Banner Street, E.C.1.—The Chater-Lea exhibit consists of two lightweights, the No. 7 sidecar outfit, samples of the Chater-Lea engine, the new Chater-Lea spring forks, the Chater-Lea seat-pillar, and various fittings and components, including the Chater-Lea terminal. Few sidecar outfits have met with greater success in this country than the No. 7 type Chater-Lea. So satisfactory has this machine been that its makers have wisely refrained from altering it to any great extent. For the first time it is shown fitted with a single-lever carburetter, while the improved detachable wheel, illustrated in *The Motor Cycle* of November 20th, is an important improvement. The fixed portion of the wheel carrying the chain sprocket also comprises the brake drum, and the detachable portion engages with the latter by means of studs.



One of the improvements on the 2¾ h.p. Chater-Lea for 1920 — a redesigned spring fork.



A newcomer in the motor cycle field, the 2¼ h.p. two-stroke Hoskison.

The whole idea is very well carried out in a practical manner.

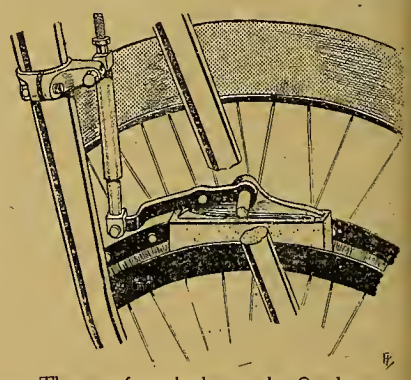
2½ h.p. two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; M-L chain-driven magneto; two-speed sliding gear; chain and belt drive; 26×2in. tyres.

This exceedingly attractive little lightweight is fitted with a Villiers engine and Chater-Lea two-speed gear box. In addition to the detachable rear wheel dealt with in *The Motor Cycle* of November 20th, another interesting feature is the new Chater-Lea spring forks, which are strong and well-designed somewhat on the lines of the larger model.

HOSKISON, No. 26.

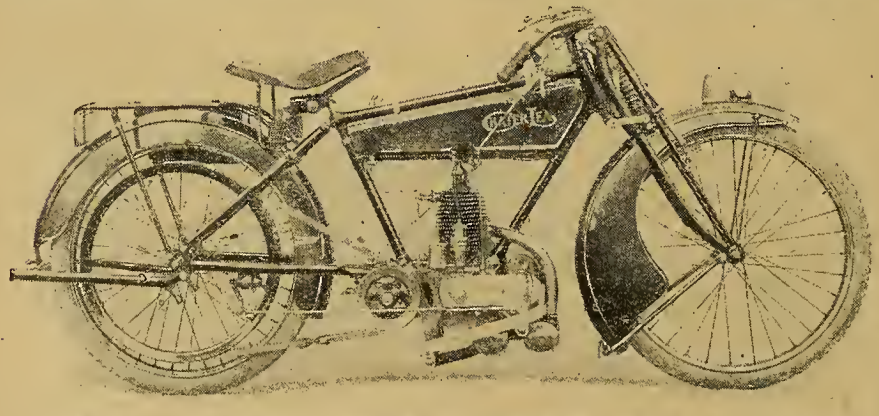
2¾ h.p. single-cylinder two-stroke MODEL: 70×76 mm. (292 c.c.); B. and B. carburetter; Runbaken magneto, direct driven; Burman two-speed gear; chain-cum-belt drive; 26×2¼in. tyres.

HOSKISON MANUFACTURING CO., LTD., 20, Digbeth, Birmingham.—The Hoskison Manufacturing Co. pin their faith to one type of motor bicycle, of which two examples are shown. Of these, one is fitted with disc wheels, and has a very attractive appearance. The 2¾ h.p. Hoskison is an extremely sensible lightweight, built up of the best components, but not possessing any very startling features. Its motive power is a Union two-stroke engine, while the transmission is chain-cum-belt, and the gear box is the Burman, incorporating a clutch and kick starter. The front forks are of the Saxon type, but fitted with Terry's links, and the mudguards are of 7in. section, with splashguards on both. The machines are



The new front brake on the Quadrant.

finished in black with French grey tank, lined in black, grey, and gold, and the manufacturers expect to produce them in considerable quantities. The price of the machine, with Dunlop belt, Lycett pan-seat or All-All saddle, rubber-covered footrests, semi-T.T. flat or upturned handle-bars, is 65 guineas.



Appearance and serviceability have been carefully studied in the Chater-Lea 2¾ h.p. two-stroke. Note the improved straight-tube frame.

DOUGLAS, No. 76.

2¾ h.p. flat twin four-stroke MODEL: 60.9×60 mm. (350 c.c.); side-by-side valves; Amac automatic carburetter; E.I.C. gear-driven magneto; three-speed sliding gears; chain and belt drive; Clincher 26×2¼in. tyres.

DOUGLAS MOTORS, LTD., Kingswood, Bristol.—The popular 2¾ h.p. Douglas has been largely redesigned for the 1920 season. At first sight the alterations are not very apparent, but on closer inspection it will be found that a modified form of frame has been fitted, which permits the use of considerably wider guards, and a new tank, having rounded top edges, provides a pleasing appearance. The

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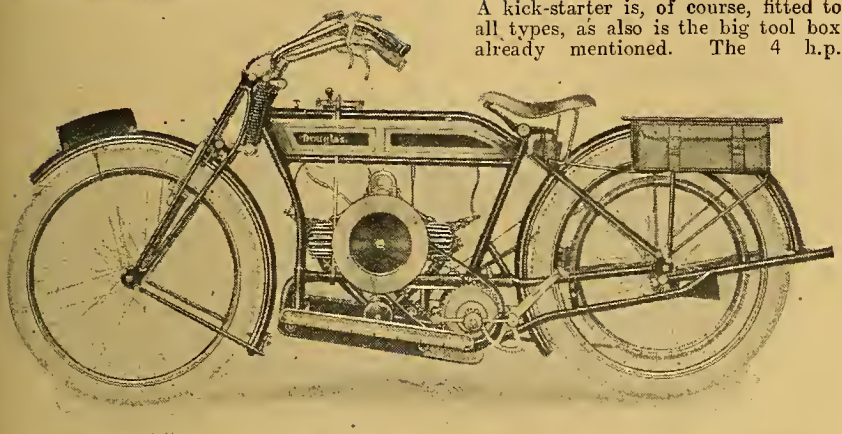


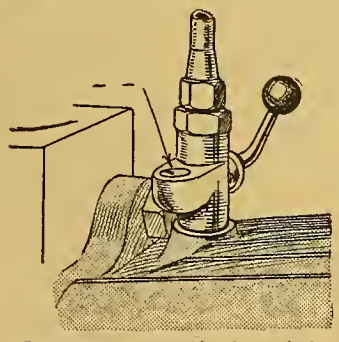
Although its main lines remain unaltered, the 2¾ h.p. Douglas has many detail improvements. Three-speed gear, clutch, and kick-starter are now fitted.

forks also are considerably wider and stouter, and the links are adjustable for wear. The 2¾ h.p. engine remains practically unaltered, but this type of machine is now fitted with a three-speed countershaft gear and clutch as standard. A heavier chain transmits the power from the engine to the gear box, the pitch being ⅝in., and the width of the roller ¼in. A new silencer is fitted below the engine, and has a pipe extending beyond the rear spindle, where a fish-tail end completes the arrangement. The spring forks are lubricated by grease cups throughout, and a new carrier with a very large tool box is now standard. A foot brake, acting above the chain stay and on the inner V of the belt rim, is provided, and a large underscreen not only saves the engine and gear box from mud, but helps to prevent belt slip and keeps the rider clean, assisted by neat brass-edged footboards. The 2¾ h.p. model represents a most practical "go anywhere" touring machine of medium weight, and its popularity, already great, will be largely enhanced by the latest improvements. This machine, together with the 4 h.p., will form the main production programme of the Bristol firm.

4 h.p. flat twin four-stroke MODEL: 74.5×68 mm. (593 c.c.); side-by-side valves; Amac automatic carburetter; E.I.C. gear-driven magneto; three-speed sliding gears; chain and belt; Clincher 26×2⅜in. tyres.

The already well known 4 h.p. Douglas has undergone practically no alteration, except for the fork improvements, already described in the 2¾ h.p. The side-by-side valves lie above the cylinders, and mechanical lubrication is employed, oil being pumped from a sump in the crank case to troughs below the big ends, and also to the front cylinder. The gear box is similar to that of the 2¾ h.p., and the clutch, which is also similar, is of the Ferodo dry-plate type, controlled from the handle-bar. It should be mentioned that, owing to the special arrangement of the clutch spring, which works through a simple system of levers, the pull required to release the clutch is remarkably light. On one model is shown a particularly neat form of dynamo installation.

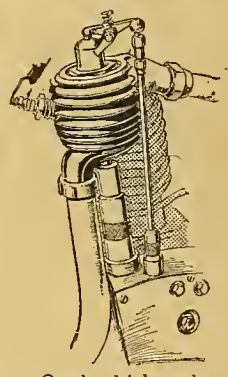
A kick-starter is, of course, fitted to all types, as also is the big tool box already mentioned. The 4 h.p. Douglas is a fine sidecar machine, and has earned its reputation largely through war service. A feature of the new Douglas motor cycles is that malleable lugs have been entirely replaced by steel stampings.



Priming taps near the base of the cylinders are fitted to the 3½ h.p. Douglas.

3½ h.p. flat twin four-stroke MODEL: 68×68 mm. (500 c.c.); side-by-side valves; Amac automatic carburetter; E.I.C. gear-driven magneto; spring frame; three-speed sliding gears; chain and belt; Clincher 26×2⅜in. tyres.

An exhibit which creates a great amount of interest on the Douglas stand is the new spring frame 3½ h.p. This is, to a certain degree, an experimental model, and will not be sold to the public until 1921. The engine, in main features, is a large replica of the 2¾ h.p., but is provided with an oil pump, which supplies oil to the front cylinder through a sight feed drip. Roller bearings are fitted to the big ends, and the magneto, which, as is usual in Douglas practice, lies on the top of the crank case, is held in position by a horseshoe frame and distance pieces. This renders the whole magneto extremely accessible, as it is driven through dogs, and can be removed or replaced without disturbing the timing. From our own experience we can state that the spring frame is most effective. It is controlled by means of enclosed coil springs under the tank through a simple system of links, and, should wear occur, this is readily taken up. So neat is this frame that the casual observer may be forgiven for failing to notice the springing device. In spite of the fact that many will be anxious to obtain specimens of this model, Messrs. Douglas's policy of thoroughly trying out their new departures before placing them on the market is to be highly commended.

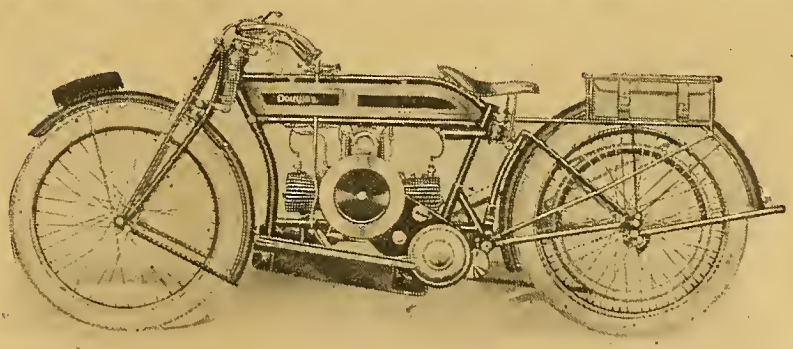


Overhead inlet valve operating gear on the American Excelsior, showing also the enclosed exhaust valve spring.

EXCELSIOR (American), No. 21.

7-9 h.p. V twin four-stroke MODEL: 84.5×88.9 mm. (1,000 c.c.); overhead inlet valves; Schebler carburetter; gear-driven magneto; three-speed sliding gear; chain transmission; 28×3in. Firestone tyres.

MELCHIOR, ARMSTRONG, AND DESSAU (LONDON), LTD., 14 and 14a, Great Marlborough Street, Oxford Circus, W.1.—Two well-known American makes are exhibited on this stand, the Excelsior and the Henderson. Of these, one of each make is an electrically equipped model, and two are standard mounts equipped with sidecars. The various



The latest Douglas production—the spring frame 3½ h.p. mount

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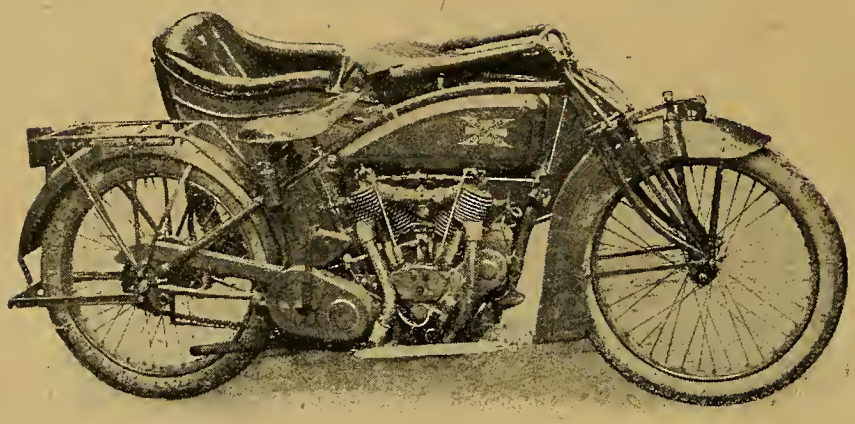
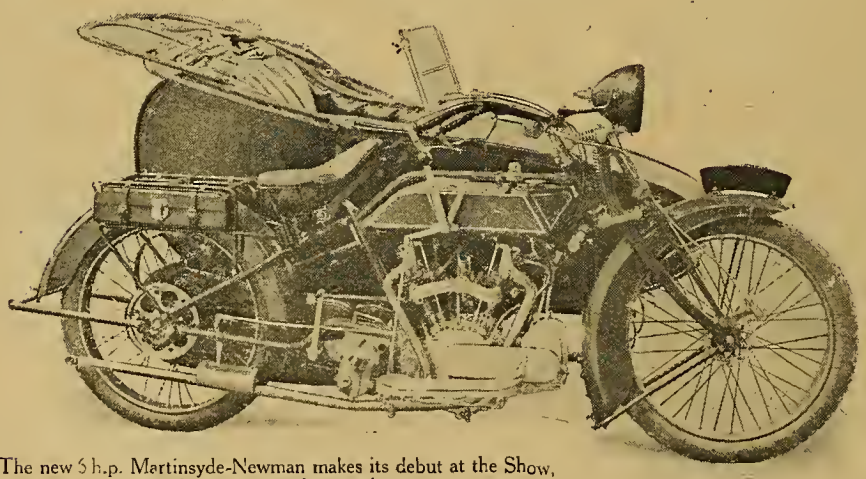


One of America's most powerful twins, the 7-9 h.p. three-speed, chain-driven Excelsior.

component parts of these machines are also exhibited. Of these the Excelsior is an attractive V twin, possessing many of the desirable features embodied in motor cycles hailing from the U.S.A., such as automatic single-lever carburetter, mechanical oil pump, and spring seat-pillar. The chief features of the Excelsior, dealing first with the engine, are the overhead inlet valves and the simplicity of the timing gear. The oil tank is carried behind the saddle tube and forms part of the accumulator case. It is of large dimensions, and oil is delivered from it to the crank case by a mechanical pump. It is worthy of note that both the inlet and exhaust valve stems are enclosed. An interesting feature is the fact that the kick-starter is coupled up to the exhaust valve lifter, keeping the valves raised during the whole of the stroke of the kick-starter and dropping them at the right moment. The usual type of three-speed ball bearing gear box and multiple-disc dry clutch running on roller bearings is fitted. It should be noted that the auxiliary horizontal tube of the frame is made detachable, so as to allow the cylinders to be removed without taking the engine from the frame. Features usually associated with American motor cycles, such as 28×3in. tyres, twist grip control, and an electric lighting system are included. The head lug is an excellent piece of construction, and the long curve of the top tube running into the line of the back stays gives a graceful outline that is often lacking in heavy high-powered machines.



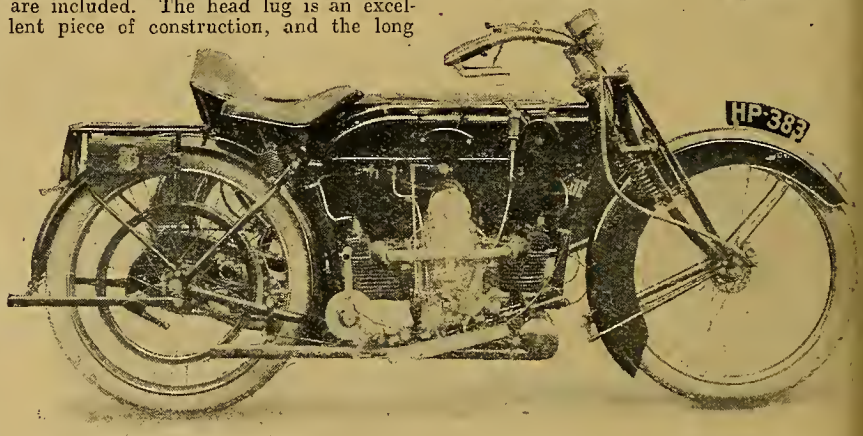
The new 6 h.p. Martinsyde-Newman makes its debut at the Show, and attracts much attention.

The special valve carrier supplied with the Brough machine

HUMBER, No. 85.

4½ h.p. flat twin four-stroke MODEL: 78×68 mm. (600 c.c.); side-by-side valves; Claudel-Hobson carburetter; E.I.C. gear-driven magneto; three-speed sliding gear; chain drive; 26×2½in. Dunlop tyres.

HUMBER, LTD., Coventry.—The motor cycles exhibited on Messrs. Humber's stand consist of two of the new 4½ h.p. flat twin models, one fitted with a fine example of sidecar work. The 4½ h.p. model was described in *The Motor Cycle* of November 13th, and requires little further comment, since its details are already known. It is, to all intents and purposes, a larger edition of the well-known 3½ h.p. flat twin Humber, with one or two slight but important modifications. The valves lie along the tops of the cylinders, and are located in pockets, which can be quickly detached by undoing a single nut and dog. An improvement of some importance in the engine—which, incidentally, shows the trend of modern design—is the incorporation of mechanical lubrication, oil being carried in a sump below the crank case and pumped by a gear pump to troughs below the big ends. From these troughs special dippers on the crank webs pick up the oil and lead it into the hollow crank pins, whence it is thrown to the white-metal-lined big ends by centrifugal force. The gear box has also undergone some modification in that the sliding member now comprises the gear wheels of both first and second speed, the top gear being engaged by means of dogs. Incorporated with the gear box is a neat and substantial kick starter—an improvement on the 3½ h.p. model that will be appreciated by many. A special spring shock absorber is applied to the rear hub, the transmission shocks being



The redesigned flat-twin Humber. The 4½ h.p. engine replaces the original one of 3½ h.p.

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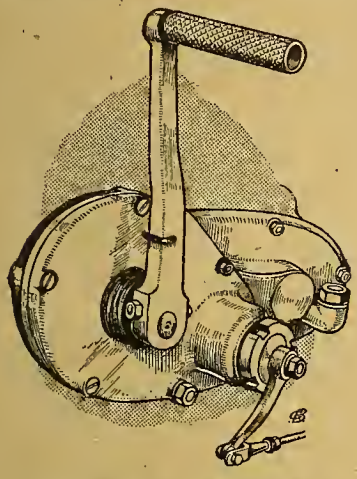
taken by coil springs, and the rebound by rubber blocks. Finished in black relieved by gold lines, the new model has a very attractive appearance, and should be specially suitable for sidecar or fast solo work. The automatic carburetter, which has been a feature of Humber models for some little time, is another item that tends to show the precautions taken by up-to-date designers to simplify the controls.

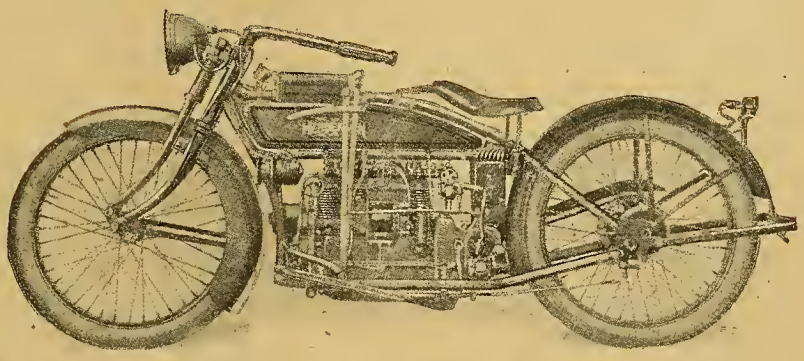


Enclosed kick-starter mechanism is a desirable feature, and a neat example occurs on the 4¼ h.p. Humber.

IVY, No. 91.

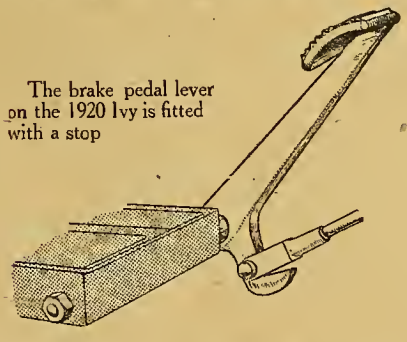
2¼ h.p. two-stroke MODEL: 64×70 mm. (225 c.c.); Amac carburetter; E.I.C. chain-driven magneto; two-speed sliding gear; chain-cum-belt drive; 26×2½in. Dunlop tyres.

S. A. NEWMAN, LTD., Lichfield Road, Aston Cross, Birmingham.—Messrs. Newman's exhibit consists of the one type of machine upon which they are now concentrating their whole attention, namely, the lightweight two-stroke. There are two types of this machine, *i.e.*, the touring models and the T.T. or sporting models. Each of these models is sub-divided into three types, a single-speed, two-speed, and two-speed with kick-starter.



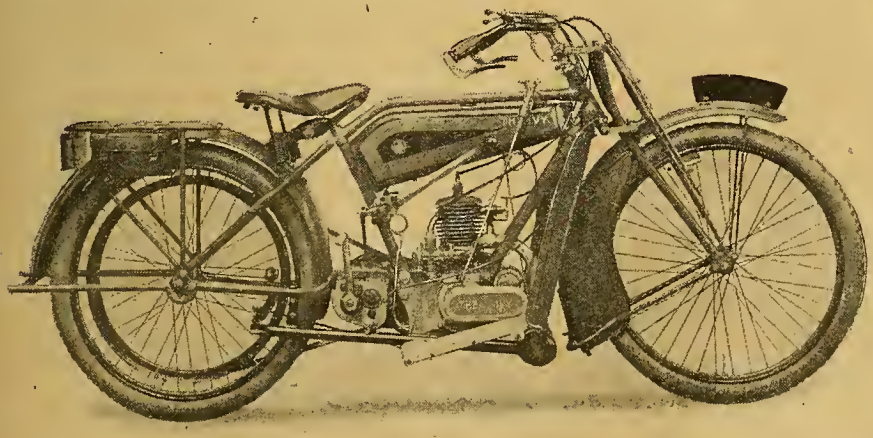
The four-cylinder Henderson; an 8-10 h.p. American machine which has the power unit, clutch, and gear box *en bloc*.

The main details of all these machines are practically the same, and the single-speed model of either type can, if necessary, be converted to a two-speed model, as the frames are identical, and merely the addition of the gear box is all that is necessary. An interesting point with regard to the frame construction is the duplex down tube, which adds considerably to the strength of the machine. The sporting models have discs fitted to the wheels as standard, which give a sporting and neat effect, while all the touring models have ample mudshields fitted to protect the rider's legs. All the machines



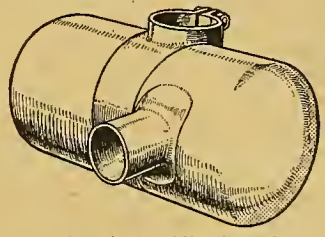
The brake pedal lever on the 1920 Ivy is fitted with a stop

are conventional in design in all other respects, and their appearance with khaki finish, and tank picked out with black panels, gives a very pleasing effect.



Leg shields extending from steering head to footboards add to the efficiency of the new Ivy, a two-stroke of decidedly pleasing appearance.

Another useful fitting is the spring-operated rear stand, which obviates the necessity of fixing this fitting after a stop—a process which is often a muddy and annoying one when short runs in town are undertaken.

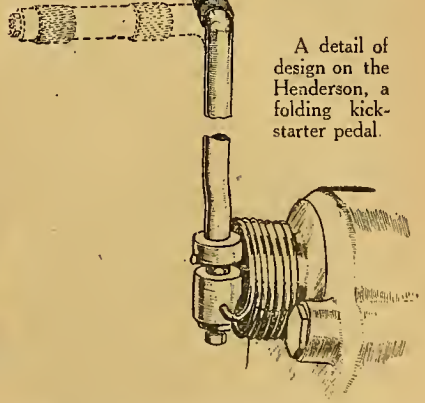


Acetylene welding is used in the production of the one-piece silencer on the Ivy two-stroke.

HENDERSON, No. 21.

8-10 h.p. four-cylinder four-stroke MODEL: 69×76 mm. (1,168 c.c.); overhead inlet valves; Schebler carburetter; Berling gear-driven magneto; three-speed sliding gear; chain drive; 28×3in. Firestone tyres.

MELCHIOR, ARMSTRONG, AND DESSAU (LONDON), LTD., 14 and 14a, Great Marlborough Street, Oxford Circus, W.1.—



A detail of design on the Henderson, a folding kick-starter pedal.

The Henderson is naturally one of the most interesting motor cycles in Olympia because it is one of the only two fitted with a four-cylinder engine at present on the British market. In its thoroughly

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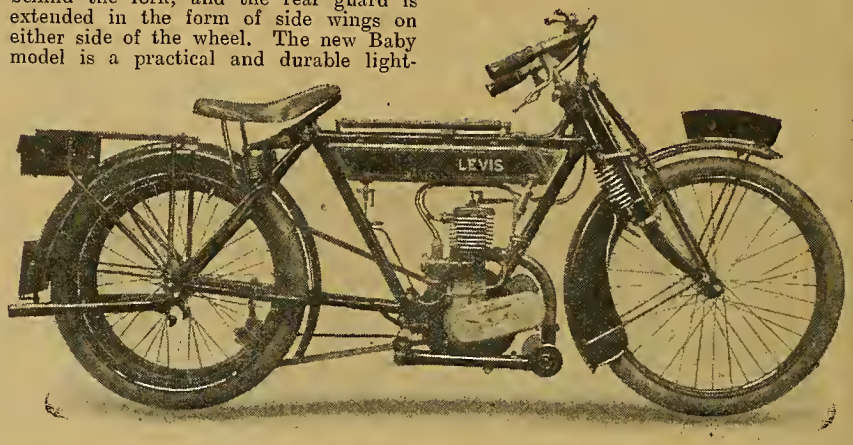
modernised form with a three-speed sliding type gear box and clutch, all enclosed in a unit with the crank case, the machine is practically a two-wheeled car. The electrical model, fitted with a direct current dynamo manufactured by the General Electric Co. and driven from the timing gearshaft, is one of the most luxuriously equipped motor cycles on the road. An Exide battery is fitted, a genuine Klaxon horn and an ammeter complete the equipment. Points of detail have been well studied; there are spring clips over the lubricating holes in the inlet valve rockers, and adequate means are provided for lubricating the moving parts of the spring forks. The control of the spark and throttle is by twist handle, while it is worthy of mention that the clutch may be actuated by a hand lever, which, when pushed forward as far as it will go, applies the internal-expanding brake in the rear hub, and also by the pedal which controls the clutch alone. The external brake is applied by a pedal. The sidecar model Henderson fitted with acetylene head, side, and tail light, and aluminium disc wheels, is a very handsome outfit. It is equipped with a new pattern luggage-carrier of ample dimensions.

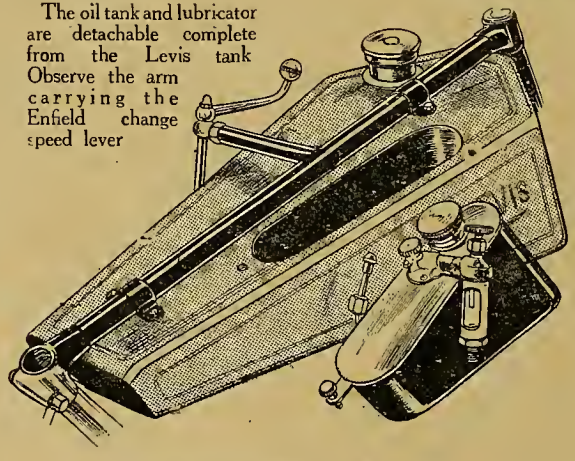
LEVIS, No. 80.

2¼ h.p. two-stroke MODEL: 62×70 mm. (211 c.c.); Amac carburetter; E.I.C. magneto, chain-driven; two-speed clutch gear; chain drive; 26×2¼in. Hutchinson tyres.

BUTTERFIELDS, LTD., Station Road, Stechford, Birmingham.—The new Baby Levis is bound to attract many prospective motor cyclists. Unfortunately, from their point of view, no deliveries are anticipated until the end of the summer at the earliest. This little machine has an engine of the same bore and stroke as the popular model, but roller bearings are fitted throughout the crankshaft. An unusual feature is that the flywheel is arranged on the opposide side to the transmission, which is through an Enfield two-speed gear on the left-hand side of the engine, thus enabling a neat chain case to be fitted, which protects not only the transmission chains, but also the magneto chain. A sloping top tube is used on this frame, and the oil tank is made entirely separate from the petrol tank and is readily detachable should occasion arise. As in the case of the Popular model, the front mudguard is fitted with valances behind the fork, and the rear guard is extended in the form of side wings on either side of the wheel. The new Baby model is a practical and durable light-weight, the performances of the Levis with the Enfield gear having been sufficiently demonstrated in the A.C.U. Six Days Trials.



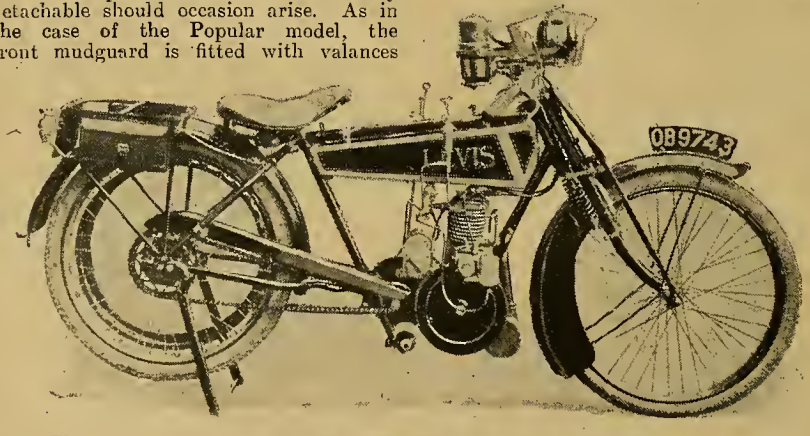
The 2¼ h.p. two-stroke Levis popular model with fixed gear.



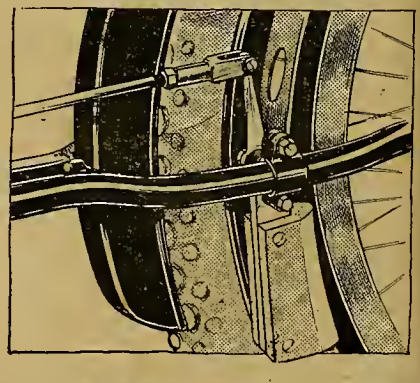
The oil tank and lubricator are detachable complete from the Levis tank Observe the arm carrying the Enfield change speed lever

2¼ h.p. two-stroke MODEL: 62×70 mm. (211 c.c.); Amac carburetter; E.I.C. magneto, chain driven; single gear; 24×2in. Dunlop tyres.

One of the most interesting little machines at Olympia is the standard 2¼ h.p. Levis. This is the case for more than one reason. Its performances are already so well known that there is little or no need for us to enlarge on this important point, for not only in competitions, but also in standard everyday use, the Levis has made its name. However, we wish particularly to emphasise this point: the fact that the little Levis weighs not more than 1 cwt. unladen! This is a very big advance in the right direction, and we are given to understand that even further lightening can safely be carried out, and *will* be carried out in the near future. The Levis three-port two-stroke is one of the forerunners of this class, and its makers still claim it to be one of the best of its type. There are practically no alterations in the 1920 model, except that a new internal V brake is fitted to the rear wheel, and that the tank has been improved in shape and colour, a black panelling now lying on a deep grey background. It is, of course, hardly necessary to state that the Levis lubrication system, in which

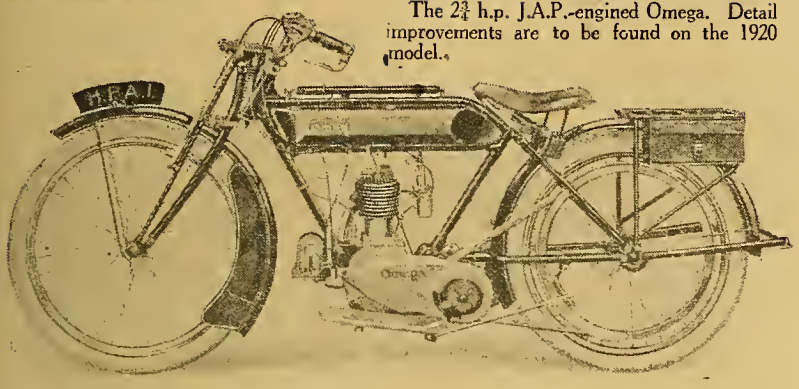


The 2¼ h.p. Levis two-stroke was a forerunner of its type. A sloping top tube and wedge-shape tank have been adopted.



On the Levis lightweight the brake block operates inside the belt pulley as shown

The Olympia Show.—



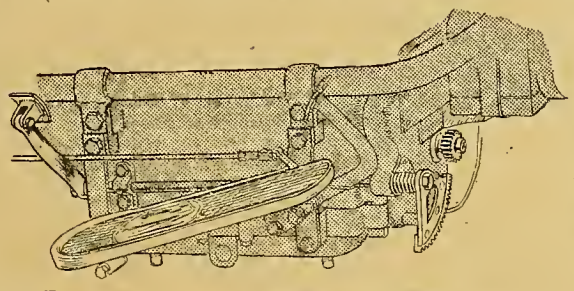
The 2¾ h.p. J.A.P.-engined Omega. Detail improvements are to be found on the 1920 model.

a supply of oil is fed through a sight-feed drip directly to the piston and main bearings, is still incorporated. One other feature of the Levis popular model which is worthy of note is the fact that both petrol and oil pipes are formed of electrically-deposited copper, which form of pipe has been found to withstand vibration better than the more normal type. Brooks saddle and tool-box are now fitted. Levis Popular models are shown with three different types of handle-bars, the up-turned pattern being shown on a machine which is also fitted with a dress guard for ladies' use.

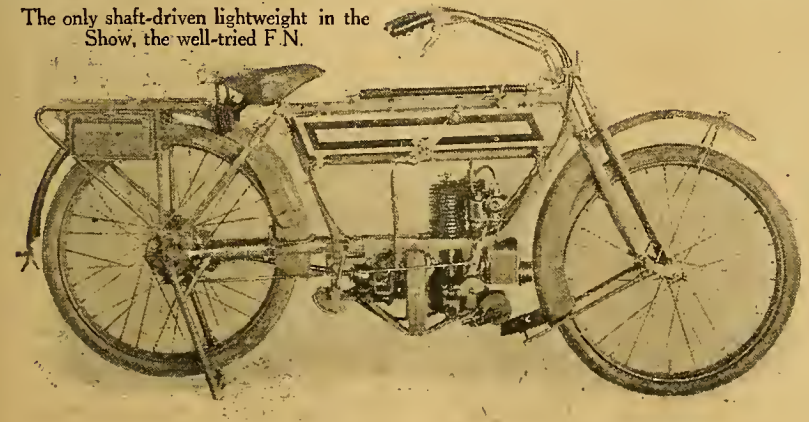
OMEGA, No. 46.

2¾ h.p. single four-stroke MODEL: J.A.P. engine; side-by-side valves; B. and B. carburetter; chain-driven magneto; two-speed constant mesh gear; chain-cum-belt drive; 26×2¼in. Dunlop tyres.

W. J. GREEN, LTD., Hill Street, Coventry.—Six models of the Omega lightweight single-cylinder four-stroke are exhibited by Messrs. W. J. Green, Ltd. These are all fitted with the 2¾ h.p. J.A.P. engine, and vary only in detail, such as handle-bars and gear box. As in the 1914 models, the frame embodies a very substantial one-piece head, and has a curved top tube. As a special attraction on this stand, an Omega with red and black disc wheels is shown. As on several other machines of high-class specification, the Burman gear box is used, controlled by a hand gear lever mounted in a clip on the down tube. The gear box is suspended from a platform which is detachable from the main frame, and forms part of the construction of the rear forks. The machine generally has been improved on minor points, and the equipment now includes the Brampton Biflex forks. Altogether, these machines are exceptionally well finished, and include the minimum of plated parts, the disc-wheeled machine being fitted with bars finished by a new oxidising process which is very durable. Internal cables are used on all Omega models. The rear guard is of 5in. section, and is constructed in one piece; it is also of ample width, and has wide valances. The models are obtainable at the following prices: With two-speed gear and semi-T.T. or touring bars 62 guineas, with kick starter and handle-bar-controlled clutch 71 guineas. This latter model is fitted with a Brooks saddle and larger pannier bags and aluminium footboards.



To devise a kick start mechanism on a shaft-driven four-cylinder machine is not an easy matter, and the F.N. designer has overcome the difficulty in the neat manner depicted above.

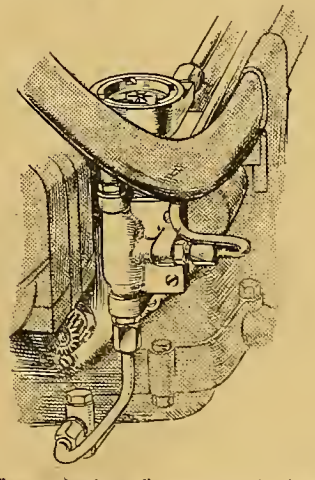


The only shaft-driven lightweight in the Show, the well-tried F.N.

F.N., No. 54.

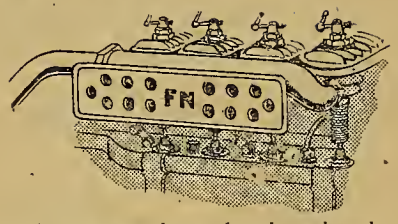
7-9 h.p. four-cylinder four-stroke MODEL: 52×88 mm. (748 c.c.); valves on each side of cylinder; Amac carburetter; Fellows gear-driven magneto; three-speed F.N. sliding gear; shaft drive; 26×3in. Palmer tyres.

F.N. (ENGLAND), LTD., Kimberley Road, Willesden Lane, N.W.6.—Seen for the first time since 1913, the resuscitated four-cylinder F.N. is bound to attract attention, especially as the factory where it is made was one of the first to suffer when the enemy overran Belgium in 1914. The exhibit consists of three 7-9 h.p. four-cylinder machines—one fitted with a sidecar, and three of the 2½ lightweights. The engine has separate T head cylinders with the exhaust valves on one side and the inlet valves on the other. In front, the mechanical oil pump is situated, and above it a lubrication indicator, through the glass in which two small star wheels can be seen rotating so long as the oil flows. The pump serves to draw oil directly from the tank and sump to supply the troughs into which the big ends dip with a constant supply. Oil is also sprayed over the ball bearings of the main shaft and the other principal bearings. Another feature of the engine is the size of the crankshaft, and the flywheel is of ample dimensions in contrast with the earlier models; it also contains a multi-disc clutch. In the beautifully-made gear box car practice is followed; the shafts run on ball bearings, and the moving gear wheels slide on a splined shaft. There is a large circular inspection plate at the side of the gear box. The latest model is fitted with an Amac carburetter—an innovation for this firm—and a Fellows magneto. As soon as deliveries are forthcoming this particular model should be in great demand.



The mechanical oil pump on the four-cylinder F.N

The Olympia Show.—



A trouser guard over the exhaust branch of the new four-cylinder F.N.

2½ h.p. single-cylinder four-stroke MODEL: 65×88 mm. (285 c.c.); side-by-side valves; Amac carburetter; Fellows gear-driven magneto; two-speed sliding gear; shaft drive; 26×2in. Palmer tyres.

In these days when shaft drive is attracting so much attention, considerable interest will doubtless be displayed in the lightweight F.N.—the only lightweight in the Exhibition to be fitted with weatherproof positive transmission. Since exhibited at the last Olympia Show, the lightweight F.N. has undergone very few alterations. It is now fitted with an Amac two-lever carburetter and a Fellows magneto. Its chief features are the rendering of the engine and gear box practically oiltight, and the fitting of a special form of valve cap which cannot come unscrewed. Both valve caps have serrated edges, and when they have been screwed in as tightly as possible with a spanner a bridge piece bolted on to the cylinder head and designed to engage with each valve cap absolutely prevents them from becoming loose. This little machine has been most carefully thought out. The clutch is handle-bar controlled, and in the general arrangement of engine, clutch, and gear, car practice has been followed as closely as possible. A small detail which is worthy of mention is that the oil pump piston, instead of being fitted with the ordinary type of leather washers, is provided with two stepped piston rings.

NEW IMPERIAL, No. 60.

8 h.p. V twin four-stroke MODEL: 85.5×85 mm. (976 c.c.); side-by-side valves; B. and B. carburetter; E.I.C. chain-driven magneto; three-speed gear; chain drive; 28×3in. Dunlop tyres.

NEW IMPERIAL CYCLES, LTD., Princip Street, Birmingham. — Although the New Imperial name is more closely associated with lightweights, the 8 h.p. model, introduced for an Allied Government during the war, is a worthy addition to the New Imperial range. Its design is characterised by sturdy construction, which should render it suitable for the most difficult conditions. One point which is quite apparent is the exceptional ground clearance, which was a necessity for the special purpose for which the machine was designed, and is an admirable point for Overseas conditions. The details of the design appear to be very well carried out. As on the majority of machines of this type, the wheels are quickly detachable, while the mudguarding is ample, and includes an exceptionally wide shield to protect the magneto. The back guard is divided, which allows the rear portion to be swung round for tyre repairs. This rear portion is connected to the frame by a slotted lug and a spring bolt, so that no tools are necessary. Aluminium footboards, Gough pan-seat saddle, two pannier bags, spare tube case, Brampton forks, drip feed lubricator, and metal chain cases form part of the equipment. A De Luxe model includes the Lucas Magdyno lighting set.

ANOTHER ENLARGED ISSUE NEXT WEEK!

The special contents of next week's issue of "THE MOTOR CYCLE" include—

A Review of Sidecar Attachments and Bodywork at Olympia.

Tyres Available in 1920.

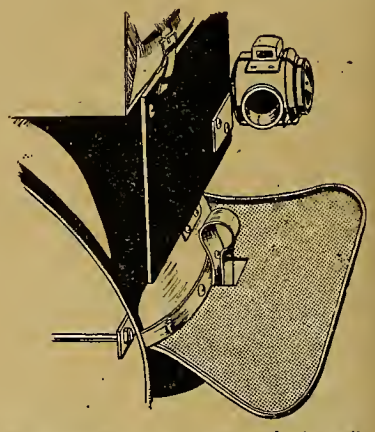
A Survey of the Accessory Exhibits.

Critical Articles on Motor Cycle and Sidecar Design in 1920.

The regular features of this Journal will be retained.

Out on THURSDAY—3d as usual.

The price of the complete outfit, with electrical equipment, is 174 guineas, the motor cycle itself is 118 guineas, and the passenger sidecar 29 guineas. The passenger attachment has an exceptionally large body, supported on an underslung chassis by means of three springs at the rear and long quarter-elliptics at the front. A capacious locker is provided, with door in the rear of the body.



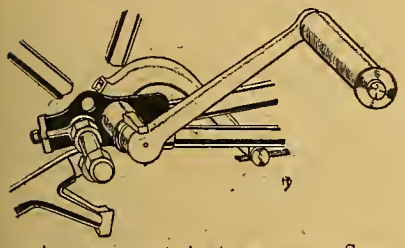
An additional shield extends horizontally beneath the rear number plate of the New Imperial lightweight, thus giving the back of the rider extra protection from mud splashes.

2¾ h.p. single-cylinder four-stroke TOURIST MODEL: J.A.P. 70×76 mm. (292 c.c.); side-by-side valves; B. and B. carburetter; E.I.C. chain-driven magneto; two-speed gear; chain-cum-belt drive; 26×2¼in. Dunlop tyres.

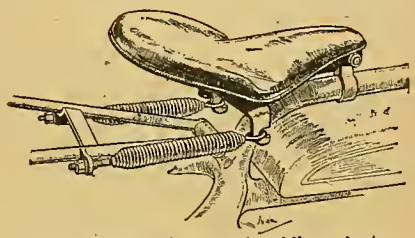
It may be said that the New Imperial-Jap lightweight did more to popularise the small J.A.P. engined machine before the war than any other make, and the new model exhibited at this stand shows evidence that its makers have progressed one step further in producing an all purpose solo machine. The tank has been enlarged and has a capacity of two gallons, which is, perhaps, exceptional on a machine of only 2¾ h.p., and both front and rear guards are of 7in. section—another commendable point on a lightweight machine. The front has a wide splash guard, which should do much to protect the rider's feet and the magneto from wet thrown up from the road, while care has been taken to protect the belt by a gutter fitted round the gap through which the belt passes. This is so designed that water and mud running down the inside of the guard are completely diverted to the side instead of dripping constantly upon the belt. The forks fitted are of the Saxon type, made by the New Imperial Co., and the equipment includes aluminium footboards, large toolbag, Gough pan-seat saddle, and Dunlop belt. The price, with two-speed gear, is 64 guineas, and an alternative model, which has a kick-starter and hand-controlled clutch, is offered at 72 gns.

The 8 h.p. three-speed and the 2¾ h.p. New Imperial models for 1920

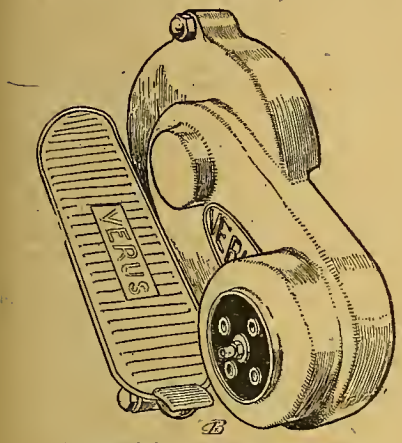
A PAGE OF DETAILS.



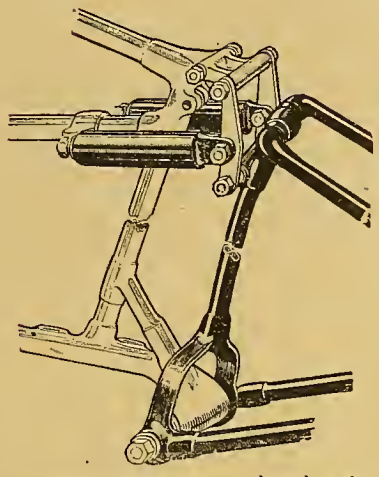
Arrangement of the latest pattern Scott kick starter.



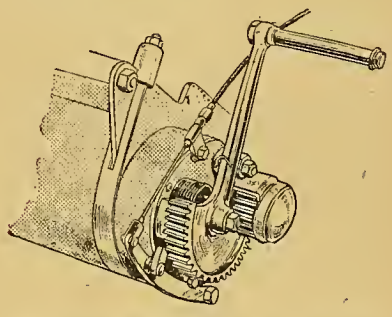
The very simple type of saddle springing adopted on the Clyno



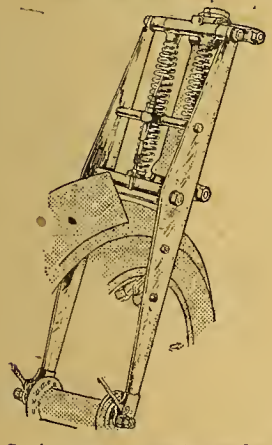
Combined flywheel and chain cover of the two-stroke Verus



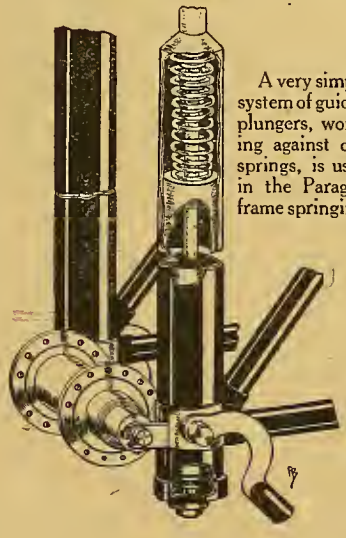
Neat rear springing system adopted on the 3½ h.p. Douglas.



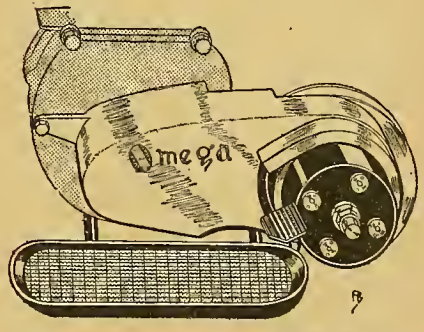
To enable easy starting on the Matchless, the exhaust valves are automatically released at the correct moment by a cam on the quadrant of the kick starter crank.



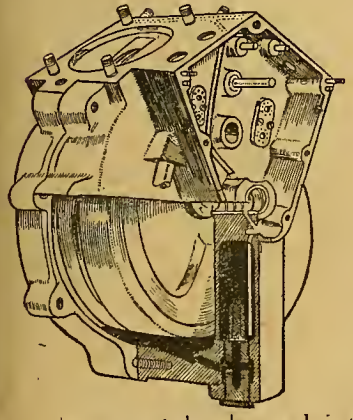
The Starley patent pressed steel forks on the new Ariels

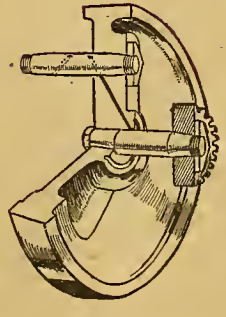


A very simple system of guided plungers, working against coil springs, is used in the Paragon frame springing.

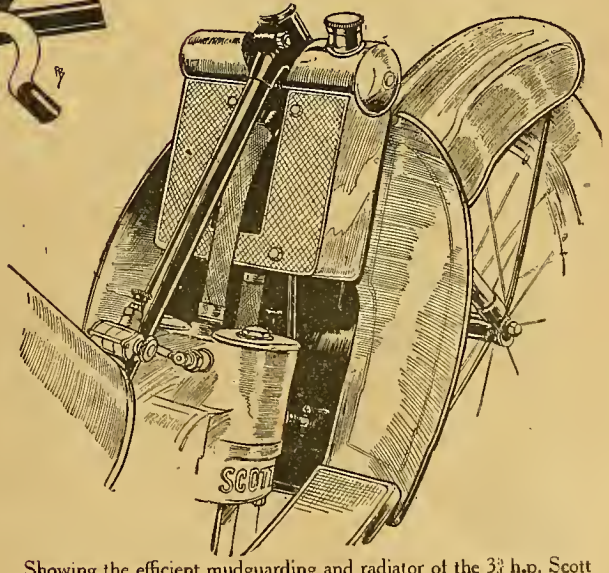


The neat and readily detachable footboards on the Omega J.A.P.



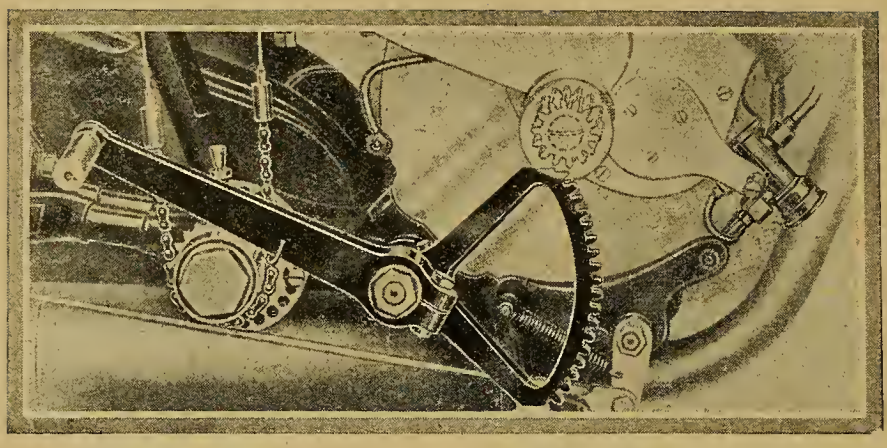


Improvements have been made in the J.A.P. oiling system. A much larger oil chamber is cast on the crank case.



Showing the efficient mudguarding and radiator of the 3¾ h.p. Scott

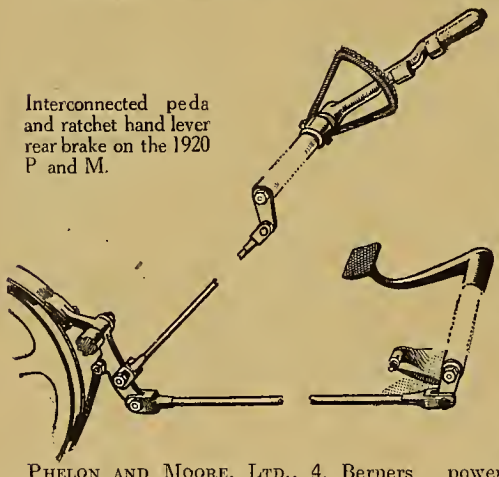
The Olympia Show.—



A simple starter, operating directly on the engine-shaft, is fitted to the 1920 P. and M. Observe the mechanical pump

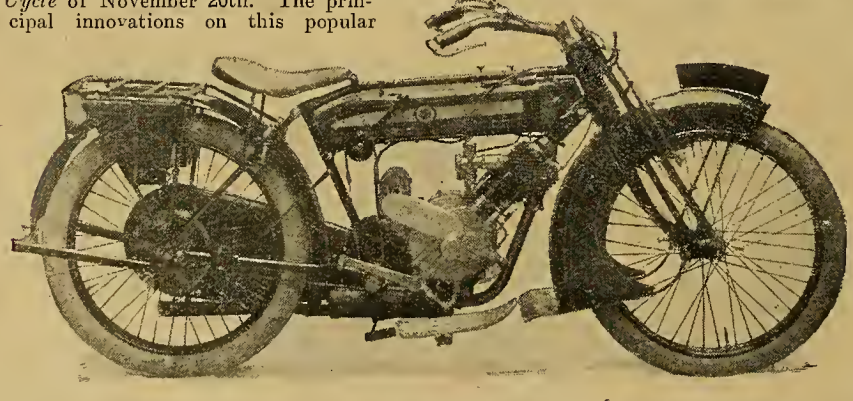
P. and M., No. 63.

3½ h.p. single four-stroke MODEL: 84.5×88.9 mm. (498 c.c.); side-by-side valves; Amac carburetter; chain-driven magneto; two-speed gear; chain drive; Kempshall 26×2½in. tyres.



Interconnected pedal and ratchet hand lever rear brake on the 1920 P and M.

PHELON AND MOORE, LTD., 4, Berners Street, W.1.—The P. and M. exhibit consists of two sidecar and numerous solo machines. A detailed description of the latest model appeared in *The Motor Cycle* of November 20th. The principal innovations on this popular mount are the fitting of an engine from which much greater efficiency can be obtained than before, and the casting of the cylinder fins so that they are parallel with the ground, thus greatly assisting the cooling of the engine, while an extremely interesting innovation is the ingenious oil pump, which conveys the oil alternately to the big end and to the cylinder. Points of convenience have been carefully studied in the latest pattern P. and M. Spacious toolbags are fitted to the luggage carrier and secured by an iron bar, so that they can be effectively locked up, while an extremely comfortable saddle, the nose of which is hinged on to the top tube, is fitted. Messrs. Phelon and Moore were among the earliest firms to consider the fitting of a ratchet brake, so desirable a feature on motor bicycles to which a sidecar is attached, and excellent examples of this brake are to be seen on the P. and M. machines. The firm have long studied the passenger question, and though the P. and M. is of moderate horsepower the machine has acquitted itself extremely well during the war with sidecars attached, and also, of course, as a solo mount. It is extremely gratifying to note that the company have been so far encouraged by the extra efficiency developed in their latest engines that they propose entering for the 1920 T.T. race. The finish of the firm's productions is proverbial, and it would be difficult to find a better finished machine in the exhibition. Messrs. Phelon and Moore are one of the oldest exhibitors, and the fact that their mount retains most of its original features, with up-to-date modifications only, speaks well for the design and reliability of P. and M. motor cycles.

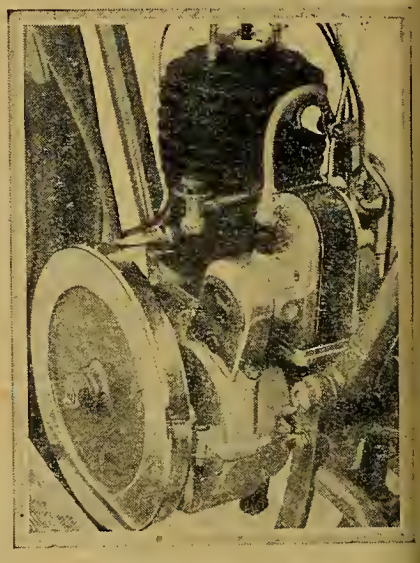


The engine of the popular P. & M. now has horizontal radiating fins and mechanical lubrication.

PARAGON, No. 70.

3 h.p. two-stroke MODEL: 76×79 mm. (349 c.c.); Amac carburetter; gear-driven magneto; two-speed gear; gear and belt drive; 26×2¼ tyres.

PARAGON MOTOR MANUFACTURING CO., Manningtree, Essex—Particularly neat and compact in appearance is the 1920 Paragon motor cycle, in which the gear box is cast integral with the crank case.

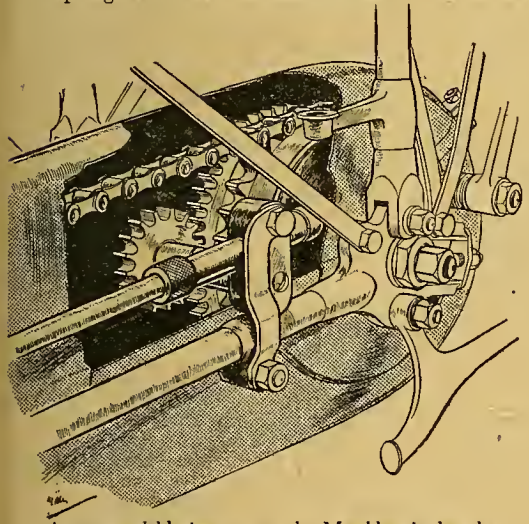


Two-speed gear integral with crank case, a feature of the Paragon two-stroke engine.

The construction is somewhat unusual, as also is the design of the two-speed gear mechanism, in which the driving and driven pinions are constantly in mesh. The gear box is simple in construction and operation; the gear ratios employed are 4¼ to 1 and 7¾ to 1. The 3 h.p. two-stroke engine, which has a bore and stroke of 76×79 mm., follows standard practice. One fitting, however, that has been adopted by this firm since its earliest production, and has been found of considerable utility in separating the inlet and exhaust gases, consists of a small extra air valve, provided with a dust cap, which allows air to be drawn into the transfer port in order that a blast of air may rush out directly this is opened by the descent of the piston. This layer of pure air divides the exhaust and inlet gases, but does not, however, remain in the cylinder to weaken the mixture. It is claimed by the makers that a consumption of 135 miles per gallon has been attained by the use of this device.

The Olympia Show.—

Plain bronze bearings are used throughout, this type being favoured by the makers in consideration of the replacement of spare parts and simplicity in manufacture. The lubrication is of the conventional type, suction feed to the oil grooves in the cylinder walls lubricating the latter, the small end, and the piston, whilst the big end and crankshaft bearings are fed by the usual splash feed. A C.A.V. magneto is mounted on a plate cast integral with the crank case, and is driven through an intermediate pinion, from the low gear driven pinion. Another feature of this machine is the new pattern spring frame—the manufacturer's patent. The rear knock-out axle is secured on either side to sleeves, which reciprocate in the two side tubes forming the main frame of the machine. Between the closed ends of these sleeves and the head of the tube are two springs, the weaker but longer one providing a lively movement for the smaller road shocks, whilst the shorter one of greater strength takes the maximum shocks in order to prevent the complete contraction of the longer spring. A small recoil spring is located at the bottom of the tube, and is held in position by a cap, through which a rod, brazed at the top of the frame member, is passed, and is provided with a nut and washer which locks and encloses the complete spring mechanism. Adequate lubrication is ensured, the sleeves being packed with grease. The rear wheel may be withdrawn without interfering with the brake block or any other fitting. A drop-out axle is also employed on the front wheel, which is sprung by a Brampton Biflex fork. Two brakes are furnished, one on the front wheel rim and the other, which is foot-operated, on the rear belt rim. A standard Amac carburetter is fitted, and fed from the oval tank, which has a capacity of one gallon three pints of petrol and three pints of oil. The price of this mount, which, although equipped with toolbags, is not provided with tools or accessories, is £60.

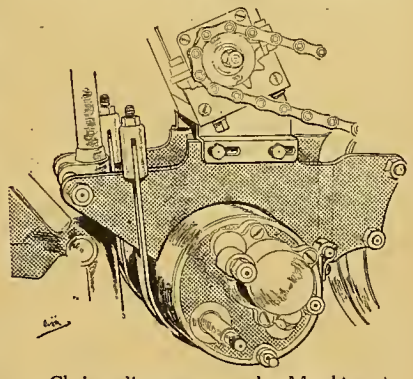


A commendable feature on the Matchless is that the speedometer drive is enclosed within the rear chain case.

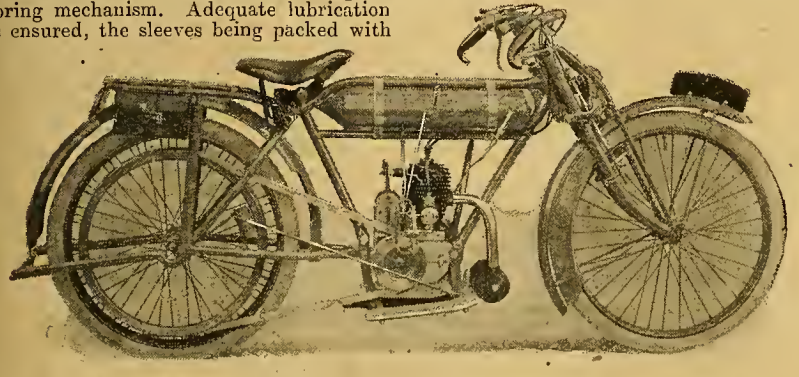
MATCHLESS, No. 48.

8 h.p. V twin MODEL: J.A.P.; 85.5×85 mm. (976 c.c.); side-by-side valves; Amac carburetter; Lucas chain-driven Magdyno; spring frame; three-speed sliding gear; chain drive; 28×3in. Clincher tyres.

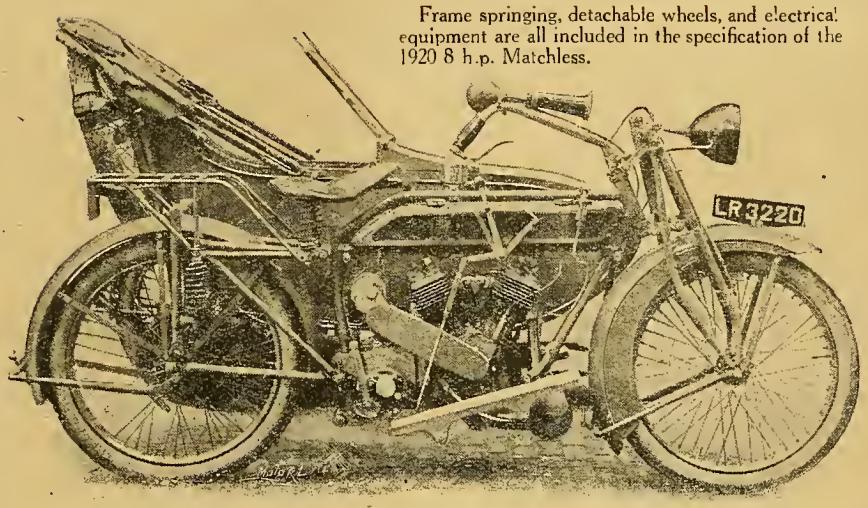
H. COLLIER AND SONS, 44, Plumstead Road, Plumstead, S.E.18.—Described in detail in the issue of July 17th, 1919, the 8 h.p. Matchless sidecar outfit has undergone very little alteration. It is, as its makers have aimed that it should be, the last word in sidecar outfit construction. Excellently sprung fore and aft, the machine is extremely comfortable, and the makers have succeeded in obtaining the maximum amount of ease both for the rider and for the passenger. Two slight modifications have been incorporated in the latest model. The magneto is now carried on a bracket sliding on the top of the engine cradle, which also holds the gear box, so that if the attachment bolts are loosened any slack in the magneto chain may be easily taken up. Another point which is well worthy of examination is the method of driving the Watford speedometer. The driving sprocket of the instrument is attached inside the chain sprocket, and it and the driven pinion are situated inside the oiltight chain case. This ensures the speedometer drive working under the best conditions, since, being entirely protected from the elements, it should last almost indefinitely. The novel method of holding the gear box is also well worthy of mention. The case is round, and is held in steel straps. In the event of it being found necessary to tighten the engine chain, the whole gear box may be moved round to a slight degree after loosening the straps. Messrs. Collier and Sons were the first British firm to interconnect kick



Chain adjustment on the Matchless is easily effected, the gear box being mounted in a tunnel with an eccentric sprocket.



The 3 h.p. spring frame Paragon, which has the gear combined with the crank case.



Frame springing, detachable wheels, and electrical equipment are all included in the specification of the 1920 8 h.p. Matchless.

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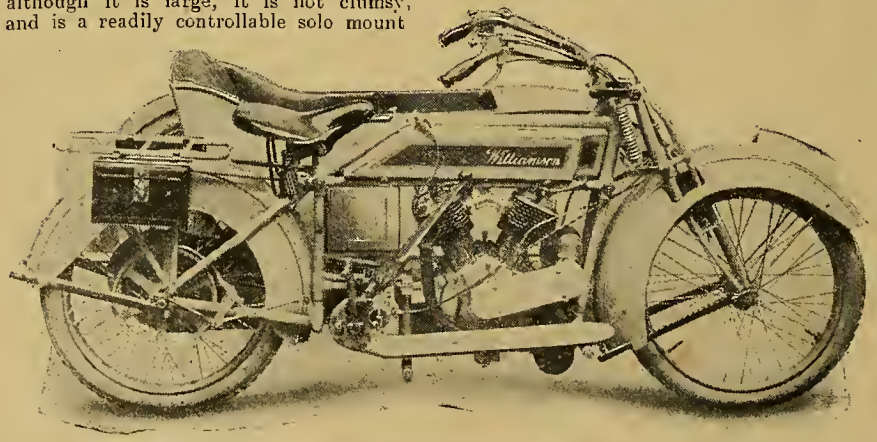
starter and exhaust lifter. The exhaust valves are raised by means of a cam on the inner side of the kick starter quadrant, which, on the pedal being depressed, comes into contact with a trip on the exhaust lifter arm. The valves remain open during one-third of the quadrant's travel; the trip then slips off the drum, and the valves are dropped exactly at the right moment. A complete engine and gear unit is also shown on the Matchless stand, and affords potential buyers an opportunity more closely to examine these parts.

WILLIAMSON, No. 78.

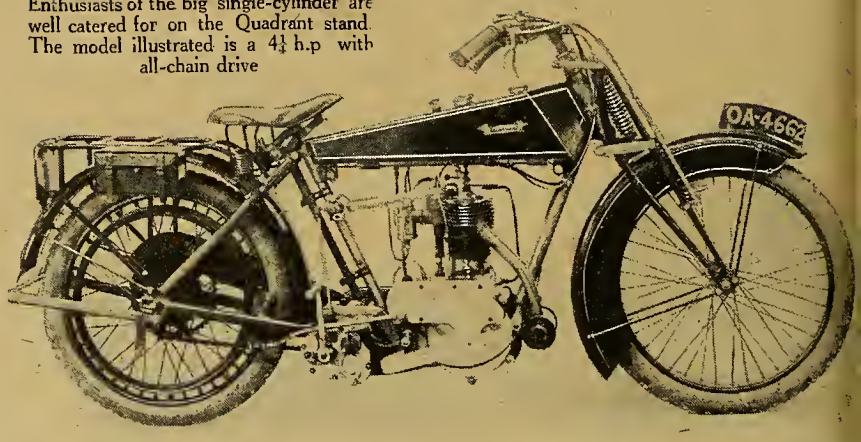
8 h.p. V twin four-stroke MODEL: 76×85 mm. (770 c.c.); side-by-side valves; Amac carburetter; B.L.I.C. chain-driven magneto; three-speed Sturmey-Archer gear; chain drive; 650×65 mm. tyres.

WILLIAMSON MOTOR CO., LTD., Earlsdon, Coventry.—The most notable innovation on the Williamson stand is the new 6 h.p. V type twin fitted with J.A.P. engine and Sturmey-Archer gear. This power plant is neatly fitted into a standard Williamson duplex frame. Transmission throughout is by chain, a spring shock absorber being fitted in the rear sprocket. There are several features of considerable interest on these machines. First, the rear brake is of the contracting band type, standard on Williamson machines, the drum being of exceptionally large diameter. This brake is operated by a pedal having extremely long leverage. The forks are of the Douglas type, and the mudguarding is unusually complete. The aluminium footboards, which are of large size, are sprung at the rear end, and behind the engine and above the gear box is fitted a large accumulator box, which sets off the general lines of the machine in an effective manner. This is an unusual feature, in that the addition of an accumulator box usually renders the appearance of a motor cycle clumsy. Lubrication is through a sight feed drip to the crank case, the internal lubrication being carried out on the well known J.A.P. system. A large silencer is placed in front of the engine, and both chains are protected by covers only, and are not fully enclosed. Fitted with 650×65 mm. tyres, this is an extremely practical sidecar machine, and, although it is large, it is not clumsy, and is a readily controllable solo mount



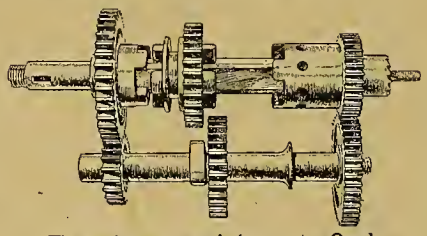
A Williamson passenger machine with duplex frame and the 6 h.p. J.A.P. engine

Enthusiasts of the big single-cylinder are well catered for on the Quadrant stand. The model illustrated is a 4½ h.p. with all-chain drive



8 h.p. flat twin four-stroke water-cooled MODEL: Douglas; 85×85 mm. (964 c.c.); side-by-side valves; Amac carburetter; B.L.I.C. gear-driven magneto; three-speed sliding gear; chain drive; 700×80 mm. tyres.

The standard Williamson production is, of course, represented by the 8 h.p.



The main and lay shafts of the Quadrant gear incorporated with the engine on the new "big single" model. The latter also acts as the camshaft to operate the inlet valve.

water-cooled model. This is fitted with a three-speed gear specially designed for the work, carried in the duplex frame already mentioned, with the exception of the gear box. The engine details are almost exactly similar to those of the 6 h.p. model already mentioned. The clutch in this model is foot-controlled, and the kick starter is of curious but attractive design, in that the rack is internal, and all the framework of the pedal position surrounds the central pinion on the crankshaft. The neat radiators are fitted on each side of the head, and the machine forms a very fine example suitable for heavy sidecar work. A similar air-cooled model is also made, but is not exhibited. Williamson sidecars are, of course, well known, especially for their excellent springing and large and roomy bodies. The chassis design is very stout and powerful, and the sidecar wheel is completely surrounded by a tubular frame, so that the knock-out axle is supported on both sides of the wheel.

QUADRANT, No. 121.

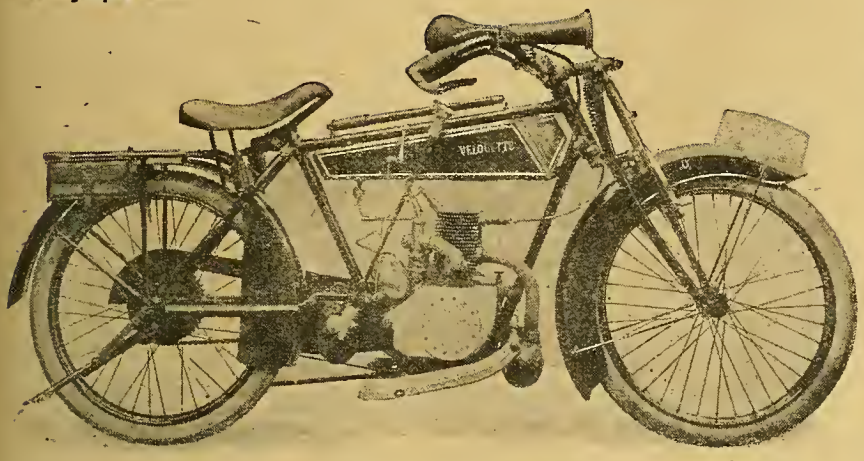
4½ h.p. single four-stroke MODEL: 87×110 mm. (654 c.c.); exhaust valve at side, inlet valve at rear, of cylinder; Amac carburetter; M-L magneto, gear driven; three-speed gear; chain transmission; 26×2½in. Dunlop tyres.

QUADRANT MOTOR CYCLE CO., 45, Lawley Street, Birmingham.—A special feature of the engine is in the distribution gear. A crankshaft pinion drives above it the cam wheel of the side exhaust valve and behind it the gear of a transverse inlet valve camshaft; the latter gear engages with the magneto drive pinion. Thus no idler wheels are required, and a very compact and workmanlike arrangement is attained; in fact, the machine as a whole gives an appearance of neatness which is enhanced by the sloping top tank being of the saddle type and screening the two top frame tubes. The tank is capacious, accommodating 2¼ gallons of petrol and half a gallon of oil. An enclosed chain occurs between engine and gear box, while the rear chain has a full half cover for the top section. Aluminium footplates are standard. The engine valve arrangement is peculiar, for the exhaust is on the right side and the inlet 90° away at the rear of the cylinder.

5 h.p single four-stroke MODEL: 95×110 mm. (780 c.c.); exhaust valve at side, inlet valve at rear, of cylinder; Amac carburetter; M-L magneto, gear driven; three-speed gear integral with crank case; chain drive; 26×2½in. Dunlop tyres.

The design and arrangement of the combined engine crank case and

The Olympia Show.—



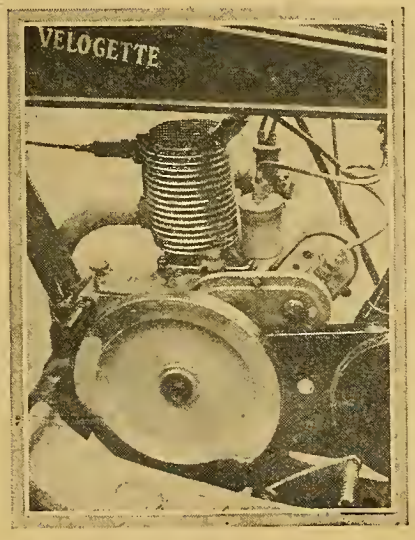
This newly designed Velocette two-stroke should become popular, since on its first competition appearance it won a gold medal in the Six Days Trials.

three-speed sliding gear box are of peculiar interest, for the system eliminates the primary chain. The drive is conveyed through spur gearing from the crankshaft to a layshaft, which also forms the inlet camshaft, the shaft carrying the sliding gear wheels being in the same housing slightly to the rear. The driving chain sprocket is on the end of the last-named shaft, while the clutch is located in the back hub and is of the cone type. Both this model and the 4½ h.p. are suited to sidecar work, the larger especially representing a good example of the powerful single for passenger combinations yet equally fitted for solo work. The examples of sidecars shown attached are all Canoelets with four attachments all held by lugs permanently secured to the frame.

VELOCETTE, No. 19.

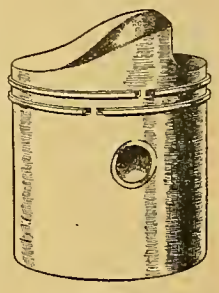
2¼ h.p. single two-stroke MODEL: 62×70 mm. (211 c.c.); Amac or B. and B. carburetter; C.A.V. magneto, gear driven; two-speed sliding gears; chain drive; Dunlop 24×2½in. tyres.

VELOCE, LTD., Sixways, Aston, Birmingham.—With the exception of the three-speed Velocette which gained a gold medal in the Six Days Trial, only one type of this make is to be seen on this stand. An excellently thought-out and useful type of lightweight, carefully designed from stem to stern, it possesses numerous special features such as mechanical lubrication—a point of detail design for which the firm have always been noted. The lubrication is effected



The power unit of the two-stroke Velocette. The cubical capacity of the engine is 211 c.c.

by a pump driven off the intermediate magneto pinion, conveying oil to all the principal bearings. The extremely neat design of the gear box and change-speed lever call for special attention, and are well worthy of careful study. All-chain transmission has been adopted, and in the rear sprocket is a spring shock-absorber and also an internal-expanding brake. By removing a tapered pin in the head, oil may be injected so as to lubricate adequately both head ball races. The frame is extremely strong, the down tube being of the duplex variety and carried right to the end of the engine union as far as the gear box. The space between the rear mudguard and the saddle tube is entirely occupied by a capacious toolbag. Points of detail have been well studied, and the bracket for the generator is brazed on to the side of the saddle tube.



The Velocette piston.

WOLF, No. 118.

2½ h.p. single two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; M-L chain-driven magneto; three-speed Sturmey-Archer gear; chain and belt drive; 26×2in. Dunlop tyres.

WULFRUNA ENGINEERING CO., LTD., Great Brickkiln Street, Wolverhampton.—Practically, the 1920 model follows the design of that produced this year, no variations of note having been considered necessary. A Villiers two-stroke engine is used with the primary chain of the transmission having a side cover. Druid spring forks are standard, the same applying to the aluminium footboards. The pedal-operated brake follows normal practice, and is applied to the interior periphery of the rear wheel belt rim.

2¾ h.p. single four-stroke MODEL: J.A.P.; 70×76 mm. (292 c.c.); side-by-side valves; Amac carburetter; M-L chain-driven magneto; Sturmey-Archer three-speed gear; chain-belt drive; Dunlop 26×2in. tyres.

This neatly designed solo mount has a J.A.P. engine and Druid forks, the general arrangement of the units being almost identical with that of the 2 h.p. two-stroke model and the largest of the

Two-stroke and four-stroke Wolf lightweights, produced by the Wulfruna Engineering Co., Ltd.

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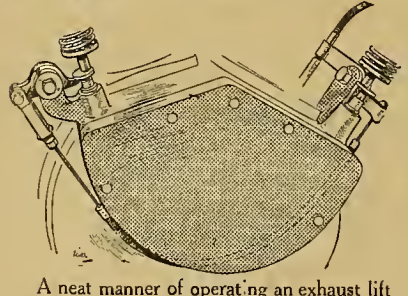
series, a 4 h.p. type, with a single-cylinder four-stroke J.A.P. engine. The 4 h.p. machine is not, however, exhibited, but it may be said that it forms the model offered for sidecar use. All Wolf machines have a special feature in the reinforcement of the down tube from the steering head to engine bracket; the usual weldless tubes have an inserted flat side plate or web running across the full diameter, and from end to end of the tubes. The carriers of all models are made of ½in. steel tubing, with the stays and struts welded together and in position.

RUDGE, No. 92.

3½ h.p. single four-stroke MODEL: 85×88 mm. (499 c.c.); overhead inlet valve; Senspray carburetter; gear-driven magneto; Multi gear; belt drive; 650×65 mm. Dunlop tyres.

RUDGE-WHITWORTH, LTD., Coventry.—Messrs. Rudge-Whitworth have made no great departure from the general design of their standard models, though many detail improvements may be observed. The famous Multi gear, with which the firm have gained such repute, is still retained on all their models. This gear is too well known among motor cyclists to need detailed description. As most are aware, it consists of expanding and contracting pulleys, the slack of the belt being taken up by the belt rim, also expanding and contracting. The method of changing gear is by means of a long lever at the side of the tank. Its movement from front to back increases the ratio by progressive stages. A point which at once impresses itself on one glancing at these machines is the cleanliness of the crank case, in which all sharp corners have been eliminated as far as possible. this should render the machines extremely easy to clean. A plate clutch is situated on the engine-shaft, and is operated by a Bowden control from the handle-bars. The colour of these machines has also altered since we saw them at the last Show, the tank now being of dark service green with black panels. A good point is the fact that very few bright parts exist, such parts as the handle-bars and hubs being coated with black celluloid. Lubrication on all models is effected by a pump operated by a pedal situated just behind the right footrest. The standard model is fitted with pedals, which, as usual in the Rudge machines, are used for starting the engine. By means of a clever device, one of these pedals may be dropped, thus giving an extra pair of footrests.

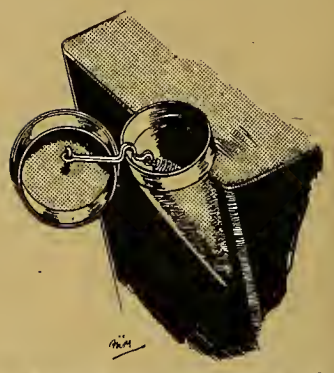


A neat manner of operating an exhaust lift without interior mechanism. The small cable actuated levers on the Rudge Multwin

Another model shown is the famous T.T. machine, which is almost identical in every respect to the one used by Mr. Cyril Pullen when he put up such a magnificent performance, winning the 1914 Tourist Trophy Race in the Isle of Man. This differs from the 3½ h.p. roadster, inasmuch as the frame slopes from the steering head to the saddle, giving a delightfully low riding position. This model also is fitted with a clutch in addition to the multi gear. It has no engine starting device, however, and a pair of fixed footrests are fitted in place of the pedals.

7-9 h.p. V twin four-stroke MODEL: 85×88 mm. (998 c.c.); overhead inlet valves; chain-driven magneto; Multi gear; belt drive; 650×65 mm. Dunlop tyres.

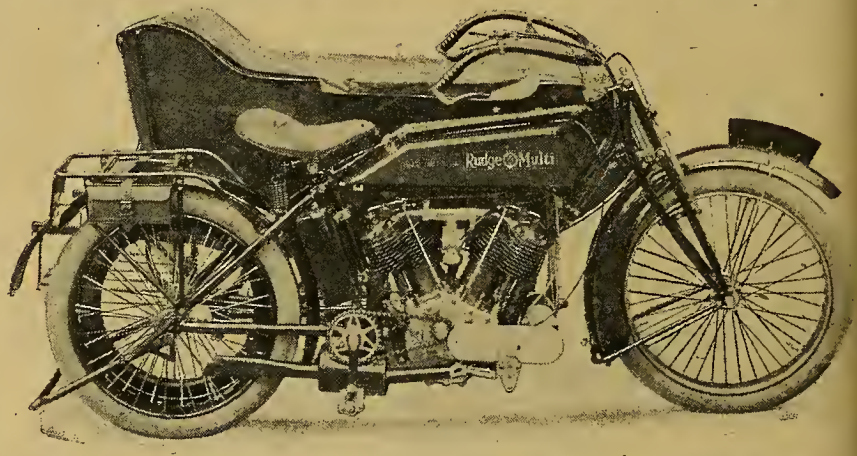
All sporting readers will welcome the new model of Messrs. Rudge-Whitworth, namely, the 7-9 h.p. Multwin, as it is styled. This is a model which was commenced just before the war, and the progress of which, so far as the public is concerned, was cut off by this disaster.



Spring held filler cup on the oil tank affixed to the seat tube of the Rudge

belt drive; 650×65 mm. Dunlop tyres.

A fourth model shown is the long-stroke single, which must appeal to all sidecar enthusiasts who desire a powerful machine of extreme simplicity.

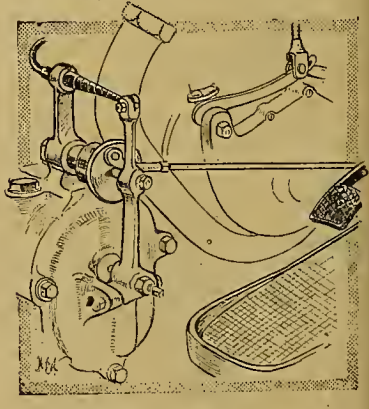


A fast sidecar machine, the 7-9 h.p. Rudge. The Multi-gear and all-belt drive are retained on all Rudge models.

However, tests were continued throughout the war, and the resulting machine is one which will please the eye of all speedmen. In general outline it closely resembles the T.T. model, as it has the same sloping frame. The engine is in many respects a twin replica of the 3½ h.p., having overhead inlet valves, situated directly above the exhausts, and operated by rocker arms and push rods. The magneto is situated in front of the down tube, and is driven by chain. It does not, however, embody the extremely neat vernier adjustment for timing which is characteristic of all the other Rudge models. An inverted Senspray carburetter is fitted compactly between the cylinders. Multi gear is also used on this model, and it has a clutch and the pedal starting device. Two examples of the Multwin are shown, both attached to sidecars, which are manufactured throughout in the Rudge-Whitworth works, and are of very pleasing appearance.

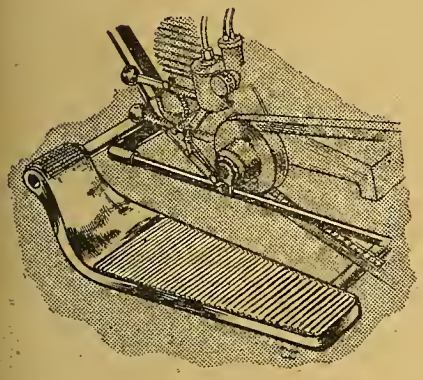
5-6 h.p. single four-stroke MODEL: 85×132 mm. (750 c.c.); overhead inlet valve; Senspray carburetter; gear-driven magneto; Multi gear;

This machine follows the usual Rudge practice throughout, with the exception of the elongated cylinder, which is at once noticeable, and necessitates the tank tube being cranked.

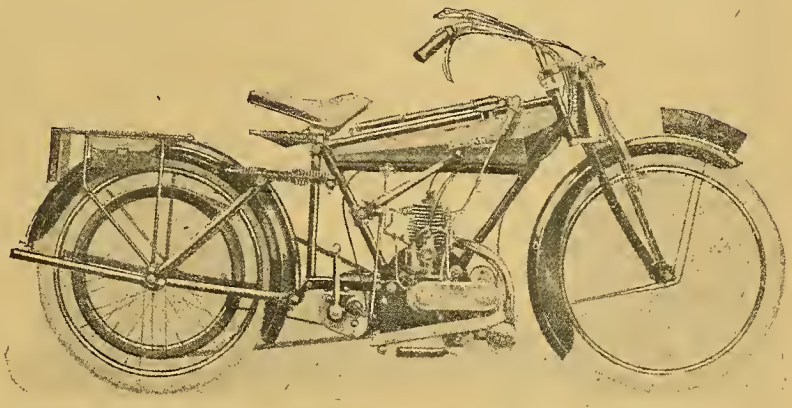


The clutch on the Bradbury has combined hand and foot control, though each may be operated independently

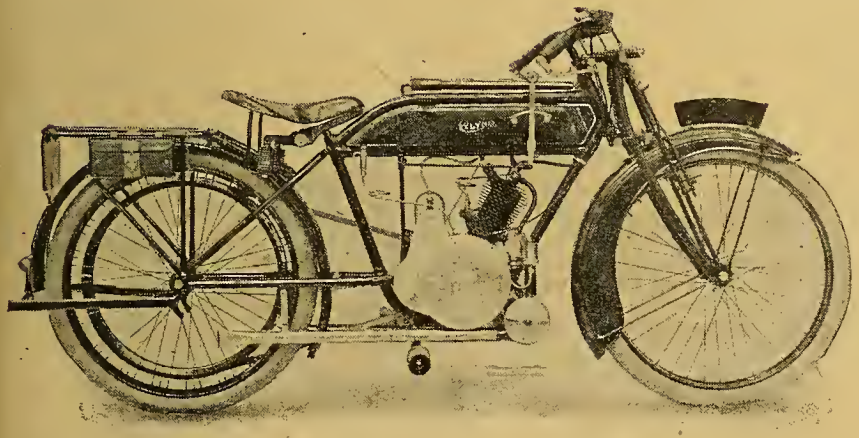
A FINE SELECTION OF TWO-STROKE LIGHTWEIGHTS.



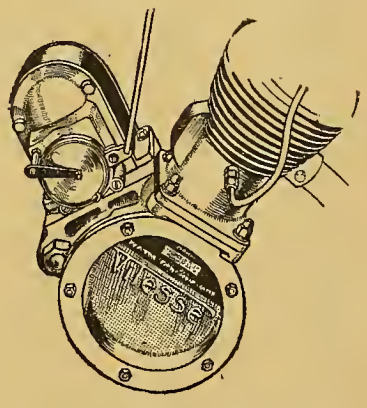
Up-turned aluminium footboards are now fitted to the flat-twin Wooler.



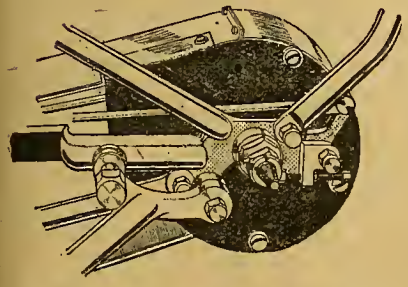
The spring-frame lightweight Hobart.



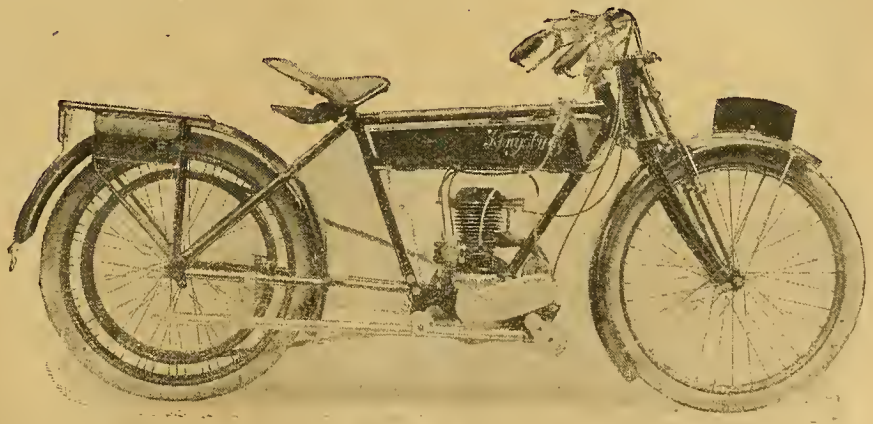
2¼ h.p. two-stroke two-speed Clyno for 1920. The engine of the machine rotates in the opposite direction to usual practice



Enclosed engine and peculiar construction of the crank case of the Sun two-stroke.



Details of the detachable wheel on the Bat. The illustration shows the chain case as well as the locking bolt for the detachable hub.



One of the newcomers to the lightweight field, the new Kingsbury two-stroke.

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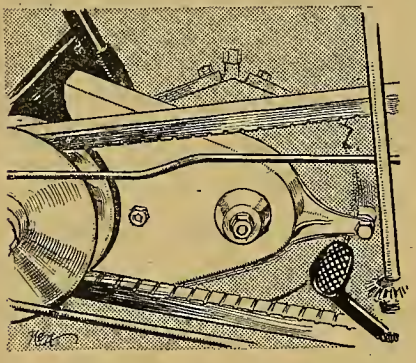
ZENITH, No. 108.

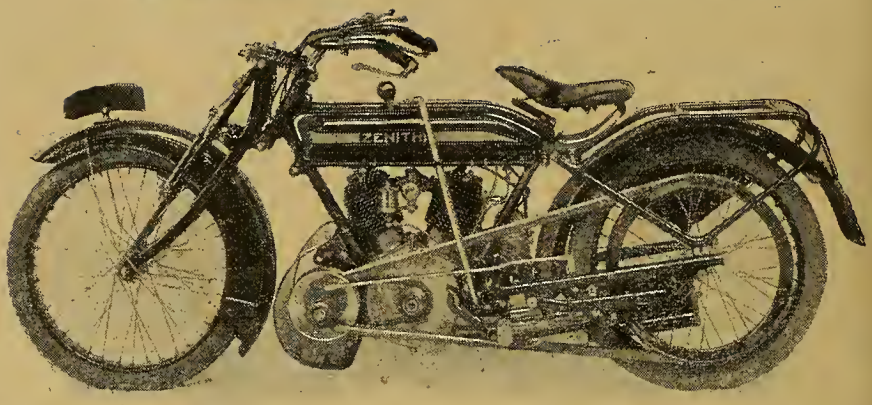
2¾ h.p. flat twin four-stroke MODEL: 58.75×65 mm. (347 c.c.); side-by-side valves; Amac carburetter; C.A.V. gear-driven magneto; Gradua expanding pulley; chain and belt drive; 26×2¼in. Dunlop tyres.

ZENITH MOTORS, LTD., Hampton Court, Middlesex.—This is an entirely new model, and one that should make a very wide appeal to potential motor cyclists. All details of the engine are accessibly arranged; the valves can be removed, ground in if need be without disturbing the cylinders or any other part, while the cylinders themselves can be detached with ease while the crank case remains in position. Hand pump oiling is used. The transmission consists of a chain driving a countershaft immediately below the crank case, and thence by Gradua gear and belt to the rear wheel. The fitting of the countershaft below the engine allows a long belt to be used, the actual length being 7ft. 6in. The belt tension is automatically regulated as the variable pulley is closed or opened out, and in this connection a very ingenious system of pedal brake linkage has been adopted for the 1920 models of all Zenith machines. The brake in question is a pad acting within the belt rim, but, to prevent the brake efficiency and adjustment being upset by the moving back of the wheel centre when the gear is operated, the final motion is conveyed by a



A neat cover is now fitted to the primary chain-drive of the twin Zenith.

vertical member with an open jaw at its bottom end embracing a rod that moves upward when the pedal is depressed. Thus as the wheel centre moves back the brake pad and its immediately adjacent linkage are carried back also, and the open jaw merely slides along the longitudinal rod that moves bodily upward to operate the brake. The countershaft is supported by ball bearings in an aluminium bracket, which in turn is held by bolts passing through slotted holes in the hanging brackets. The chain can therefore be adjusted by a vertical movement that does not affect the tension of the belt. The latter is provided with a limited range of adjustment, which can all be taken up during the course of a run, if need be, without the rider being called upon to reduce the length of the belt until he has time to spare for that process. The engine as a whole is supported above a steel baseplate, which in

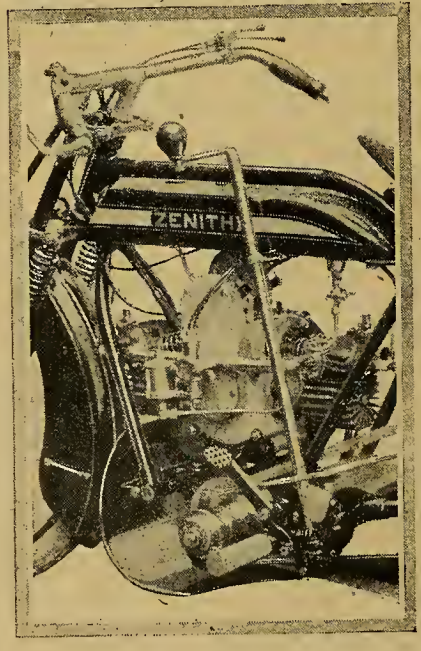


Amongst belt-driven adherents the 8 h.p. Zenith is a popular mount. The well-sprung seat will be particularly noticed.

turn is attached to two tubular cross members of the widely separated tubes depending in pairs from head and seat support. It is by reason of the width between the units of each of the dual tubes that the cylinders can be so easily detached. The magneto is also very accessible, for it is mounted on top of the crank case, below the tank, with its contact breaker arranged conveniently for adjustment on the right-hand side. The magneto chain drive is all enclosed. Wide mudguards are fitted fore and aft, those at the back having a segmental extension at each side reaching from the back stays to the rear end of the carrier.

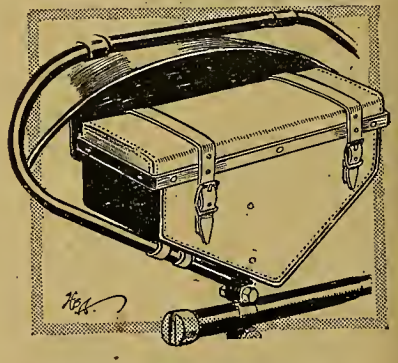
4-5 h.p. V twin four-stroke MODEL: 70×64.5 mm. (496 c.c.); side-by-side valves; Amac carburetter; Thomson-Bennett chain-driven magneto; Gradua expanding pulley; belt drive; 650×65 mm. tyres.

The outstanding innovation on this model is the combined carrier and rear



A new model in the Zenith range fitted with a flat twin engine of 347 c.c.

stays, each side of which is formed of two lengths of tubing telescoped over the axle centre line, and shaped to a triangular form in side elevation. A very sturdy construction is thus provided, for the ¾in. diameter side tubes of the carrier are stiffened at two points by brazed-on cross tubes, while the stays themselves are ⅞in. in diameter and have a tubular brace at the top end in addition to the transverse bolt that holds them in position. The unit can be removed as a whole from the main frame without disturbing any other part. The new stand



A capacious toolbag is used on the new Zenith, with separate compartments for spare tube and tools.

is unusual, for it consists of two flat tubular supports hinging together from a lateral bearing near the centre of the machine, the centre line of the bearing being located between engine and rear wheel. The same type of stand occurs on the 8 h.p. model, and both are fitted with J.A.P. engines.

8 h.p. four-stroke twin MODEL: 85.5×85 mm. (976 c.c.); side-by-side valves; Amac carburetter; Thomson-Bennett chain-driven magneto; Gradua expanding pulley; chain and belt drive; 650×65 mm. tyres.

The special features of this machine, the chain drive to a forward countershaft and the very long belt to the rear wheel, are continued, the same type of Gradua variable pulley gear being in evidence. But in the machines supplied for combination work a free engine clutch can be embodied. This is a very workmanlike

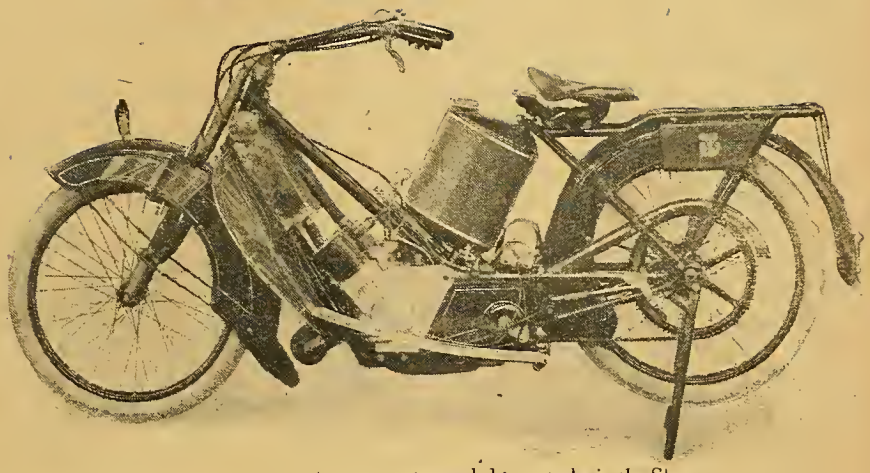
The Olympia Show.—

device, consisting of a combination of friction cone (metal-to-metal, running in oil) and positive dog clutches. The cone takes up the drive smoothly and without shock, but the spring pressure is not sufficient (and is not intended to be) to provide other than a slipping drive, the final upward movement of the clutch pedal allowing the dog teeth to drop into mesh—that is, when the driving and driven members are running at similar speeds. The dog teeth are bevelled on their edges, and have no tendency to overrun and clatter. On this machine, as on all Zenith 1920 models, a new sprung saddle is fitted; its springs are of the leaf type, viz., quarter-elliptics, one of the three supporting the front of the seat and the other two the rear portion. It is a well-conceived design, and one that should be exceedingly comfortable in use without permitting lateral sway and tendency to affect steering. Altogether, the Zenith exhibit presents an exceedingly interesting display, and the machines embody a very great deal of well thought out and practical detail.

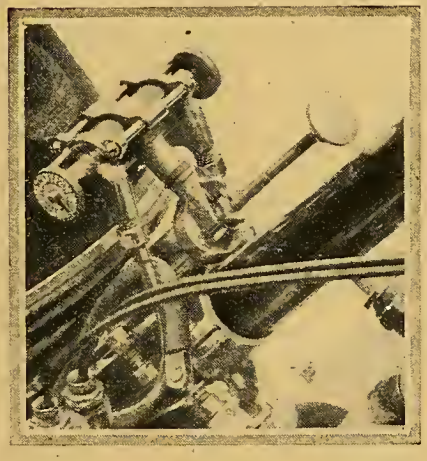
SCOTT, No. 122.

3¾ h.p. twin two-stroke MODEL: Binks carburetter; Thomson-Bennett magneto, chain driven; two-speed expanding clutch gear; chain drive; Palmer 26×2½in. tyres.

SCOTT MOTOR CYCLE CO., LTD., Saltaire, Yorkshire.—Four models are shown, three being solo machines, *i.e.*, the standard touring, another with semi-T.T. bars, and a third termed the sports model, which has a higher gear ratio, full T.T. bars, and narrower mudguards. The fourth type is the sidecar machine, which has 26×3in. Palmer Cord light car tyres, and gear ratios of 4.69 and 8.62, the ratios of the solos being: Standard 4.25 and 7.85, sports 3.75 and 7.2. Variations and improvements for 1920 include wider mudguards (sports model excepted), having an overall width of 5¾in. The rear brake now has a much larger shoe

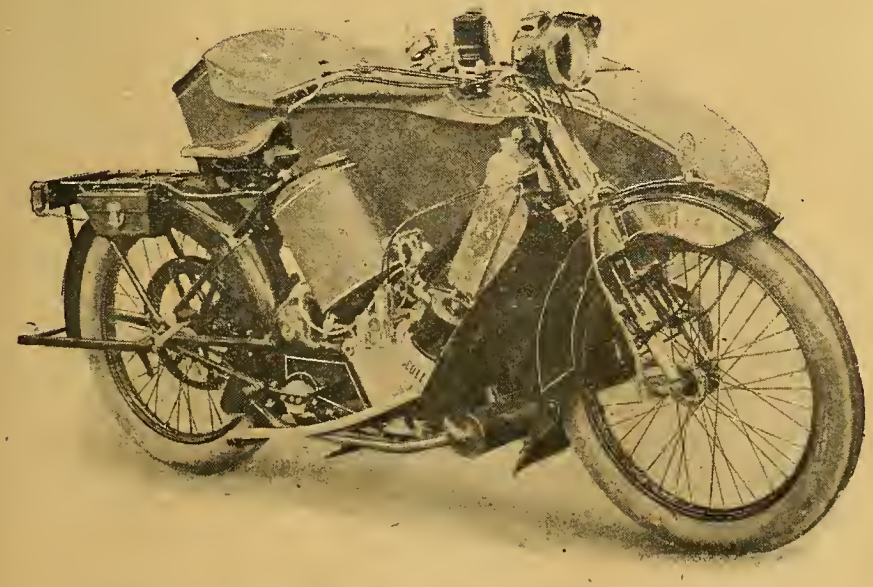


[illegible] water-cooled two-stroke in the Show



The lubrication system on the 1920 Scott embodies a neater form of separate sight feed for each crank case.

operating within the drum formed as a unit with the chain sprocket. A new sight feed for the oil is arranged horizontally, with a glass enclosing the two feeds, one to each of the cylinders; the new arrangement brings the oil feed into direct view when the rider glances down. The honeycomb radiator is wider and deeper, affording a larger area of cooling surface, and the kick starter stop now consists of a rigid lug on the bottom fork tube of the rear wheel. The sidecar exhibited is worthy of careful inspection. The chassis is the Scott patent cantilever type, with all straight tubes and four-point attachment. Coil springs are used at the rear, and are adjustable to suit the weight of the passenger, while C springs support the front of the body. Behind the seat is a covered compartment that will hold a two-gallon tin of petrol, tin of oil, and tools, while under the forepart is a tray for maps, small parcels, etc. On general lines the 1920 Scotts follow the makers' established practice, and that it represents a successful system in principle and construction the recent A.C.U. Trials have given conclusive evidence.



Scott two-stroke sidecar combination for 1920. The efficient guards will be noted

BRITISH EXCELSIOR, No. 51.

2½ h.p. single two-stroke MODEL: Villiers 70×70 mm. (269 c.c.); Amac carburetter; C.A.V. chain-driven magneto; two-speed constant mesh gear; chain-cum-belt drive; 26×2¼in. Dunlop heavy tyres.

BAYLISS, THOMAS, AND CO., LTD., King's Road, Tyseley, Birmingham.—Although perhaps the Excelsior was better known in the larger sizes before the war, the new lightweight models recently introduced bid fair to live up to the reputation created by their predecessors. Of the former, the Villiers-engined two-stroke is an exceedingly taking machine, having a sloping top tube and a wedge-shaped tank holding eleven pints, finished in black with Cambridge blue and gold lines. The forks fitted are larger than is usually the case with lightweights of this type, being of the wide bearing pattern, and the mudguarding is well carried out both front and rear. The former guard has deep valances, and the latter flat extensions on either side, giving altogether a width of 7in. There are very few plated parts on the machine, the bars being enamelled black and fitted with Bowden levers with outside cables.

The Olympia Show.—
The equipment includes two pannier bags with tools, inflator, Best and Lloyd sight feed lubricator, aluminium footboards, Dunlop belt, and Renold chain. The price is £58 16s.

2¾ h.p. single four-stroke MODEL: J.A.P. engine; side-by-side valves; Amac carburetter; E.I.C. chain driven magneto; two-speed gear; chain-cum-belt drive; 2¼in. Dunlop heavy tyres.

This J.A.P.-engined machine is similar in design and equipment to the two-stroke model, and is probably one of the most compact machines of this type. The price is £65 10s., or with hand-operated clutch, £71 10s.

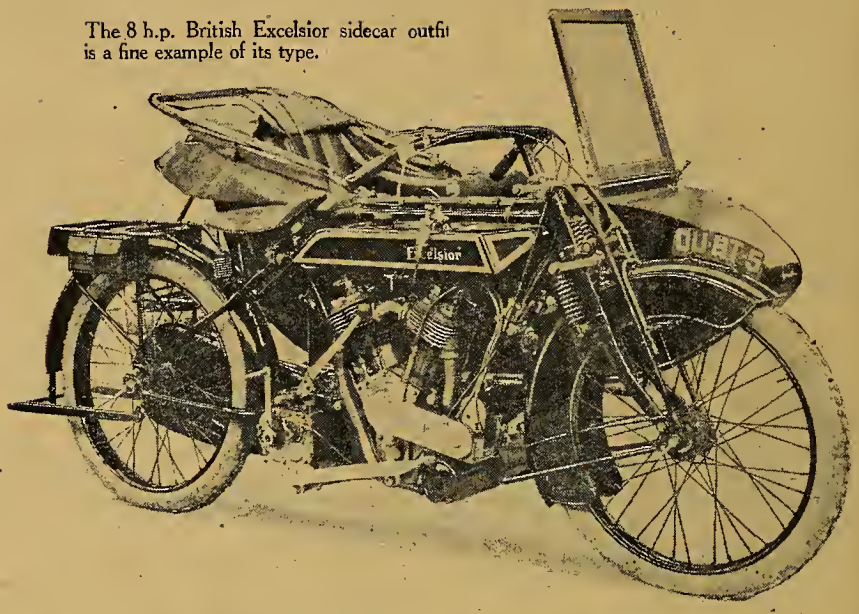
8 h.p. V twin four-stroke MODEL: J.A.P. 85.5×88 mm. (980 c.c.); side-by-side valves; Amac carburetter; M-L chain-driven magneto; three-speed Sturmey-Archer gear; chain drive; 28×3in. tyres.

Our older readers will recall the pre-war hill-climbing expeditions of Mr. W. H. Carson, an enthusiastic sidecarist, who made a hobby of searching for and assailing hills considered to be unclimbable. It has been chiefly from the experience gained

Detachable and interchangeable wheels are a feature of the 1920 8 h.p. British Excelsior.

in these trips and thousands of miles of all-weather driving that the new 8 h.p. British Excelsior sidecar has been evolved.

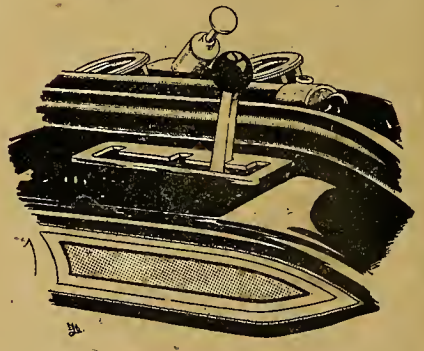
The 8 h.p. British Excelsior sidecar outfit is a fine example of its type.



It is a serviceable model, with 28×3in. quickly detachable and interchangeable wheels, a spare being carried in the underside of the folding grid supported on the back of the sidecar body. Everything is of strong construction, and follows sound commonsense lines. The sidecar is sufficiently long in the body to provide accommodation for a child's seat. This is made to slide upon slotted plates secured to the body and the door respectively, and a hood and screen form part of the very complete equipment. The body is suspended on C springs well extended at the front which should remove the vibration at the feet which is noticeable on some sidecars. The model on exhibition is equipped with a Lucas dynamo lighting set, neatly installed. The generator is clipped to the seat tube of the machine, and is driven by a chain from the outside on the primary drive casing. The dynamo chain is protected by a metal guard. The Excelsior standard model is fitted with a comfortable pillion seat attached to the carrier, upholstered in Bedford cord, mounted on C springs, terminating in coil springs, to which the upholstery fitted is attached. It would be hard to find a more completely equipped sidecar outfit or one constructed on more practical lines. The price of the outfit is £162.

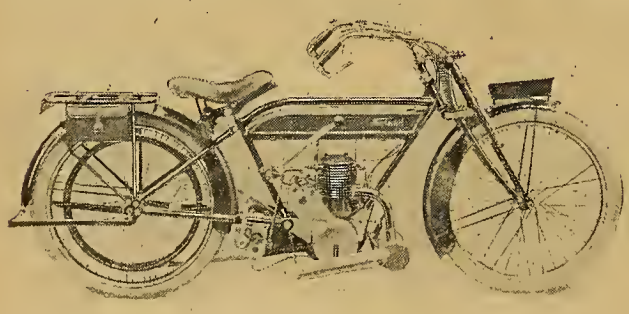
ROVER, No. 79.

3½ h.p. single four-stroke MODEL: 85×88 mm. (499 c.c.); side-by-side valves; B. and B. carburetter; E.I.C. silent chain-driven magneto; three-speed sliding gears; chain drive; 650×65in. Dunlop tyres.

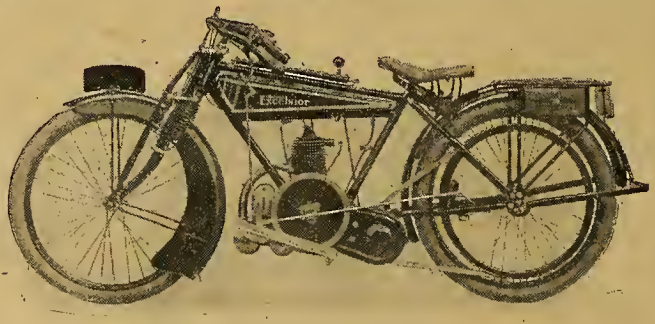


The Rover change speed lever projects through the tank, and is handily situated.

NEW ROVER CYCLE CO., LTD., Coventry.—Very few alterations have been made to the 3½ h.p. single-cylinder Rover. The engine primary transmission of the gear box remains as before, the

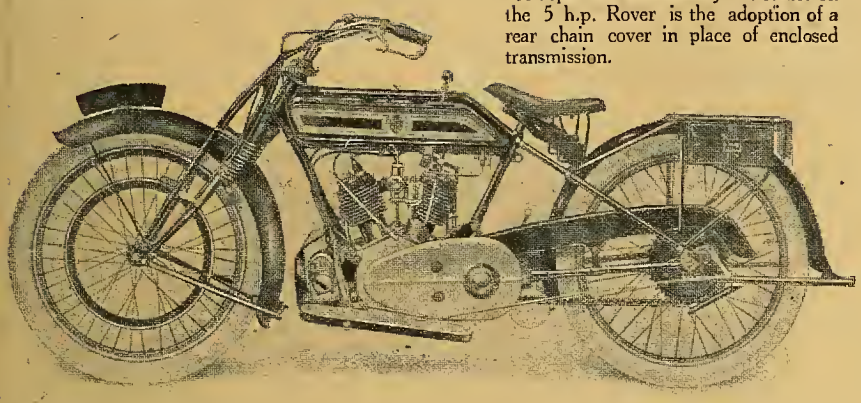


The Torpedo-Precision two-stroke two-speed lightweight.



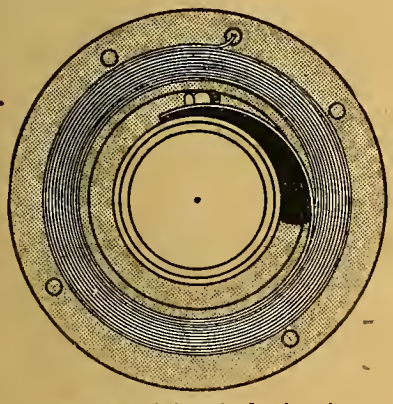
A Villiers engined Excelsior lightweight.

The Olympia Show.—



A departure immediately noticeable on the 5 h.p. Rover is the adoption of a rear chain cover in place of enclosed transmission.

main feature thus far being the silent chain transmission to the gear box. The most noticeable alteration is that the final drive is now carried out through a spring link chain instead of a belt. As in the 5-6 h.p. model, this chain is protected along the upper run only.



A leather bolster is fitted under the end of the governor spring in the Philipson pulley in order to eliminate breakages.

In all its main details this type resembles the 5-6 h.p. excepting for the fact that it is fitted with a single-cylinder Rover engine, which is exceptionally quiet in running, especially as to its valve gear. The T.T. belt-driven models are also shown on this stand. These machines have a similar engine, but the transmission is by belt, either from a plain adjustable pulley or a Philipson pulley. In the case of the Philipson pulley, a very simple hand control may be fitted operated by a small lever on the handle-bar.

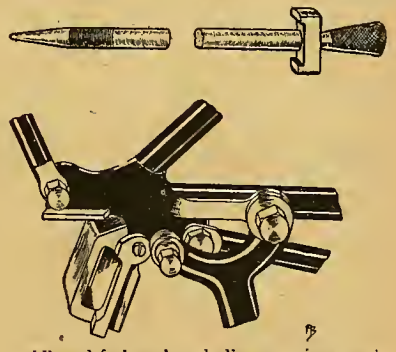
5-6 h.p. V twin four-stroke MODEL: 70×85 mm. (654 c.c.); side-by-side valves; Amac carburetter; E.I.C. chain-driven magneto; three-speed sliding gears; chain drive; 28×3in. Dunlop tyres.

A very fine specimen of a powerful solo or light sidecar machine is displayed on the Rover stand in the new 5-6 h.p. model. There are several extremely interesting features in this machine. First, the primary drive is through a noiseless chain, neatly enclosed in an aluminium case, the final drive being of the spring link type chain so long associated with Rover practice. This chain is protected by a guard along the upper run, the guard being extended over a considerable depth on each side. Very simple and positive adjustment for the tension of the final chain is provided in a notched quadrant, which makes it very easy to keep the wheel in line. The gear box is of sturdy construction, having an entirely enclosed kick-starter. The clutch is of the dry-plate type, and is operated by a pedal on the right-hand side of the engine. The gear box is provided with an unusually large inspection cover, through which it may be filled with lubricant. An internal-expanding brake is fitted in the rear sprocket, and the rotation of the front wheel can be controlled by a shoe acting in the V of a dummy belt rim. Forks of the Druid type are fitted, and spring top fork links are used, very wide flat mudguards being provided for each wheel. These guards are rolled over at the edges to form a small valance, and the back part of the rear guard can be removed for the purpose of tyre inspection. A large splash shield protects the magneto and the front part of the engine from any mud which might escape from the front guard, and a particularly neat round-edged petrol tank, through which the gear striking lever projects, is carried in the dropped top tube of the frame. Following Rover custom, the oil tank is of circular formation, and is let into the petrol tank in such a way that the oil pump is fixed on the right-hand side and projects in a convenient manner. Metal-beaded footboards complete the main specification of this machine, though the large aluminum silencer should not be forgotten, as Rovers are notably silent on the road. Attached to the 5-6 h.p. Rover is a fine sidecar beautifully upholstered and finished in grey. A wide flat guard, similar to that on the motor cycle, protects the passenger from mud from the sidecar wheel, and the chassis, which includes a sidecar stand, is simply and strongly constructed. One feature of considerable importance is the method of supporting the mudguard to prevent rattle. This is carried out by stout tubular stays which are perfectly rigid.

BAT, No. 82.

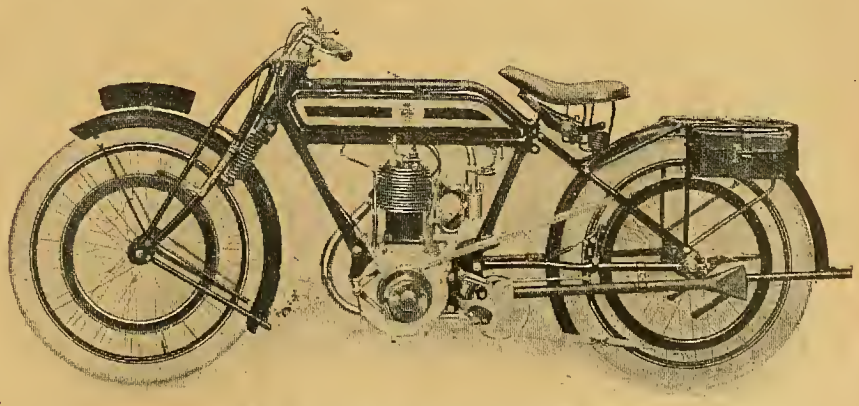
8 h.p. V twin four-stroke MODEL: 85.5×85 mm. (980 c.c.); side-by-side valves; Amac carburetter; C.A.V. magneto, gear driven; three-speed sliding gear; chain drive.

BAT MOTOR MANUFACTURING CO. (1918), LTD., 2, Kingswood Road, Penge, S.E.20. —A noteworthy feature of the 1920 8 h.p.



Hinged fork end and distance piece used in connection with the Bat detachable wheel. It is locked by a dog on the knock-out spindle

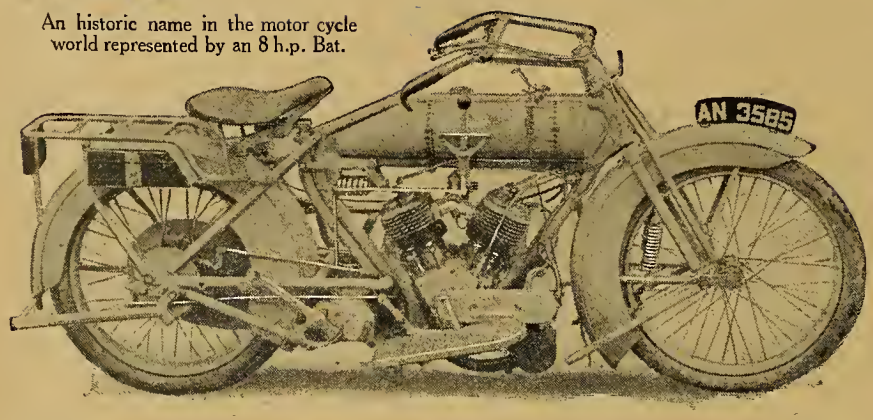
Bat machine is, in addition to its general robust construction, the ingenious design of the rear detachable hub. An advance upon previous design has been made, inasmuch as no loose distance pieces are used. These have been superseded by a fixed distance piece, hinged to the rear fork



Speed men are catered for in the 3½ h.p. Rover T.T. model, which is fitted with hand-controlled Philipson pulley.

The Olympia Show.—

An historic name in the motor cycle world represented by an 8 h.p. Bat.

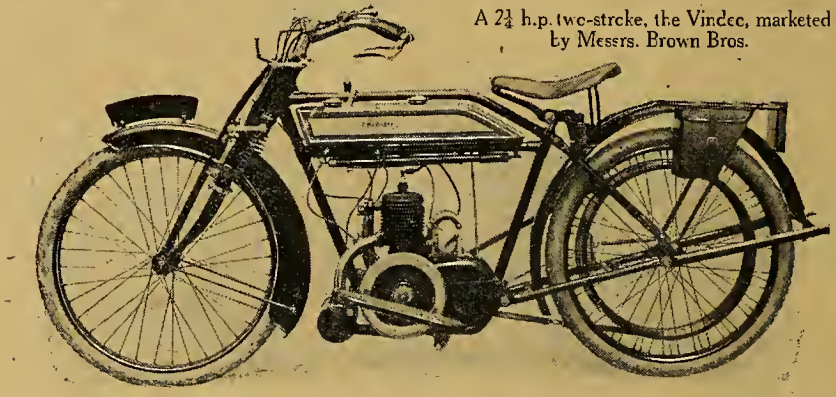


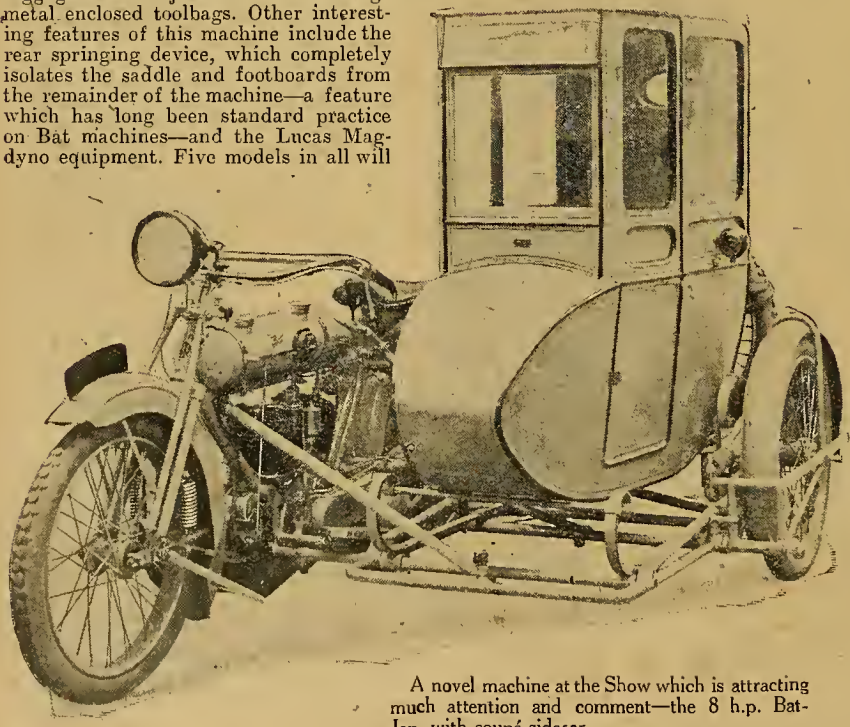
end, and provided with a longitudinal slot to accommodate the knock-out spindle. The head of the rear spindle is provided with a steel washer, which, when the wheel is in position, locks the flange on the distance piece rigidly to a similar flange on the rear fork end. This method of locking makes the usually tiresome duty of changing a wheel a very simple and rapid operation, as the removal of one nut on the near side of the spindle permits the removal of the bolt which automatically releases the hinged distance piece, when the wheel may be taken out. The drive from the rear chain sprocket, in which an internal expanding brake is located, to the wheel hub is transmitted through substantial dog teeth, cut externally on the former, which engage with similar teeth cut internally on the latter. In order to facilitate the removal of the wheel, the rear mudguard is capable of being lifted up, and this is effected by withdrawing a long bolt beneath the luggage carrier just behind the large metal enclosed toolbags. Other interesting features of this machine include the rear springing device, which completely isolates the saddle and footboards from the remainder of the machine—a feature which has long been standard practice on Bat machines—and the Lucas Magdyno equipment. Five models in all will be produced next year, a solo and a sidecar machine with the clutch mounted on the gear box, and two similar machines with the rear wheel clutch, whilst the machine *de luxe* will be electrically equipped.

6 h.p. twin four-stroke MODEL: 76×85 mm. (770 c.c.); side-by-side valves; Amac carburetter; C.A.V. gear-driven magneto; three-speed sliding gear; chain drive.

The 6 h.p. Bat motor cycle is practically identical with its companion, the 8 h.p. model, the principal difference, of course, being the lower powered J.A.P. engine. Three models will be produced, fitted with the new rear detachable hub, two of which will be sidecar outfits, equipped with the Bat sidecar, which, it will be remembered, has a novel and highly efficient springing system. The remaining two models, a solo and sidecar machine, will retain the original rear wheel clutch, and will not be fitted with detachable and interchangeable wheels. A feature of both the 6 and 8 h.p. Bat models is the method of carrying the gear box, which is supported on a special subframe running from the rear wheel to the lower half of the crank case. Both machines also are finished in grey and have circular tanks. Several examples of Bat sidecars are displayed, and, perhaps, the most striking model is an entirely enclosed miniature limousine body.

A 2¼ h.p. two-stroke, the Vindec, marketed by Messrs. Brown Bros.



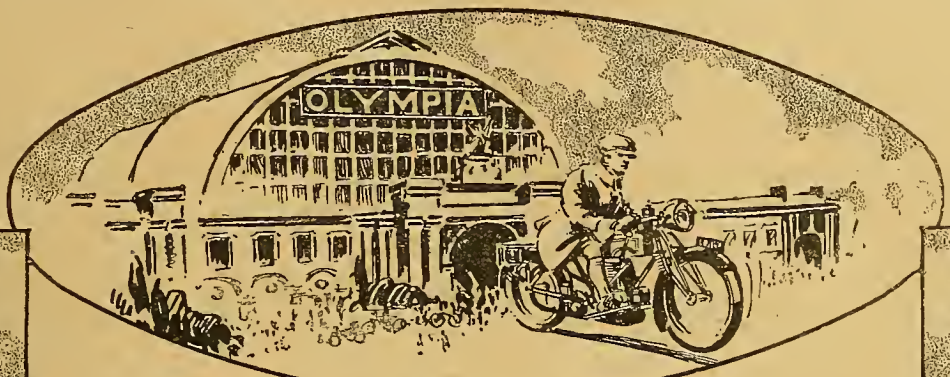


A novel machine at the Show which is attracting much attention and comment—the 8 h.p. Bat-Jap, with coupé sidecar.

VINDEC, No. 164.

2¼ h.p. two-stroke MODEL: 64×70 mm. (225 c.c); Amac carburetter; T.B. chain-driven magneto; two-speed gear; chain and belt drive; 24×2¼in. tyres.

BROWN BROS., LTD., Great Eastern Street, E.C.2.—Simplicity is the keynote of the Vindec layout, since a two-speed transmission is obtained without the use of a gear box. On each side of the crank case of the 2¼ h.p. two-stroke engine are chains driving countershaft sprockets of different diameters. These sprockets are connected to the shaft as desired by means of a sliding dog, and the final drive is by belt to the back wheel. The two-stroke engine is of the usual three-port type, and both engine and gear box are carried in a substantial loop frame. All old-time riders will be well acquainted with the name Vindec, and will be glad to see it carried on by Messrs. Brown Bros. at the present time by a lightweight machine well worthy of the reputation of its predecessors.



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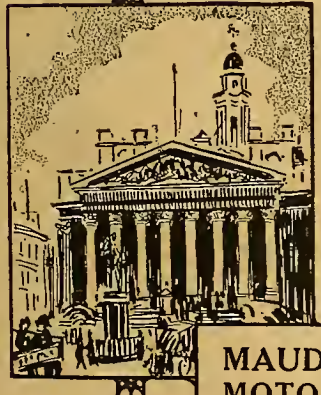

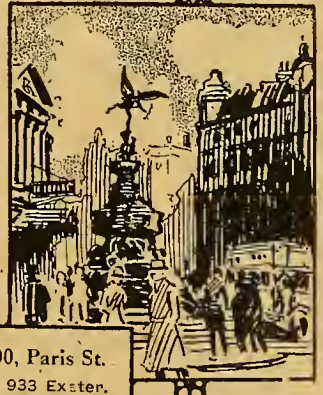

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THE SEAL OF SATISFACTION

A Private Owner's 12 Reasons for Riding a Sunbeam.

IN a recent competition in the *Auto Cycle Illustrated*, in which riders were asked to state reasons which influenced them in purchasing the machine which they ride, Lieut. J. A. NEWMAN obtained a prize, giving the following 12 reasons as to why he purchased a Sunbeam:—

(1) I have owned thirty-six machines, light weight, heavy weight, solo and sidecar, and I find that it is THE BEST.

(2) There is an old motto that "The best is the cheapest," and although the Sunbeam is the dearest machine on the market it is the cheapest to run, and fetches the highest prices, pro rata, second-hand.

(3) Transmission is Weatherproof, absolutely. There is no other machine on the market with such solid and perfectly made chain cases.

(4) It will take a Sidecar anywhere, and I mean ANYWHERE.

(5) The drive is absolutely smooth at the slowest speeds. None of the belt-driven machines, or Chain-cum-Belt, on the market are its equal in this respect.

(6) It is better for all-round work than a machine with two or more Cylinders, as less attention is required to keep it in Tune.

(7) It steers magnificently. I proved this in the recent Scottish Six Days where I won a Gold Medal.

(8) It climbs anything with total absence of Fuss.

(9) It is extremely silent.

(10) I can point out advantages on the Sunbeam single which no other Machine can claim in entirety.

(11) The bearings wear ALMOST INDEFINITELY.

(12) It starts perfectly, no injection or decompression device being needed. In regard to my claim that a 3½ single is the best machine for all-round purposes: it is the type which has been most consistently successful for many years. The only claim in favour of the flat twin is the smooth running. I maintain that no flat twin runs smoother than the 3½ Sunbeam. As regards a bigger engine, if the 3½ Sunbeam can do everything, why buy a machine of greater power?

STAND 49, OLYMPIA.

MAKERS:—

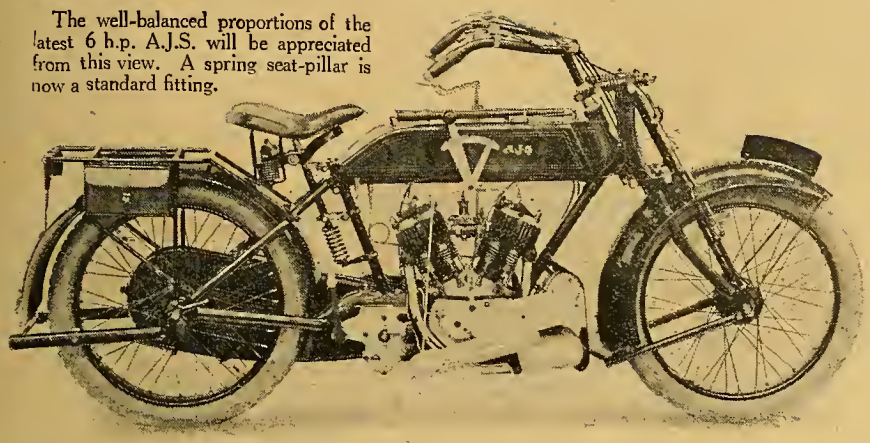
JOHN MARSTON, LTD., 11, Sunbeamland, WOLVERHAMPTON

LONDON SHOWROOMS:—57, HOLBORN VIADUCT, E.C.1.
157, SLOANE STREET, S.W.1.

In answering this advertisement it is desirable to mention "The Motor Cycle."

The Olympia Show.—

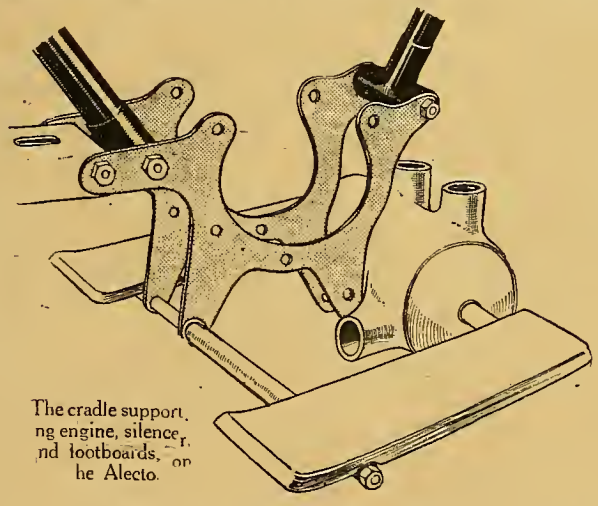
The well-balanced proportions of the latest 6 h.p. A.J.S. will be appreciated from this view. A spring seat-pillar is now a standard fitting.



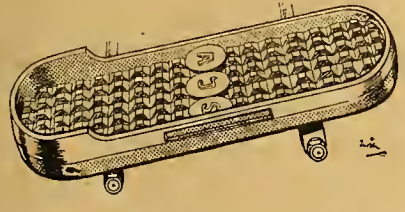
A.J.S., No. 31.

6 h.p. V twin four-stroke MODEL: 74×81 mm. (749 c.c.); side-by-side valves; Amac carburetter; Thomson-Bennett chain-driven magneto; three-speed sliding gear; chain drive; 700×80 mm. Dunlop tyres.

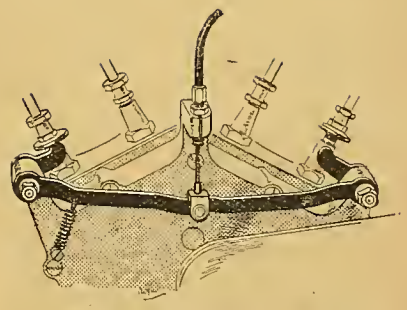
A. J. STEVENS AND CO. (1914), LTD., Penn Road, Wolverhampton.—One type only of A.J.S. is shown on this stand, which is the 6 h.p. sidecar outfit, one of the most practical and popular machines of its kind on the British market. It is full of interesting points. The careful student will note the width of the saddle-tank situated above the top tube of the frame, rendering it easy to clean. The width of the mudguards will be commended, whilst a very practical form of spring seat-pillar, in addition to the comfortable saddle fitted, absorbs all road shocks. The extra hand lever attached to one side of the back stand is another practical feature which enables the rider to put enormous leverage on to the stand and to raise the whole of the machine with the minimum amount of effort. All these models are fitted with the Amac single lever carburetter, concerning the working of which the designer is most enthusiastic. The footboards are rubber covered, with deep studs effectually absorbing any vibration that may be felt in the feet. The only variation in types is the fitting of electric light in the case of one model shown, which is equipped with a Lucas dynamo, driven by a Whittle belt neatly enclosed in a case, off the engine-shaft. The dynamo is eccentrically mounted in its housing, and if one of the holding-down bolts is loosened the whole dynamo may be twisted, and, by this means, any slack in the belt may be taken up. The switch controlling the lights is fitted to the side of the tank. No one can examine the A.J.S. machines exhibited without remarking upon their practical points and excellent finish throughout.



The cradle support, engine, silencer, and footboards, on the Alecto.



Extra deep rubber studs are a feature of the A.J.S. footboards.

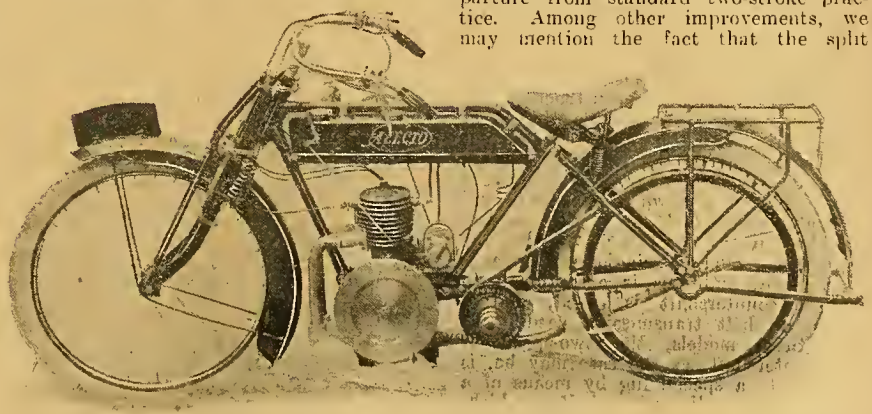


The centrally operated exhaust lifter mechanism on the A.J.S.

ALECTO, No. 15.

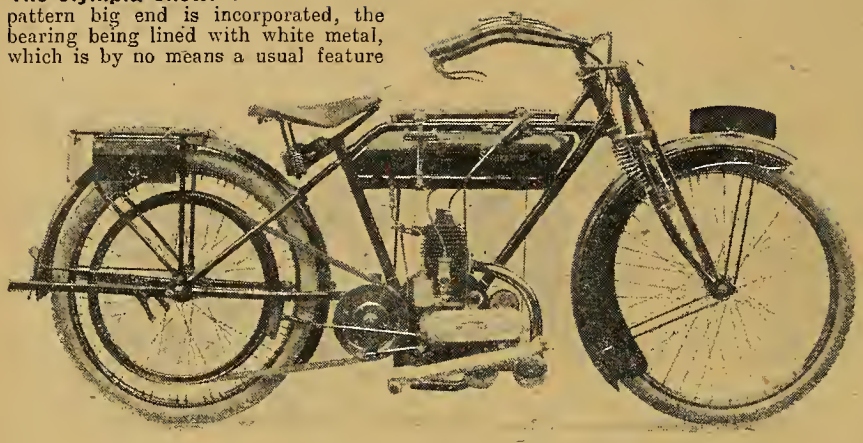
3½ h.p. two-stroke MODEL: 76×76 mm. (345 c.c.); Amac carburetter; C.A.V. magneto, chain driven; two-speed Burman sliding gear; chain-cum-belt drive; 26×2¼in. Dunlop tyres.

CASHMORE BROS., LTD., Hildreth Street, Balham, S.W.12.—Two solo motor bicycles are to be seen on this stand. The Alecto is a two-stroke which possesses several original features and many interesting points. Among these we may mention the twin system of exhaust pipes enteriog a large silencer, and the compression release connected up to the exhaust pipe so as to eliminate any objectionable noise. It is interesting to note that the silencer has three times the capacity of the cylinder; consequently the Alecto should be among the quietest of two-strokes. The latest model is now fitted with a handle-bar controlled magneto. Another special feature of this machine is the size of the radiating fins on the cylinder, which should render the engine very cool running. The piston is of an aluminium alloy known as Magnalium, possessing two rings, a compression ring and a scraper ring. This is one of the new firms which has developed since the war, and the fact probably accounts for the designers having incorporated the novel features, to which we have referred, which mark a departure from standard two-stroke practice. Among other improvements, we may mention the fact that the split



One of the newcomers, the 3½ h.p. Alecto, fitted with an engine of 350 c.c.

The Olympia Show.—



A two-speed model chain and belt-driven Sparkbrook. This is one of the best finished two-strokes in the Show.

pattern big end is incorporated, the bearing being lined with white metal, which is by no means a usual feature in motor cycle construction. The machine is finished in dark blue with red bands, and was described in the issue of *The Motor Cycle* of July 31st, 1919, page 112. Since that date one or two minor improvements have been incorporated; the rear brake is now controlled by the rider's toe instead of the heel, and sensibly wide handle-bars have been fitted.

SPARKBROOK, No. 77.

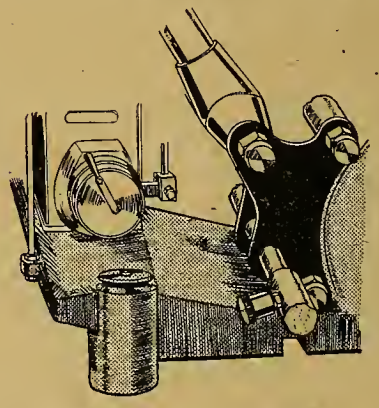
2½ h.p. single two-stroke MODEL: 70×70 mm. (269 c.c.); B. and B. carburetter; C.A.V. chain-driven magneto; two-speed gear; chain and belt drive; 26×2in. Dunlop tyres.

SPARKBROOK MANUFACTURING CO., LTD., Payne's Lane, Coventry.—For the forthcoming year, the Sparkbrook Co. have decided to market one main model only, and, by concentrating on this, their output, it is hoped, will be considerably increased. The Sparkbrook is one of the really high-class assembled two-strokes which are now obtainable. Fitted with a Villiers two-stroke engine and a two-speed countershaft gear of the company's own manufacture, it is an extremely neat and serviceable little mount. The detail work is excellent and the finish extremely taking. Few alterations have been made, but the following points are noticeable: The oil supply from a Best and Lloyd sight-feed is connected to a hollow engine bolt and passes to the crank by this means. A very serviceable and stoutly constructed heel brake operates a shoe inside the V of the belt rim, and thus the shoe does not get in the way of the rear wheel when the latter has to be detached. The stand also has been somewhat improved, and neat aluminium footboards with serviceable heel plates are fitted. Besides the two-speed model, a single-gear type is also shown, and this is exceptional, in that a countershaft is fitted, and a chain and belt transmission used. In both these models, the two-speed or the countershaft, as the case may be, is attached to a special lug by means of a single large diameter bolt, which, besides serving as a fixing, is utilised as a method of lubrication, being fitted at the top with a large oil cup. Touring and sporting models of each of the above types are staged complete.

REX, No. 55.

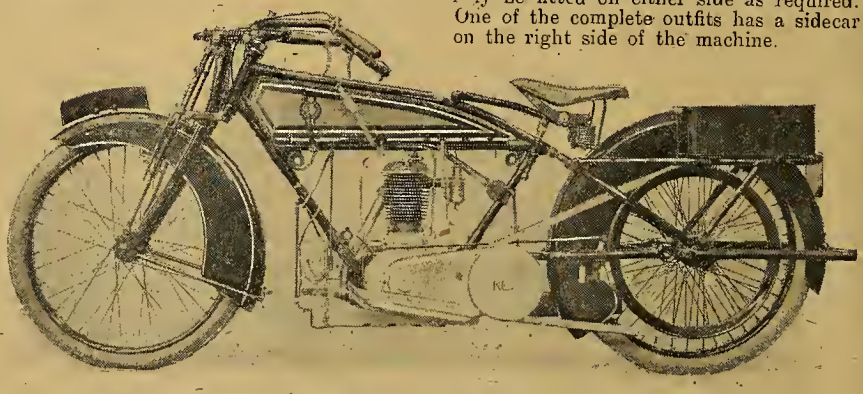
4 h.p. single four-stroke MODEL 77: 84.5×98 mm. (550 c.c.); side-by-side valves; Amac carburetter; M-L chain-driven magneto; Sturmey-Archer three-speed gear, chain and belt drive; 28×2½in. Dunlop tyres.

REX MOTOR MANUFACTURING CO., LTD., Earlsdon, Coventry.—The Rex will long remain in the memory of old motor cyclists as one of the pioneer makes which did so much to develop the industry at a time when it appeared to be in danger of becoming extinct by the apathy of manufacturers generally concerning motor cycles some fifteen years ago. The Rex reputation generally has been bound up more with twin-cylinder machines than with those of the single-cylinder type, and though the non-appearance of the twin-cylinder Rex at the Show has no doubt been a source of disapointment to twin enthusiasts, the new single-cylinder model should, on the other hand, go far to revive the Rex name in the world of first-class motor cycles. Unlike the majority of single cylinders the new Rex engine has mechanical lubrication carried out more or less on car lines. A large sump, which also forms a platform for the magneto, is part of the crank case, in which three pints of oil are carried, and this, in conjunction with the auxiliary oil compartment in the main tank, provides lubricant for approximately 500 miles. A worm-driven pump is fitted inside the sump, and may be removed complete, if necessary, by detaching six screws. Lubrication, in fact, appears to have been closely studied throughout the machine, and not least amongst the features of the framework may be mentioned the use of steel lugs and the large lubricator on the steering head. This forms part of the head lug, and has a duct to the lower ball race. The brake pedal lever also has a means of lubrication in the form of a screw-down grease cup, and the bearing which supports the separate belt wheel



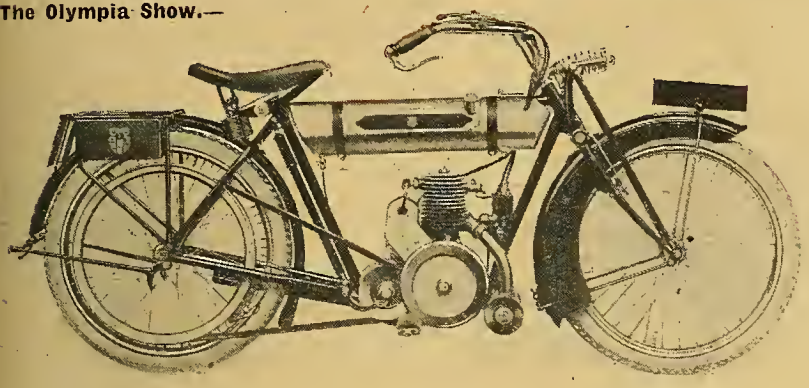
The new oil sump on the Rex outfit

is lubricated by means of a similar grease cup located at the extremity of the outside back stay. Large lubricators are also fitted to the wheels. A noteworthy point in the engine is that it is fitted with an aluminium alloy piston of the lantern pattern, and the roller bearing big end and mainshaft are supported on each side by a large sized ball bearing, the driving sprocket being further supported by a bearing of the roller type. The framework of the new Rex embodies integral sidecar lugs, which are of the parallel type and arranged so that the sidecar may be fitted on either side as required. One of the complete outfits has a sidecar on the right side of the machine.



The 4 h.p. double-purpose Rex single-cylinder machine, which is notable for its long wheelbase.

The Olympia Show.—



The 2¼ h.p. Junior Triumph two-stroke.

TRIUMPH, No. 96.

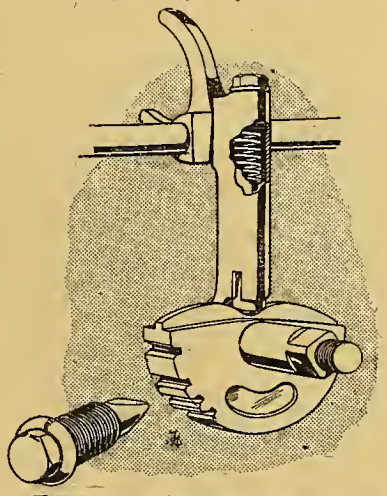
4 h.p. single four-stroke MODEL: 85×97 mm. (550 c.c.); side-by-side valves; Triumph carburetter; M-L chain-driven magneto; three-speed sliding gear; chain drive; 26×2½in. tyres.

TRIUMPH CYCLE CO., LTD., Coventry.—So far as the Show is concerned, all the four-stroke models seen on the Triumph stand are new, for it will be remembered that the 4 h.p. countershaft model, so extensively used by our D.R.'s in all parts of the world, was not to be seen when Olympia was last held. The two-stroke is familiar, and remains unaltered. The real feature of interest on this stand, however, is the new all-chain-driven model, known as the S.D. type, which so distinguished itself as a sidecar machine in the recent Six Days Trial. The general outlines of this machine closely follow those of the 4 h.p. chain-cum-belt model, and here for the first time we see a Triumph fitted with all-chain transmission, which has, as might be expected, been designed in a neat and yet workmanlike manner, in keeping with the Triumph standard.

The three-speed gear box is one of the Triumph Co.'s own design and manufacture, and is of the sliding pinion and dog type. An interesting point in the construction of the gear box is that no splines or keys are used for carrying sprockets, etc., these being held by projecting dogs formed on the main shaft. A quick thread shock-absorbing device is introduced, and is mounted on the gear box main shaft. The clutch is of a multi-plate friction type running in oil, and is controlled by means of Bowden control from the handle-bars. Simplicity throughout is undoubtedly the chief feature in all the Triumph models, even to the internal details. For instance, both valves are actuated from the one timing wheel; the well-known Triumph spring fork with its one moving joint is retained until the later enclosed spring type with its neat damping device can be manufactured in quantity. The general clean design of the machine is continually impressed upon one when examining this exhibit.

Both the 4 h.p. models are seen fitted to Gloria sidecars, which have been re-designed, having a spring wheel suspension which quite insulates the chassis from road shocks. For the first time sidecar lugs are incorporated in Triumph frames.

2¼ h.p. single two-stroke MODEL: 64×70 mm. (225 c.c.); Triumph carburetter; M-L chain-driven magneto; two-speed gear; chain and belt drive; 24×2¼in. tyres.



To prevent damage to gears when changing, a spring device is interposed between the control and striking fork in the latest Triumph gear box.

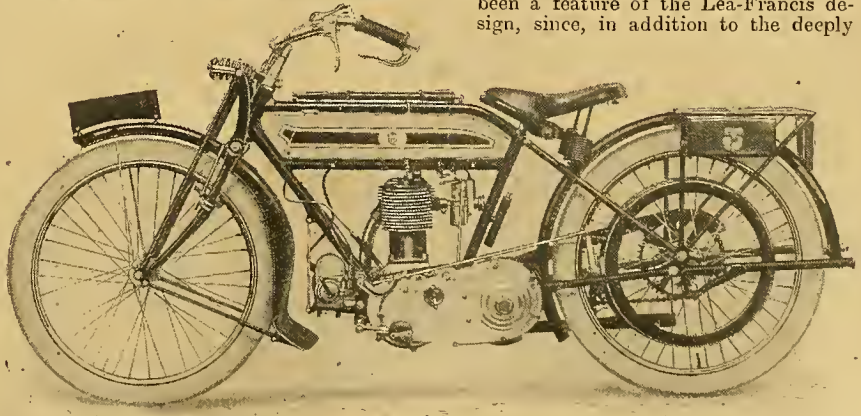
The Junior Triumph still has its two-speed gear box operated by handle-bar control—a point which must appeal to all beginners or nervous riders. Lubrication is by petroil, a small valve operated by a plunger allowing the oil to be removed from the oil tank for admixture with the petrol.

LEA and FRANCIS, No. 50.

3½ h.p. V twin four-stroke MODEL: J.A.P.; 70×64.5 mm. (494 c.c.); side-by-side valves; Amac carburetter; Thomson-Bennett chain-driven magneto; two-speed sliding gear; chain drive; Palmer Cord 26×2¾in. tyres.

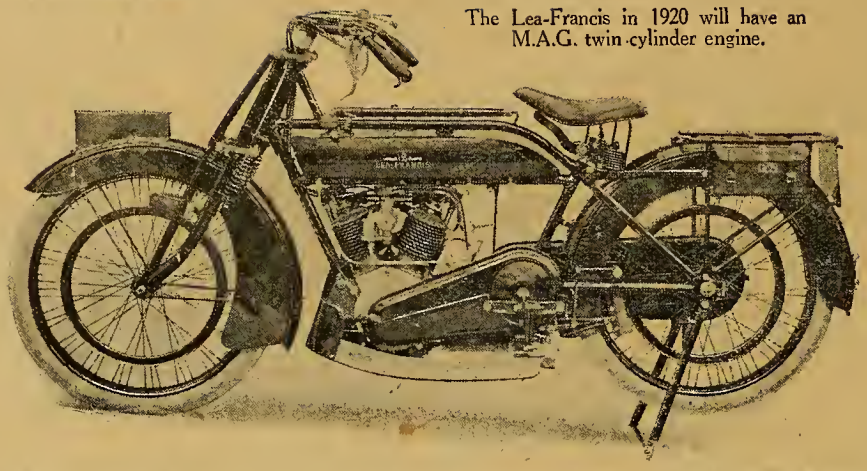
LEA AND FRANCIS, LTD., Lower Ford Street, Coventry.—The reappearance of the Lea-Francis motor cycle after a somewhat prolonged absence from the public view will be gratefully noticed by all interested in an essentially all-weather and reliable solo mount. In the first place, the makers adopted a design at once neat in outline, and tending to secure the above-mentioned qualities. Taken generally, the machine does not deviate to any great extent from the original layout, which proved its worth in the big trials of 1913 and 1914. Dealing first with the J.A.P.-engined model, the power unit is the 3½ h.p. twin, embodying the oiling system associated with that make, adjustable tappets, and a simple external exhaust lifter. The magneto is situated behind the engine, and is driven from the mainshaft, consequently the contact breaker is easily accessible on the off side. Transmission from engine to the detachable back wheel is by chain, through a two-speed constant mesh gear box, which is housed in a cylindrical bottom bracket housing. The final drive passes over to the right of the machine, and is enclosed in a compact case of the same depth from end to end. A multi-plate clutch is fitted with an ingenious arrangement of separate handle-bar and foot controls. Brakes on both front and rear wheels consist of V-shaped pads working inside dummy belt rims. This type of brake, as applied to front wheels, was originally introduced by the Lea-Francis firm, and a glance round the Show indicates how largely this system has been followed by other designers. A large silencer, connected to the cylinder by flexible exhaust pipes, accounts for the silence of this machine on the road.

Excellent mudguarding has always been a feature of the Lea-Francis design, since, in addition to the deeply



A newly designed three-speed gear and all-chain transmission are the chief alterations on the 1920 model 4 h.p. Triumph.

The Olympia Show.—



The Lea-Francis in 1920 will have an M.A.G. twin-cylinder engine.

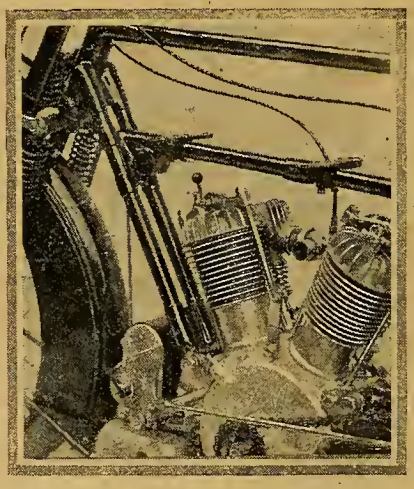
valanced front guard, there is a screen across the front of the footboards which adequately protects the engine and the feet of the rider. Details worthy of attention are the neat inspection holes in the chain cases covered by small discs (similar to contact breaker covers), held in place by flat springs, the metal tubes through which the high-tension wires are led, and the method of adjusting the front chain by rotating the gear box in its shell. The points just mentioned serve to show the care displayed by the designer in adapting the machine to the requirements of the practical motor cyclist.

The second model is engined with the V twin M.A.G. unit. This has overhead inlet valves, which, with their cages and tappet rods, are completely enclosed. By this arrangement, the whole valve mechanism may be lubricated by oil spray from the crank case, and this causes the engine to be noticeably free from the mechanical noise and clatter often associated with overhead inlet valves. On general lines, the specification follows that of the model already described.

BRADBURY, No. 52.

2¾ h.p. single four-stroke MODEL: 74.5×80 mm. (349 c.c.); side-by-side valves; B. and B. carburetter; magneto, chain driven; two-speed constant mesh gear; chain-cum-belt drive; 26×2¼in. tyres.

BRADBURY AND CO., LTD., Wellington Works, Oldham.—Undoubtedly one of the most attractive solo propositions in the Show of the single-cylinder type is the new 2¾ h.p. Bradbury. The engine is of a size which a large number of riders consider ideal for solo work, *i.e.*, 350 c.c., and the new Bradbury reminds one very much of a 3½ h.p. countershaft model slightly cut down in engine size. Everything on the machine appears to be of excellent quality and finish, and is produced throughout in the Bradbury factory. The frame is of duplex construction at the front, and embodies the commendable Bradbury feature of forming the crank case as a nucleus of the frame. The main portion of the crank case is a malleable iron casting, and upon the side is bolted an aluminium cover plate embodying the timing case and the inner side of the magneto chain case. This form of construction provides rigidity, eliminating, as it does, the use of engine plates. From the seat tube to the rear of the gear box bracket an auxiliary member is fitted,



Note the duplex down tube and detachable tank platforms of the 1920 6 h.p. Bradbury.

which forms a small triangle to which the gear box is attached. The tank, finished in the growingly popular gold and black, has rounded sides, and tapers to the rear. The two-speed gear differs from the majority, inasmuch as the cork inset clutch is embodied in the engine pulley. A kick-starter is fitted on the right side of the machine, as in the case of the 6 h.p. model. Druid Mark II. forks, Brooks saddle, aluminium footboards, and the usual tool-box are included in the specification. The price of this mount is £85.

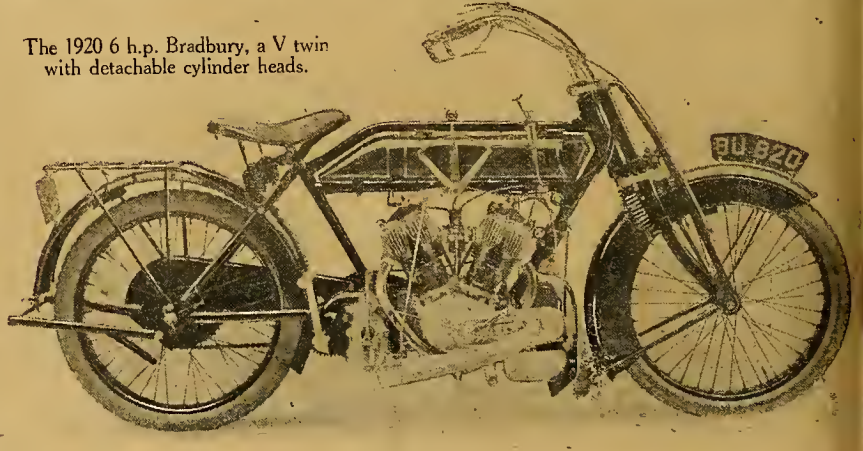
6 h.p. V twin four-stroke MODEL: 74.5×86 mm. (750 c.c.); side-by-side valves; B. and B. carburetter; magneto, chain driven; three-speed sliding gear; chain drive; 650×65 mm. Dunlop tyres.

The leading Bradbury mount is the 6 h.p. V twin, much after the lines of the pre-war model, but improved in many details. Detachable cylinder heads are used, secured by two long bolts fore and aft of the cylinder and a yoke which bears on the cylinder head at two points. The adjustable tappets have large heads, and are offset to the valve stems. Installed behind the engine is a three-speed countershaft gear box, which has enclosed kick-starter mechanism. The machine presents a workmanlike appearance, the efficient magneto shield and large aluminium footplates being worthy of special mention. Unlike most similar machines, both the primary and secondary chains are protected only by a top guard, a point of design favoured by many riders who have suffered a chain breakage. The hub of the rear wheel is of the quick detachable type, and when removed the transmission and internal expanding brake remain undisturbed. A Grindlay double sprung sidecar is a standard attachment used by Messrs. Bradbury and Co. on this model, and the complete outfit will make a wide appeal. The price of the machine without sidecar is £122 10s.

4 h.p. single four-stroke MODEL: 89×89 mm. (554 c.c.); side-by-side valves; B. and B. carburetter; T.B. magneto, chain driven; three-speed sliding gear; chain drive; 26×2¾in. Dunlop tyres.

This model was one of the favourite single-cylinder machines for sidecar work before the war, and it is not surprising that Messrs. Bradbury and Co. have reintroduced it for the 1920 season. It may be recalled that it was on this machine that Mr. Hugh Gibson put up some wonderful performances at a time

The 1920 6 h.p. Bradbury, a V twin with detachable cylinder heads.



The Olympia Show.—

When the general public was doubtful concerning the suitability of the type for sidecar work. Very few alterations have been made in the model shown at Olympia, and consist chiefly of refinements in detail. The tank, like the 2¾ h.p. model, has rounded sides and tapers to the rear. The equipment is similar to that of the smaller model, only, of course, everything is so much larger. As on the twin model, the rear brake is of the internal expanding type.

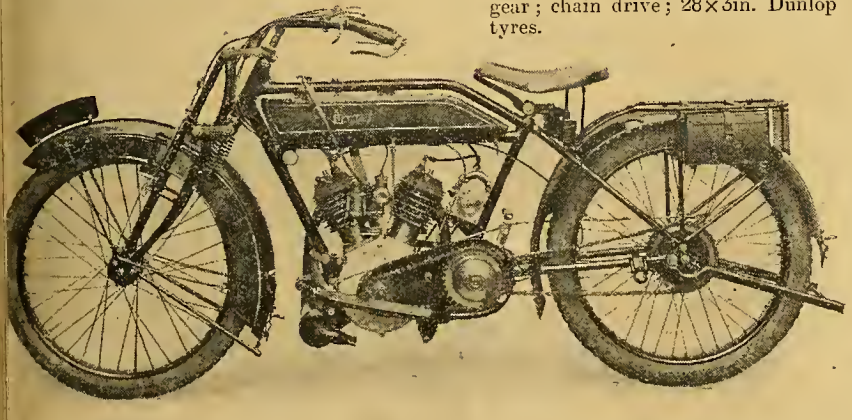
DOT, No. 113.

8 h.p. V twin MODEL: 85.5×85 mm. (976 c.c.); side-by-side valves; Amac carburetter; E.I.C. chain-driven magneto; three-speed sliding gear; chain drive; Dunlop 26×3in. tyres.

DOT MOTORS, 38, Ellesmere Street, Hulme, Manchester.—A noticeable feature of this sidecar model is the design and generous dimensions of the pedal-operated rear wheel brake. It is of the internal-expanding type with a drum 8in. in diameter and 1¼in. wide; the adjustment is external and peculiarly accessible. The machine is shown attached to an exceptionally roomy sidecar, the upholstery of which is in imitation pigskin, while the outfit as a whole, like the other exhibits on this stand, is finished in red. The sidecar has a capacious box in the bulbous rear portion with a large lock-fitted lid. The suspension is by means of C springs fore and aft, while the four stays for attachment are brought to three points on the frame of the cycle, the two central tubular members, leading from the lower tube of the chassis, being carried to a lug below the saddle tube clip. All the lugs are integral with the frame of the machine, which is fitted with Saxon spring forks. The mudguarding should be particularly effective, for the front guard is 5¼in. wide, the sidecar wing 13in., and the driving wheel guard 6¾in., including the flat side extensions.

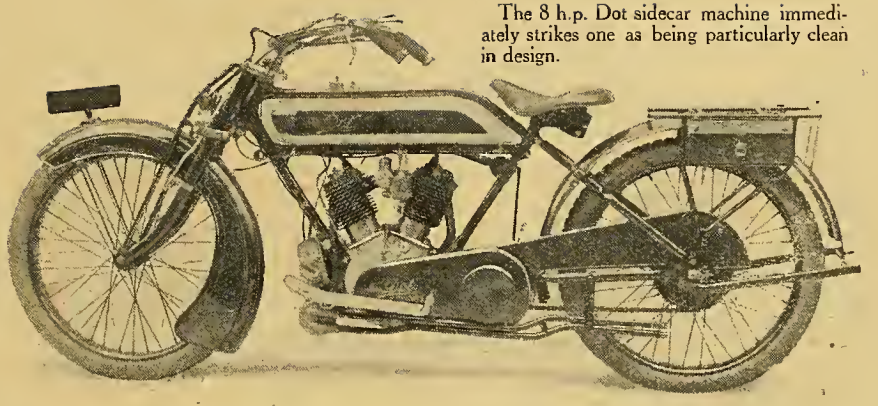
2¾ h.p. single MODEL: 70×76 mm. (292 c.c.); side-by-side valves; Amac carburetter; two-speed constant mesh gear; 26×2in. tyres.

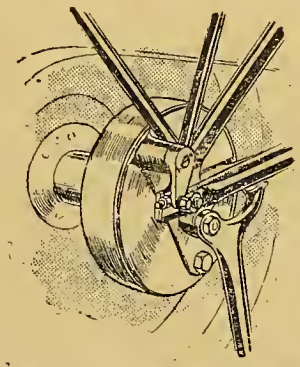
Two examples of this solo model are shown, one with semi-T.T. and the other with upturned handle-bars. The latter has an Albion gear with kick-starter and hand-controlled clutch; both have Saxon spring forks. The rear brake, pedal-operated, actuates within the belt rim, and is provided with a pivot pin anchored in a slotted lug so that the most effective angle of pad can be maintained when belt adjustments must be made; this slotted fixture is additional to the usual adjustment on the actual rod between pedal and shoe.



The 3½ h.p. James—a solo twin of 500 c.c.—with the Renold chain guard removed.

The 8 h.p. Dot sidecar machine immediately strikes one as being particularly clean in design.



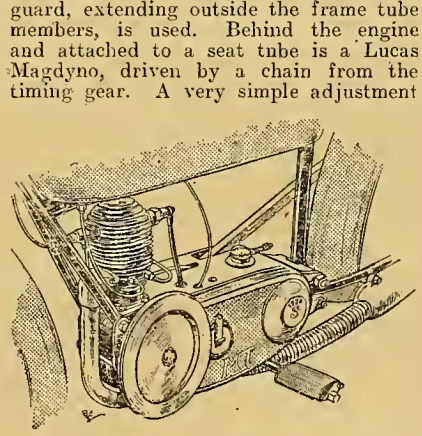


The 1920 8 h.p. Dot has an internal expanding brake in the rear hub.

JAMES, No. 71.

5·6 h.p. V twin four-stroke MODEL: 70×76 mm. (662 c.c.); side-by-side valves; Amac carburetter; chain-driven magneto; three-speed gear; chain drive; 28×3in. Dunlop tyres.

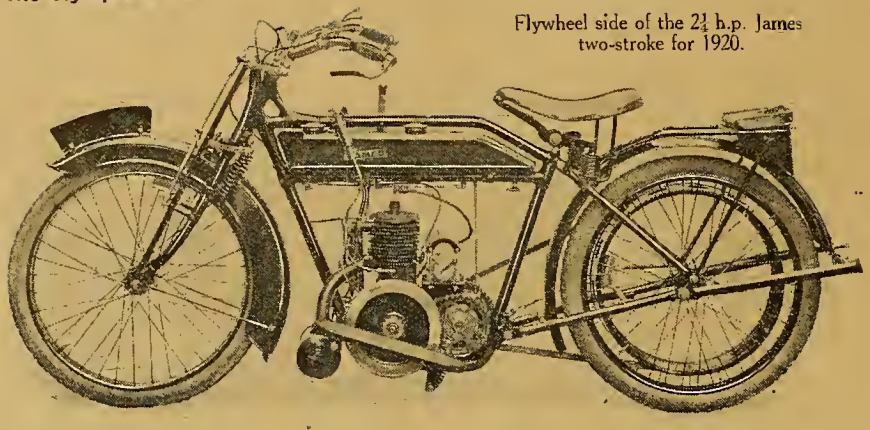
JAMES CYCLE CO., LTD., Greet, Birmingham.—The James Cycle Co. stage several interesting models, but the 5·6 h.p. will be dealt with first, as it is the most recently produced. The engine is a 50° twin-cylinder, having the usual distinctive James radiating fins. Transmission from the engine to the gear box and thence to the rear wheel is by totally enclosed chains. The gear box is a special three-speed countershaft gear of the firm's own manufacture, and the rear wheel has an internal expanding brake, operated by a pedal on the left-hand side of the engine. The clutch also is operated by a pedal on the opposite side. The front mudguard is fully valanced, and a very wide rear mudguard, extending outside the frame tube members, is used. Behind the engine and attached to a seat tube is a Lucas Magdyno, driven by a chain from the timing gear. A very simple adjustment



On the Metro-Tyler the magneto and gear box are totally enclosed.

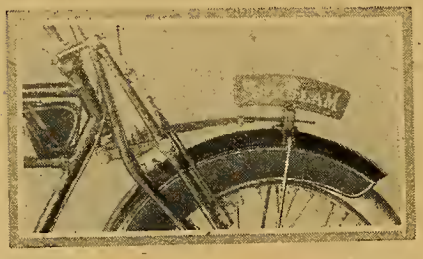
is provided for chain tension. Druid type spring forks are used. Attached to these machines is a fine example of James *de luxe* sidecar, finished in brown to match the tank, and attached to the cycle at four points. This sidecar is fitted with an extremely neat and ingenious windscreen. The main screen is of glass, having hinged celluloid side screens. The whole screen automatically folds away as the sidecar door is opened, so as to admit of an easy entry. Once inside, the passenger can, if desired, utilise a fabric cover for protection. This cover may be rolled up to the little dashboard, or, if no passenger is carried, can be used to cover the seating accommodation. A similar experimental model

The Olympia Show.—



Flywheel side of the 2¼ h.p. James two-stroke for 1920.

is shown on the stand, the chief alteration being a somewhat larger engine of 750 c.c., having enclosed valve springs, a larger brake, and a very neatly enclosed kick-starter. This last-mentioned feature is standard on all James models. It must be clearly understood that this model is purely experimental, and that no manufacturing programme has been laid out, so that enquiries from the public at the present time will be useless. The larger type of machine is also fitted with Brampton duplex forks.



A laminated leaf spring is used in the fork of the 1920 3½ h.p. Sunbeam.

4¼ h.p. single-cylinder four-stroke MODEL: 86×103 mm. (600 c.c.); side-by-side valves; Amac carburetter, Thomson-Bennett gear-driven magneto; three-speed gear; chain drive; 28×3in. tyres.

The 4¼ h.p. James has given satisfactory service for some years past, and its performance with a sidecar in the recent Six Days Trials was extremely creditable. The transmission of the James big single is similar to that already described on the 5-6 h.p. model. The James big single is primarily designed for sidecar service, and the frame incorporates all the necessary lugs for sidecar attachment. A decompressor is included in the timing gear to facilitate starting, and throughout the machine is solidly and sensibly constructed. One feature which James riders will miss is the use of Timken roller bearings in the wheels. These bearings are necessarily omitted owing to the impossibility of obtaining delivery, but a very satisfactory ball bearing has been evolved, in which unusually large balls are used, and this type has shown itself an excellent substitute in every way.

3½ h.p. V twin four-stroke MODEL: 64×77 mm. (500 c.c.); side-by-side valves; Amac carburetter; Thomson-Bennett chain-driven magneto; three-speed gear; chain drive; 26×2¼in. Palmer tyres.

Primarily designed for solo work, the 3½ h.p. twin James is an extremely handy little mount. Its performance in the T.T. as regards speed will be remembered by keen motor cyclists. It is a smaller replica of the 5-6 h.p. already described, though perhaps it would be more correct if it were called a prototype. This machine is one of the few motor cycles in the Show which are purely designed for high speed solo work, the makers having no intention of it being used for sidecar purposes. It is an extremely fine example of its type, and will be of considerable interest to the sporting type of rider. In the case of the 3½ h.p. a multi-plate clutch is controlled from the handle-bar.

2¼ h.p. single-cylinder two-stroke MODEL: 64×70 mm. (226 c.c.); Amac carburetter; Thomson-Bennett chain-driven magneto; two-speed gear; chain-cum-belt drive; 26×2½in. Dunlop tyres.

The two-stroke James is another model which performed very creditably in the Six Days Trials. The engine is the usual three-port type, but the gear is somewhat unusual, in that there are two chains from the engine, which are connected as desired to the main camshaft by dog clutches, whence a belt drive transmits the power to the rear wheel. Both the engine aud gear are mounted within a simple loop frame.

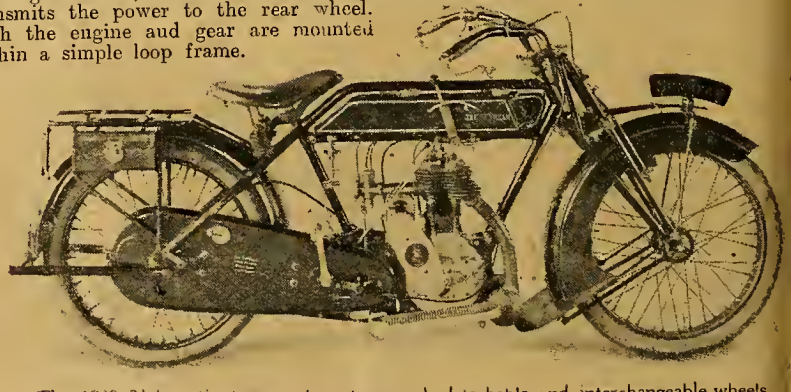
SUNBEAM, No. 49.

3½ h.p. single four-stroke MODEL 85×88 mm. (499 c.c.); side-by-sid valves; B. and B. carburetter E.I.C magneto, chain at rear three-speed countershaft gear chain drive in oil bath; 650×6 mm. tyres.

JOHN MARSTON, LTD., Wolverhampton —There would be much heartburning i by any chance Messrs. John Marston Ltd., elected to abandon the manu facture of the popular 3½ h.p. Sun beam. For some time it has bee the Rolls-Royce of solo motor cycles i the opinion of a large coterie of single track enthusiasts, and the rumour curren for some time that the well-known singl would be replaced by a similar machin of larger capacity was not received wit acclamations, as it was considered tha to enlarge the capacity would be to mak it more suitable for sidecar use than fc solo riding. The most drastic alteratio is the adoption of a new type of sprin fork, which embodies a laminated le

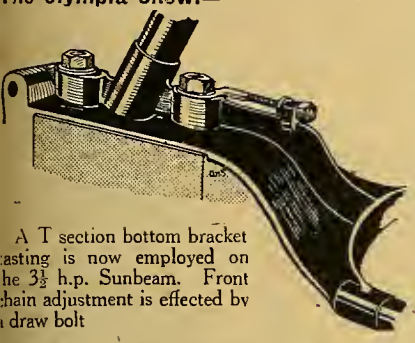
The seat lug of the 3½ h.p. Sunbeam frame has the rear stays brazed in. An expander-bolt and cone secures the saddle-pillar, and a special lug is provided for the sidecar attachment.

spring in a very neat manner. The sprir approximately is 12in. long, and tl inner end is secured by four bolts and cross plate to a platform, which forms tl bottom pair of links of the fork. Tl outer end of the spring slides betwe two rollers carried in a bracket fixed the forward extension of the guard, an



The 1920 3½ h.p. Sunbeam, which has quick detachable and interchangeable wheels and a new type of laminated spring fork.

The Olympia Show.—



A T section bottom bracket casting is now employed on the 3½ h.p. Sunbeam. Front chain adjustment is effected by a draw bolt

incidentally, also supports the front number plate. Other improvements are connected chiefly with details not immediately apparent. The wheels are now detachable and interchangeable, and sidecar lugs are integral with the frame. The wheels are 650×65 mm., and improved mudguards are fitted, both front and rear being exceptionally wide. Improved stand clips, screw adjustment for the gear box, and a new pattern cylinder casting are also alterations from the 1919 machine. As in previous models, the well-known Sunbeam oil bath cases are used for the transmission. The sidecar chassis for this model is a new design of the Sunbeam Co., and is of the underslung type, having the wheel axle supported at both sides. On the inside the wheel spindle is secured by an upright member from the longitudinal tube of the chassis, but on the outer side two tubes from the front and rear of the wheel are inclined, and meet at the wheel spindle. The sidecar body is low, but roomy both as to length and width. It is of metal construction and well upholstered. The guard of 7in. section is secured to the body. The finish is made to match the black and gold Sunbeam motor cycle.

8 h.p. four-stroke MODEL : 85.5×85 mm. (976 c.c.); side-by-side valves; Amac carburetter; Magdyno; three-speed countershaft gear; chain drive; 28×3in. Dunlop tyres.

For 1920 the 8 h.p. Sunbeam very closely follows the lines of the 1919 model, which in truth would be very difficult to improve. Engined with an 8 h.p. J.A.P. power unit, fitted with a Sunbeam three-speed gear box, and having its chain drive enclosed in oil bath cases, this machine is a leading example of V twin motor cycles. The black and gold finish which has characterised Sunbeam productions since their inception (and, incidentally, is being copied) is retained, as are the leg shields, rubber-faced aluminium footboards, and Brampton type forks.

On one of the models exhibited the Lucas Magdyno is fitted, together with Bowey speedometer and the new horn of the same accessory firm.

NORTON, No. 115.

3½ h.p. single four-stroke MODEL : 79×100 mm. (490 c.c.); side-by-side valves; B. and B. carburetter; C.A.V. chain-driven magneto; belt; Dunlop 26×2¼in. tyres.

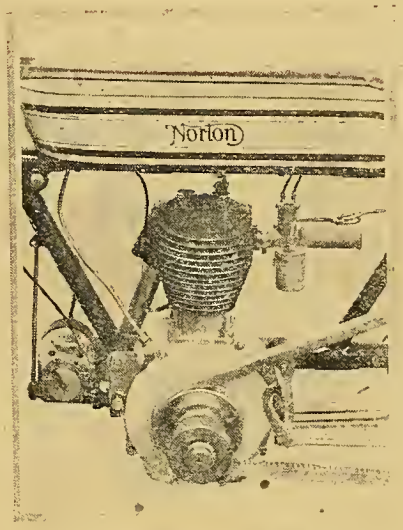
NORTON MOTORS, LTD., Phillips Street, Bolton, Birmingham. — Both Norton machines (there are really three of the 3½ h.p. belt and chain-driven types, and viewed as distinct) are designed to be capable of use with sidecars, but this model with a single-speed belt drive is obviously intended for solo work. For passenger use all-chain drive is recommended, but the belt-driven machine can, if required, be fitted with a Philipson pulley or a Bradbury gear. Full T.T. bars are standard. This machine is generally known as the 3½ h.p. speed Norton, and in one form is equipped as a track machine, every individual model of which has been certified to exceed 75 m.p.h. Druid forks are used, and a pedal-operated rear brake with the pad operating within the V of the belt rim.

3½ h.p. single four-stroke MODEL : 79×100 mm. (490 c.c.); side-by-side valves; B. and B. carburetter; C.A.V. chain-driven magneto; all-chain drive; Sturmey-Archer gear box; three speeds; Dunlop 650×65 mm tyres.

This model is fitted with the same frame as that used for the Big Four Norton, and provides a 6in. ground clearance for the crank case. T.T. bars are standard, and also a tank holding two gallons of petrol and three pints of oil. As with the speed models, a straight-through exhaust pipe is fitted with a capped and drilled extension piece. The rear brake on all Nortons is now adjusted by rotating a left and right-hand threaded coupling rod, which is of hexagonal section. The front chain adjustment is provided with a draw-bolt that applies to the anchoring studs of the gear box, this draw-bolt being neatly arranged below the bracket with the head accessibly placed at the rear end. Similarly neat and precise adjustment is provided for the magneto chain. On this model, and on the Big Four, the brake pad applies to a special rim on the rear wheel. The frame lugs are exceptionally long, that from the head in which the down tube is telescoped, for example, being a full six inches in length.

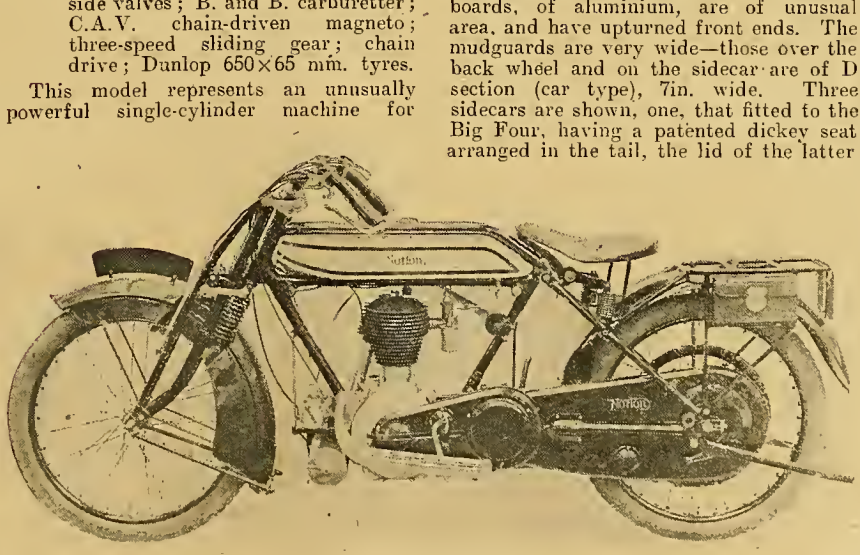
4 h.p. single four-stroke MODEL : 82×120 mm. (633 c.c.); side-by-side valves; B. and B. carburetter; C.A.V. chain-driven magneto; three-speed sliding gear; chain drive; Dunlop 650×65 mm. tyres.

This model represents an unusually powerful single-cylinder machine for



3½ h.p. T.T. Norton power unit of 79 × 100 mm. It has a Philipson governor pulley

sidecar work, for, although it is termed 4 h.p., it develops over 11 h.p. at 2,000 r.p.m. The frame has integral lugs with taper holes for sidecar attachments at four points; a noteworthy and commendable feature of the tube arrangements is shown in the triangulated front members, which provide an unusually stiff connection and give evidence of careful consideration of the stresses imposed. The standard type of stand for all models has three positions, *i.e.*, dropped for supporting the machine as usual out of use, and a middle state, where it is merely pushed on to the ground behind the wheel and is able then to support a solo machine by the presence of a powerful spring that holds the stand normally in or out of use. The chain drive on this model is completely enclosed, but the rear portion has a large and easily removable end that allows the wheel to be detached in a few minutes. The footboards, of aluminium, are of unusual area, and have upturned front ends. The mudguards are very wide—those over the back wheel and on the sidecar are of D section (car type), 7in. wide. Three sidecars are shown, one, that fitted to the Big Four, having a patented dickey seat arranged in the tail, the lid of the latter



4 h.p. three-speed Norton with enclosed chain transmission

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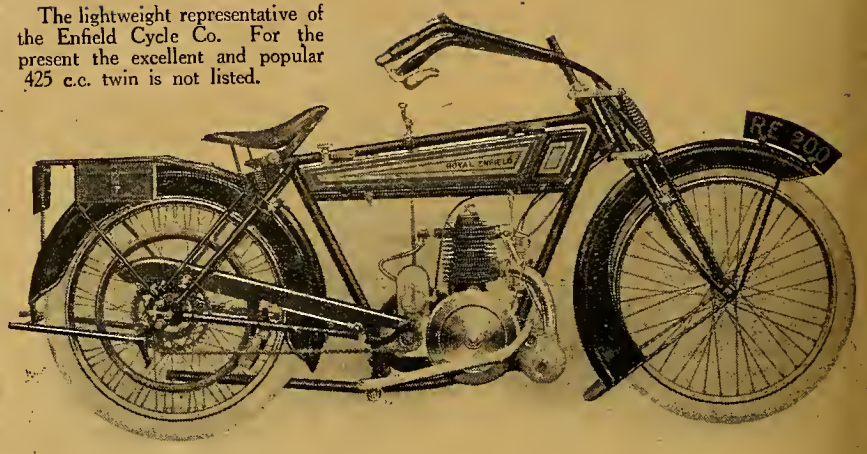
forming the back-rest of a seat capable of accommodating a child up to ten or twelve years of age. When not in use as a seat the cushion drops down and the compartment forms a large space for luggage, petrol tin, etc. All sidecar mudguards are fitted to the body, and are, therefore, sprung. The sporting sidecar attached to a 3½ h.p. chain model somewhat belies its title by affording a degree of comfort and luggage space unusual on sports models. But the weight is low, nevertheless, and the reduction of wind resistance has been carefully considered. The *de luxe* sidecar cannot fail to attract attention and favourable comment, if only by reason of its hinged back, which allows a suit case to be carried with room to spare for a petrol tin, while a long space running the full length under the floor of the body will hold golf clubs, fishing rods, or a gun case.

The lightweight representative of the Enfield Cycle Co. For the present the excellent and popular 425 c.c. twin is not listed.



ENFIELD, No. 72.

6 h.p. V twin four-stroke MODEL: J.A.P.; 76×85 mm. (770 c.c.); side-by-side valves; Amac (one-lever) carburetter; Thomson-Bennett chain-driven magneto; two-speed expanding clutch gear; chain drive; Palmer Cord 700×80 mm. tyres.

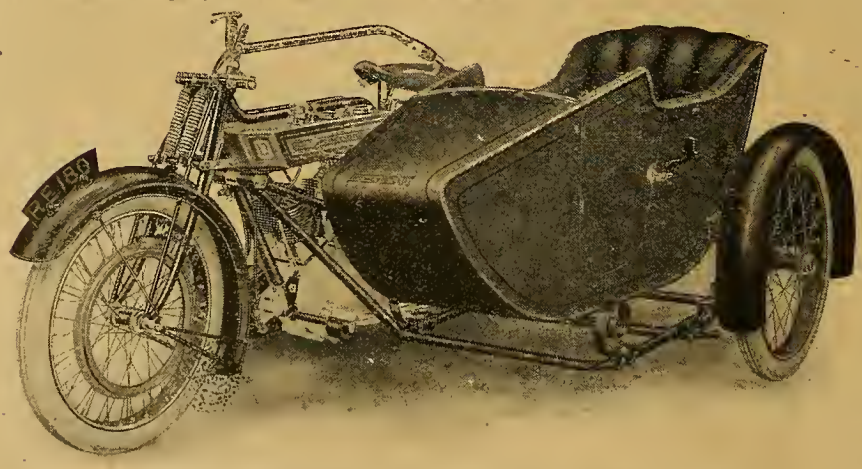
ENFIELD CYCLE CO., LTD., Redditch.—Not only in this country, but also in the Colonies, has the Enfield made for itself an enviable reputation. The company are specialising on two models—the 6 h.p. and the 2¼ h.p. The well-known 6 h.p. J.A.P. forms the power unit of the former, and the transmission is by the Enfield Co.'s own selective clutch gear, there being two chains from the engine to the countershaft with sprockets giving unequal ratios. Either of the sprockets may be clutched to the countershaft, driving the rear chain at will. In the hub lies a cush shock absorber. Quickly detachable wheels are used throughout the Enfield sidecar combination, and both front and rear wheels are fitted with dummy belt rims in which act internal V brake shoes. The tank holds a full two gallons of petrol and one and a half quarts of oil—a desirable feature in powerful sidecar machines. The Enfield Company was one of the first to adopt really wide mudguards extending well outside the forks and frame tubes. It has also clung throughout to handle starting. One of

A mud shield is fitted to the forward end of the Enfield footboards

the earliest firms to adopt special provision for dynamo lighting was the Enfield, and its 6 h.p. model is a very excellent example of a powerful sidecar mount, which has proved itself extremely popular throughout the world. As the sidecar is constructed specially for the motor cycle, one never sees the two main portions of the combination leaning inwards—a sight which is only too common on our roads. Lubrication is by sight feed drip.

2¼ h.p. single two-stroke MODEL 64×70 mm. (225 c.c.); Amac (one lever) carburetter; Thomson Bennett magneto, chain driven two-speed expanding clutch gear chain drive; Palmer Cord 24×2in tyres.

In contradistinction to the 6 h.p Enfield, the little 2¼ h.p. model is purely solo mount. It is of the three port two-stroke type, combining a light sloping top tube frame and good mud guarding, with the usual Enfield chain transmission and selective clutch two speed gear. A large aluminium silence is fitted in front of the engine, and the aluminium footboards are provided with small but effective leg shields. The miniature Enfield spring fork provide comfortable riding, so far as the front wheel is concerned. Many riders will miss the well-known 3 h.p. solo machine from the Olympia exhibit. The little machine, with its overhead inlet valves and mechanical lubrication, has long been an outstanding feature in the firm's productions. The Enfield company wisely avoid plated fittings in all their models where such can be avoided and their black finished workmanlike productions are most effective.



The 6 h.p. Royal Enfield and sidecar, a justly popular outfit noted alike for simplicity of construction and reliability in running.

RALEIGH, No. 64.

5·6 h.p. flat twin four-stroke MODEL 77×75 mm. (698 c.c.); side-by-side valves; Amac carburetter (one two-lever); gear-driven magneto spring frame; three-speed sliding gears built into countershaft; chain drive; Dunlop 650×65 mm. tyres.

RALEIGH CYCLE CO., LTD., Lenton Nottingham.—For the first time for many years the Raleigh Co. offer a motor cycle at Olympia. It is only to be expected that when this well-known cycle firm entered the motor cycle industry production would be of the highest order. The flat twin Raleigh is certainly one of the nicest designs in the Show, and,

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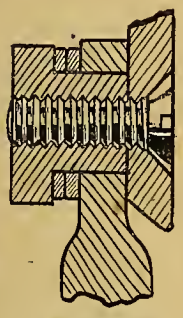
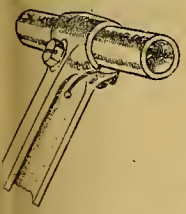
ike many opposed twins of the larger ize, the design is such that there are no gly gaps in the assembly. This result as been secured by a duplex frame, the ront cylinder being snugly disposed of n the triangle formed by the two front nbes, while immediately behind the rear ylinder the vertical duplex members of he frame are attached to a large casing vhich forms the main part of the gear ox. As the latter takes up very little oom, and the frame elements are imme- iately above it, no space is lost between he rear cylinder head and the mudguard f the back wheel; consequently a 5 .p. flat twin is obtained with a wheel- ase less than in many single-cylinder

The shock absorber on the 5-6 h.p. Raleigh flat twin engine-shaft sprocket.

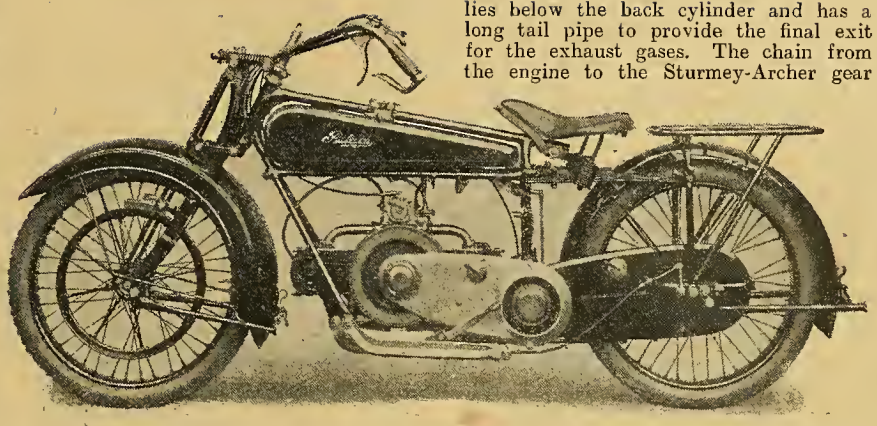


Rear stand bearing on the Raleigh flat twin; a spring washer prevents rattle.

achines of the conventional type. There re several specially striking features bout the engine, among which may be ientioned the large aluminium silencer. his is placed directly under the power nit, and extends for practically its entire ength, two very short exhaust pipes lead- ng into it. The method of supporting he engine in the frame, too, is interest- ng; it is carried on the horizontal members by means of two special clips and bolts. The Raleigh is also fitted with a spring frame, embodying two quarter-elliptic springs, carried from below the saddle to a loop which is pivoted on the back fork near the wheel centre. Those who have been troubled with rattling tool oxes and damaged tools through their rriage in pannier bags on the carrier their machine will note with pleasure e position of the Raleigh tool case ider the horizontal members of the ame. By placing the toolbag in this sition the contents are insulated from ad shock. The equipment in every way good, and includes wide guards and minium framed footboards with rubber- vered centres. The black finish with l and gold lines gives the machine a tinguished appearance.



The gudgeon-pins on the Raleigh flat twin are clamped into the connecting rod small ends.



The 6 h.p. Raleigh, a flat twin that will appeal to all because of its distinctive appearance quite apart from its praiseworthy mechanical features.

lies below the back cylinder and has a long tail pipe to provide the final exit for the exhaust gases. The chain from the engine to the Sturmey-Archer gear box lies outside the flywheel, and is covered by a cast aluminium case, the final chain being protected over the top run only. Brampton forks provide the front springing, and the magneto, which lies above the camshaft, is particularly accessible. Lubrication is effected by a simple hand pump, the oil being forced to a trough with overflows to each big end bearing; thence the oil passes to the crank case and oil well.

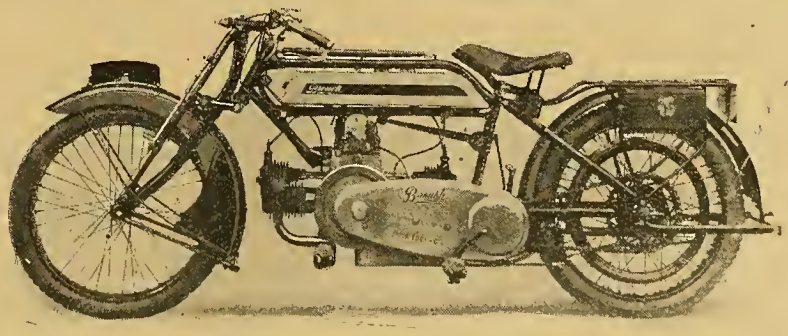
BROUGH, No. 69.

5 h.p. flat twin four-stroke MODEL: 70×90 mm. (690 c.c.); side-by-side valves; Amac carburetter; Lucas Magdyno, gear driven; Sturmey-Archer three-speed sliding gear; chain drive; Dunlop 650×65 mm. tyres.

W. E. BROUGH AND CO., Basford, Nottingham.—It is an undoubted fact that Messrs. Brough and Co., besides turning out a fast machine, have always succeeded in making their productions extremely taking to the eye. The latest model 5 h.p. Brough is no exception to this rule. In main features there are but few alterations since it was last described, but the cylinders are now cast with circular radiator fins. These fins have a series of grooves cut longitudinally at intervals so as to permit a current of air to reach all the required spots. The valves are disposed above the cylinders, and are closed by rather short but powerful springs, and the adjustable tappets are easy of access. One of the most striking features of the engine is its cleanliness, even after long use. This is largely accounted for by the fact that the crank case is made in one casting closed by a single cover plate which also forms the central portion of the induction pipe to which the carburetter is attached, thus the incoming mixture is warmed by contact with the engine. Two short stub pipes connect the cylinders to the carburetter. The two-part aluminium silencer

Plain bearings are used throughout the crankshaft, the main shaft bearings being fed from a point close to the outer end, and oil is screwed back by means of a special threaded bearing. The internal construction of the engine is most interesting. Messrs. Brough have determined that offset connecting rods are undesirable, and in consequence have preferred to offset the cylinders. An aluminium piston and hollow gudgeon pin are used and a special system of scraper rings to ensure equal lubrication to each cylinder. The workmanship of the internal parts is extremely fine, and all vital parts are ground to fine limits. Externally also the workmanship is good, and blind-ended nuts are used throughout the engine. It may be mentioned that it is possible to remove either cylinder without dismantling the engine, but as it is an extremely simple process to remove the whole power unit it is preferable to do this in the case of an overhaul.

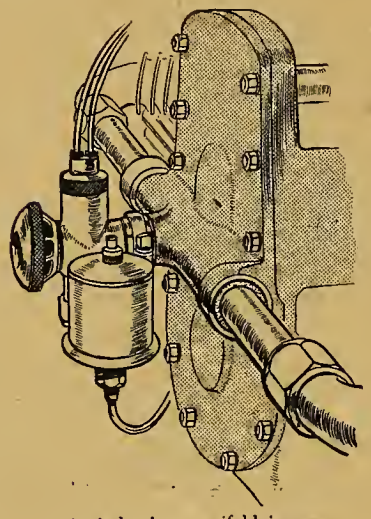
The new Brough is a fine example of a machine designed by a practical rider



The new 5 h.p. Brough flat twin, a model suitable for either solo or sidecar work

The Olympia Show.—

who willingly admits the enormous amount of knowledge of internal combustion engines that he has gained during the war, and embodied in his latest machine. The sidecar, which is specially built to suit the machine, has a very simple and strongly constructed frame, and a roomy well upholstered body is attached to the motor cycle at four points, and in addition to the leaf springing for the body the wheel is suspended on another leaf spring in a particularly ingenious manner. A large locker is formed in the back of the body.

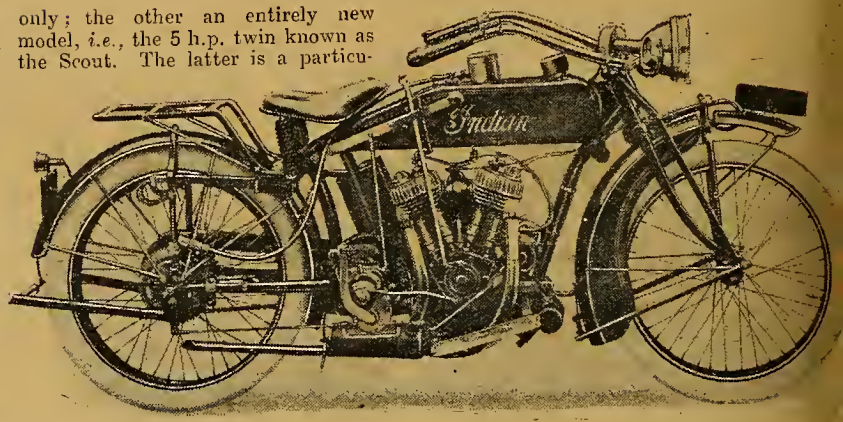


An induction manifold is cast in the timing gear cover of the 5 h.p. Brough.

INDIAN, No. 93.

5 h.p. V twin four-stroke MODEL: 70×78 mm. (596 c.c.); side-by-side valves; Schebler carburetter; gear-driven magneto; three-speed gear; transmission by spiral gears and chain; 26×2½in. tyres.

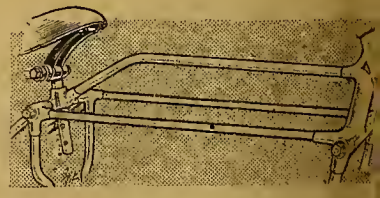
HENDEE MANUFACTURING CO., LTD., 366-368, Euston Road, N.W.1.—The Indian exhibit consists of two models—one the much appreciated 7-9 h.p. Powerplus, which is altered in detail only; the other an entirely new model, *i.e.*, the 5 h.p. twin known as the Scout. The latter is a particularly attractive mount for solo riders. Although at first glance this machine appears to differ from the 7-9 h.p. Powerplus in size only, a closer inspection reveals the fact that it is in reality different in many respects, an interesting point being the double tube frame, which enables an extremely low centre of gravity to be obtained and great strength withal. The front forks are almost exactly similar to the cradle pattern fitted to the Powerplus. The engine is a very substantial unit, and is almost a miniature of the big 7-9 h.p. Mechanical pump lubrication is provided, the oil being drawn from the front compartment of the ordinary two compartment tank. A three-speed gear box with a kick-starter is fitted, forming one unit with the engine, though it is possible to separate them. An interesting feature, especially from a sidecarist's point of view, is that practically everything which is ever likely to require attention, such as chains, kick-starter, and many other similar fittings, so frequently hidden away on the left, and, consequently, inaccessible when a sidecar is fitted, are all situated on the right-hand side. Contrary to usual American practice, the wheels are 26in. in diameter instead of 28in. This also helps to keep the riding position very low. Another somewhat unconventional feature is the exhaust outlet arrangements. No expansion box is fitted, the exhaust pipes being led from the cylinders into a somewhat larger pipe flattened the end.



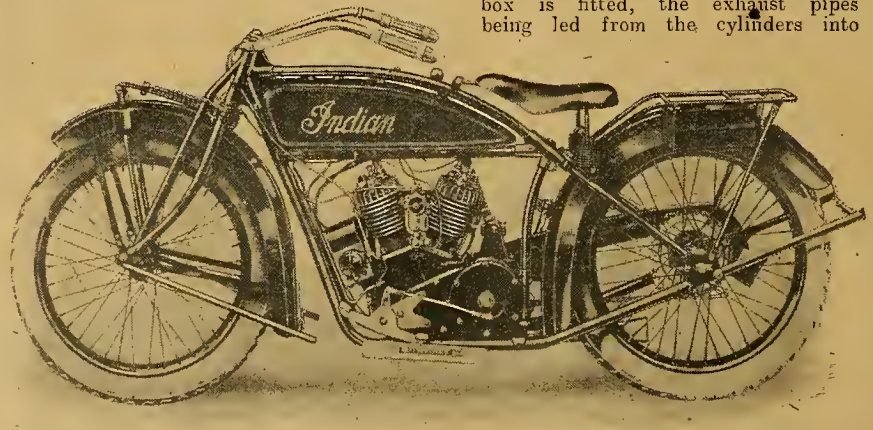
Complete electrical equipment is fitted on the 7-9 h.p. Powerplus model Indian.

7-9 h.p. V twin four-stroke MODEL 79×700 mm. (997 c.c.); side-by-side valves; Schebler carburetter; gear-driven magneto; spring frame three-speed gear; chain drive Goodyear 28×3in. tyres.

The 7-9 h.p. Powerplus is shown fitted to a very smart sidecar, and one is also to be seen solo. The points which differ from previous Indian practice are details only. For instance, the front fo connecting links are now drop forging and the bell cranks are much larger, t bearings of these are adjustable a fitted with large screw-down greaser There is also a greaser fitted for the lub cation of the rear spring frame hin joint.



Douglas frame tubes have been adopted o the new 8 h.p. Williamson.



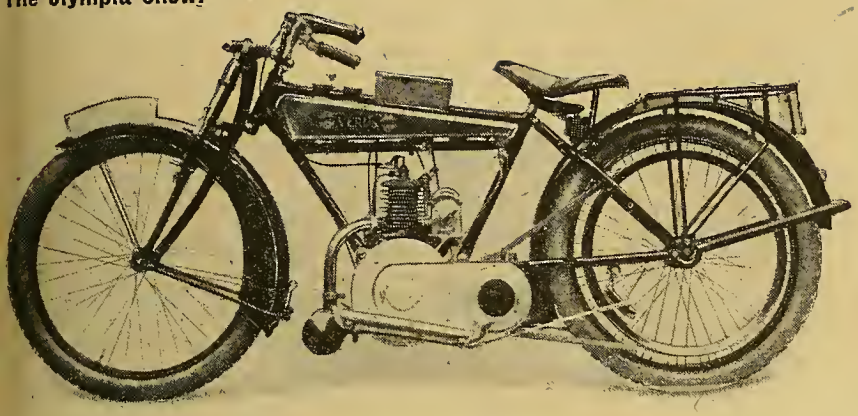
A solo model Indian, the 5 h.p. Scout, which has duplex loop frame without the rear springing associated with this make.

VERUS, No. 17a.

2¼ h.p. single two-stroke MODE 62×70 mm. (211 c.c.); Amac carb retter; E.I.C. magneto, ch driven; belt drive; Dunlop 24×2 tyres.

ALFRED WISEMAN, LTD., Glover Str Birmingham. — Although comparativ new to the motor cycle public, the Verus machines produced during 1 have performed consistently well in competitions this year. The Verus m its *début* in the London-Edinburgh r and was successful in securing for its ri a gold medal. Since then, howe Messrs. Wiseman have considerably tended their scope by the introduct of other models, two of which m their first public appearance at Olym The model exhibited is fitted with wheels, and the equipment, finish, general appearance are distinctly go

The Olympia Show.—



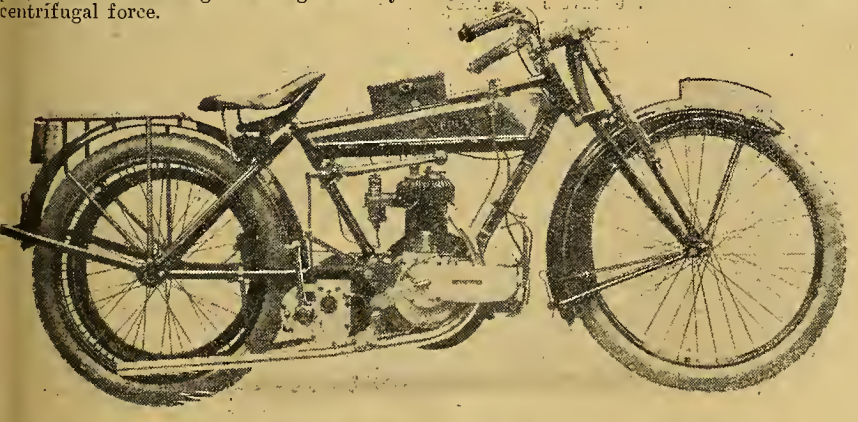
The 2½ h.p. two-stroke Verus, fitted with countershaft two-speed gear.

2½ h.p. single two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; E.I.C. magneto, chain driven; Burman two-speed gear; chain and belt drive; Dunlop 26×2½in. tyres.

A more elaborate two-stroke model is the 2½ h.p., as it is fitted with chain-cum-belt drive and two-speed gear box, provided with a kick starter. One of its most notable features is the single aluminium casting which completely encloses the flywheel and the chain. It can be detached by removing three bolts. It is a commendable idea, and efficiently protects the most important parts of the engine, as well as preventing mud from being splashed upon the rider by the "outside" flywheel. A by-pass from the compression release to the exhaust pipe is fitted, thus preventing any noise when the compression is released. Both in this engine and on the smaller one, to which we have just referred, the lubrication is carried out in a thoroughly practical manner by means of a Best and Lloyd drip feed. The oil is first led to the base of the cylinder. After lubricating the piston it then drops down into a well at the top of the crank case, and from there enters two holes on each side leading to the main bearings. The crankshaft is drilled to register with the holes, and the oil passes through ducts in the webs of the crankshaft to the crank pin, thus lubricating the big end by centrifugal force.

2¾ h.p. single four-stroke MODEL: Blackburne; 70×88 mm. (339 c.c.); side-by-side valves; Amac carburetter; E.I.C. magneto, chain driven; Burman two-speed sliding gear; chain and belt drive; Dunlop 26×2½in. tyres.

Another practical type of mount is the Verus fitted with a 2¾ h.p. Blackburne engine, which suits the taste of the rider who needs a medium weight mount and yet does not care for a two-stroke. It is interesting that this is the only machine on the stand fitted with the Amac two-lever carburetter, all the others being equipped with the single lever variety.



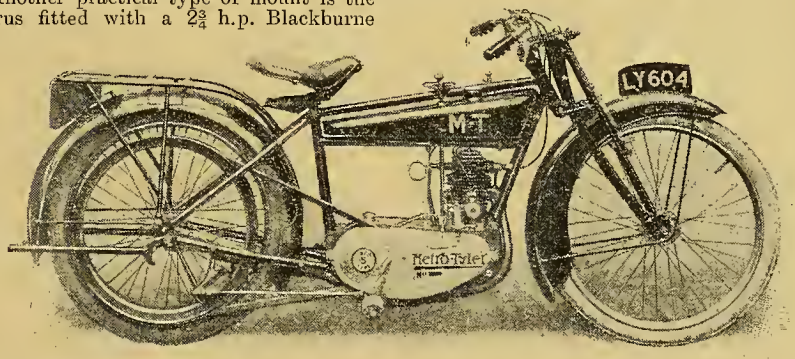
One of the newcomers into the motor cycle world—the Verus. The model shown has a Blackburne engine.

The fourth model is the 4 h.p. Blackburne engined machine, intended to meet the requirements of those who require a dual-purpose machine. It is fitted with the latest type of Sturmey-Archer three-speed gear box and kick starter. Both this and the lighter types have wide tanks and are well equipped. The power and transmission units employed being well known, need no more than a passing reference.

METRO-TYLER, No. 65.

2½ h.p. single two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; C.A.V. magneto; two-speed gear (unit construction); chain and belt drive; 26×2¼in. tyres.

TYLER APPARATUS CO., LTD., Banister Road, Kilburn Lane, North Kensington, W.10.—Three machines of the two Metro-Tyler models are exhibited by the Tyler Apparatus Co. One of these is the new model, which has a rather distinctive frame, the seat tube being almost vertical. This and the front tube are one member, forming a wide loop, in which the engine and gear are fitted as a single unit. There are several features which



The 2½ h.p. Metro-Tyler has been redesigned for 1920, and now carries the engine and gears in a unit assembly.

make the machine worthy of a close inspection, which will reveal that the crank case, magneto, and gear box are fixed in the frame between two long side plates. These plates have an aluminium top, and so form a case enclosing the three units, and on the sides are aluminium covers enclosing the magneto and main drives, the belt emerging from a slot above the countershaft pulley. The whole assembly strikes one as being a very good job, and it will make a strong appeal to those who have long urged the desirability of enclosing the mechanism. Frequently newcomers to the pastime have hesitated on account of their ignorance of mechanics and the apparently complicated mechanism of a motor cycle. This model will go far to remove such impressions, besides keeping the rider free from grease. It should have a very ready sale. With its introduction, the Tyler Co. enter the manufacturing field as distinct from the fitting of proprietary units, as the machine is built throughout in the company's works. The other model exhibited follows more conventional lines, and both are finished in the deep maroon colour which has characterised Metro-Tylers since their introduction early in 1919.

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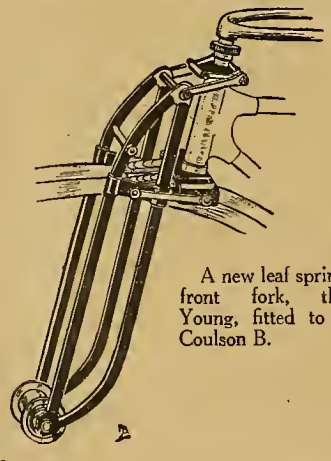
COULSON B, No. 16.

4 h.p. four-stroke MODEL: 85×88 mm. (499 c.c.); side-by-side valves; Capac carburetter; E.I.C. chain-driven magneto; single speed; belt drive; 26×2½in. tyres.

F. ASLETT-COULSON ENGINEERING CO., Albion Road, King's Cross, N.—Three Coulson motor cycles are staged on this stand. A new model which has not been shown previously is the 4 h.p. Blackburne-engined single gear sporting model, which is bound to appeal to the young motor cycle enthusiast, as it is of medium weight, does not possess the complications of a change speed gear, and yet has sufficient power for a high turn of speed and for hill-climbing under ordinary conditions. The Blackburne engine, with its large outside flywheel and excellent pulling powers at low speeds, is an excellent power unit for a single-geared mount, and from our own experiences with this engine we can safely prophesy good results. This model is fitted with the new Young spring forks. They are of the usual girder pattern, but employ two leaf springs connecting the rigid to the moving portion. The two-stroke model referred to later has a plated finish specially for the Show.

2¾ h.p. four-stroke MODEL: 71×88 mm. (350 c.c.); side-by-side valves; Capac carburetter; E.I.C. chain-driven magneto; Albion two-speed sliding gear; chain and belt drive; 26×2½in. tyres.

Another type which is more widely known among our readers and which has attained a considerable amount of well-deserved popularity is the 2¾ h.p. Coulson B, a machine with which we had some interesting experiences during the early part of the year. It has sufficient power to render it delightful for touring purposes, affording a good turn of speed on the level, and with a gear which will enable it to climb any hill this model should meet with a very ready demand. The chief points about the Coulson motor bicycles are the Capac single-lever carburetter, which certainly gives great satisfaction on these machines, the fitting of a new band brake, and a new stand, and, of course, the excellent spring frame. These points were referred to in our issue of November 20th.

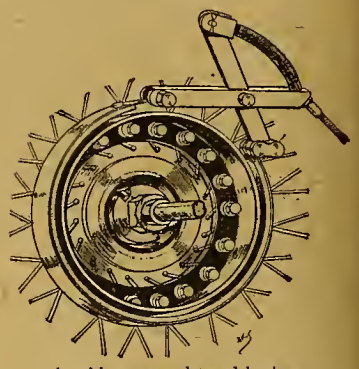


A new leaf spring front fork, the Young, fitted to a Coulson B.

2¾ h.p. two-stroke MODEL: 69×78 mm. (292 c.c.); Capac carburetter; Runbaken magneto; single speed; belt drive; 26×2½in. tyres.

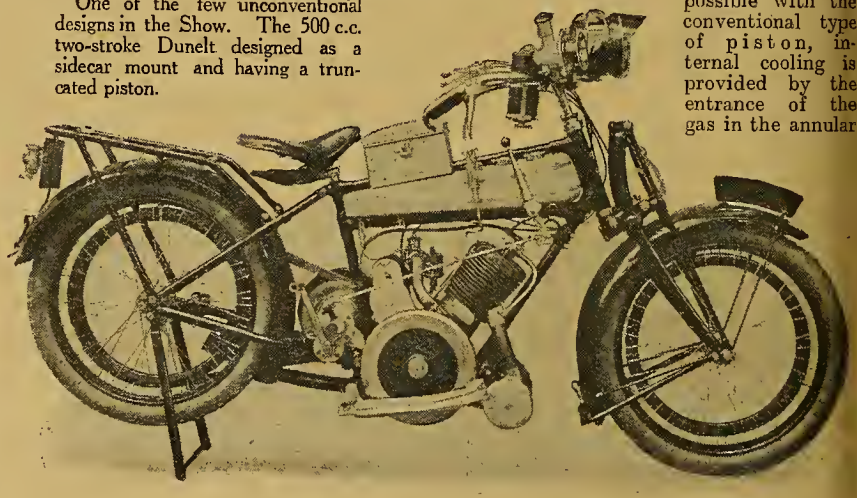
Unlike the other machines made by the F. Aslett-Coulson Engineering Co., the Coulson two-stroke is not fitted with a Blackburne engine, but with a Union two-stroke. This is of 2¾ h.p., and should appeal to the rider who is a novice and requires a machine of extreme simplicity and yet of solid construction and reliability.

Also shown on the Coulson stand is a Blackburne engine fitted with the David Lightning oscillating valve, which was described in *The Autocar* of July 5th, 1919. The combustion chamber is, roughly speaking, cast in the form of a hollow ball, in the interior of which is an oscillating valve mounted on trunnion bearings. The valve (in plan) is circular in shape, has rounded edges, with two step-cut rings, and is designed to fit closely inside the spherical combustion chamber. Opposite to each other in the combustion chamber are two ports—the inlet and exhaust—and on the side thereof is the sparking plug. This valve has an oscillating motion given to it by suitable means from the timing gear, and alternately covers and uncovers the inlet and exhaust ports. With the type of valve gear employed no springs are necessary, as the movement is positive. We understand that a number of well-known people are interested in the idea.



A cable-operated band brake is fitted to the Coulson B.

One of the few unconventional designs in the Show. The 500 c.c. two-stroke Dunelt designed as a sidecar mount and having a truncated piston.



DUNELT, No. 33.

3½ h.p. two-stroke MODEL: 85×88 mm. (499 c.c.); Amac carburetter; chain-driven magneto; two-speed gear, expanding ring type; Dunlop 26×2½in. tyres.

DUNFORD AND ELLIOTT (SHEFFIELD), LTD., 96, Bath Street, Birmingham.—If only because it is by far the largest two-stroke engine in the Show, the new Dunelt 500 c.c. machine was bound to create a great deal of interest. Hitherto, all attempts to make a two-stroke engine of this size have met with but moderate success, but it is claimed that the inherent difficulties of a large two-stroke single-cylinder of the three-port type have been overcome in this model by the use of a truncated piston. In addition to providing a charge fully fifty per cent. larger than is possible with the conventional type of piston, internal cooling is provided by the entrance of the gas in the annular space above the trunk and outside the piston body. The engine exhibited strikes one as being a particularly massive unit, but, as placed in an inclined position in the frame, the appearance of the machine does not suffer. We are told that the nominal h.p. at which it will be rated has not yet been decided, as, although the engine is only of the same size as the four-stroke 3½ h.p. engine, the power developed is in the neighbourhood of 7 h.p. The change-speed gear is of the expanding ring type embodying a kick-starter. The mechanism is very neatly disposed in an aluminium case. The main drive is taken from the left side of the machine, while the large flywheel and the magneto chain drive are on the right. The Dunelt has the front and back wheels detachable and interchangeable. Each has a belt rim; when in the front position, the groove of the belt rim is used for the front brake. The mudguards are particularly wide, and the forks are of the girder variety, linked so as to give a rocking as well as the vertical motion. A leaf spring fork is used, the laminations being of chrome-vanadium steel.

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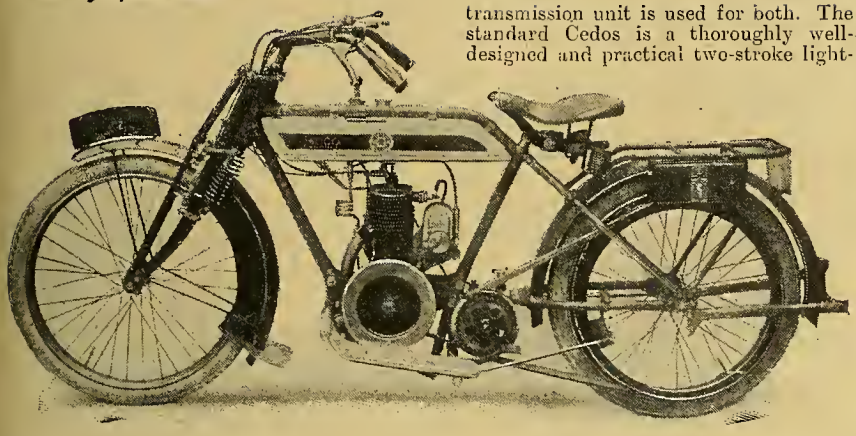


Transmission side of the 2¼ h.p. Radco, a two-speed two-stroke model.

RADCO, Nos. 206 and 66.

2¼ h.p. two-stroke MODEL: 62×70 mm. (211 c.c.); Amac carburetter; Lion chain-driven magneto; single speed; belt drive; Dunlop 24×2in. tyres.

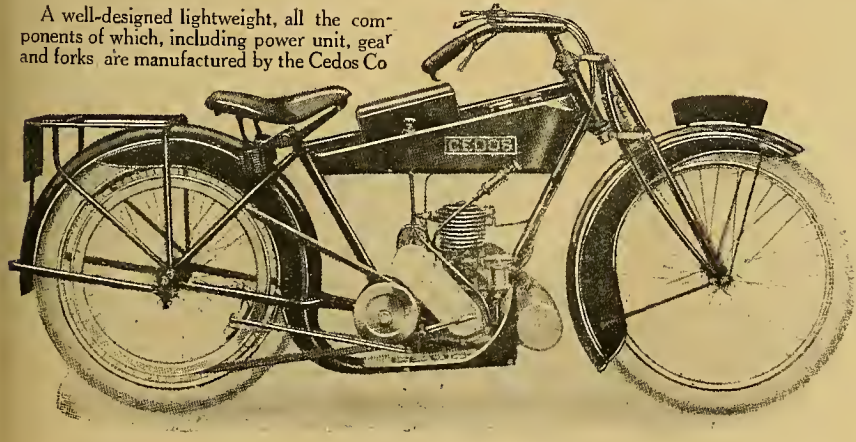
E. A. RADNALL AND CO., LTD., Dartmouth Street, Birmingham.—This firm has on exhibition several examples of the 1920 model which, in many respects, resembles the pre-war product. The engine is of the conventional three-port type, having a magneto platform cast at the rear of the crank case. The inner part of the magneto chain case, also, is integral, a construction and design which places the magneto well out of the way of mud thrown up from the front wheel. The frame follows conventional lines, and the forks now fitted are of the Druid type, while the equipment includes aluminium footboards, Xl-All saddle and two pannier bags. Both single and two-speed models are exhibited, the prices of which vary from £48 to £55.

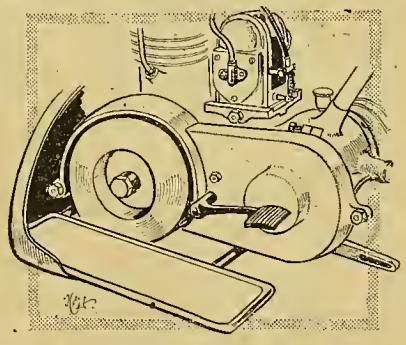
CEDOS, No. 18.

2½ h.p. two-stroke MODEL: 62×70 mm. (211 c.c.); Cedos carburetter; Runbaken chain-driven magneto; two-speed gear; chain and belt drive; 24×2½ Dunlop tyres.

HANWELL AND SONS COMPONENTS, LTD., Northampton.—Though two types of Cedos two-stroke motor bicycles are shown on this stand, the same power and transmission unit is used for both. The standard Cedos is a thoroughly well-designed and practical two-stroke lightweight in which a number of interesting features is embodied. The engine is of the three-port variety, of which the cylinder is an extremely light and strong casting, carefully ground as to the bore and combustion chamber so that no rough surfaces are left to encourage carbonisation. The exhaust ports are double, and are cut in the thickness of the cylinder wall only, thereby allowing an immediate expansion of the gas inside the enlarged passage to the exhaust bulb. The small end bearing is of large diameter, and is a grooved phosphor bronze bush with a slightly tapered hollow gudgeon pin. Lubrication is effected by the oil entering the cylinder wall through the collector slot on the side of the piston. The big end is fitted with Hoffmann roller bearings, while the main shaft runs on self-aligning ball bearings and finally on phosphor bronze bushes grooved so as to keep the oil in the crank case, and thus prevents crank case compression leakage. Particular attention has been paid to the balance of this engine. The engine should keep cool owing to its good design, and further to assist this the top radiating fin is of copper. In order to allow access to the one cylinder nut, which is shielded by the magneto chain case, on the undoing of one screw a large V-shaped piece can be taken out of the cover. The carburetter fitted is of the firm's own design. It has horizontal throttle and air tubes arranged in the direction of the flow of gas, and is so designed that it gives slow running without four-stroking. The gear box is of particularly neat design, is cylindrical in shape, and is mounted concentrically in a cylindrical lug. To take up any slack in the chain it is only necessary to undo one nut and insert a small tommy bar provided in the tool kit in a hole on the exterior of the gear box casting, when a couple of taps with a hammer will effect the required adjustment. The adjustment of the magneto chain is equally well provided for, as the magneto is mounted between two V-shaped wedge pieces, of which one is loose and the other a fixture, and the undoing of one nut allows the magneto to be slid in either direction without altering the chain line. As an example of the care displayed in the design of this motor bicycle we may mention that an undershield is fitted beneath the power unit, which is raised up in front so as to protect the rider's feet from mud, while there is only one separate clip on the machine, and that is on the down tube for the purpose of holding together the control wires. All other lugs, such as those for the brake brackets, are brazed on to the frame. Both brakes act on the rear wheel, one on the outside of the belt rim and the other on the inside; these are controlled by the rider's right and left feet. So far as the control is concerned, there are two double sets of control levers on the handle-bars, one set working the air and throttle, another the spark, and the fourth the change-speed mechanism.

A well-designed lightweight, all the components of which, including power unit, gear and forks are manufactured by the Cedos Co





The Cedos flywheel and chain cover

N.U.T., No. 116.

3½ h.p. V twin four-stroke MODEL: 64.5×76 mm. (496 c.c.); side-by-side valves; Amac (two-lever) carburetter; Lucas Magdyno, chain driven; Sturmey-Archer three-speed; chain and belt drive; Palmer Cord 26×2½in. tyres.

NEWCASTLE-UPON-TYNE MOTOR CO., LTD., St. Thomas Street, Newcastle-upon-Tyne.—Several examples of the newly-produced N.U.T., the North-country production, which has created so great an interest in the motor cycle world. Built and designed after considerable experience in numerous T.T. races by a practical rider, the new N.U.T. is certainly a solo mount that will strongly appeal to all types of motor cyclists. Though built up of high-class component parts, the machine bears evidence of having been carefully designed in all its details. The engine is

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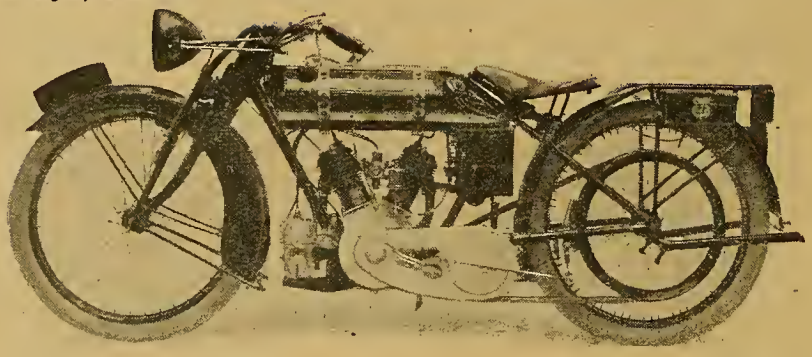


Complete electrical equipment is somewhat rare on British so'o machines. The 3½ h.p. N.U.T. has the Lucas combined lighting and ignition Magdyno.

specially constructed for the firm by Messrs. J. A. Prestwich and Co., and the frame has been carefully adapted to take it whilst retaining the low position so generally favoured. Beneath the engine is a spacious aluminium silencer of shapely design, which greatly enhances the appearance of the machine. It is fitted with the Lucas Magdyno set, with the battery box attached to the saddle tube of the frame, and the lighting switch situated at the rear of the tank. Instead of trusting to the ordinary type of lamp bracket for the Lucas head lamp, the makers have specially cast lugs on the handle-bars, and have designed a light double member bracket carrying the lamp well forward and low down, so that there is a beam in just the correct position. The handle-bars are wide, and afford a comfortable riding position. The small petrol injector, instead of being carried loosely in the tool-bag is specially provided for in the head, being held securely by spring clips. The chain from the engine to the gear box is enclosed in a neat aluminium case, whilst the brake acting on the rear belt rim is of ample dimensions. Altogether, the N.U.T. is a really attractive mount, its well-balanced lines commanding appreciation.

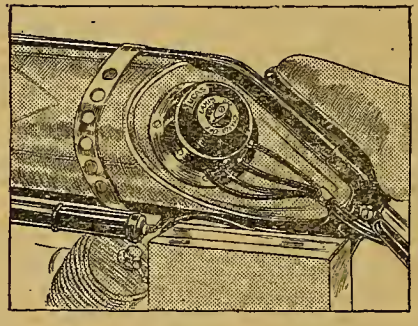
JOHNSON MOTOR WHEEL, No. 28.

Horizontal flat twin two-stroke MODEL: Johnson carburetter; magneto in flywheel, also acting as dynamo; chain drive; 26×2in. tyres.

W.T.T. ENGINEERING CO., LTD., 6-10, Dalling Road, Hammersmith, London, W.1.—The Johnson motor wheel was recently described in *The Motor Cycle*. This is one of the most practical forms of motor attachment for pedal cycles. The power unit is a horizontal flat twin two-stroke with a flywheel magneto, which also acts as a dynamo, and a special rear wheel chain-driven and equipped with a spring drive.

BOWN-VILLIERS, No. 148.

2½ h.p. Villiers two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; C.A.V. chain-driven magneto; two speeds, Sturmey-Archer or Albion gear; chain and belt drive; 26×2½in. Dunlop tyres.



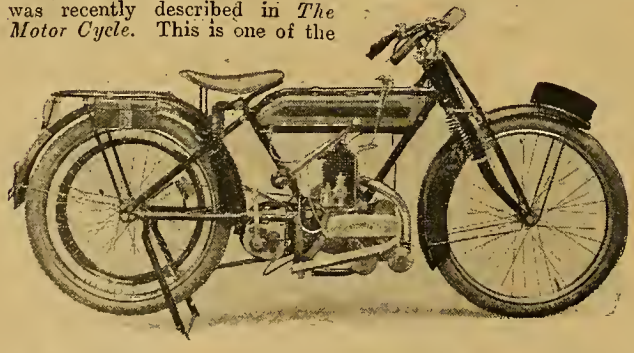
The latest model N.U.T. has a switch-box fixed on the rear of the tank.

BOWNS, LTD., Æolus Works, Summer Lane, Birmingham.—Bown motor cycles were commencing to gain an enviable reputation for sound design before the war placed a temporary restriction on their output. One of these machines now reappears on the stand of Chas. B. Timperley and Co. in the Gallery, and examination reveals much of the care which has been exercised in its design. While it follows conventional specification, special attention has been paid to details. Large hubs are fitted, $\frac{7}{16}$in. spindles being used, while, to eliminate cranking of the rear brake rod, a specially designed pedal has been made which leads the control behind the flywheel. The price, with two-speed hand-controlled clutch and kick-starter, is £65.

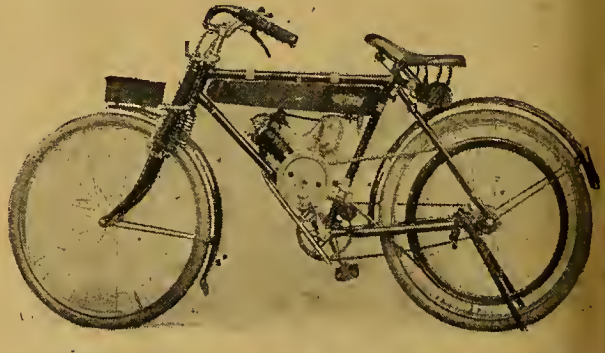
J.E.S., No. 39.

1 h.p. single four-stroke MODEL: 55.6×60.3 mm. (146.4 c.c.); overhead m.o. inlet valve; J.E.S. floatless carburetter; Lion magneto, chain driven; single speed; belt drive; Dunlop 26×1¾in. tyres.

J. E. SMITH, J.E.S. Motor Works, Gloucester.—An exceedingly interesting little lightweight, the power unit of which is well worth a careful study. The inlet valve is of the overhead variety, and the tappet mechanism is entirely enclosed. There is a sump at the base forming part of the crank chamber, and oil is delivered from this by means of a pump submerged therein to the principal bearings. Owing to an ingenious arrangement, the hollow floating gudgeon pin receives oily vapour, and is adequately lubricated. There is only one bearing, that on the flywheel side, the flywheel being of the external variety, and the crankshaft has a flying balance weight and an extension driving the timing gear. The piston is of aluminium. Gas is fed to the engine through a floatless single lever carburetter. The other lever of the two on the handle-bars raises the exhaust valve for starting. The J.E.S. is not, strictly speaking, a motorised bicycle, although the unit is designed to fit into the diamond frame of an ordinary cycle. The makers, however, prefer to sell it as a complete unit. It has been very carefully thought out, and is a very fine piece of design. The comfort of the rider has been well studied, and Druid spring forks of the lightest pattern are provided. The transmission is by Whittle belt, the tension of which can be varied by means of a jockey pulley. A front rim brake is fitted while the rear brake is of the coaster pattern. It is clearly the lightest motor bicycle made at the present time.



The 2½ h.p. Bown-Villiers two-stroke two-speed lightweight for 1920.



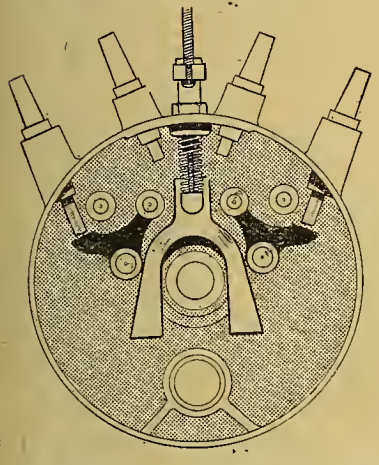
The latest J.E.S. ½ h.p. motor bicycle, probably the simplest machine in the Show.

The Olympia Show.—

CLYNO, No. 103.

8 h.p. V twin MODEL: 76×102 mm. (925 c.c.); side-by-side valves; Amac carburetter; T.B. magneto, chain driven; spring frame; three-speed sliding gear; chain drive; 28×3in. wheels.

CLYNO ENGINEERING CO., LTD., Pelham Street, Wolverhampton.—One of the most attractive sidecar machines in the whole Show is the new model Clyno.



The interior of the Clyno timing case showing exhaust lifter gear. When the control forked member is lifted by the Bowden control, the exhaust rocker arms are forced outwards, thus raising the exhaust valves.

Two sidecar outfits are shown, while one of the famous machine gun outfits which has been dug up from some Government dump is also exhibited, and will undoubtedly prove a point of interest to the many members of the Machine Gun Corps, who propose to meet at this stand during the Show. In addition the little lightweight two-stroke is also shown. To describe fully the many interesting points would occupy too much space, so we must content ourselves with just a few of the most notable details. The engine is of extremely neat appearance, and, an entirely new feature for the Clyno, is fitted with detachable cylinder heads. The spark plug is situated in a pocket of its own directly over the inlet port, the valve caps being thus unhampered, and provided with cooling fins. The engine is lubricated by means of a mechanical pump, which is of the vane type, and derives oil from the tank *via* a sight-feed regulator. From the pump the oil passes to the front cylinder, and thence by splash to other parts. All surplus oil which reaches the rear cylinder passes by means of a duct again to the front. The exhaust lifter mechanism is also extremely neat, all the Bowden working mechanism being readily accessible outside the engine and easily removed for replacement. These machines are finished in slate grey with black lines and black guards and forks, which give a most elegant and serviceable appearance. All parts of the machine are unusually accessible, and the appearance throughout is both extremely pleasing to the eye and at the same time very practical. The sidecar is of Clyno manufacture, and is fitted with a windscreen; it is extremely roomy and comfortable.

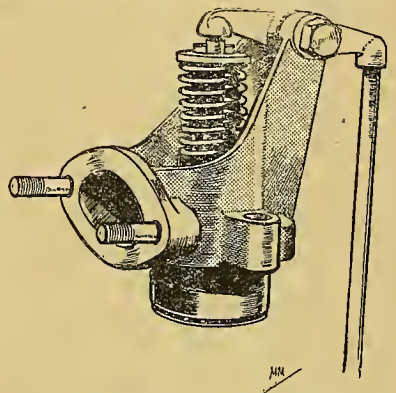
2½ h.p. two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; gear-driven magneto; two-speed integral with crank case; belt drive; 26×2in. wheels.

The Clyno lightweight, which has now been on the market for a considerable number of years, and has proved itself to be one of the finest machines of its class, is unaltered in its principal features. The compact engine and gear unit is a feature which is at once most noticeable, incorporating as it does the two-speed gear and metal-to-metal plate clutch, with final belt drive. The front pulley is protected by a cast aluminium shield. Beyond the engine unit the machine is conventional. Lubrication is by drip feed to the transfer port, which method gives the dual advantage of drip feed and petrol-oil systems.

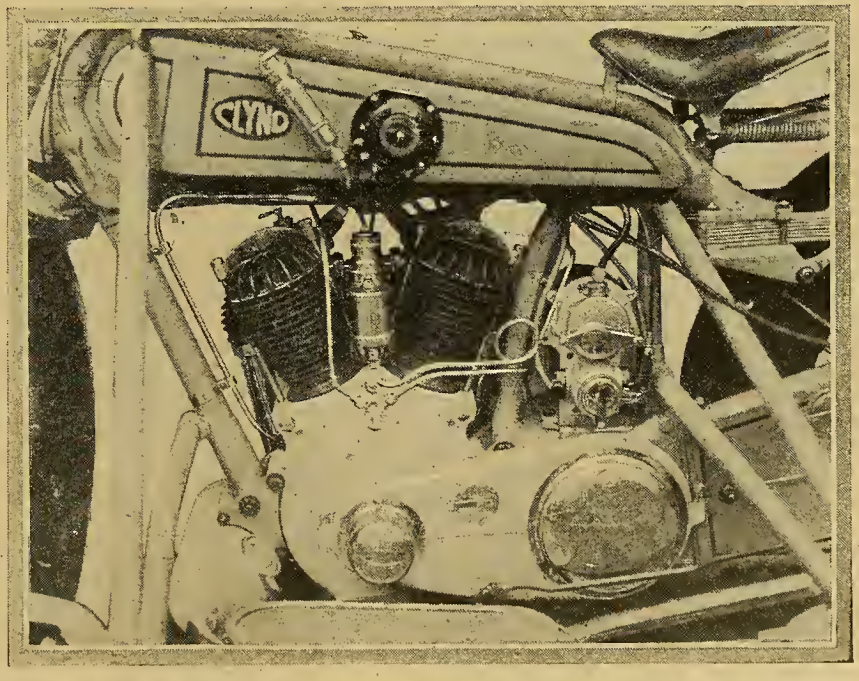
MARTINSYDE-NEWMAN, No. 43.

6 h.p. V twin four-stroke MODEL: 70×88 mm. (680 c.c.); overhead exhaust valves; Amac carburetter; M-L magneto, chain driven; three-speed sliding gear; chain drive; 650×65 mm. tyres.

MARTINSYDE, LTD., Maybury Hill, Woking.—Shown to the public for the first time at Olympia, the new Martinsyde cannot fail to attract attention. Designed by a well-known motor cyclist in conjunction with the experts of an equally well-known aeroplane works, with excellent facilities for production, this machine starts with every hope of success. One of the chief features of the engine is the disposition of the valves, the exhaust valve being above the inlet. The ports are of the streamline variety, so that the maximum amount of efficiency can be anticipated. Adjustable tappets are, of course, fitted. The deeply waisted pistons are of cast iron, are light, and have one ring fitted at the top and one ring at the bottom, while the gudgeon pins are held by a split ring—a system often adopted in aeroplane practice. Lubrication is by splash, and the carburetter chosen for the coming year is the single-lever Amac. Quite a good feature is the carrying of the M-L magneto in an aluminium watertight case provided with inspection doors so that it can be rendered accessible in a moment. Messrs. Martinsyde, Ltd., have been very wise in their choice of a gear box, having adopted the A.J.S. three-speed countershaft gear incorporating a cork insert clutch and kick-starter, and this they intend to manufacture under licence. The

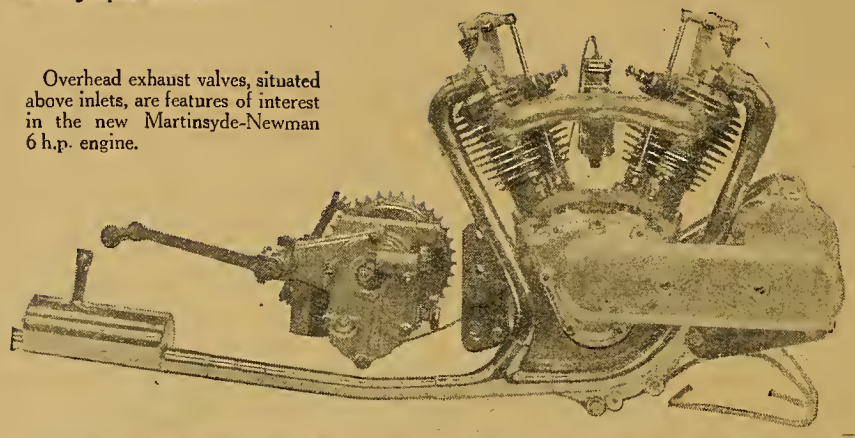


Overhead exhaust valve cage on the 6 h.p Martinsyde. Note the flanged joints.



Power unit of the 1920 model 8 h.p. Clyno sidecar machine. Attention is drawn to the mounting of the Lucas Magdyno and the switch on the tank.

The Olympia Show.—



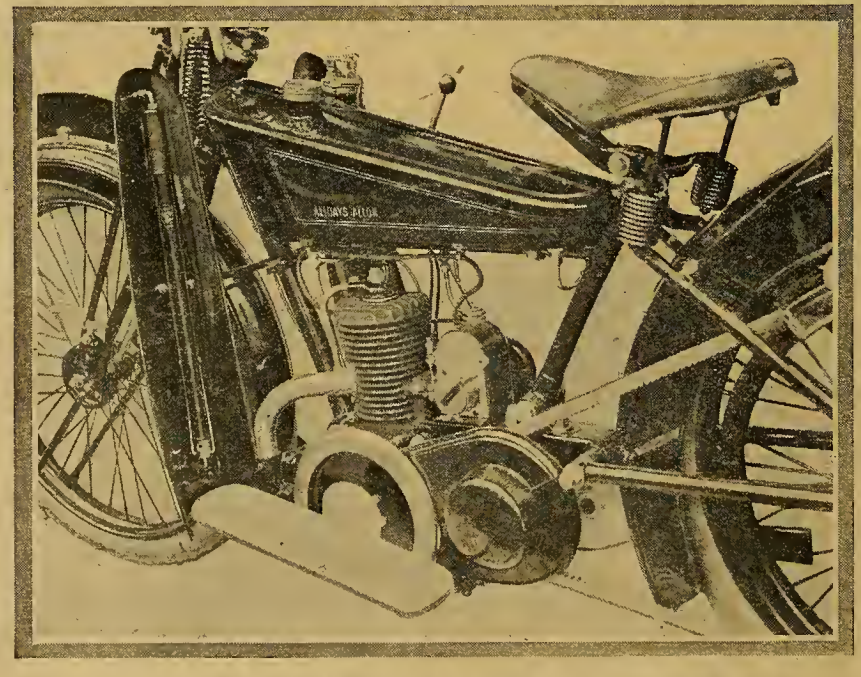
Overhead exhaust valves, situated above inlets, are features of interest in the new Martinsyde-Newman 6 h.p. engine.

transmission is by chains enclosed in oil-tight cases. A foot-controlled external band brake working on a drum of large dimensions is fitted on the rear hub and the front brake on the Brampton spring forks is of the conventional shoe type. A hood and an Auster screen form part of the sidecar equipment.

ALLON, No. 104.

2¾ h.p. single-cylinder two-stroke MODEL: 70×76 mm. (292 c.c.); B. and B. carburetter; chain-driven magneto; two-speed sliding gear with clutch and kick starter; chain-cum-belt drive; 26×2¼in. tyres.

ALLDAYS AND ONIONS, LTD., Birmingham.—Messrs. Alldays and Onions are showing three of their machines, all of which are of the same model and differ very slightly from the firm's previous productions, which have won for themselves a name as most substantial and roadworthy lightweights. The engine is of special design, and has many interesting points. The cylinder and top half of the crank case are cast in one, and access to the piston for cleaning, etc., is obtained by dropping the lower half of the crank case, a very simple process in this design. The crankshaft, connecting rod, and piston may then be withdrawn. This firm was one of the first to adopt the sloping type top tube, thus enabling a very low riding position to be obtained, and it has for a considerable time fitted external contracting band brakes to both wheels, the front being operated from the handle-bar, while the rear is applied by the usual pedal. A two-speed gear box is fitted, and has a handle-bar controlled clutch and a substantial kick-starter. The tank has a flush top, which is now becoming popular on other makes, and not only gives a very neat appearance, but obviates the difficulty of cleaning dust and dirt from beneath the top tube. This model is priced at £70.

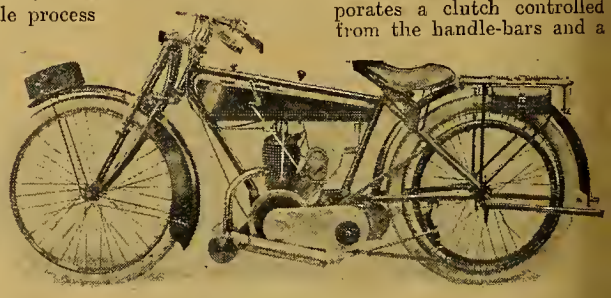


A distinctive two-stroke, the Allon, which has a large saddle tank and high leg shields.

OLMYPIC, No. 123.

2½ h.p. two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; chain-driven magneto; two-speed gear; chain-cum-belt drive; 26×2¼in. tyres.

OLYMPIC CYCLE AND MOTOR CO., LTD., Granville Street, Wolverhampton.—The Olympic is a nice little machine built on modern lines, the power unit being the Verus two-stroke. This engine is fitted with an external flywheel, and outside the flywheel there is a chain sprocket, the chain being enclosed in an aluminium case, conveying the drive to the countershaft gear, which incorporates a clutch controlled from the handle-bars and a kick starter. One of the most interesting features of the machine is the suspension of the gear box, which is attached to a special bracket, the centre of which is pivoted from the bottom bracket of the frame. The forward end of the plates forming this bracket is slotted, and there are two small distance screws also at the forward end and above the slot bolts. To adjust the chain it is only necessary to loosen the pivoting bolts and the slot bolt, and give a very slight movement to the distance bolts, when the gear box is displaced sufficiently to allow the necessary chain adjustment. The construction of the frame is not without interest, as there are no curved tubes; also, a special flat is provided underneath the rearward portion of each chain stay, against which the legs of the stand abut. The handle-bars, we may mention, are wide, and should give an excellent control of the machine on rough roads. Footboards of ample dimensions are fitted. The tank is wide and of ample capacity for fuel and oil.



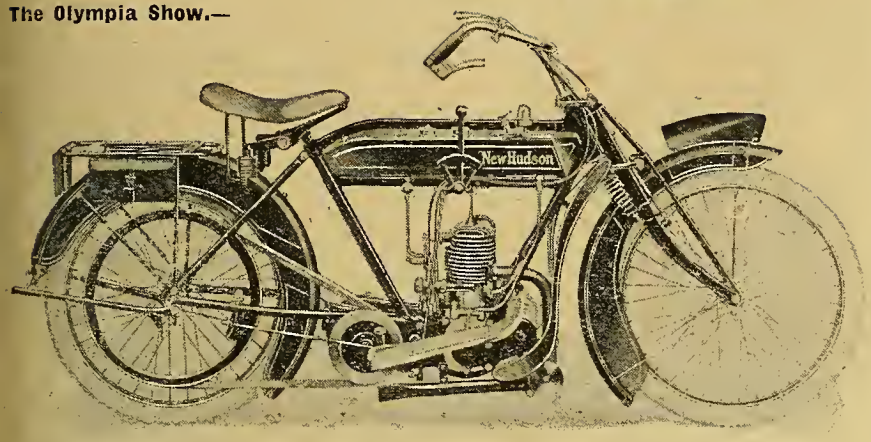
The Olympic-Verus two-speed chain and belt driven machine.

NEW HUDSON, No. 74.

2¼ h.p. two-stroke MODEL: 62×70 mm. (211 c.c.); B. and B. carburetter; chain-driven magneto; two-speed gear; chain-cum-belt transmission; 24×2in. tyres.

NEW HUDSON CYCLE CO., LTD., Icknield Street, Birmingham.—For 1920 the New Hudson Co. will concentrate on a

The Olympia Show.—



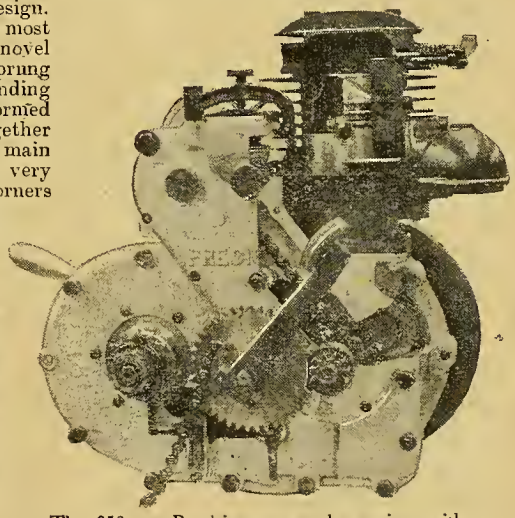
A lightweight *de luxe*. The touring model two-stroke 2¼ h.p. New Hudson, fitted with deep mudguards, leg guards, and footboards.

2¼ h.p. two-stroke model, having stopped production of their larger types. The two-stroke will be produced in quantity, and is a very handy little runabout. The engine is designed on standard two-stroke lines, and is of the three-port type, lubrication being by means of sight feed drip and a branched pipe which leads to the base of the cylinder and the magneto drive side bearing. The release valve is connected to the silencer, so as to avoid noise, and it is actuated in a particularly neat manner by a little plunger operated from a bracket on the lower tank rail. From the engine the drive is taken to the two-speed countershaft gear by an entirely enclosed chain, final drive being by belt over a large diameter front pulley. Mudguarding has received special attention, and in addition to full valances on both guards both aluminium footboards and leg shields are fitted. The rear brake acts on the outside of the V of the belt rim.

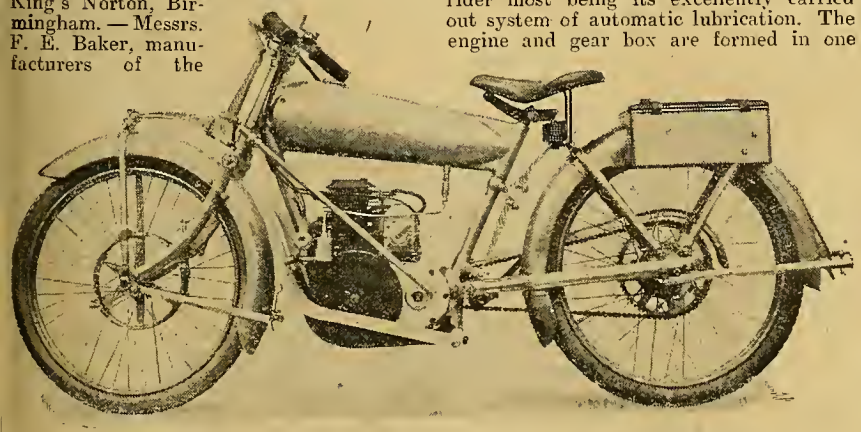
BEARDMORE-PRECISION, No. 95.

3½ h.p. single two-stroke MODEL: 74×81 mm. (350 c.c.); Amac carburetter; Thomson-Bennett magneto; chain driven; spring frame; two-speed gear, expanding ring type, integral with crank case; chain drive; 26×2¼in. Dunlop tyres.

F. E. BAKER, LTD., Precision Works, King's Norton, Birmingham.—Messrs. F. E. Baker, manufacturers of the famous Precision engine which has been so well-known for many years, are now introducing, in conjunction with the famous aeroplane firm of Beardmore, a lightweight of most distinctive design. Possibly the feature which is most noticeable at first glance is the novel construction of the frame, which is sprung both back and front, its outstanding distinction being that the tank is formed of two steel pressings welded together and taking the place of the top main tubes of the frame. This gives a very clean appearance, there being no corners or crevices for the collection of dust and dirt. Another extremely novel feature of the frame is the fact that the mudguards, which are also steel pressings, form essential parts of the frame, acting as they do in the dual capacity of mudguards and triangulating the front and back units of the construction. This not only affords very great strength, but also ensures most excellently rigid guards and obviates a number of flimsy stays. The springing, both back and front, is on the cantilever principle and extremely original in design. The back stays are hinged at the bottom bracket on ball bearings, which are naturally adjustable for wear. The engine has many novel features worthy of notice, the one which possibly appeals to the average rider most being its excellently carried out system of automatic lubrication. The engine and gear box are formed in one unit, and the gearing, which is of the double chain variety, actuated by expanding clutches mounted on the crankshaft, is entirely enclosed in the crank case and runs in the oil sump. An interesting point in connection with the gears is that, although double chains are used, each chain is independently adjustable by means of arms on either side of the crank case working in a quadrant. By turning these arms jockey sprockets, working on eccentrics, take up any slack which may exist in that chain. The brakes also are novel, the footbrake, which is of the contracting band type, acting inside the gear box. The front brake also has a contracting band of ample dimensions. Another point which attracts one's attention is the carrier, which is composed of a steel box and is fitted out with recesses specially designed for the holding of tools and spares. This also gives a neat appearance and obviates many corners for the collection of dirt. Aluminium footboards are fitted in which the front ends are upturned, forming very effective leg guards. All the controls are operated from the handle-bar with the exception of the foot brake, and both the front brake and compression release valve are operated by roller levers.



The 350 c.c. Precision two-stroke engine, with sections cut away to show the design of the internal parts.



A striking exhibit is the all-steel 350 c.c. spring frame Beardmore-Precision.

HOBART, No. 106.

2¾ h.p. four-stroke single-cylinder MODEL: 70×76 mm. (292 c.c.); side-by-side valves; Amac carburetter; C.A.V. chain-driven magneto; spring frame; two-speed Sturmey-Archer gear; chain-cum-belt transmission; 26×2¼in. Dunlop tyres.

2½ h.p. two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; C.A.V. chain-driven magneto; two-speed Sturmey-Archer gear; chain-cum-belt drive; 26×2¼in. Dunlop tyres.

HOBART CYCLE CO., LTD., Coventry.—Messrs. Hobart have on view two types

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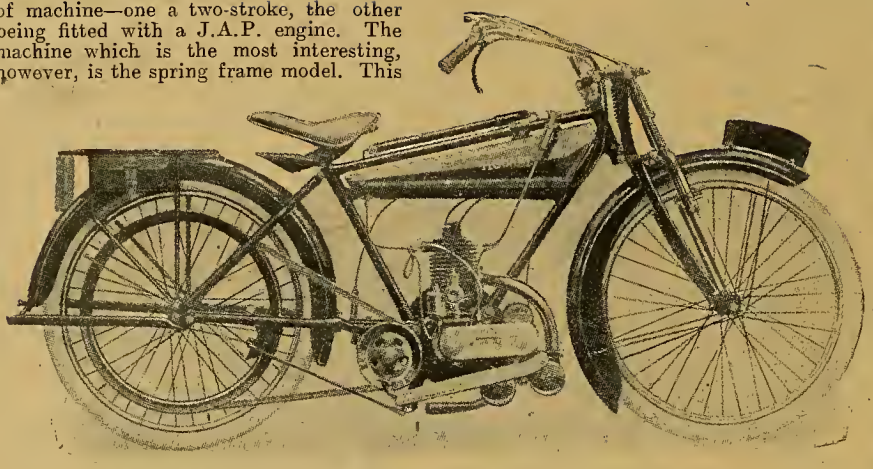
of machine—one a two-stroke, the other being fitted with a J.A.P. engine. The machine which is the most interesting, however, is the spring frame model. This



Exceedingly neat frame design characterises the 2¾ h.p. two-stroke Hobart.

suspension is extremely neat and inconspicuous. It is original, and differs from the majority of spring frames in that the springing is carried out by means of coil springs, and is very similar in action to the usual form of front spring fork. It is very neatly arranged, and, having a 6in. bearing where the rear frame hinges alignment is ensured. Front springing is by Brampton Biflex fork. The sloping top tube and torpedo-shaped tank, which has a flush top entirely covering the frame tube, give a neat and cleanly appearance. These machines are fitted with two-speed gear boxes with kick starters; the two-stroke model, however, has handle-bar control for the gears and no clutch. All models have Best and Lloyd pump lubrication. A front rim brake with Bowden control is fitted, that at the rear being of an improved pattern worked on the inside of the belt rim. The machines are finished in all-black, and are shown with both touring and T.T. bars, and a single-geared two-stroke is listed.

ELSWICK, No. 97.

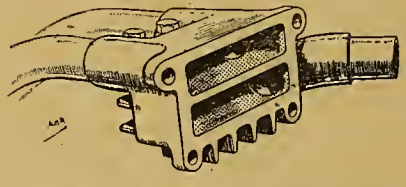
3½ h.p. single two-stroke MODEL: 74×81 mm. (348 c.c.); Amac carburetter, Thomson-Bennett chain-driven magneto; two-speed Sturmey-Archer gear; chain and belt transmission; 26×2¼in. Dunlop tyres.

ELSWICK HOPPER CYCLE AND MOTOR CO., LTD., Barton-on-Humber.—On this stand are shown two motor cycles. Both machines are identical, except for finish, though one is known as the Elswick and the other as the Torpedo. The Elswick is an extremely neat lightweight, fitted with a Precision 3½ h.p. two-stroke engine, which has sump lubrication, as described in the Beardmore-Precision. The machine is quite simple, and on strictly conventional lines. It is finished in the well-known Elswick shade of green, and lined with gold, and has a particularly distinctive appearance. The engine chain is neatly encased, the cover also enclosing the outside flywheel. A Sturmey-Archer two-speed gear box with kick-starter is fitted, and the machine has Brampton Biflex spring forks.

CONNAUGHT, No. 102.

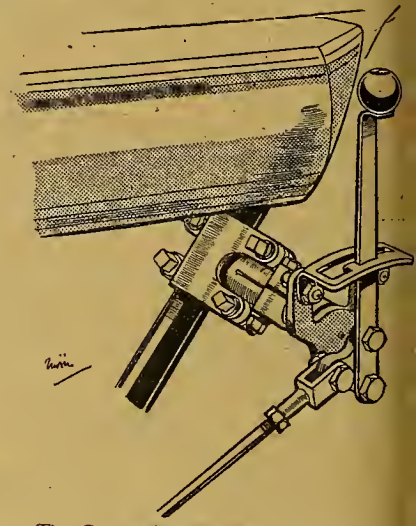
2½ h.p. single two-stroke MODEL: 73×70 mm. (293 c.c.); Amac, B. and B., or Senspray carburetter; B.L.I.C. chain-driven magneto; single or two-speed; sliding dog gear; 26×2¼in. Dunlop tyres.

BORDESLEY ENGINEERING CO., LTD., New Bond Street, Birmingham.—Two



Combined exhaust and inlet pipe casting on the Connaught two-stroke. The lower port passes the mixture from the carburetter to the cylinder, considerably cooling the exhaust port above, and the gases passing through the twin pipes to the silencer. The exhaust gases in turn heat the mixture entering the cylinder.

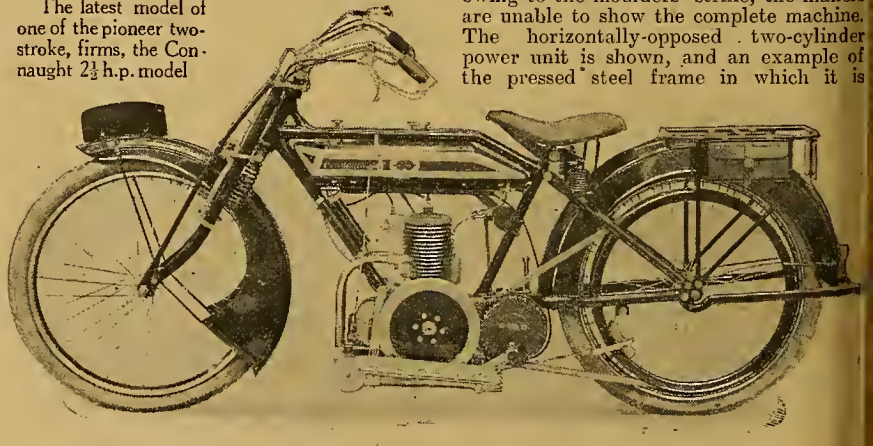
types of this machine are exhibited—one the standard, which is shown as a single gear model and also as a two-speed model with chain-cum-belt drive; the other, the Connaught miniature, which is a smaller machine, but with the same sized engine. This also is shown as a single-speed and as a two-speed. A notable feature in the construction of the engine, and a point which this firm was the first to adopt, is the combined exhaust and inlet manifold, which allows the incoming gases to cool the exhaust port and the ingoing cold charge to be heated—a considerable advantage on a two-stroke. Another interesting point in the construction of this engine is the size of the crankshaft and bearings, which are very substantial indeed. Petroil lubrication is used, and a measure is fitted to the machine between two pump clips, which is quickly acces-



The Connaught change-speed bracket is clamped to the front down tube, the operating lever thus being accessibly placed.

sible. The oil tank is provided with a pump for withdrawal of the oil for admixture with the petrol. The miniature model is a very handy little mount, especially for town work. The machine generally is of orthodox design, and is nicely finished.

The latest model of one of the pioneer two-stroke, firms, the Connaught 2½ h.p. model



BLACK PRINCE, No. 42.

4 h.p. two-stroke flat twin MODEL: 73×60 mm. (500 c.c.).

BLACK PRINCE MOTORS, LTD., Barnard Castle, Co. Durham. — Unfortunately, owing to the moulders' strike, the makers are unable to show the complete machine. The horizontally-opposed two-cylinder power unit is shown, and an example of the pressed steel frame in which it is

The Olympia Show.—

proposed to mount it. The engine of the 4 h.p. horizontally-opposed two-cylinder motor cycle has been increased in dimensions since the time it was first described in *The Motor Cycle* of July 24th last. The bore and stroke are now 73×60 mm., and, whilst the engine is rated at 4 h.p., it is claimed that it develops 8½ h.p. on the brake. It will be recollected that a feature of particular interest in this engine is the common combustion chamber for the two cylinders. The construction of the engine is extremely simple, the entire power unit consisting of only two castings, which are similar. The gases enter into the lower part of the rear cylinder, and are passed by crank case compression into the common combustion chamber, where they are fired by a single sparking plug placed in the centre. Admission into this combustion chamber is through a small automatic valve. It is claimed by the makers that a particularly uniform flow of gases is obtained by their system, a comparatively slow flame propagation being produced. Underneath the engine is attached a large aluminium silencer of rectangular form, which is rigidly bolted up to the two exhaust ports, and forms a part of the power unit; it is also used for the attachment to the frame.

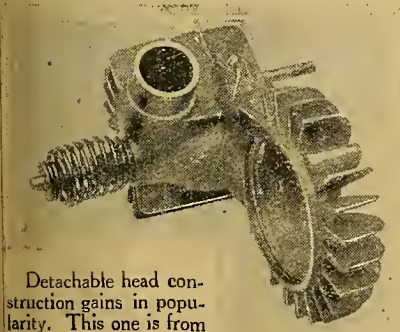
A smaller model of the pressed steel frame is also shown, which is fitted with a Union single-cylinder two-stroke engine.

In addition to these two motor cycles, a new Black Prince four-wheeled runabout is being demonstrated outside Olympia. This machine is very interesting. A two-cylinder two-stroke engine is fitted, 70 mm. bore by 78 mm. stroke, giving a cubic capacity of 670 c.c. The R.A.C. rating is 6 h.p., but the power developed on the brake is said to be 9 h.p. The engine is, in fact, two single-cylinder two-stroke engines fitted together.

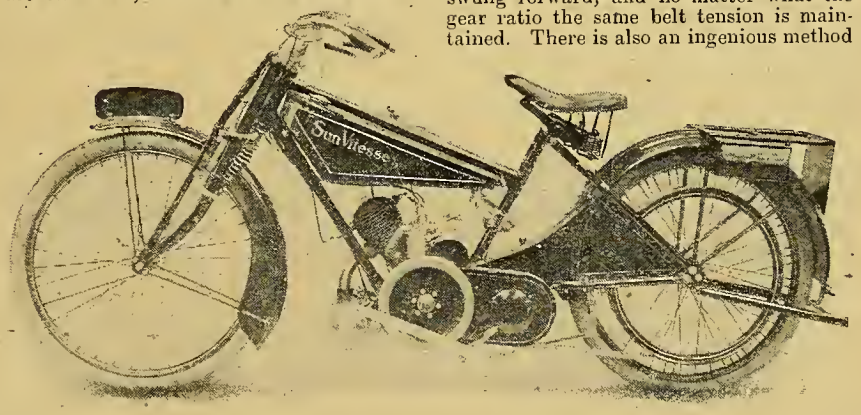
SUN, No. 57.

2½ h.p. two-stroke MODEL: 70×70 mm. (269 c.c.); B. and B. carburetter; chain-driven magneto; two-speed constant mesh gear; chain and belt drive; 26×2in. tyres.

SUN CYCLE FITTINGS CO., LTD., Birmingham.—Two models of the new Sun lightweight are staged by the Sun Co. The two types differ only in frame construction, one being more or less on conventional lines, and the other a drop frame model, which will appeal to lady motor cyclists. In both models the three-port two-stroke engine has the cylinder placed inclined in a forward position. The engine itself is of simple construction embodying the crank case, which consists of a main body and a recessed side plate. A single plain bearing and of good length supports the main shaft, the crank being of the one web type. This construction brings the flywheel, main drive, and magneto drive all on one side, and to distribute the weight evenly at each side of the centre line of the machine, the cylinder is offset in the frame. On the drop frame model the guarding is exceptionally well carried out in metal, a dress shield forming part of the rear mudguard between the two pairs of rear stays. The magneto chain and driving chain are protected by a combined guard, which also embodies a cover for that portion of the belt between the countershaft and the rear mudguard, which, incidentally, is exceptionally wide for a machine of its size. Both two and single-speed models are exhibited, and kick-starters are fitted on all the former. An all-black finish with gold lines has been adopted for most of the machines, but in the centre of the stand there is one model finished in stone grey with red lines.



Detachable head construction gains in popularity. This one is from the engine of the 2¾ h.p. flat twin Wooler.

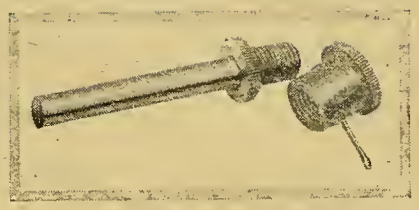


The open frame Sun-Vitesse two-speed mount suitable for the use of either sex.

WOOLER, No. 47.

2¾ h.p. flat twin four-stroke MODEL: 60×60 mm. (340 c.c.); overhead inlet valves; B. and B. carburetter; gear-driven magneto; spring frame; nine-speed expanding pulley gear; belt drive; Palmer 26×2¼in. tyres.

WOOLER ENGINEERING CO., LTD., Alperton, London.—Two types of Wooler motor bicycles are to be seen on this stand. Of these, the T.T. type has dropped handle-bars and footrests, while the touring model, fitted with upturned handle-bars and footboards, is mounted on a platform. A model of the variable pulley is also shown, also an engine with the timing gear cover removed. There is a nickel-plated section of the frame showing the springing and various parts. The 2¾ h.p. Wooler was the first entirely new motor bicycle to be described in our pages after the Armistice, and was fully described in the issue of November 28th, 1918. It has many interesting features. Among these may be mentioned the enclosed inlet valve mechanism and the ingenious system of lubrication. Oil is



Tappet adjustment on the Wooler flat twin may be effected by the finger's when the split-pin is withdrawn.

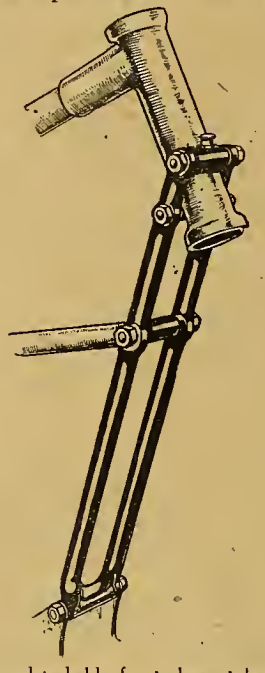
delivered *via* a chain driven off a sprocket on the timing-shaft through the timing gear case, and thence into the crank case, in which a constant level of oil is maintained. The big ends dip into this oil, and the rest of the moving parts are lubricated by splash. The ingenious pulley gear is also well worthy of inspection. The pulley is under-geared, and is so arranged that it is expanded as it is swung forward, and no matter what the gear ratio the same belt tension is maintained. There is also an ingenious method of taking up any slack in the belt by sliding the gear forward. The frame is suspended fore and aft on enclosed coil springs. The Wooler is distinctive in appearance, and is full of ingenious points.

DIAMOND, No. 119.

2¾ h.p. four-stroke MODEL: 70×76 mm. (293 c.c.); side-by-side valves; Amac carburetter; C.A.V. chain driven magneto; two-speed Enfield gear; chain and belt drive; 26×2¼ Dunlop tyres.

D.F. AND M. ENGINEERING CO., LTD., Vane Street, Wolverhampton. — The standard four-stroke is a very practical little machine fitted with the latest type 2¾ h.p. J.A.P. engine, footrests, chain-cum-belt drive, the chain being enclosed in an aluminium case. The gear is of the Enfield variety, giving two speeds, while the brake is of simple design, and is actuated by the driver's heel, the pedal giving ample leverage, thus rendering the brake extremely powerful. The newest model of this type, which will be delivered early next year, possesses several important improvements. The tank now holds just under two gallons of petrol. Comfortable aluminium footboards are provided. The mudguards are much wider, giving far better protection to the rider than previously, and the same

The Olympia Show.—
efficient type of footbrake is fitted. Considerable improvement has been made in the frame design. The down tube is of the duplex variety and made in two portions, of which the upper is a steel pressing bolted fore and aft of the head tube. The lower portion enters, and is brazed into, the duplex tubes. This arrangement



The detachable front down tube of the Diamond J.A.P. lightweight.

tends to great strength, and in the unlikely event of a frame breakage a new portion can be inserted instantly, and without trouble. The horizontal tube beneath the tank is detachable.

2¾ h.p. two-stroke Villiers MODEL: 70×70 mm. (269 c.c.); Amac carburetter; C.A.V. chain-driven magneto; two-speed Sturmey-Archer gear; chain and belt drive; 26×2¼in. Dunlop tyres.

The Diamond two-stroke is a very smart little model fitted with a Villiers engine, built into a frame which, except for the engine bracket, is interchangeable with the four-stroke frame. Comfortable aluminium footboards are provided, and a two-speed lightweight Sturmey-Archer gear is employed, incorporating clutch and kick-starter. Since the frames are, as we said before, practically interchangeable, the same excellent features obtaining in the four-stroke are incorporated, such as wide mudguards, the improved form of down tube, and the capacious tank. The lubrication is by pump and sight feed, leading directly to the crank case.

EDMUND, No. 99.

2¾ h.p. four-stroke MODEL: 70×76 mm. (292 c.c.); side-by-side valves; M-L chain-driven magneto; Amac carburetter; Enfield or Burman two-speed gear; chain drive; 26×2¼in. Dunlop tyres.

CHAS. EDMUND AND CO., LTD., Crane Bank, Chester.—Messrs. Edmund and Co. will be remembered to be one of the earliest who attacked the problem of rear springing, and, although their device does not actually spring the rear portion of the motor cycle, the rider is most delightfully insulated from all shocks on long leaf springs. The saddle tube passes through the down tube of the frame, in which it slides, and to which the aluminium footboards are attached and sprung in unison with the saddle. There are two models of this machine exhibited, one being fitted with a J.A.P. four-stroke engine, the other with a 2¾ h.p. Union two-stroke. The four-stroke models are fitted with the Enfield double chain selective two-speed gear, enclosed in a very neat cast aluminium case. The top tube of the frame is hinged at the steering head, and also moves with the saddle, thus giving a most rigid effect to the springing device. The petrol tank, which is of the pannier type, one compartment being each side of the main frame tube, is attached to this tube, and is also sprung, the petrol connection to the carburetter being by flexible petrol-proof tubing. The springing is readily adjustable to any weight of rider by merely turning an adjusting nut on the back spring carrier stays, on which are fitted rebound springs.

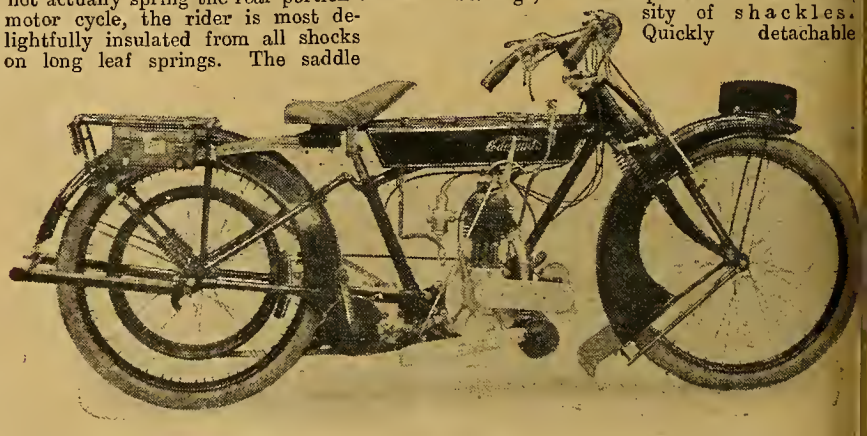
2¾ h.p. two-stroke MODEL: 70×76 mm. (292 c.c.); M-L direct-driven magneto; Amac carburetter; spring suspension; Burman two-speed gear; chain drive; 26×2¼in. Dunlop tyres.

The two-stroke model is identical with the four-stroke, but has a Burman two-speed gear with kick starter, the magneto on this model being directly coupled with the crankshaft on the engine. Six machines are shown. These are all finished in black, and have a neat and pleasing appearance.

ROYAL RUBY, No. 101.

8 h.p. V twin four-stroke MODEL: J.A.P.; 85.5×85 mm. (976 c.c.); side-by-side valves; Amac carburetter; chain-driven magneto; three-speed Sturmey-Archer gear; chain drive; Dunlop 28×3in. tyres.

RUBY CYCLE CO., LTD., Cannel Street, Ancoats, Manchester.—A very fine display of the two models of the Royal Ruby machine is to be seen on this stand, there being three sidecar outfits and six lightweights. Probably the chief point of interest in the sidecar machine is the substantial and original arrangement of springing. In this model the carrier is sprung with the frame. A single laminated spring is used both back and front, and in each case it is supported on roller bearings, which dispense with the necessity of shackles. Quickly detachable



1920 model 2¾ h.p. spring frame Edmund-Jap

When at Olympia do not fail to see—

The new flat twin Zenith—F. W. Barnes's modern production.

The all-metal Canoelet sidecar body.

The experimental spring frame Ariel.

The 1920 model Ariels, with curved top tubes.

The all-steel Beardmore-Precision.

The electrified N.U.T. - J.A.P. — Hugh Mason's latest—which is now priced at 140 guineas.

The Bramco £40 sidecar attachment with all-welded joints.

The latest in sidecars on the Harley-Davidson stand—concealed hood, a screen, dickey, and all.

The 2¾ h.p. Model W Douglas machines for H.R.H. Prince Albert and H.R.H. Prince Henry.

The latest production of an aircraft factory—the Martinsyde-Newman combination.

The lightweight Velocette, one of the most original two-strokes in the Show.

The little mauve Cedos, a machine bristling with practical points. - Designed by Sergeant Ernest Smith, late of the M.M.G.S.

The Motor Cycle Exhibition of photographs of 1919 events, Stand No. 100.

The Indian "Scout" Model—C. B. Franklin's contribution to British motor cyclists.

The enclosed power unit of the new Metro-Tyler, which brings the hosable motor cycle nearer realisation.

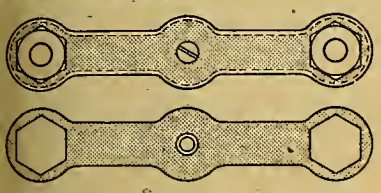
The flat twin spring-frame Raleigh, which marks the return of a pioneer firm to the motor cycle world.

The all-weather dull black enamel finish of the production model A.B.C.

The various three-wheeled runabouts which exhibit marked improvement in design.

A machine with its carburetter fitted upside down. Fact!

The Olympia Show.—

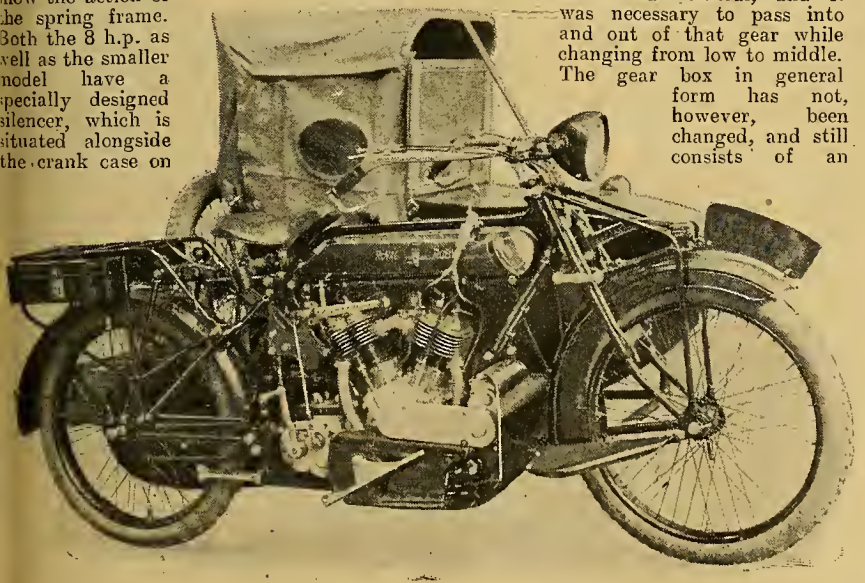


Locking plates which prevent the slacking of the spindle nuts are fitted on the spring fork links of the 3 h.p. Royal Ruby.

nd interchangeable wheels are also a oteworthy feature. The adjustable foot-oards will interest many riders who find he standard position of certain machines ncomfortable. The rear wheel brake is nother new feature. It is of the internal xpanding type, and is situated at the ide of the hub. The sidecar is very oomy, and is undoubtedly most comfort-ble. A novel feature is the method of pringing the body, which, in conjunction vith the spring wheel, gives luxurious iding, and at the same time considerable ateral stability. The whole outfit gives he impression of great strength. The inish is good, and the red and black namel of the tank gives a smart ppearance.

3 h.p single four-stroke MODEL: 74.5×80 mm. (349 c.c.); side-by-side valves; Amac carburetter; Thomson - Bennett chain - driven magneto; spring frame; two-speed countershaft gear; chain and belt drive; Dunlop 26×2½in. tyres.

The lightweight model is a most distinctive machine, and also includes the ear and front springing system as fitted o the larger machines. The carrier, however, on the lightweight is not sprung. The whole machine, including the engine, s of Royal Ruby manufacture. A tripped model of this type is shown with he spring tension slacked off, so as to how the action of he spring frame. Both the 8 h.p. as well as the smaller model have a pecially designed silencer, which is situated alongside the crank case on the right-hand side, and both models have a neat undershield, which also covers in the silencer. A sensible fitting on both types is the locking device for the front fork shackled nuts.

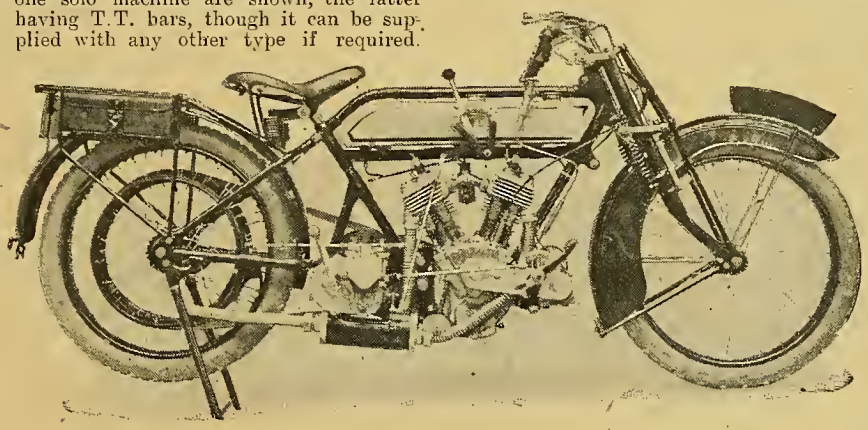


A very complete passenger machine is the 8 h.p. spring frame Royal Ruby sidecar outfit illustrated Detachable wheels are used.

HAZLEWOOD, No. 107.

5 h.p. V twin four-stroke MODEL: J.A.P.; 70×85 mm. (654 c.c.); side-by-side valves; B. and B. carburetter; M-L chain-driven magneto; three-speed gear; chain and belt drive; Dunlop 650×65 mm. tyres.

HAZLEWOODS, LTD., West Orchard, Coventry.—Two sidecar combinations and one solo machine are shown, the latter having T.T. bars, though it can be supplied with any other type if required.



Specimen of the 5-6 h.p. Hazlewood-Jap, three-speed, solo and sidecar mount.

The machines are identical as regards engine, gear box, and transmission, and the frame of the solo mount has the same integral lugs for sidecar attachment. An improvement for 1920 lies in the gear box, which now provides a straight run through from first to second and from second to third, the neutral notch on the quadrant being between first and second. Formerly the high gear notch was central, and it was necessary to pass into and out of that gear while changing from low to middle. The gear box in general form has not, however, been changed, and still consists of an aluminium case bolted to and suspended from the lower steel member of a triangulated portion of the frame. The kick starter gear is unusually substantial, and is completely enclosed within the gear box itself, the ratchet faced pinion being mounted at one end of the main shaft. The rear brake, pedal operated, is particularly worthy of note. It consists of a drum, secured to the right-hand side of the rear wheel, to which is applied an exterior fabric-lined shoe 7in. in length. Accessible right and left-hand threaded adjustment is provided, and also a stop against which the shoe is held when out of action by a spring taking effect at its opposite end. A point worthy of commendation is the additional support afforded to the uppermost front tube of the sidecar attachments. In addition to passing through one of the integral lugs, the tube carries alongside the head an S-shaped oval plate, which is anchored at the top to a bolt passing through the top head lug. By this means the head of the machine is relieved from a large proportion of the torsional stresses set up by the sidecar, the tube itself is given additional support, and what in practice amounts to a bearing some 9in. in length is provided for this point of attachment.

CORONA JUNIOR, No. 32.

4 h.p. single-cylinder four-stroke MODEL: 72×110 mm. (488 c.c.); staggered valves; Amac carburetter; E.I.C. chain-driven magneto; single gear; belt drive; Dunlop 26×2½in. tyres.

METEOR MANUFACTURING CO., LTD., 98, Tollington Park, N.4.—The Corona is fitted with an engine that has several very novel features. The crank case and cylinder are cast in one piece. One side of the crank case is entirely detachable, so that the crankshaft can be easily removed. The cylinder head is separate, so that decarbonisation is possible, while the engine is still in the frame. The cylinder head, it may be mentioned, is made of special alloy to give efficient radiation. The crank case is made of a one-piece stamping of nickel steel, and the cylinder is set slightly *désaxé* in order to reduce the wear and side stresses on the cylinder wall. The crankshaft runs on

The Olympia Show.—

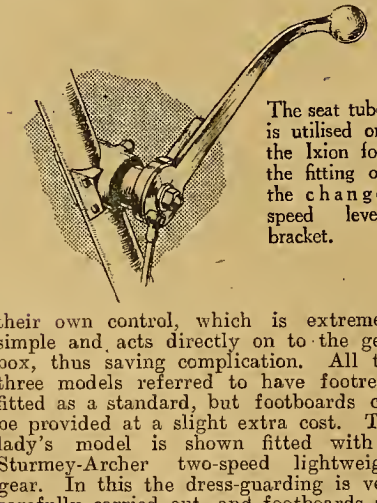
large size ball bearings, and inside flywheels have been avoided in the design. The arrangement of the valves is particularly interesting. These are staggered, and so situated that the stems incline to a common centre, meeting at the axis of the camshaft. This position simplifies the timing gear, and does away with any necessity for rocker arms; consequently there are only two gear wheels in the timing gear case. The valves are enclosed and have adjustable tappets. Within the magneto chain case is a small sprocket which drives the lubricating pump. This pump delivers oil from a sump on the outside of the crank into a trough in the base chamber into which the connecting rod dips. The connecting rod has split bearings, and the piston is provided with two rings. The models shown are of the single gear variety, but the company is at present engaged in manufacturing suitable gear boxes of the two and three-speed types. The rear wheel is provided with two internal expanding brakes, and the springing of the front forks is rather out of the common. The front wheel is mounted on two bell crank levers, and is suspended on an ingenious coil spring system.

IXION, No. 22.

2½ h.p. single-cylinder two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; chain-driven magneto; two-speed gear; chain-cum-belt drive; 26×2in. Dunlop tyres.

IXION MOTOR MANUFACTURING CO., LTD., 35, Great Tindal Street, Ladywood, Birmingham.—This firm's exhibits consist of seven machines, including four distinct types. The engines are the same size in every case, the chief difference being in the nature and manner of the equipment.

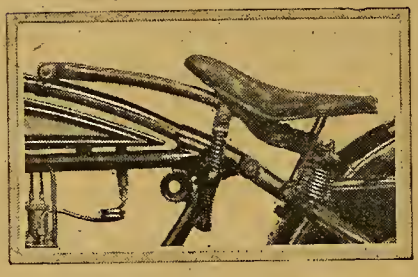
There is one single gear model, in which belt drive is employed; two two-speed models, one of which is fitted with the Burman two-speed gear box, and the other with the Sturmey-Archer two-speed lightweight gear box. In the case of the Burman fitted model, the Ixion Motor Mannfacturing Co. have provided



The seat tube is utilised on the Ixion for the fitting of the change speed lever bracket.

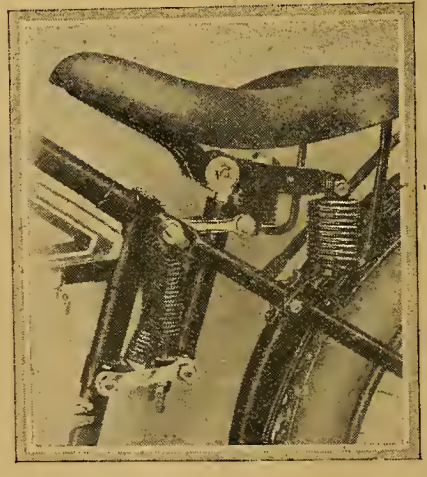
their own control, which is extremely simple and acts directly on to the gear box, thus saving complication. All the three models referred to have footrests fitted as a standard, but footboards can be provided at a slight extra cost. The lady's model is shown fitted with a Sturmey-Archer two-speed lightweight gear. In this the dress-guarding is very carefully carried out, and footboards are fitted as a standard. In these types lubrication is by Best and Lloyd drip feed.

SPRING SADDLE PILLARS—THE BEST ALTERNATIVE TO A SPRING FRAME.



Spring saddle-pillars are growing more popular. The Rex cantilever seat was introduced many years ago, and is still fitted in improved form.

Great simplicity and easy application to a standard motor cycle frame characterise the Chater-Lea spring seat-pillar.

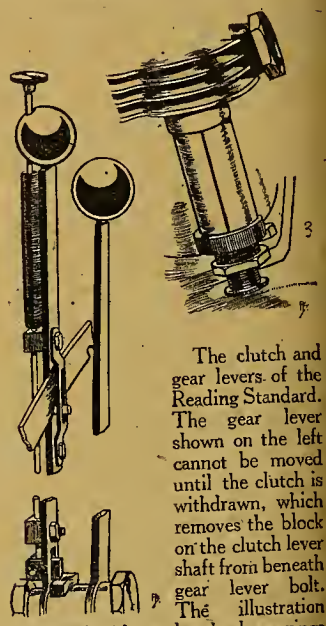


The Ariel is one of the many machines in which the saddle-pillar is spring supported.

READING STANDARD, Nos. 11(and 195.

10 h.p. V twin four-stroke MODEL 85.7×101.6 mm. (1,170 c.c.); side by-side valves; Schebler carbu retter; Bosch or Berling magneto three-speed sliding gear; chai drive; 28×3in. tyres.

STANLEY J. WATSON, 37, Sheen Road Richmond, S.W.—The Reading Standar will be remembered as an America motor bicycle which has always closel adhered to English ideals whilst still re



The clutch and gear levers of the Reading Standard. The gear lever shown on the left cannot be moved until the clutch is withdrawn, which removes the block on the clutch lever shaft from beneath gear lever bolt. The illustration above depicts the enclosed valve springs and tappets on the Reading Standard.

taining several desirable Americ characteristics, such as the single-lev carburetter, high power, and sound co struction. The valves are situat side-by-side, and their springs are neat enclosed in telescopic protectors. Spec attention has been paid to the mater of the valves, which are of chro vanadium steel, and are guaranteed n to warp or become pitted. Roller be ing connecting rods are fitted. The ge box is also worthy of mention, in th it contains three speeds, is of su stantial construction, and the shafts r on ball bearings throughout. Lubric tion is effected by means of a skew-driv mechanical oil pump, which maintai a constant level of oil in the cra chamber, and by an auxiliary hand pum The transmission is by ⅞in. wide by ⅜ pitch roller chains. The mudguards wide and carefully valanced. Li many other American motor cycles, possesses a spring seat-pillar in additi to a comfortable saddle. This pil consists of a movable rod in the sad tube carried between two heavy sprin one taking the load and the other che ing the rebound, while it also posses the advantage of being adjustable so to suit the rider's weight. The mo bicycle shown is fitted with a Splitd electrical generator carried entir separate from the magneto and driv by belt off the mainshaft.

The Olympia Show.—

SALTLEY, No. 148.

2¾ h.p. Villiers two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; C.A.V. chain-driven magneto; two-speed Albion gear; chain and belt drive; Dunlop heavy tyres.

SALTLEY CYCLE Co., 86, Snow Hill, Birmingham.—A neat two-stroke lightweight, the Saltley is shown on the stand of Timperley and Co. in the Gallery. The machine is manufactured on standard lines, and a sporting layout is followed. The Villiers engine is fitted, and lubrication is effected by direct drip to the crank case through a Best and Lloyd sight feed oil pump. T.T. bars and disc wheels are fitted as standard, and aluminium footboards, with a neat heel brake pedal on the left, are provided. The Albion gear box, with or without clutch and kick-starter, is fitted, and single-speed models are also offered.

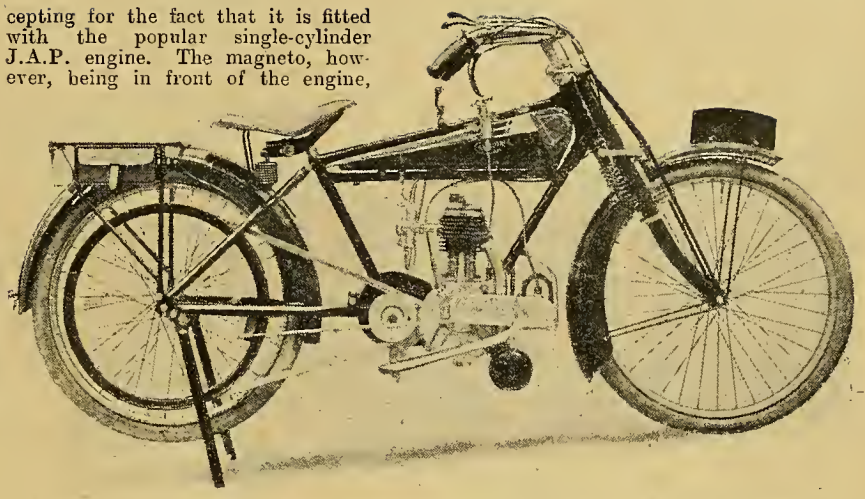
CALTHORPE, No. 84.

2¾ h.p. two-stroke MODEL: 75×79 mm. (350 c.c.); valveless gear; Amac carburetter; C.A.V. chain-driven magneto; chain and belt drive; two-speed selective clutch gear; 26×2in. Dunlop tyres.

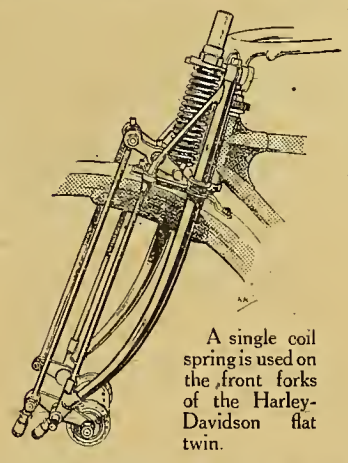
CALTHORPE MOTOR CYCLE Co., Barn Street, Birmingham.—Two models, each of which is subject to slight variations, are exhibited on the Calthorpe stand. The two-stroke is fitted with an engine following accepted practice and having a detachable plate covering the transfer port. Lubrication is by sight feed drip to a groove surrounding the cylinder, from which oil passes to the piston and finally to the crank case. The gear fitted is an Enfield with final belt transmission. Front springing is effected through Druid type forks with spring top links. Both front and rear guards are partly valanced, and the rear wheel brake acts on the inside of the belt rim. A very practical feature of one example is the neat all-black finish.

2¾ h.p. single four-stroke MODEL: J.A.P.; 70×76 mm. (292 c.c.); side-by-side valves; Amac carburetter; C.A.V. chain-driven magneto; chain and belt drive; two-speed selective clutch gear; Dunlop 26×2in. tyres.

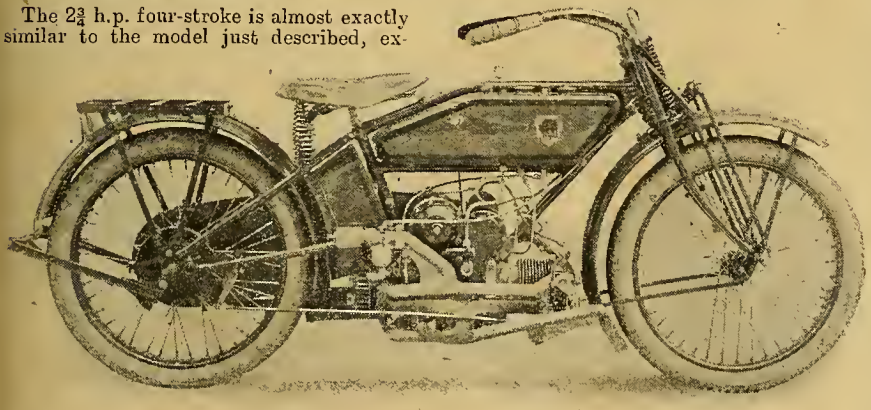
The 2¾ h.p. four-stroke is almost exactly similar to the model just described, except for the fact that it is fitted with the popular single-cylinder J.A.P. engine. The magneto, however, being in front of the engine, is protected by a simple aluminium shield. All Calthorpe models are distinguished by the striking octagonal tank and sloping top tube. Black or plated finish of either type is optional. The chains in both models are protected by a wide guard.



A Calthorpe, with J.A.P. engine and Enfield gear. One of the several lightweights offered by the Calthorpe Co.



A single coil spring is used on the front forks of the Harley-Davidson flat twin.



An American flat-twin—the 4 h.p. Harley-Davidson, a machine that already has good records to its credit in the U.S.A.

HARLEY-DAVIDSON, No. 117.

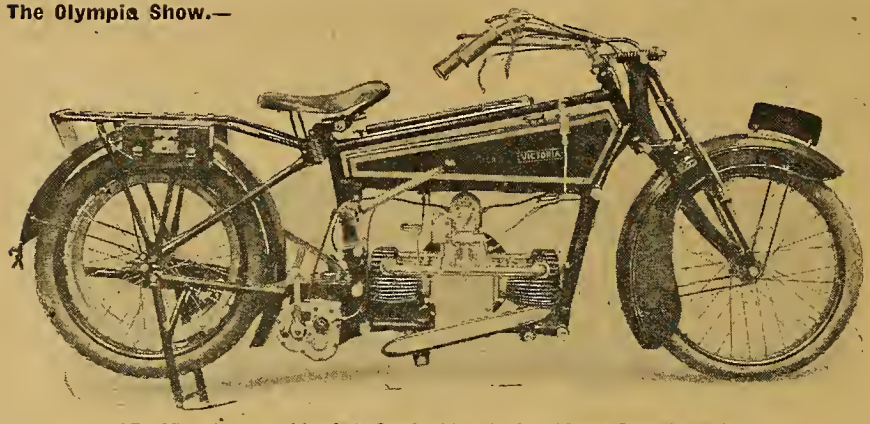
7-9 h.p. V twin four-stroke MODEL: 84×89 mm. (986 c.c.); overhead inlet valves; Schebler carburetter; Berling gear-driven magneto; three-speed gear; chain drive; Goodyear 28×3in. tyres.

HARLEY-DAVIDSON MOTOR Co., LTD., 74, Newman Street, W.—The Harley-Davidson Motor Co. have an imposing exhibit of three sidecar outfits and three solo motor cycles. These include the electrical and magneto models, as well as the handy little flat twin Sports model, which is bound to be popular among motor cyclists during the coming year. There is a certain fascination about the heavy solo of big horse-power which appeals to a vast number of riders, and it is in the design of this type of machine that the American manufacturers have excelled. Also the same type gives ample reserve of power when attached to a sidecar, and the sidecar models on this stand will receive special attention in our sidecar article in next week's issue. The 7-9 h.p. Harley-Davidson possesses many excellent points. Among these may be mentioned the spring seat-pillar, having the spring enclosed in the saddle tube, and the spring forks, the springs of which are just as neatly hidden inside the fork members. So far as the engine is concerned, it may be mentioned that of the two connecting rods the main runs on roller bearings. The lock nut of the valve tappets is of very ingenious design: it permits very fine adjustment, and when once locked is quite secure.

4 h.p. flat twin four-stroke MODEL: 70×76 mm. (584 c.c.); side-by-side valves; Schebler carburetter; gear-driven magneto; three-speed gear; gear and chain drive; 26×2½in. tyres.

The Sports model will certainly appeal to the rider who wants a mediumweight mount for solo riding which will give a fair turn of speed. It is full of interesting features, such as the staggered valves actuated by one camshaft, the ingeniously heated induction pipe, and the simple form of single chain transmission. Roller bearings are fitted throughout, including

The Olympia Show.—



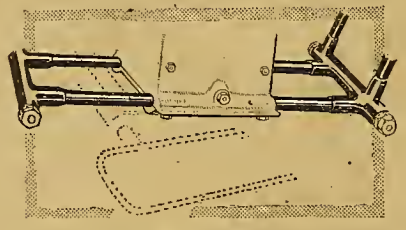
The Victoria motor bicycle is fitted with a 5-7 h p. Victor flat twin engine.

the crank pin bearings, and large balance counterweights are fitted to the crankshaft. The question of cooling has been carefully gone into, even the valve caps possessing radiating fins. The valve guides are screwed into the cylinders, thus allowing easy replacement.

VICTORIA, No. 87.

5-7 h.p. flat twin four-stroke MODEL: Victor; 75×78 mm. (688 c.c.); Amac carburetter; C.A.V. gear-driven magneto; Sturmey-Archer three-speed countershaft gear; chain drive; Dunlop 650×65 mm. tyres.

VICTORIA MOTOR AND CYCLE CO., LTD., Dennistoun, Glasgow.—The most striking



Method of mounting the Victor engine on the duplex tubes of the Victoria motor bicycle.

exhibit on the stand of the Victoria Motor and Cycle Co. is the Victor-engined flat twin model. The machine is novel in many respects and should prove a fast solo mount and a sturdy example of a sidecar machine. The framework is duplicated below the tank, and the engine rests on two parallel tubes. A special framework supports these tubes from a T lug and the base of the saddle tube. Throughout the whole framework the massive proportions are particularly noticeable, as also is the fact that locknuts are used wherever necessary. Brampton Biflex forks provide front springing. The front mudguard is fully valanced, and the rear guard is of exceptional width. The chain from the engine to the Sturmey-Archer gear box is protected by a sheet metal cover, and wide rubber-covered footboards are provided for the rider. Lubrication is by sight feed drip, and a very large torpedo-shaped silencer is attached to the chain stays.

O.K., No. 86.

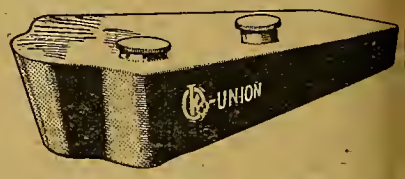
2¾ h.p. single-cylinder two-stroke Union MODEL: 70×76 mm. (292 c.c.); Amac carburetter; Runbaken magneto, direct driven; single speed; belt drive; 26×2in. tyres.

HUMPHRIES AND DAWES, LTD., Hall Green Works, Birmingham.—A large amount of attention has been attracted to the new O.K. Union by the plucky ride which was undertaken by Capt. P. Pike from Inverness to Land's End. The machine, which is to sell at the moderate price of 38 guineas, is to be mass produced, and will undoubtedly attract a large number of prospective purchasers, owing to its sound construction. The Union two-stroke engine forms the power unit, and it will be remembered that one of the most outstanding features is the magneto driven direct from the crankshaft. The lubrication is by sight feed drip directly to both main crankshaft bearings, plain bearings being used throughout. An auxiliary lead from the main oil pipe feeds directly to the piston. Large diameter bearings and a drilled connecting rod with split big ends are employed, and the one-piece crankshaft has disc webs carefully balanced. Special provision is made to prevent oil leakage from the bearings. With regard to the construction of the frame and details, the broad outlines are pleasing, and the all-black finish is most practical. The O.K. leaf spring fork is extremely simple, and should provide great comfort, while a metal tool box is carried on the top tube, where it receives less vibration from road shocks than on any other part of a motor cycle.

A Union engine in section is also shown on this stand.

2¾ h.p. flat twin four-stroke MODEL: 60×60 mm. (348 c.c.); overhead inlet valves; Amac carburetter; C.A.V. magneto, chain driven; two-speed gear; chain-cum-belt drive; 26×2¼in. tyres.

Another model which will be exhibited to the public for the first time is the flat twin O.K. This is an interesting little machine in many respects, especially as regards the valve gear. As indicated in the heading, the inlet valve is directly over the exhaust, but a feature which is well worthy of notice is the fact that the valves are operated by a single cam, which is driven through internally cut gearing. This is perhaps the simplest form of valve



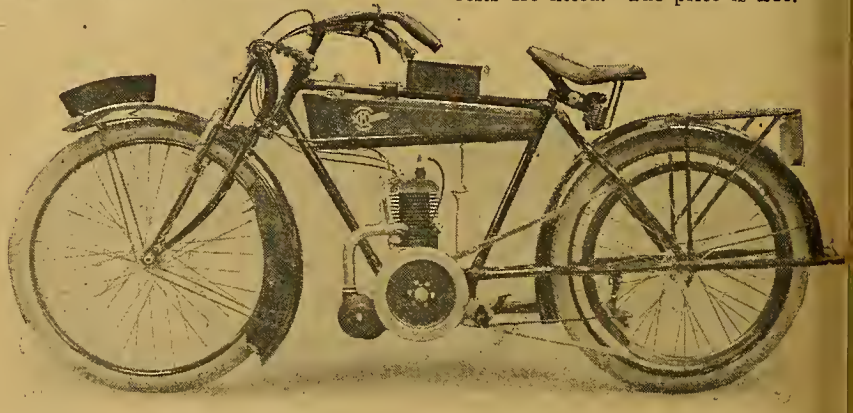
The shapely tank of the new O.K. union, which Humphries and Dawes are introducing to sell at a popular price.

gear possible for a flat twin. The frame is of duplex construction, and is both strong and light. Forks similar to those described on the O.K. Union, but of a slightly heavier type, are fitted.

KINGSBURY, No. 1.

2¾ h.p. two-stroke MODEL: 75×79 mm. (349 c.c.); Senspray carburetter; chain-driven magneto; belt drive; 26×2¼in. tyres.

LONDON AND MIDLAND MOTORS, LTD., 445, Oxford Street, W.1.—A new lightweight, manufactured by the Kingsbury scooter firm, is one of the chief exhibits staged by London and Midland Motors, Ltd. It follows conventional lines, but as regards design and general specification, it has a straight tube frame, Brampton forks, Xl-All saddle, and plain mudguards. Two pairs of rubber-faced footrests are fitted. The price is £50.



The 2¾ h.p. O.K. Union single-geared mount, one of the cheapest machines in the Show.

Vivian Hardie & Lane Limited

SERVICE AGENTS FOR

DOUGLAS.

6-8-19

Messrs. Vivian Hardie and Lane, Ltd.

Gentlemen—Enclosed remittance for £1-6-6. It has been a real pleasure to deal with so courteous and prompt a firm.

Yours sincerely.

(Signed) W.F.R—

Oct. 18, 1919.

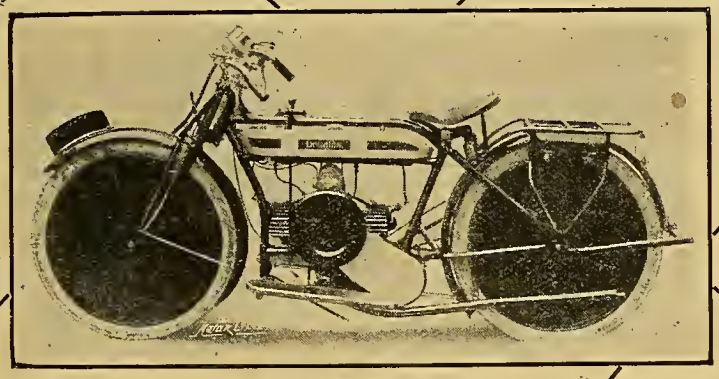
Dear Sirs,

Please accept my sincere thanks for your courtesy and prompt attention, which is greatly appreciated.

Yours faithfully

(Signed) W. H. T—

LEVIS & N.U.T.



ASK FOR OUR REPRESENTATIVE AT THE SHOW.

April 25, 1919

Messrs Vivian Hardie and Lane, Ltd.

Dear Sirs,

I must thank you for your attention. I first saw your name in "The Motor Cycle," it is a blessing to discover a firm which takes a real personal interest and treats their customers on the good old English lines of courtesy promptness, and consideration.

Yours faithfully

(Signed) H. C. S—

Oct. 22, 1919.

Dear Sirs,

I feel I must write and thank you for such prompt attention, especially so taking into account the small amount of my purchase, i.e. 6d. Needless to say I shall not fail to place any further orders for spare parts, &c., when I require prompt attention.

Yours faithfully

(Signed) H. L. C—

1920 4 h.p. DOUGLAS COMBINATION

(With CHELSEA DISCS),

now on view at our Showrooms.

DOUGLAS REPAIRS OF EVERY DESCRIPTION.

SPECIALITIES IN STOCK.

Douglas Spares. Douglas Instruction Books, 1/3. Tan-Sad Seats, 33/- P. & H. Lamp Sets. Complete Cycling Suits, £2 2s. Dunlop and Hutchinson Tyres. Douglas Aluminium Chain Guards, 12/6. G.L. Sidecars and Canoes. Cowey Horns, £3. Cowey Speedometers, £4 15s.

SOLE AGENTS FOR CHELSEA DISCS (The best in the World).

24, Woodstock St. (off Oxford Street), Bond St., W.1.

Telephone: Mayfair, 6559.

For the convenience of our clients, we have taken an office at 18, West Kensington Gardens (Hammersmith Road Entrance to Olympia) where our representatives will be pleased to meet anyone interested in the machines for which we are agents. Our representatives will also be in attendance on the stands of the firms above mentioned.

STAND NO. 108
GROUND FLOOR

Enter from Hammersmith Road, left incline, and see the——

ZENITH

1920 MODELS

all fitted with the famous GRADUA GEAR.

2¾ h.p. H. O. TWIN MODEL, an entirely new production.
5 h.p. MODEL C.—the Sporting model.
8 h.p. MODEL H.—for Passenger work.

ZENITH MOTORS, LTD.
HAMPTON COURT, ENG.

NOTICE.

STELASTIC TYRES, LIMITED, regret to announce to their customers that they are still unable, owing to shortage of skilled labour, to re-commence the production of

STELASTIC ARMOURED MOTOR CYCLE TYRES

having had to concentrate all available labour on the production of

STELASTIC ARMOURED CAR TYRES

They hope, however, to re-commence delivering in the spring of 1920.

STELASTIC TYRES, LTD.,
14 & 16, GARWAY ROAD, WESTBOURNE GROVE, LONDON, W.2.
Telegrams—"Torkitire, London." Telephone—1271 1272 Park.

The Olympia Show.—

SIMPLEX, No. 36.

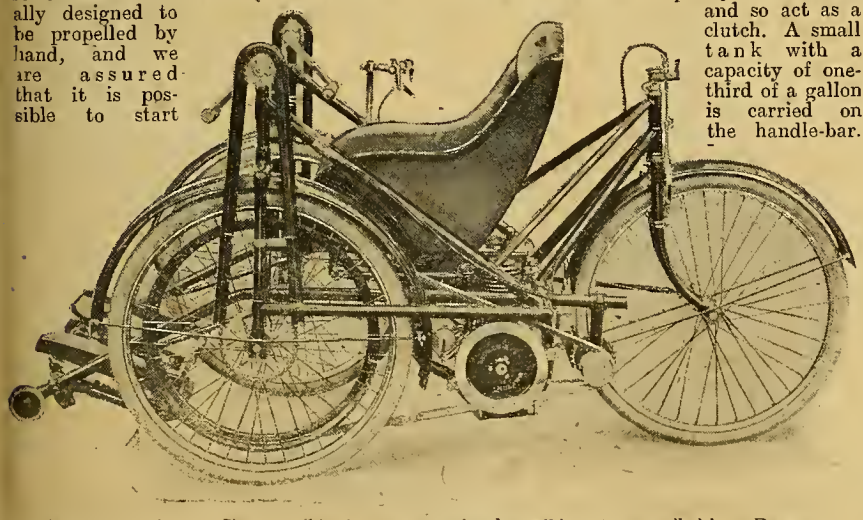
1 h.p. two-stroke MODEL: 51×51 mm. (105 c.c.); Amac carburetter; Runbaken magneto; gear driven; chain drive.

PATRICK ENGINEERING CO., LTD., New Summer Street, Birmingham.—The Simplex is one of the earliest attachments for motorising a pedal cycle. The unit, we may remind our readers, is fixed by means of a hinged clip on to the seat-pillar tube, and there are two supporting stays from the engine base to the cycle wheel spindle. The driving wheel is attached by special tubular spokes, through each of which wire passes through small holes pierced in the rims between the ordinary spokes. The engine is a two-stroke, and drives by gear to a countershaft on which a small chain wheel is fitted. There is a tiny plate clutch which enables a free engine position to be obtained.

DAYTON MOTOR TRICYCLE, No. 40.

1½ h.p. two-stroke MODEL: Amac carburetter; Lion chain-driven magneto; adjustable pulley; belt and chain drive; 26×1¾ Warwick tyres.

CHAS. DAY MFG. CO., LTD., 221, High Street, Shoreditch, London, E.1.—This is a motor-propelled invalid tricycle of a type about which we are often asked by those who have been unfortunate enough to have been seriously disabled while fighting for their country. The motive power is a Dayton two-stroke engine carried in an under-frame. The drive is by chain to a countershaft, and thence by belt to the near side wheel. Everything is of the simplest. There is a tank holding one gallon of petrol and one pint of oil, on which there is a pump for introducing the oil into the petrol as the petroil system of lubrication is employed. The small pulley is adjustable, so that the gear ratio may be altered. A short tiller is provided for the steering, which moves the back wheel through a rack and pinion. On this tiller is a brake lever, and one actuating the compression release. Adjacent to the left hand is the carburetter control. The tricycle was originally designed to be propelled by hand, and we are assured that it is possible to start the engine with one hand. The speed attainable is from three to twelve miles an hour.

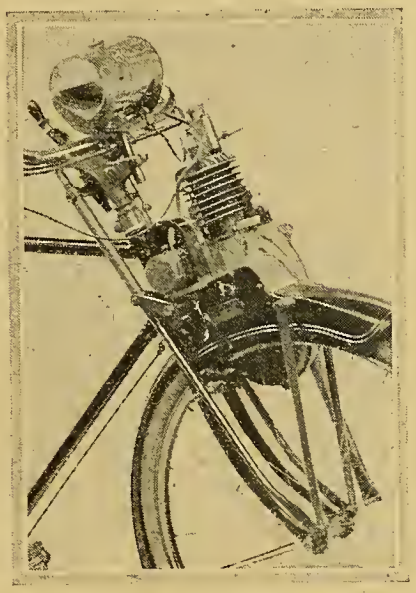


Among a variety of Show exhibits is a motor-assisted invalid chair, propelled by a Dayton two-stroke engine

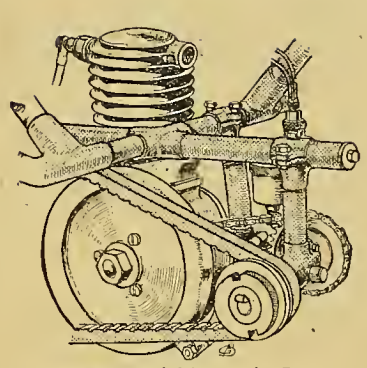
CYCLO-MOTOR, No. 200.

1½ h.p. four-stroke single-cylinder MODEL: 50×55 mm. (105 c.c.); friction transmission.

THE BRITISH MOTOR CAB CO., LTD., Grosvenor Road, S.W.1.—The auxiliary motor attachment is represented at Olympia by designs from England, U.S.A., and France. The latter production is known as the Cyclo-Motor, and is on view at Messrs. Smith's stand in the Gallery. Of the four-stroke type, the engine is carried on a pair of special forks intended to replace the existing forks of a pedal cycle. Transmission is by friction wheel on the tyre of the bicycle wheel, and a lever is arranged to enable the friction pulley to be raised and so act as a clutch. A small tank with a capacity of one-third of a gallon is carried on the handle-bar.



A French auxiliary motor unit, the 1½ h.p. cyclomotor which drives a pedal cycle front wheel by friction roller on the tyre.



Arrangement of drive on the Dayton invalid tricycle.

YOUNG, Nos. 114 and 227.

1¾ h.p. single-cylinder two-stroke MODEL: 70×70 mm. (269 c.c.); Amac carburetter; Runbaken chain-driven magneto; chain transmission.

MOHAWK CYCLE CO., LTD., Hornsey, N.—Having an engine of slightly larger horse-power than those usually fitted to pedal cycle motor attachments, the Young engine and transmission set should appeal specially to heavy riders or those who live in hilly districts. Conventional three-port practice is followed in the engine design, excepting that the transfer port is covered with a plate fixed by screws, and that a detachable head is fitted. The engine is mounted on a frame or carrier which fits on the seat stays, and has two additional struts extending to the axle. A further stay of flat steel, having a yoke or bridging piece in it to accommodate a small countershaft, is fitted between the engine and the hub spindle. The cylinder extends rearwardly and horizontally, the flywheel is to the right of the machine, and the magneto is between the crank case and the rear of the cycle saddle. Transmission is by chain. The first reduction is to a large sprocket on the countershaft beforementioned, and in this is situated a handle-bar controlled metal cone clutch. From here the drive is taken to the back hub, on which a chain sprocket is screwed on the side remote from the pedalling free-wheel. The makers hope to market this attachment at a reasonable price, probably in the region of £20.

The A.C.U. and Olympia.

The Auto Cycle Union are at Stand No. 2, where members will receive every attention at the hands of a large staff. Special facilities are provided whereby prospective members may enrol without any of the formalities which are unavoidable when writing. The Senior and Junior Tourist Trophies and other famous challenge cups are on view. A number of road guides are distributed throughout the building and its immediate vicinity to give a helping hand to all and sundry. Members will doubtless avail themselves of the lounge—provided by the Union in the well-known Princes Rooms—where special arrangements have been made for the provision of tea and light refreshments.

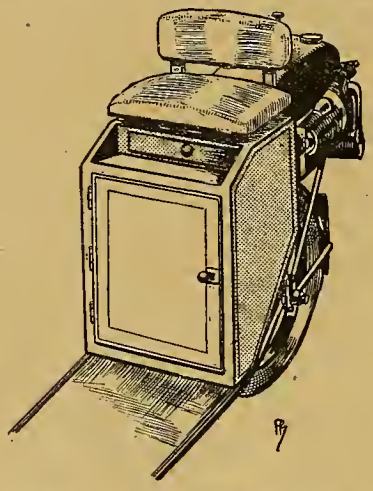
NOVELTIES IN SCOOTER DESIGN.

Examples of Miniature Two-wheelers Exhibited at Olympia.

SKOOTAMOTA, No. 41.

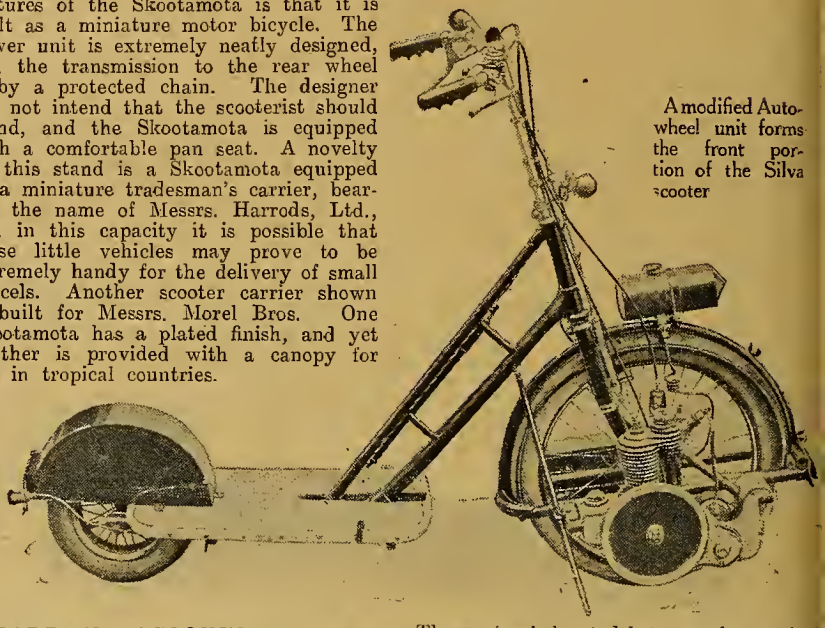
1½ h.p. four-stroke MODEL: 60×44 mm. (125 c.c.); overhead exhaust valve; Amac carburetter; C.A.V. magneto, gear driven; single gear; chain drive; 16×2⅜in. Clincher tyres

GILBERT CAMPLING, LTD., 1, Albemarle Street, W.1.—Designed by Mr. Granville Bradshaw, the Skootamota is full of ingenious points. It is interesting to note that its cylinder forms half the unit of the neat little flat-twin stationary engine



A large box is fitted beneath the seat on the commercial model A.B.C. Skootamota.

which Mr. Bradshaw designed for electrical generating sets and blowers for filling airships during the war. Following the original A.B.C. practice, the exhaust valve is situated in the cylinder head, which is detachable, and the inlet valve beneath it, while the cylinder is of steel, and is turned from the solid. One of the features of the Skootamota is that it is built as a miniature motor bicycle. The power unit is extremely neatly designed, and the transmission to the rear wheel is by a protected chain. The designer did not intend that the scooterist should stand, and the Skootamota is equipped with a comfortable pan seat. A novelty on this stand is a Skootamota equipped as a miniature tradesman's carrier, bearing the name of Messrs. Harrods, Ltd., and in this capacity it is possible that these little vehicles may prove to be extremely handy for the delivery of small parcels. Another scooter carrier shown is built for Messrs. Morel Bros. One Skootamota has a plated finish, and yet another is provided with a canopy for use in tropical countries.

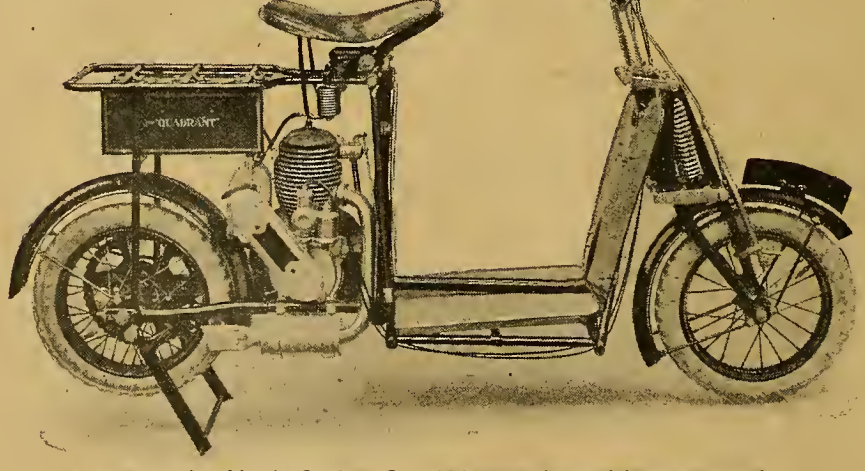


A modified Auto-wheel unit forms the front portion of the Silva scooter

QUADRANT SCOOTER, No. 121.

2 h.p. single two-stroke MODEL: 70×76 mm. (292 c.c.); Amac carburetter; M L chain-driven magneto; single speed; chain drive; 16×2½in. Wood-Milne tyres.

QUADRANT CYCLE CO., LTD., 45, Lawley Street, Birmingham.—This is quite a new product, and has every appearance of being a practical type of machine, with refinements not usually associated with motor scooters. Except for the small diameter wheels, it may well be considered a lightweight motor cycle, the weight being 110 lb. Spring forks, a sprung platform, and adjustable height handle-bars and seat-pillar are in evidence, and a front wheel rim brake.



A scooter produced by the Quadrant Co., which approaches a miniature motor cycle.

The engine is located between the vertical saddle tube and the rear wheel, and is surmounted by a rectangular tubular frame, which displaces rear stays, serves to support the one and a half gallon petroil tank, and forms a substantial luggage carrier. The rear wheel stand has, like the larger Quadrants, a spring clip mounted on a lug extending from the back fork on the left, thus relieving the mudguard of the duty of supporting the stand.

SILVA, No. 17.

1 h.p. single four-stroke MODEL: 52.5×54 mm. (117 c.c.); automatic — inlet valve; S.U. single-lever carburetter; C.A.V. gear-driven magneto; single speed; chain drive; Avon 20×1¾in. tyre on front and Palmer Cord 300×60 mm. tyre on rear wheel.

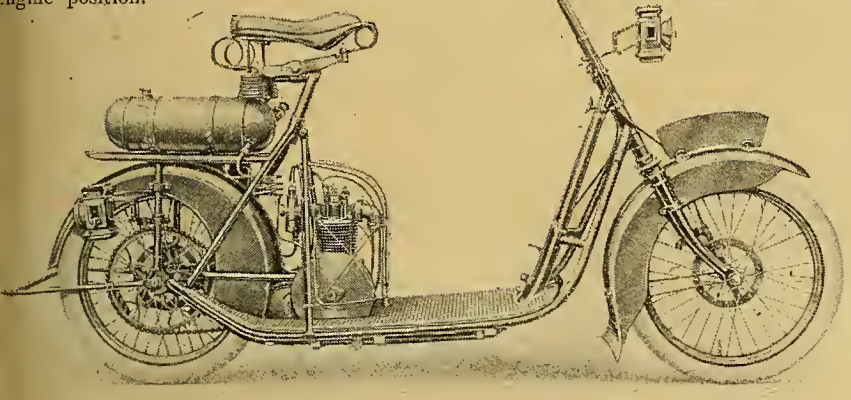
T. AND T. MOTORS, LTD., 52a, Conduit Street, W.1.—On this stand is to be seen the Silva scooter, the motive power of which is an Auto-wheel unit suitably placed in the forks. The rear wheel is considerably smaller than the front, and is fitted with a 300×60 mm. Palmer Cord tyre, while the front wheel is equipped with an Avon 20×1¾in. tyre. The rider is intended to assume a standing position on this scooter, but a seat may be fitted at a slight extra cost. On the opposite side of the power unit is a small box designed to carry an accumulator for lighting and a few tools. The Silva scooter is fitted with a simple form of single leg stand.

AUTOPED SCOOTER, No. 28.

W.T.T. ENGINEERING CO., LTD., 6-10, Dalling Road, Hammersmith, London, W.1.—There is shown on this stand the Autoped scooter. This machine is of very ingenious construction and

The Olympia Show.—

embodies twist grip controls, clutch, and flywheel magneto. The construction of the frame is most ingenious and well worth a careful study. The steering pillar when depressed provides a free engine position.



A feature of particular interest on the Whippet scooter is the aluminium cylinder. Overhead valves are used on the engine.

KINGSBURY, No. 1.

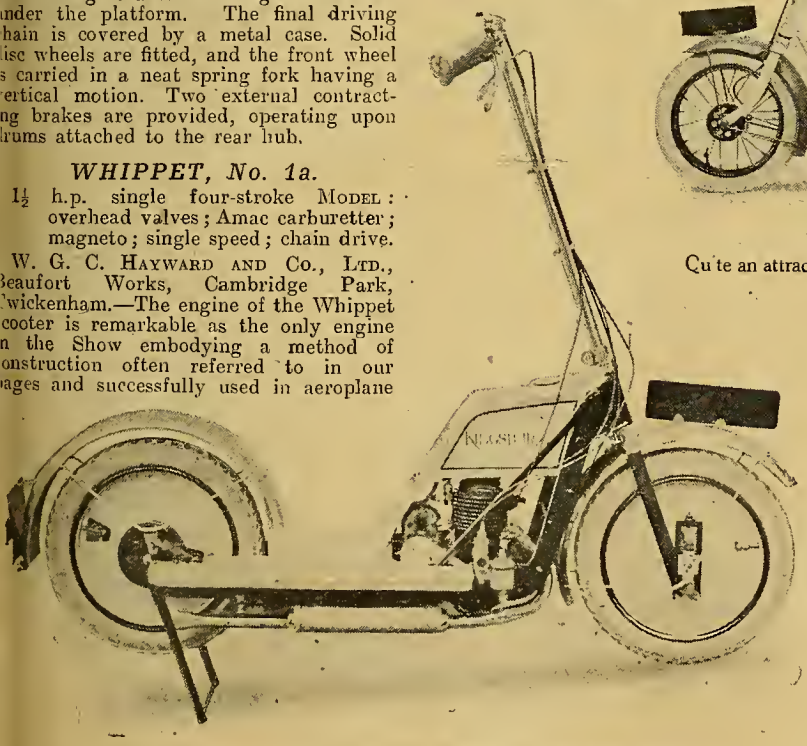
2¼ h.p. two-stroke MODEL: Amac carburetter; C.A.V. magneto; chain-driven; chain transmission; single speed.

LONDON AND MIDLAND MOTORS, LTD., 145, Oxford Street, S.W.1.—A substantially built scooter, embodying a pressed steel frame and large platform. The Kingsbury is one of the best of the "stand up to ride" types. The engine is located in the front end of the "chassis," and has a detachable head, the cylinder barrel and crank case forming one casting. Chains are used for the transmission, the primary drive being to a ball bearing countershaft under the platform. The final driving chain is covered by a metal case. Solid disc wheels are fitted, and the front wheel is carried in a neat spring fork having a vertical motion. Two external contracting brakes are provided, operating upon drums attached to the rear hub.

WHIPPET, No. 1a.

1½ h.p. single four-stroke MODEL: overhead valves; Amac carburetter; magneto; single speed; chain drive.

W. G. C. HAYWARD AND CO., LTD., Beaufort Works, Cambridge Park, Twickenham.—The engine of the Whippet scooter is remarkable as the only engine in the Show embodying a method of construction often referred to in our pages and successfully used in aeroplane practice, viz., an aluminium cylinder with a steel liner and a detachable head. The engine is a 1½ h.p. four-stroke, and is situated almost below the saddle, the supporting tubes of which divide and pass on each side of it. The pistons are also of aluminium. The petrol tank is unusually large for a scooter and contains 1¼ gallons of petrol as well as oil. The upper half of the rear wheel is enclosed, and both wheels are fitted with contracting band brakes, that in front being operated from the handle-bar by a Bowden cable, and that in the rear by a pedal.

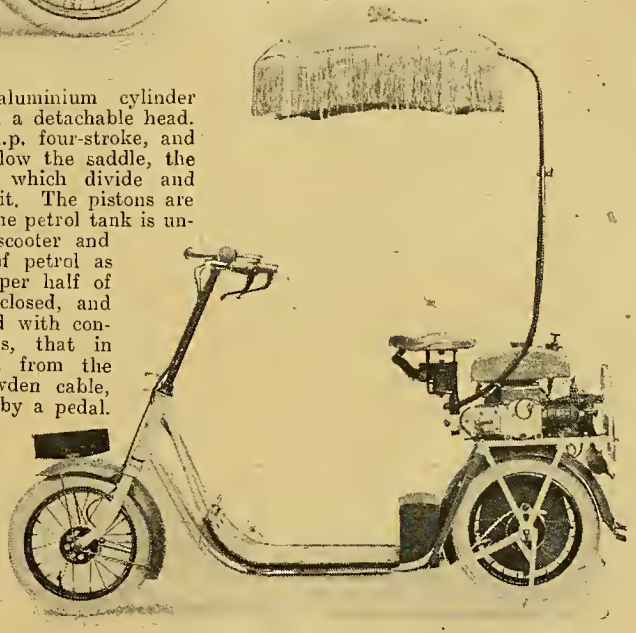


The Kingsbury scooter, which has a two-stroke engine and disc wheels.

LONDON-EXETER RUN.

Up to 21st of November fifty-one entries had been received for this sporting event—a large number of them from new members joining specially for the winter run. Members are reminded that entries close on December 8th. Owing to the fact that it has been found impossible to arrange for a meal at the Bridge House Hotel, Staines, competitors must make their own arrangements before the start. Meals have been arranged for at the White Hart at Salisbury on both outward and homeward journeys, and breakfast at the Bude Hotel, Exeter. Hot refreshments will also be obtainable at Yeovil.

The hon. sec., Mr. B. Alan Hill, "Apsley," Fellows Road, Farnborough, Hants, would be glad to hear from any motor cyclists who would be willing to help along the route as marshals, etc.



WHAT NEXT IN SCOOTERS?
Quite an attraction at the Show is the Oriental model Skootamota, which has a silk canopy, as shown.

The T.T. Races in 1920.

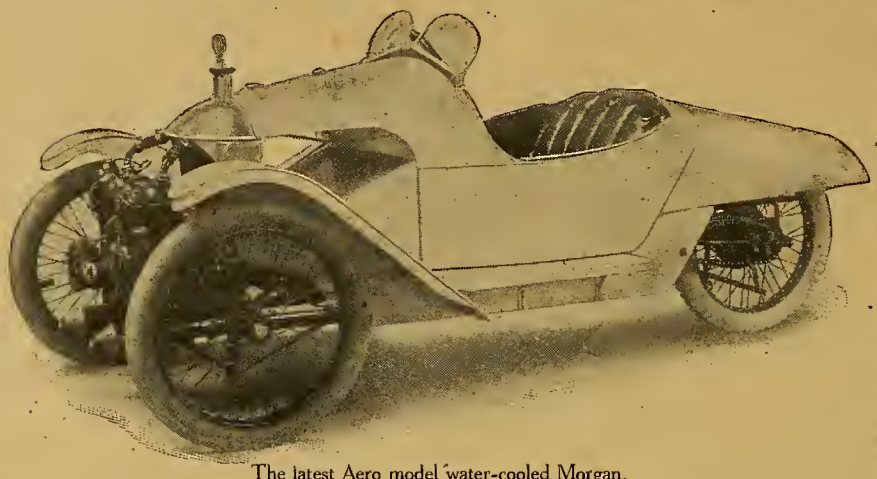
We hear that the Manx people are looking forward to the renewal of the T.T. races in 1920, and the R.A.C. has received a hearty invitation to organise races. The A.C.U. has provisionally arranged the programme, which will include a lightweight race for the trophy presented by *The Motor Cycle*, to take place in May next.

"THE MOTOR CYCLE" SHOW REPORT.

This issue creates a new world's record in the circulation of motoring journals, the printing order being for over 130,000 copies. Apart from circulation, however, there are actually more pages than in any previous issue, the weight of paper alone exceeding 70 tons. There are approximately 300 illustrations.

THE RUNABOUTS AT OLYMPIA.

Latest Examples of Three-wheeled Passenger Motor Cycles available in 1920. Definite Progress Achieved.

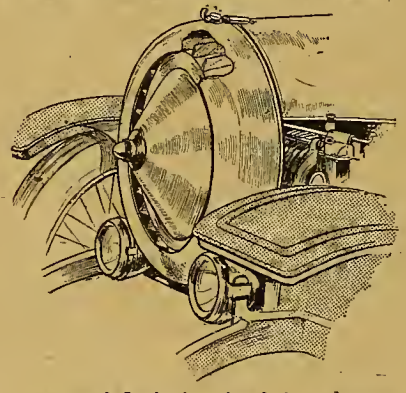


The latest Aero model water-cooled Morgan.

MORGAN, No. 120.

8 h.p. V twin MODEL: 85.5×85 mm. (976 c.c.); side-by-side valves; Amac carburetter; gear-driven magneto; two-speed gear; chain transmission; 700×80 mm. tyres.

MORGAN MOTOR CO., LTD., Malvern.—In addition to a chassis, eight complete machines are shown. These comprise two standard air-cooled models, one with an 8 h.p. J.A.P. engine, and the other with a 10 h.p. Precision (85×96 mm. V twin); two with a type of body termed the Aero model, and having water-cooled 10 h.p. J.A.P. (85.5×85 mm.) and M.A.G. (82×104 mm.) engines respectively; two *de luxe* machines, one with an air-cooled J.A.P. engine, and the other with a water-cooled motor of the same make; while the last two consist of a 10 h.p. M.A.G.-engined standard Grand Prix water-cooled model, and a 10 h.p. water-cooled J.A.P.-engined four-seater. The latter is shown for the first time in public, and is primarily intended for two adults in front and two children behind.



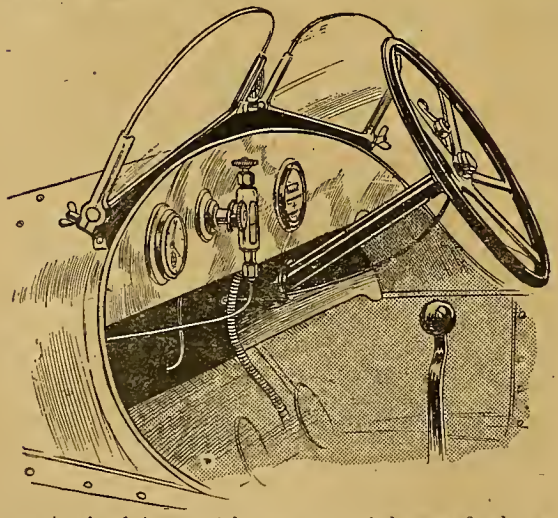
A vaned flywheel enclosed in a dummy radiator provides a forced cooling draught for the cylinders of the Wooler mule.

The front seat is adjustable for length of leg, and can be brought well forward if, on emergency, two normally-proportioned adults were to be carried behind, though obviously this little machine could not be expected to cope with a regular load of, say, 40 stones. The back seat, nevertheless, is quite as roomy as that at the front, and is well upholstered; it will certainly accommodate two well-grown children even if a week-end suit case or parcels were carried between them. The general design of the Aero body model is particularly attractive, for the streamline tail harmonises well with the fore part of the machine. The dashboard is aluminium faced, and carries a speedometer and clock flush fitted, besides the sight feed oiler in the centre. The Grand Prix type is well known as a wonderful hill-climber and exceptionally speedy for a motor vehicle of this weight and type; it is capable of a speed of over 60 m.p.h. on the level. Various detail improvements have been embodied in all types for 1920; for instance, the tail is now hinged so that, after two holding-down springs have been released, it can be lifted instantly for tyre repairs, inspecting, or adjusting the chain. The withdrawal mechanism of the clutch, too, is now provided with a ball thrust race, considerably reducing wear at this point and facilitating change of gear. But in general design there has been found no call for variation.

WOOLER MULE, No. 47.

10 h.p. flat twin MODEL: 85×90 mm. (1,022 c.c.); single valve and distributer valve; Wick carburetter; C.A.V. gear-driven magneto; variable pulley; belt and shaft drive; 700×75 mm. Palmer cord tyres.

WOOLER ENGINEERING CO., LTD. Alperton.—One of the most novel passenger machines staged at Olympia is the



A pair of Auster triplex aero type windscreens fitted to a Grand Prix Morgan. Observe the aluminium instrument board.

The Wooler-Mule, a three-wheeler embodying many unconventional features in the engine, transmission, and springing system.

Humber

At Olympia

The 4½ h.p. Humber Motor Cycle exhibited at Olympia has a flat twin cylinder engine, as in the 3½ h.p. model, but it should create a greater demand, because it is constructed for sidecar work as well as solo, whereas the 3½ h.p., though it did splendid service for riders with combination attached, was generally recognised as a "solo machine."

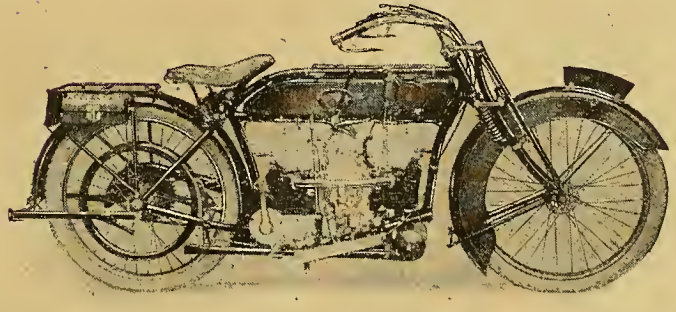
Stand No. 85.

There is ample margin of power reserve in sidecar work with the 4½ h.p. 1920 Humber. The engine, 75 bore, 68 stroke, has horizontally-opposed cylinders, perfect balance, and smooth, easy-running qualities.

The model is staged at Olympia, both as solo and with attractive and comfortably-sprung sidecar.

HUMBER LIMITED.

Head Offices and Works:
COVENTRY.



On the Road—

Wherever a goodly number of Motor Cyclists congregate, there also you will find all kinds of mounts fitted with Palmer Cord Tyres.

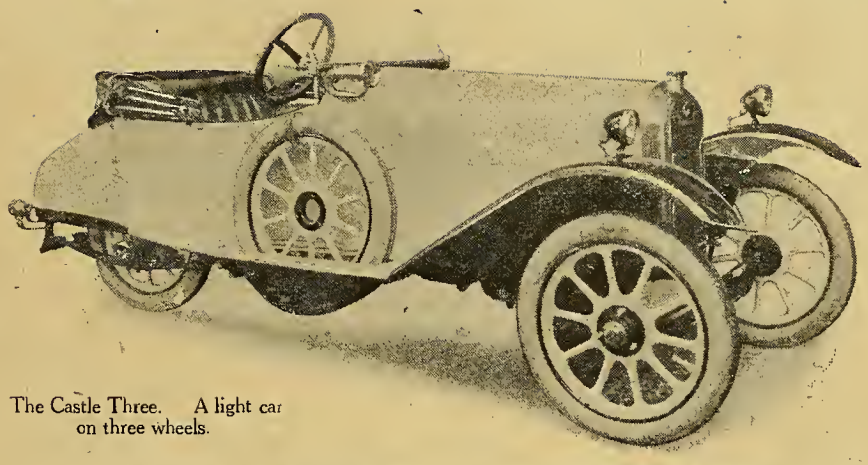
At the Show—

Stand No. 112 will be also the rendezvous of users of Palmers (from the owner of the light little two-stroke to the driver of the powerful combination shod with Palmer Cord Car Type Tyres) and also the Stand of particular interest to prospective users of Palmers, who have noted their consistent reliability and durability in the past season's Races and Reliability Trials

Stand No. 112

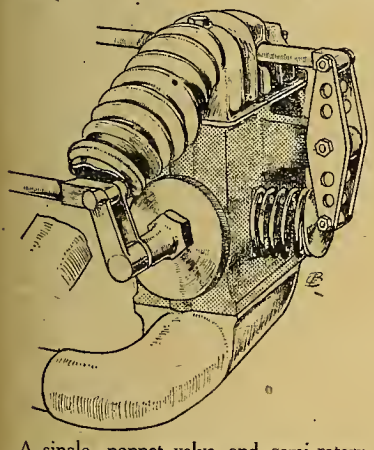
THE PALMER TYRE, LIMITED,
119-123, Shaftesbury Avenue, London, W.C.2.
CYCLE TYRE DEPT., 103, St. John St., Clerkenwell, E.C.

The Olympia Show.—



The Castle Three. A light car on three wheels.

new Wooler Mule. Beginning with the engine, this is full of interesting features. First, the heads of the horizontal cylinders are detachable, and held in position by a ring fixed by long holding-down bolts. The valve gear consists of a single poppet valve, which remains open from the beginning of the exhaust stroke to the end of the inlet stroke, its functions being determined by a semi-rotary valve operated from a separate camshaft. As the engine is placed across the frame, the cylinder heads protrude from the bonnet, and, in addition to being exposed to the air, they are cooled by a simple arrangement of forced draught. A conical web of the flywheel projects from a circular dummy radiator, and on the periphery of the flywheel rim fan vanes are disposed. These force air over the cylinders, and by means of baffles the airflow is directed on to the cylinder heads. The transmission is particularly ingenious. Gear ratios, varying from 4½ to 17¼ are obtained, and the drive first passes through two enclosed Whittle belts.



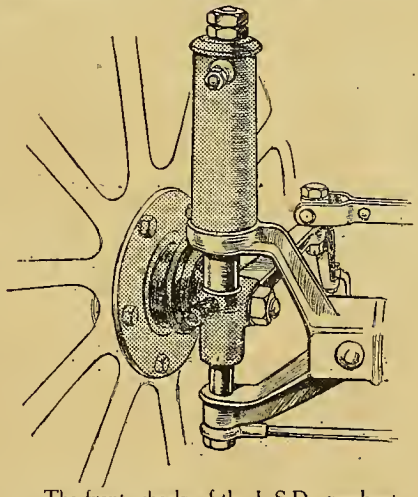
A single poppet valve and semi-rotary distributing valve are used on the Wooler Mule.

From the belts the drive is taken through a horizontally jointed propeller-shaft to a worm gear in the back axle, there being two rear wheels placed close together. It should here be stated that all four wheels are interchangeable. A simple armoured wood girder chassis is employed. Steering is by worm and wheel, and the springing of both front and back wheels is similar to that of the Wooler motor cycle, that is to say, by coil springs enclosed in guides, the wheels being free to move vertically. Both brakes act on the rear wheels, one being of the contracting band type and the other of the expanding shoe type. The body at present fitted will be somewhat increased in size in the future. Altogether, this machine is a striking novelty, and will be further dealt with at a later date. Light weight and a moderate price (£185) are further features.

CASTLE, No. 37.

10 h.p. four-cylinder MODEL: 64×85 mm. (1,094 c.c.); side-by-side valves; Zenith carburetter; spiral gear-driven magneto; two-speed and reverse epicyclic gear; shaft drive; 710×85 mm. tyres.

CASTLE MOTOR CO., LTD., New Road, Kidderminster. — An elaborate three-wheeler built entirely on car lines. The motive power is a four-cylinder Dorman water-cooled engine, driving through a clutch and two-speed epicyclic gear, and thence by propeller-shaft to a universal joint, from which the power is transmitted by a short shaft, very slightly out of line with the first shaft, and by bevel gear to the rear wheel. The latter is detachable by means of a withdrawable spindle and without disturbing the brake drum. There are two brakes, that operated by hand acting on a drum running in oil in the gear box, while the foot brake is of the internal expanding pattern on the rear wheel. The steering is carried out through planetary reduction gear, and the column is adjustable. The chassis is composed of channel steel members. The three-wheeler is sold complete with hood, screen, and dynamo lighting set, and the whole machine is a car in miniature. The suspension is by short quarter-elliptic springs in front and semi-elliptic springs at the rear.

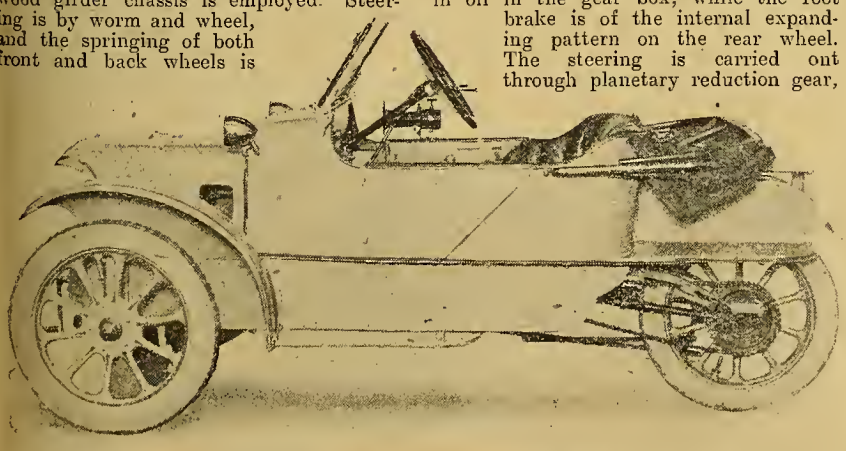


The front wheels of the L.S.D. runabout are suspended on enclosed coil springs

L.S.D., No. 38.

8 h.p. V twin four-stroke MODEL: J.A.P.; 85.5×85 mm. (976 c.c.); side-by-side valves; Amac carburetter; M-L gear-driven magneto; two forward speeds and reverse; shaft and chain drive; Dunlop 700×80 mm. tyres.

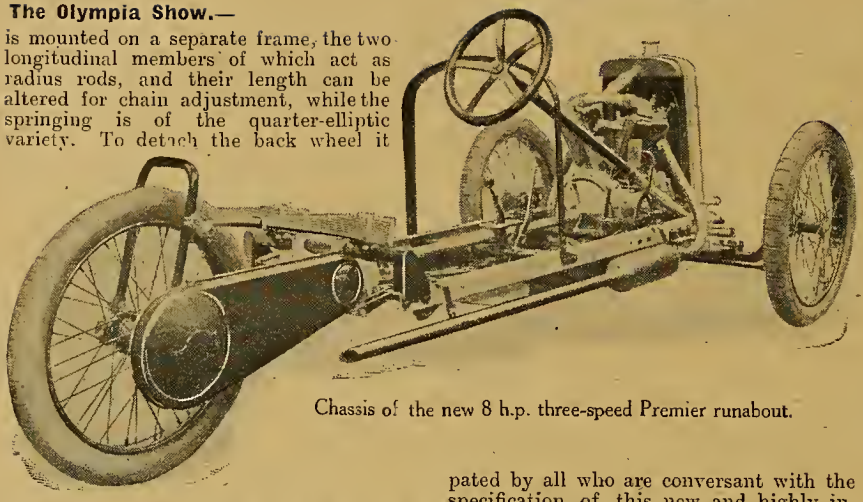
SYKES AND SUGDEN, LTD., Spring Place Works, Huddersfield.—Two three-wheeled cycle cars are exhibited, one complete and one partially finished. The J.A.P. engine conveys the power by means of a leather-to-metal cone clutch through a shaft to the two-speed gear box, which is of the firm's own manufacture. It contains a reverse actuated by a separate lever in the centre of the vehicle, adjacent to the driver's left hand. The change speed lever is on the right, and when the reverse lever is in operation the forward gears are automatically locked. The main longitudinal members of the frame are of ash. The back portion of the frame is of angle iron on ash. The rear wheel



Broadside of the L.S.D. three-wheeled runabout, which has Sankey steel detachable wheels.

The Olympia Show.—

is mounted on a separate frame, the two longitudinal members of which act as radius rods, and their length can be altered for chain adjustment, while the springing is of the quarter-elliptic variety. To detach the back wheel it



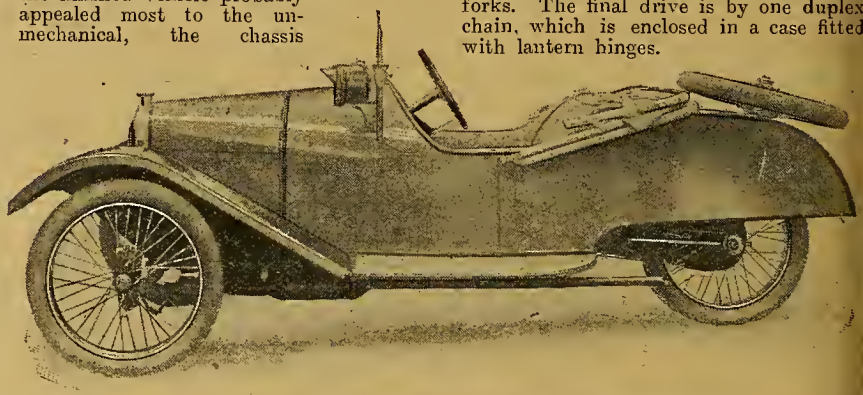
Chassis of the new 8 h.p. three-speed Premier runabout.

is necessary to withdraw the back spindle after first uncoupling the two side-by-side band brakes. The front portion of the chassis is mounted on enclosed coil springs; the steering is direct, and the steering wheel is of large dimensions. A roomy body is fitted with doors at each side, and provision is made for a third seat. An outstanding feature of the vehicle is its admirable accessibility.

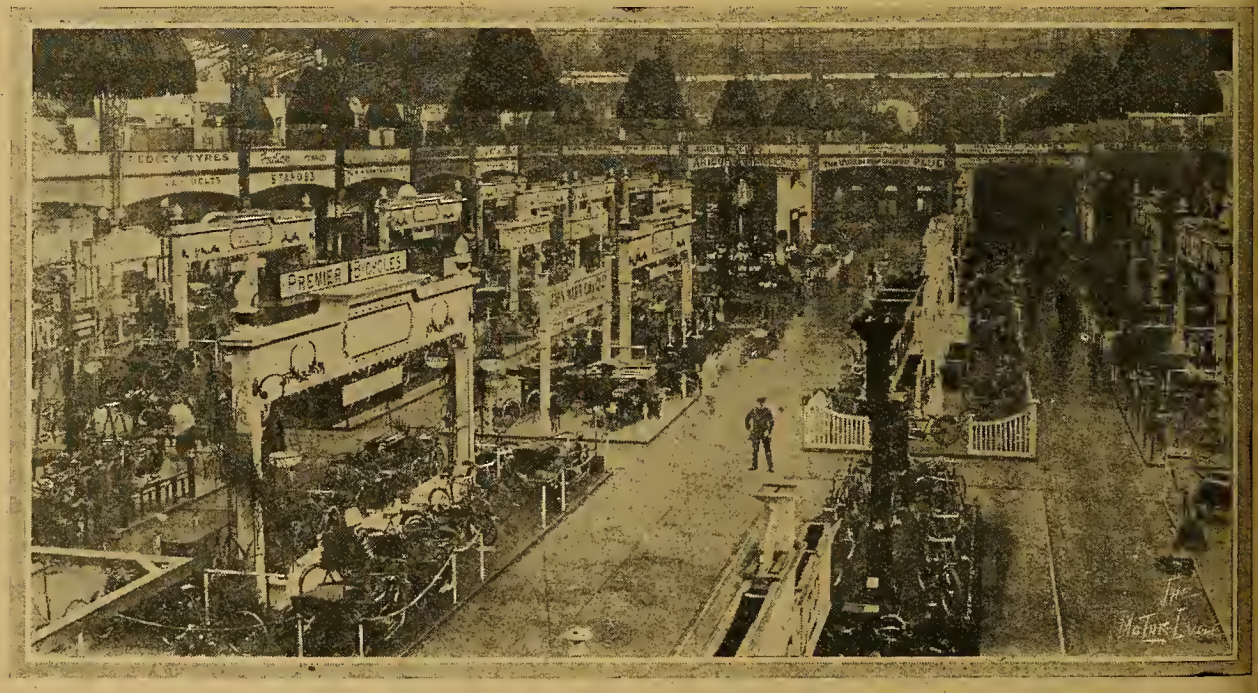
COVENTRY PREMIER, No. 62.

8-10 h.p. twin MODEL: 80×105 mm. (1,055 c.c.); side-by-side valves; Atmos carburetter, gear-driven magneto; three-speed and reverse gear box; shaft and single chain transmission; 700×80 mm. tyres.

COVENTRY PREMIER, LTD., Read Street, Coventry.—The complete runabout and a chassis exhibited by the Premier Co. are attracting the full share of attention on the part of the public that was anticipated by all who are conversant with the specification of this new and highly interesting three-wheeler proposition. While the finished vehicle probably appealed most to the unmechanical, the chassis made a strong appeal to those who pay closer attention to the mechanical elements. The whole design is extremely neat, and does not convey an impression of being a light car on three wheels, although at several points car practice has been followed. The frame has pressed steel side members, tapering at the front, and fitted with short quarter-elliptic springs to a drop front axle of tubular construction. The cross members are tubular, and support at the front end a small sub-frame, upon which is carried the engine and clutch unit. At the rear of the frame the tubular cross member is raised above the line of the frame by two substantial lugs. Upon this superstructure are fixed the two large quarter-elliptic rear springs, which are inclined slightly to miss the transmission. From the engine unit the transmission is by shaft to a three-speed and reverse gear box, which is also supported on the rear cross member in such a manner that the centre of the chain sprocket coincides with the pivotal point of the back wheel forks. The final drive is by one duplex chain, which is enclosed in a case fitted with lantern hinges.



The two-seater 8 h.p. Premier Runabout staged at Olympia



The Motor Cycle Show at Olympia, 9 a.m. Monday, all dressed up and—waiting for the visitors who arrived in their thousands an hour later, and a crowded house is the rule.

A VOYAGE ROUND THE GALLERY.

Things to see Amongst the Accessories. A Motor Cyclist's Tour of Inspection.

CONFINED to his apartment by force of circumstances, Xavier le Maistre created a work of lasting literary fame, which he called "A Voyage Round my Room." If a book could be written around the impressions of one's own room, how impossible it seems to compress within one short article even the merest details of a glimpse at the assembled accessories and equipment on the Gallery at Olympia!

Next week *The Motor Cycle* will refer in more detail to sidecars, accessories, and tyres, but our present purpose is to take a passing glance at the fittings and "gadgets" while our *confrères* deal with the motor cycles, glittering on the stands, which take pride of place in this issue.

Leaving the crowded ground floor for the no less crowded region upstairs, one finds an array of minor components and equipment in a variety which at once dazzles and gratifies the confirmed accessory fiend, to which class of rider the writer must confess to a decided bias.

The Electrical Equipment

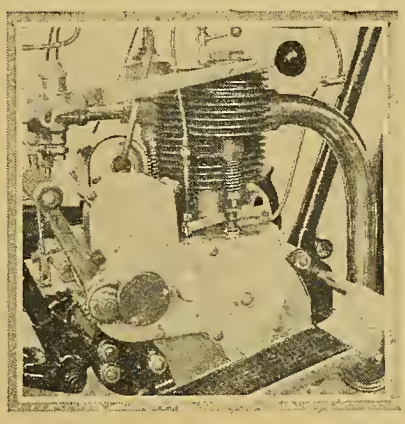
He who is interested in the latest tendency towards electrifying the motor cycle should at once make for the stands of Lucas, Powell and Hanmer, M-L, and Smith. These show respectively the Magdyno, combining a separate dynamo and magneto in one machine, and driven by one chain; the P. and H. dynamo set; the M-L lighting and ignition unit, which both lights the lamps and ignites the charge off the current from the one generator; and, finally, the Smith dynamo outfit, a neat instrument shown fitted on to an 8 h.p. Blackburne and sidecar.

Incidentally, one may light one's cigarette from a high-tension spark on the M-L stand before passing on.

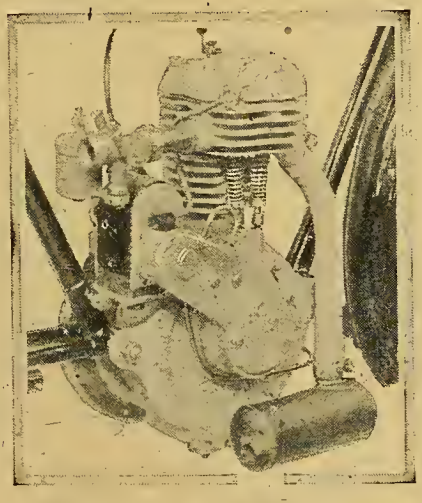
A majority of the exhibits are of trade interest, consisting of component parts which will assist the assembler, and tools to equip the workshop of the repair man. In this class are the stands of such firms as Brown Bros., Ltd., where the trade man may order anything from a split pin to a lathe. There are many other stands with a like variety displayed.

Motor cyclists who do their own repairs, and in consequence delight in convenient tools, will see innumerable labour-saving devices on Lake and Elliot's stand, such as valve truers, gudgeon pin removers, and similar tools; while they may look with longing at the splendid samples of adjustable spanners on the Abingdon and Lucas stands, and of tube spanners of the Apollo brand shown by Accles and Pollock, Ltd.

Riders who have booked a machine and expect a favourable delivery will find in the Gallery all the accessories which their taste and inclination will ever lead them to desire. Mechanical horns, speedometers, and distance recorders are here in profusion shown by Smiths, Cowey, Markt, and others. The Cowey mechanical horn is of a quite unusual pattern, and, finished in aluminium, looks exceedingly attractive. Lighting sets of all types—electrics, shown by Hunts, P. and H., and Lucas, and acetylene outfits by Millers, in addition to the two last-named, are to be seen and compared.



The new combined engine and gear unit of the latest big single Quadrant.



A new comer to four-stroke singles—The Corona

Before completing one's tour of the Gallery, special notice should be made of some of the effective methods of displaying the nature of the exhibitors' business. Thus a gargantuan sparking plug, with Sphinxes at the base, forming a group somewhat like Cleopatra's Needle on the Embankment, at once indicates a sparking plug which we all know to be excellent and enduring.

The Crackle of Lively Sparks.

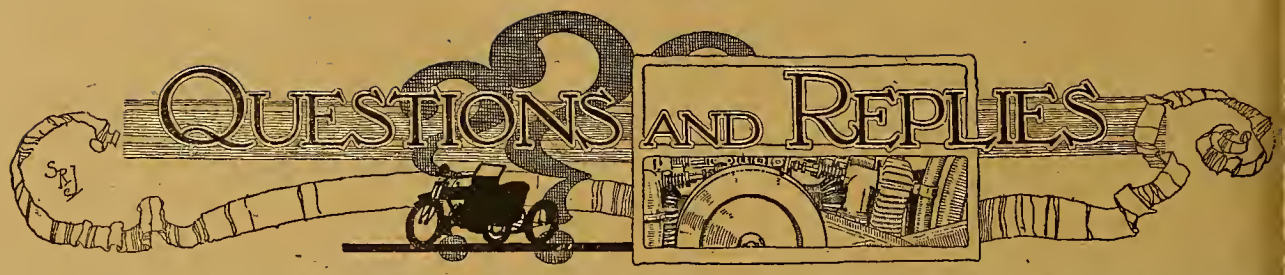
The M-L and Lucas people naturally run their magneto-dynamo machines so that we may see the light and the spark, while at such stands as C.A.V., E.I.C., Lodge, and Xl-All, we must expect to raise our voices to be heard above the crackle of lively sparks which demonstrate the efficiency of the respective magnetos and sparking plugs.

Mechanically-minded people who are a little hazy on the operation of an epicyclic gear will see a working model with pinions as big as soup-plates, this being an excellent indication of the nature of the Sturmey-Archer products.

Before departing we take a glance at the Lamplugh throttle-controlled mechanical oil pump, of which a working model is fitted on to a small J.A.P. engine. Best and Lloyd also show a device of a similar nature. We then pass on to notice the B. and B. and Amac automatic carburetters, pausing awhile to examine the beautiful samples of war material which recently occupied the makers of the Senspray carburetter.

With an admiring look at all the things we cannot mention for lack of space, we will bid the reader *adieu*, directing him downstairs to the refreshment room, while we recommence our voyage, calling at every port, in order to make the complete report of the accessory and tyre exhibits, which will appear in detail in next week's issue.

In the Diamond models the tubes of the newly designed frames closely follow a correct diamond formation



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Lady Motor Cyclists.

I should be grateful if you would tell me whether the A.C.U. has any lady members.—A CHESHIRE LADY MOTORIST.

The A.C.U. has many ladies amongst its members. Your other questions will be dealt with by post if you will comply with our regulations and send a stamped and addressed envelope.

Removing Belt Drum.

Will you inform me how to remove the belt driving wheel, which is fixed to the hub of the 1915 4¼ h.p. B.S.A. motor cycle?—FIXED.

The belt pulley on the rear wheel of the 1915 B.S.A. motor cycle is screwed on with a left-hand thread (the lock ring is right-hand thread. These pulleys are extremly difficut to remove, and, unless you have special apparatus, they are easily damaged in the process. We would recommend you to return the wheel to the makers if it is necessary that the pulley should be taken off.

Starting Difficulties.

I am troubled by difficult starting from cold on my 4¼ h.p. B.S.A. Can you give me any useful suggestions?—J.J.H.B. (Sierra Leone).

We should have imagined that in your climate starting the engine even from cold would be fairly easy. We would suggest the following points in order to make the starting easier. Open the adjustable jet on the B.S.A. carburetter one complete turn, advance the ignition almost fully, and place the gear lever in the third speed, release the exhaust valve, when the foot starter pedal is almost at the bottom of its stroke.

Reboring Cylinders.

I am thinking of having the cylinders of my 3½ h.p. Douglas rebored and fitted with new pistons. Will you inform me what is the least amount of metal one can leave with safety? Surely the thinner the walls the better the cooling would be. Can you recommend reboring?—C.F.L.

If it is necessary to rebore the cylinders of your Douglas, we should suggest that you approach the makers, who would perform the work far more satisfactorily than most smaller firms. If the ovality of the cylinders necessitates removal of more than $\frac{5}{1000}$, we should advise you to have them renewed.

Timing A.I.V. Engine.

Will you please help me in the following: An old type Minerva engine under bottom tube, battery and coil ignition, about 2 h.p. Please say how to time same (automatic inlet). Also, the plug appears at times to spark not at the points but some distance higher up. What is the fault, if any?—I.S.P.

Timing as follows: Inlet—Automatic. Exhaust—Valve closes when the piston reaches top dead centre. Ignition—Set control two-thirds retard; spark to occur with the piston on top dead centre (compression stroke). Plug is apparently shorting across the insulation. A new one is advisable.

Overtaking a Tramcar.

Will you kindly tell me which is the correct side on which to pass a tramcar both when running and stationary? I was told recently that it is correct to pass a stationary car on the near side, but as passengers are usually mounting or dismounting when the car stops it is more of a difficulty to pass on the near than the off side.—E.P.J.

In overtaking a tramcar a good deal of discretion has to be used, and there is no very definite legal ruling on the point. When a tramcar is in motion it is better, if at all possible, to overtake it in the ordinary way on the off side, but circumstances may compel you to keep on the near side. The same applies also when it is stationary.

Leakage from Gear Box.

I have a 1917 3½ h.p. Ariel sc. outfit. After running a few miles my belt becomes smothered with grease from the gear box. Last week I partly filled the gear box with grease before starting on a long journey, but on arriving at my destination the box was nearly empty. Please tell me how to stop this. What is the best means of cleaning the belt? Is petrol injurious? What grease do you recommend?—C.W.W.

The only thing to do is to have the gear box taken down and find the cause of the leak. It might be that the bearings require rebushing or that a felt washer is needed. All you can do is to wipe the belt with a rag soaked in petrol. Petrol naturally destroys rubber, but if it is wiped quickly and lightly no harm should ensue. Ambroleum or thick engine oil is generally used.

Unsuitable Magneto.

I have bought a 6 h.p. N.S.U and do not think that the magneto is the right one for it. The cylinders are set at 60°. If set No. 1 exhaust to close to dead centre, will the other come right? Contact breaker cams are set at 180° is this right? If not, can I alter them to suit the engine?—A.H.

(1.) If both valves are worked from one cam you need only time one valve, and if this is done properly the correct timing of the other will follow. (2.) If the magneto is one designed to suit an engine with cylinders set at 180°, it will be impossible to modify it to suit a 60° V twin engine; you would need another magneto suited to the latter angle. The cams should be set at 150°.

Timing Old Pattern Engine.

(1.) Will you please give me the correct timing of the exhaust valve of my old type Fafnir motor cycle? (2.) If this were wrong, would it cause overheating?—E.H.E.S.

(1.) The timing of the exhaust valve of your engine, which is presumably one with an automatic inlet valve, is as follows: Rotate the engine until the piston is at the top of the stroke, then insert the cam wheel so that the valve is just closing. (2.) If the exhaust valve timing is very much out it would cause poor running. Most probably the trouble is the result of late ignition timing or insufficient lift of the exhaust valve due to a worn cam or too much clearance between the tappet and the valve stem.

Ownership of Stolen Machine.

I bought a second-hand combination from a private individual, and obtained an authenticated stamped receipt for the purchase money. But the outfit happened to be a stolen one. Some days later the person from whom it was stolen identified the machine while I was riding it, and claimed it as his property. How do I stand in the matter? Have I to give up the machine and claim against the person from whom I bought it, or what should really happen?—A.C.R.

In the event of your unwittingly purchasing a stolen machine, the law would compel you to hand it over to the rightful owner. You can only claim against the person from whom you purchased the machine.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

DVERTISEMENTS in these columns rst 12 words or less 2/-, and 2d. for every tional word. Each paragraph is charged rately. Name and address must be counted. s discounts, conditions, and special terms gular trade advertisers will be quoted on ication.

stal Orders and Cheques sent in payment for rtisements should be made payable & Co. IFFE & SONS Ltd., and crossed sury Notes, being untraceable if lost in sit, should not be sent as remittances.

l advertisements in this section should be mpanied with remittance, and be addressed ie offices of "The Motor Cycle," Hertford t, Coventry. To ensure insertion letters ld be posted in time to reach the offices of e Motor Cycle," Coventry, or London (20, r St., E.C.4), by the first post on Friday ning previous to the day of issue.

l letters relating to advertisements should e the number which is printed at the end of advertisement, and the date of the issue hich it appeared.

ie proprietors are not responsible for clerical rinters' errors, although every care is taken void mistakes.

NUMBERED ADDRESSES.

the convenience of advertisers, letters may be ssed to numbers at "The Motor Cycle" Office. this is desired, the sum of 6d. to defray the cost of ration and to cover postage on replies must be added e advertisement charge, which must include the Box 000, c/o "The Motor Cycle." Only the number ppear in the advertisement. All replies should be ssed No. 000, c/o "Motor Cycle," 20, Tudor Street, .

Replies to Box Number advertisements containing ances should be sent by registered post, but in all such it is advisable to make use of the Deposit System.

he case of motor cycles offered for sale under a box er, as it is unusual for these to be sold without first lospected by the intending purchaser, advertisers will ate business by embodying in their advertisements mention of the district in which the machine d may be seen and tried.

DEPOSIT SYSTEM.

sons who hesitate to send money to unknown persons leal in perfect safety by availing themselves of our it System. If the money be deposited with "The Cycle," both parties are advised of this receipt. time allowed for a decision after receipt of the is three days, and if a sale is effected we remit the it to the seller, but, if not, we return the amount depositor, and each party to the transaction pays ge one way. For all transactions up to £10, a it fee of 1/- is charged; on transactions over £10 nder £50, the fee is 2/6; over £50 and under £75, 5/-; £75 and under £100, 7/6; and on all transactions £100, ½ %. All deposit matters are dealt with at idor Street, London, E.C.4, and cheques and money should be made payable to Iliffe & Sons Limited. letter "D" at the end of an advertisement is an tion that the advertiser is willing to avail himself of eposit System. Other advertisers may be equally us, but have not advised us to that effect.

SPECIAL NOTE.

eaders who reply to advertisements and receive no r to their enquiries are requested to regard the e as an indication that the goods advertised have ly been disposed of. Advertisers often receive so enquiries that it is quite impossible to reply to one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

'FERS Wanted for early delivery A.B.C. motor cycle; £10 deposit paid.—A. Irving, N.Z. Ordnance, ord. [3554

NES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, h Finchley. [0026

B.C.—Deliveries commencing after the Show. Have you ordered?—Prompt deliveries from Victor man, Ltd., 7, Mount Pleasant, Liverpool. [0021

NCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and ity of Rutland; particulars and illustrations on est. [0056

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London, E.C.4.

For square deals and Values....

Our Stock includes the following Machines. Price List on application.

NEW.

No.	H.P.	Machine.	Year.
12087.	8	**MATCHLESS** Combination	1920
12162.	3½	**ARIEL** and Sidecar	1920
12154.	2¾	**CLYNO**, 2-stroke, 2-speed clutch	1920
12163.	4	**BLACKBURNE** and Sidecar	1920
12161.	8	**NEW IMPERIAL** and Sidecar	1919
—	4	**DOUGLAS** Combination, Model "B"	1920
—	4	**DOUGLAS** Combination, Model "B"	1919
—	2¾	**DOUGLAS**, W.D. Model	1919
12167.	3½	I.O.M. **RUDGE-MULTI**	1920

SECOND-HAND SOLO MACHINES.

12074.	6	**ZENITH**, Gradual gear.
12059.	8	**MATCHLESS**, single gear.
12102.	2¾	**DOUGLAS**, shop-soiled, 2-speed, T.T. bars.
12012.	3½	**CORAH-J.A.P.**, single-speed, T.T. bars.
12156.	3½	**RUDGE-MULTI**, clutch.
11762.	3½	**RUDGE**, single-speed.
12152.	4	**TRIUMPH**, 3-speed, clutch, and kick-start.
12160.	4	**DOUGLAS**, 3-speed, clutch, and kick-start, 1919 model.
12169.	3½	**N.S.U.**

SECOND-HAND COMBINATIONS.

12166.	8	**ENFIELD** Combination, 2-speed, handle-start.
12010.	7-9	**JAMES HOWARTH** Combination, 3-speed, clutch, and kick-start.
12120.	3½	**KERRY ABINGDON** and Sidecar, 3-speed, clutch.
12082.	5-6	**INDIAN** Combination, 3-speed, clutch, and kick start.
12000.	7-9	**INDIAN** Combination, 3-speed, free engine, clutch.
12083.	4½	**QUADRANT** Combination, 3-speed, free engine, clutch.
12133.	8	**ROYAL ENFIELD** Combination, 2-speed, free engine.
12158.	8	**MATCHLESS** Combination, 1919 model.
12153.	4	**TRIUMPH** Combination.
12159.	5-6	**RUDGE-MULTI** and Sidecar.
12119.	5-6	**A.J.S.** Combination, 3-speed, clutch.
12165.	8	**NEW IMPERIAL** and Sidecar, 3-speed, clutch, and kick-start.
12136.	3½	**RUDGE-MULTI** and Sidecar.
11977	8	**WILLIAMSON** Combination.
12168.	7-9	**INDIAN** Combination, 2-speed, clutch, and kick-start.

SECOND-HAND CARS.

12135	—	**CARDENA** Cycle car, 7-9 h.p. Harley-Davidson engine.
12099.	8	**DUO** Car, double belt drive, A.C.-J.A.P. engine.

SIDECARS.

Canoelet Mini. Royal Ruby.
Canoelet D4. "Wauchope's" No. 1.
Canoelet K4. "Wauchope's" No. 2.
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A.B.C.

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [0015

Abingdon.

ABINGDON King Dick, 1912, 3½h.p., clutch, 2-speed, lamps, newly overhauled; £40.—Jack, 49, St. John St., Oxford. [X8833

ABINGDON King Dick, 3½h.p., T.T. model, with Mabon clutch, Binks 3-jet carburetter, Bosch mag., new tyres, in good condition throughout, lamps, etc.; £44; exchanges.—R. D. Varty, Thundersley, Rayleigh, Essex. [3217

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [0574

A.J.S. 1920 Combination; delivery December; offers.—3, Shaftesbury Av., Bath. [X9154

CROW Bros., High St., Guildford, A.J.S. agents since 1912, accept no premiums. [X7943

A.J.S. Coach Combination; £95; owner abroad.—Mrs. Newman, 24, Cottage Grove, Surbiton. [3655

CROW Bros., High St., Guildford, A.J.S. agents since 1912.—Deliveries have begun. [4083

1920 A.J.S. Combination, delivery early December; £5 premium.—Box 811, c/o *The Motor Cycle*. [X9294

2¾h.p. A.J.S., 3-speed, fully equipped, as new; 60 gns.; after 6.—K., 9, Beresbrook Rd., Tufnell Park. [3635

A.J.S., late model, just been overhauled; can be seen after 6, Saturdays excepted.—50, Dukes Av., Muswell Hill, N.10. [3489

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth Sole agents. Now booking for earliest deliveries. [0061

1916 A.J.S. 6h.p., Combination, hood, lamps, horn, spare wheel; what offer?—77, Royston Rd., Enfield Wash, Middlesex, N [3172

1920 A.J.S. Combination, latest show model, delivery first week December; what offers?—Box 803, c/o *The Motor Cycle*. [X9222

4h.p. 1916 A.J.S. Combination, Lucas lamps, speedometer, horn, excellent condition; £140. Gloucestershire.—Box 810, c/o *The Motor Cycle*. [X9263

1919 A.J.S. Combination, as new, spare wheel unused, Lucas lamps and horn, screen, any trial; £180; Midlands.—Box 778, c/o *The Motor Cycle*. [X8813

A.J.S. 6h.p. 1914 Combination, engine and gear box recently overhauled, Watford speedometer, lamps, tools, etc.—Stanley, Eagle House, Pevensey Rd., St. Leonard's-on-Sea. [X9103

1919 A.J.S. Combination, excellent condition, fully equipped, 2 head lamps, Klaxon, spare wheel, hood, screen, tools; £180, or nearst.—Glendinning, 1, Park Parade, Cambridge. [X9287

A.J.S. 6h.p. Combination, 1917, interchangeable wheels, condition perfect; first offer £135 accepted. —Hardie, 24, Woodstock St., New Bond St., W.1. 'Phone: Mayfair 6559. [3450

1919 A.J.S. Combination, as new, unpunctured and guaranteed perfect, spare wheel, spring seat-pillar, screen, apron, lamps, horn, tools; any trial; owner buying car; nearest £175.—1, Castle St., Warwick. [X9291

A.J.S. 1915½ 6h.p. Combination, luggage grid, wind screen, apron, 3 interchangeable wheels, Lucas lamps, overhauled at makers, any trial; £115. —Martin, 13, Cleveland Mews, Leicester Terrace, W.2. [2247

1916 4-5h.p. A.J.S. Combination, completely overhauled, Binks, hood, wind screen, luggage grid, spare wheel, lamps, horn, spares, splendid running order; £120.—Beardmore, Holt, Forest Rd., Loughborough. [X9053

A.J.S. Combination, late 1915, 6h.p., little used, and in excellent condition, interchangeable wheels, speedometer, spares, hood, side curtains, screen, etc.; cash wanted, sacrifice £112.—15, Summerhill Rd., Dartford, Kent. [3686

1920 A.J.S. Combination.—Advertiser invites offers of reasonable premium over list price for first place on waiting list for above model, delivery definitely promised in two weeks, private owner.—Box 780, c/o *The Motor Cycle*. [X8868

1920 A.J.S. Combination, done 500 miles, been properly run in, spare wheel (unused), hood, special seat-pillar, wind screen, tools; Southampton district; £190, or near offer; pukka reason for selling.—Box L5,675, c/o *The Motor Cycle*. [3538

A.J.S. 1917 Combination, beautiful De Luxe sidecar, screen, apron, lamps, tools, spares, as new, practically unscratched, photo available, top-hole condition, an outfit to be proud of; any trial; nearest £140.—Blakemore, 59, Rogers Rd., Birmingham. [X9182

MOTOR CYCLES FOR SALE.

A.J.S.

1919 A.J.S. M.M. Combination, 4 interchangeable wheels, wind screen, Lucas horn and head lamp set, electric side and rear lamps, special Brooks 170 saddle, handle-bar muffs, tyres unpunctured, small mileage, new September, absolutely a perfect and complete outfit; £175.—Wainwright, Millfields, Wolverhampton. [X8814

1919 A.J.S. Combination, electric lighting, 3 lamps, hood, screen, spare wheel, spring saddle pillar, Lucas horn and Klaxon horn, also brand new Watford trip speedometer, special A.J.S. model, fully insured; the whole of the outfit is in brand new condition, and is open to any trial; £210.—Blacker, 43, Central Rd., Blackpool. [X9052

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [2237

Alcyon.

1914 Alcyon, 2¾h.p., splendid little machine, climb anything, B. and B., Bosch, no further use for it; bargain, first cheque £35; no dealers.—Blue Ball Ion, Brannston, Oakham, Rutland. [X8969

Alldays.

ALLONS at Gourlay's, Fallowfield, Manchester. [2832

1916 Alldays Allon, 2-speed, in perfect order; £45.—Dudley, Fairfield Rd., Grove Park, S.E.12. [X8842

ALLON 1917, 2-speed, accessories, good condition; £55.—Morven, Canonbie Rd., Forest Hill, S.E. [3362

ALLON, 1916, new lamps, horn, perfect condition throughout; owner emigrating; £42/10.—70, Ringstead Rd., Catford. [3351

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0027

ALLON de Luxe, 2-stroke, and sidecar, as new, not ridden 50 miles, bought August, 1919; offers.—Surridge, 133, Sloane St., S.W.1. [X9180

ALLDAYS Matchless Combination, 1915, 3-speed countershaft, clutch, cane torpedo sidecar, perfect; £74.—175, Merton Rd., Wimbledon. [3642

ALLON 1916 2¾h.p., 2-speed, 2-stroke, lamps, horn, pump; best offer (about £45).—Mackie, seen at Bickell's, 251, Archway Rd., Highgate, N.6. [3665

ALLDAYS Matchless, 2¾h.p., 2-stroke, fully equipped, tyres and appearance good; ride away; offers over £30.—62, Southfield Rd., Bedford Park, Chiswick. [3078

1919 Allon, 2-speed, kick start, hand clutch, nearly new, mileage 250, electric lighting, leg shields; £69.—Patterson, 3, St. Andrew's St., Cambridge. [3356

1919 Allon Model de Luxe, 2 speeds, hand clutch, leg shields, lamps, tools, etc.; owner expecting delivery of combination; £70, or nearest offer.—36, Gordon Rd., Ealing, W. [3525

ALLDAYS Matchless, 2¾h.p., 2-stroke, new Dixie mag., Senspray carburetter, new Pedley belt, tyres almost new, spare Whittle belt and pump; £35.—M. Boberts, 55, Fairfield Rd., Bow, E. [3358

ALLON 2-stroke, 2-speed, clutch, watch, Watford speedometer, lamps, A.C.U. badge, Senspray complete, overhauled this month, new extra heavy back tyre, new chains and sprockets, guaranteed mechanically perfect; any examination or trial; extras—Binks carburetter, electric lamps, new belt, tyre; £55; stored during war, owner now going abroad.—Garner, Mulberry Green, Harlow, Essex. [X9166

Ariel.

ARIELS.—Gourlay, Agent, Fallowfield, Manchester. [2833

CROW Bros., High St., Guildford, Ariel agents, supply at makers' prices. [X7944

CYRIL WILLIAMS, for early delivery of Ariels.—Chapel Ash Depot, Wolverhampton. [X8625

JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0028

ARIEL 1919 3½h.p. Combination, new October, done 200 miles, lamps, etc.; £122/10; equal to new.—47, Newland Av., Hull. [X9184

ARIEL 3½h.p., No. 7830, 3-speed countershaft, C.B. supreme car, Lucas set, recently overhauled and enamelled; £90.—Write, 12, High St., Chatham. [3352

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare parts stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

1919 Ariel (Nov. 16th) 3½h.p., 3-speed countershaft, fully equipped and insured; best over £110; owner getting car.—Box 801, c/o *The Motor Cycle*. [X9196

ARIEL, 3½h.p., single speed, in good running order, new Fellow mag. and new carburetter, good tyres.—Lake, Vancouver House, Norwich Rd., Holt, Norfolk. [3178

1920 Ariel, brand new, just unpacked, 3½h.p., 3-speed, kick starter, etc., at makers' list price, £95, or nearest; owner must sell; Essex.—Box L5.657, c/o *The Motor Cycle*. [3443

1919 Ariel and sidecar, fitted with 3-speed countershaft gear, P. and H. head lamp, Lucas horn, in very good order; £95.—King and Harper, 6 and 7, Bridge St., Cambridge. [3516

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Auto-Wheels.

WALL Auto-Wheel, good running order; £1 Mills, 15, Russell St., Bolton. [X9

WALL Autowheel and Court Royal cycle, eq new; £22; would separate.—16, Coronation King's Lynn. [3

B.S.A. Wall Autowheel, model de luxe, cost £ only ridden few miles; £16.—Hudson, Br Rd., Redhill. [3

B.S.A. Auto-Wheel, in perfect condition, not d 600 miles; £14, or near offer.—Mugleston, O seal, nr. Ashby-da-la-Zouch. [X9

WALL Auto-wheel, attached New Hudson cycle, speed, splendid running order, accessories, lam £15/10.—128, Mackenzie Rd., Beckenham. [3

AUTO-WHEEL and Lady's Bicycle, both in excell condition; will sell separate or together.—Ap 16, Lancaster Mews, Lancaster Gate, W.2. [3

AUTO-WHEEL and B.S.A. specially built Auto-W model cycle, smart, and in perfect order, ha used, horn, handle-bar mirror, carrier, etc.; barg £25, near offer considered; photo free.—Hoare, South Side, Clapham Common, London, S.W.4. [3

Bat.

BAT Spring Frame, 5-6h.p. J.A.P., coachbuilt s car, Bosch mag., all chain, hood, lamps, w screen, horn, £80; also 2¾h.p. Ariel, early model, appointment.—56, Izane Rd., Bexley Heath. [X8

Bat-Jap.

BAT-J.A.P., 6h.p., 2-speed N.S.U., and cane s car; £60.—Mead, East Coker, Yeovil. [3

8h.p. Bat-Jap, spring frame, Bosch, Mabon clu perfect; £50.—56, Scales Rd., Tottenham. [3

BAT-J.A.P. 6h.p., solo, 2-speed, N.S., sound co tion throughout; £40, or near offer.—Bond, Bra Kent. [X9

BAT-J.A.P. 8h.p., 2-speed, speedometer, lam coachbuilt sidecar, grand condition; £75.—Bu ing's, Motor Exchange, Wealdstone. [3

BAT-J.A.P. 8h.p., chain drive, countershaft g Coronet coach sidecar; £75.—Halifax Motor change, Union St. South, Halifax. [3

BAT-J.A.P. Combination, 8h.p., splendid condit engine as new; too powerful for owner; £75.—I J. B. West, Knoll End, Dorking. [3

BAT-J.A.P., 1919, 8h.p., Henderson Elite sidecar, grey, disce, electric lighting and horn, insura policy, numerous tools, spares, splendid turnout, August, mileage 1,000; £177.—Daubeny, Selwyn lege, Cambridge. [3

1913 T.T. 5h.p. Bat-Jap, 3-speed Armstrong, en rebushed, gear just overhauled, new Dunlop Lucas lamp, spares, tools, aluminium discs, tyres general condition excellent, stored during war, used little since; £70, or best offer.—Hall, Woodlands, coner Rd., Bushey, Herts. [3

Blackburne.

CROW Bros., High St., Guildford, are old Bl burne agents, and invite enquiries. [X7

STANLEY RUSSELL, Newport, sole Isle of Wi agent for Blackburne motors; early delivery. [4

JONES' Garage, special agents for Blackbur Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0

Bown.

BOWN (Baby) 2-stroke, been stored, condition as n £35.—Bond, Brasted, Kent. [X9

Bradbury.

BRADBURY Specialists.—Bright and Hayles, Church St., Camberwell, London. [3

2¾h.p. Bradbury, B. and B., pan seat, good t complete; bargain, 9 gns.—76, Western Southall, Middlesex. [3

BRADBURY, 1920 models; Book your order no Agents, Bright and Hayles, 78, Church Camberwell, London. [3

BRADBURY 4h.p., Bosch, lamps, horn, splendid ning order; £40; owner going abroad.—Chant Hinxhill, Ashford, Kent. [X9

BRADBURY.—For the earliest possible deliveries 1919 models.—The Walsall Garage, Wolverha ton St., Walsall. Tel.: 444. [9

BRADBURY, 4h.p., Bosch, adjustable pulley, t good condition, good running order; first che £39.—48, Leigh Rd., Hale, Cheshire. [3

MOTOR CYCLES FOR SALE.

Harley-Davidson.

HARLEY-DAVIDSON, magneto model, new Aug., 1917, and handsome sporting sidecar, disc wheels, electric light, Klaxon and electric horns, wind screen, speedometer, and spares, a most luxurious outfit; £160.—Cecile, 25, Battersea Rise, S.W. [2621

Hazlewood.

HAZLEWOOD 5-6h.p. Combination, 3-speed, kick start, excellent condition; £85.—Wigley, near Church, Old Normanton, Derby. [X8863

NEW Model Hazlewood, 6h.p. twin, with J.A.P. engine, 3-speed gear box, chain-cum-belt drive, Canoelet sidecar; delivery from stock; £150, plus carriage.—Victor Horsman, Ltd., 7, Mount Pleasant, Liverpool. [3025

1915 Hazlewood, 31642, 4h.p., 3-speed countershaft, kick starter, coachbuilt sidecar, lamps, horn, speedometer, perfect condition; £80; Harwell, Berks.—See Kwiksale advertisement, Miscellaneous Cycle column. Introduction given free. [3728

Henderson.

HENDERSON 4-cyl.—Sole Midland agents, The Premier Motor Co., Aston Rd., Birmingham. [2193

HENDERSON, 1916, 8-10h.p., 4-cyl., 2-speed, £105; Canoelet sidecar, £17; exchange entertained.—109, Walton Rd., East Molesey. [3167

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co. Official Dealers, Liverpool-Manchester. [7057

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H.G.

1919 H.G., brand new, 2¾h.p. Blackburne engine, 2-speed, kick starter, hand control clutch, a lovely machine; owner must sell; at makers' list price, 85 gns., or nearest offer; Cumbridge.—Box L5,655, c/o *The Motor Cycle.* [3441

Hobart.

HOBART, 1919, 2-stroke, 2-speed, £60; just delivered from works; also second-hand 1914 Singer, 3½h.p., £40; 1914 James combination, 3-speed countershaft, and clutch, £85.—The Ripley Motors, Ripley, Derbys. [3383

Humber.

1919 Humber, 3½h.p. flat twin, new August, mileage 200; £87/10.—Rose's Garage, Uxbridge. [3486

HUMBER Lightweight, good condition; ride away; after 6.30 p.m.; £25.—96, Belgrave Rd., Wanstead E.11. [3199

HUMBER 6h.p. Water-cooled 3-speed Twin Combination; £93.—Halifax Motor Exchange, Union St. South, Halifax. [3718

HUMBER Lightweight, new appearance, mechanically sound, fast; £30, carriage paid.—Caine, 8, Salisbury Rd., Gloucester. [3227

HUMBER 2¾h.p. Twin, 3-speed, clutch, perfect; 45 gns.; by appointment.—White, 35, Leamington Gardens, Seven Kings, Ilford. [3423

HUMBER 3½h.p. Combination, 2-speed, spares, tools, lamp, good tyres, tubes, new belt; ride away; £50.—Jas. Orr, Station House, Leadhills, Lanarkshire. [X9116

1919 Humber, twin horizontal engine, fitted with canoelet sidecar, new P. and H. lamps and horn; £145.—King and Harper, 6 and 7, Bridge St., Cambridge. [3521

HUMBER 3½h.p. spare parts for sale, frame, tank, and engine, less magneto and other small parts, all parts new; £25 for quick sale.—Box 802, c/o *The Motor Cycle.* [X9232

3½h.p. Humber C.B. Combination, 2 speeds, handle condition and appearance excellent, 2 lamps, horn, spares, thoroughly reliable; £55.—115, Gainsborough Rd., Crewe. [3576

3½h.p. Humber, 1911, mechanical condition excellent, in splendid running order, new belt and back tyre; £45.—A. Savin, 10, Springfield Buildings, Chippenham, Wilts. [3417

3½h.p. Humber, 1915, 3-speed, clutch, coachbuilt sidecar, adjustable pulley, lamps, spare valve, belt, tools, etc., splendid condition; £75.—2, Pelham Place, Seaford, Sussex. [3625

HUMBER 3½h.p., 2-speed, free engine, handle start, lamps, pump, magneto, overhauled, remagnetised, condition splendid; evenings, Saturday afternoon; offers.—Smith, 20, Kingscliffe Gardens, Southfields. [X9234

Indian.

NEW Indian Combination, only done 300 miles; trial.—57, Elisley Av., Cambridge. [3436

INDIAN, 7-9h.p., 2-speed, kick starter; £65.—78, Church St., Camberwell, London. [3504

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport, Mon. [0041

INDIAN, 1913, 2-speed, clutch, in good running order; £50.—Whitehead, 77, Marylebone Lane, Oxford St., W.1. [3542

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Indian.

1919 Indian Combination, mileage 300, delivered November, full equipment, dynamo, etc.; £170.—Sayles, Goldthorpe, Rotherham. [X9169

INDIAN 7-9h.p., 1914, just overhauled; owner ordered foreign service; accessories; £70, or nearest offer.—Woodhall, Crawley, Sussex. [X9152

INDIAN 5-6h.p. Combination, 3 speeds, clutch, kick starter, very fast outfit; will accept £85 for quick sale.—103a, High St., Wandsworth. [3302

DON'T Foret to see the Indians at the Show, and place your orders with J. Horswill, Castra Motor Cycle Garage, 42, Bridge St., Chester. [2118

INDIAN 1915 7-9h.p. 3-speed Combination, electric lighting, aluminium discs, in tip-top order throughout; £125.—27, St. John's Rd., Putney. [3409

1915 7-9h.p. Indian Combination, 3-speed, 3 lamp sets, and all accessories; £90; exchange considered.—18, Hawarden Rd., Colwyn Bay. [X9272

1916 5-6h.p. Indian Combination, 3-speed, hand and foot clutch, 2 lamps, horn, in good condition; £85.—Jenkins, 4, Glamorgan Terrace, Swansea. [3482

1915 Indian, 7-9h.p., perfect condition, 2 sets of lamps, electric and gas; seen any time; £65.—Jelks, The Garage, High Rd., Whetstone, N.20. [3370

7-9h.p. Indian, Millford sidecar, just overhauled, 2-speed, clutch, electric lighting, speedometer, Klaxon horn, new tyres.—Lt. Tidy, Roseneath, Ascot. [X8950

INDIAN 7-9h.p. Road Racer, 1915 model, clutch, lamps, very fast, in perfect condition; £65; can be seen any time.—Capt. Buckley, Queen's Hotel, Folkestone. [3392

1915 Indian, 5-6h.p., sidecar, 3-speed, clutch, kick start, perfect running order; £75.—Pollard, draper, Freemason's Rd., Custom House, E.16. 'Phone: East 4236. [3236

1916 Powerplus Indian Combination, 3-speed, T.T. bars, Millford, electric head, tail, and horn, excellent condition; price £130, offers.—38, Ernald Place, Uplands, Swansea. [3380

INDIAN 5-6h.p., with P. and M. 2-speed gear and clutch, new Palmer cords, Klaxon, lamps, fast machine, in very good condition; £55.—135, Cann Hall Rd., Leytonstone. [3149

1915 Indian, 739558, 7-9h.p. twin, 3 speeds, coachbuilt sidecar, lamps, horn, sound condition; £90; Cambridge.—See Kwiksale advertisement, Miscellaneous Cycle column. Introduction given free. [3726

1915 7-9h.p. Spring-frame Indian, excellent condition and appearance; the tank, 3-speed, and 28×3 Dunlops are all new; selling because disabled; first £77/10.—Collis, 77, Birkbyhall Rd., Huddersfield. [3164

7-9h.p. Indian Spring-frame Combination, 2 speeds, clutch, K.S., head and rear lamps, mechanical horn, tyres 28×3 (front new, rear nearly), mechanical condition good, enamel as new; £100.—Betts, Moulton, Tivetshall. [3125

1916 7-9h.p. Powerplus Indian Combination, 3-speed, clutch, kick starter, electric lighting, Klaxon, etc.; immediate sale, owner going abroad; 100 gns.—Capt. Malet, Anstin House, Frome. 'Phone: 136 Frome. [3101

INDIAN Combination, late 1915, 7-9h.p., spring frame, Mills-Fulford coachbuilt sidecar, electric lighting, kick starter, 3 speeds, clutch, excellent engine and condition; 100 gns.—46, Vale Rd., Tonbridge, Kent. [2792

1919 Indian Powerplus, 7-9h.p., Burbery sidecar, wind screen and hood, inner tubes unpunctured, spares, ridden 1,000 miles in fine weather only, good order; lowest £175.—Snaith, 15, Marine Approach, South Shields. [3316

INDIAN 1914 7-9h.p. Combination, kick start, clutch, 2-speed, coachbuilt sidecar, electric lighting, stored 3 years, just overhauled at cost of £40, splendid condition; 100 gns.—Blow, Gadebridge Camp, Hemel Hempstead, Herts. [X9237

INDIAN, 1915, 7-9h.p., 3-speed, clutch, kick-starter, Mills-Fulford sidecar, hood, wind-screen, luggage carrier, electric light, horn, speedometer, only done 3,000 miles, just overhauled, very fast; £100.—Box L5,700, c/o *The Motor Cycle.* [3746

INDIAN Combination, 7-9h.p., 1914, 2-speed, clutch, speedometer, electric lights and horn, Klaxon, disc wheels, Millford sidecar, overhauled and repainted, new Palmer cords, beautiful condition; £100, or near offer.—Potter, R.A.F., Lympne, Kent. [3337

Invicta

2½h.p. Invicta, Villiers 2-stroke engine, single speed, a thoroughly reliable machine; £50, or on extended payments 4% extra.—Harrods Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [3321

Ivy.

IVY.—For the earliest possible deliveries, book your order now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9577

1914 Ivy 4¼h.p. 3-speed Combination, with sporty sidecar, perfect condition; £65.—Barker, 13, Victoria St., Clifton, Bristol. [3657

H. G. HENLY and Co. are sole London Agents for the popular Ivy 2-stroke.—91, Gt. Portland St., W.1. 'Phone: Mayfair 4084. [0022

MOTOR CYCLES FOR SALE.

Ixion.

IXION, Villiers 2¼h.p. (1919), Amac, Duolops, Bosch-Blic, splendid condition; £42.—508, Southwark Park Rd., London, S.E. [3413

James.

JAMES 2-stroke, 1915, 2-speed and free, perfect condition; any trial; £46.—175, Merton Rd., Wimbledon. [3641

1919 James, 5-6h.p., all tools, lamps, H.D. sidecar, Cameo screen; £120.—Box L5,638, c/o *The Motor Cycle.* (D) [3364

JAMES 4h.p. Motor Cycle and sidecar, 2-speed, clutch, kick start, good order; £70.—Central Garage, Bromley, Kent. [3495

JAMES 2¼h.p. 2-stroke, complete, just delivered, not wanted; £60.—Write, Collins, 33, Rathgar Av., Ealing, W. [3309

1919 James 2-stroke, 2-speed, 2¼h.p., new July, ridden 400 miles only, Klaxon; £60.—Russell, 85, Rectory Grove, S.W.4. [3490

4¼h.p. James Combination, 1916, 3-speed, clutch, kick start, thoroughly overhauled; must sell; £80.—Snellgrove, 89, High St., Winchester. [3085

1919 James Motor Cycle, sidecar, 4¼h.p., absolutely new, kick start, beautiful model; offers.—Campbell, Staumore, Elmsleigh Drive, Leigh-on-Sea. [3401

4¼h.p. James, 3-speed, recently overhauled, complete with lamps, horn, clutch, in perfect running order; £55.—Lt. Saunders, "Excellent," Portsmouth. [X8951

JAMES have a large range of models. May we book your order for one? Earliest deliveries.—Newnham Motor Co., 223, Hammersmith Rd., W. 'Phone: 80 Hammersmith. [3043

1918 James Combination, 5-6h.p., 3-speed, C.B. sidecar and screen, speedometer, etc., £120, or near offer; would exchange for lightweight.—Kelvey, 194, Oxford Rd., Manchester. [X9262

BLACKER and Blake-Marsh, Motor Mart, Bexhill and Midland Bank Chambers, Eastbourne.—Sole James agents for Bexhill-Hastings district. Early deliveries; orders booked in rotation. [3110

1919 5-6h.p. James and Triumph Gloria Sidecar, good outfit, excellent condition, mileage about 700, cost £173 in July; no reasonable offer refused.—Box L5,402, c/o *The Motor Cycle.* [2701

JAMES Combination, 1918, 5-6h.p. twin, was stored for 10 months last winter, in really splendid condition, tyres unpunctured, many spares; £120.—Biggar, 6, Guadaloupe Terrace, Sandown, Isle of Wight. [3192

JAMES (no premium).—Advertiser, expecting delivery of 5-6h.p. model de luxe outfit, cannot accept owing to unforeseen circumstances; wishes to dispose at makers' list price; appointment.—Box L5,691, c/o *The Motor Cycle.* [3609

1919 James 4¼h.p., done 600 miles, fitted with Stirling leg shields, valve guard, knee-grips, long plated exhaust, lamps, horn, mirror, tools, and spares; ideal winter machine; £110, or best offer.—Windle, 4 Essenden Rd., St. Leonard's, Sussex. [3411

J.A.P.

J.A.P. 2½h.p., new condition; £38.—Speechley, 1, Gunnersbury Lane, Acton Hill, W.3. [3599

6h.p. J.A.P. Combination, 3-speed, K.S.; what offers? seen Sunday between 11 and 12.—82, Caledonian Rd., London, N.1. [3118

J.A.P. 4h.p., T.T., dropped frame, spring forks, footboards, stand carrier, splendid condition; £35.—Murray, 37a, Charles St., Hatton Gardee, Holborn. [X9190

1919 (September) 4h.p. Twin J.A.P. Lea-Francis, 2-speed, clutch, all-chain drive, lamps, etc., only ridden 600; £95; as new; owner buying light car.—6, Cope St., Coventry. [X9159

1914 5h.p. J.A.P. Combination, cane torpedo sidecar, Gradua gear, Bosch, B.B.; real bargain, 65 gns.; perfect running order.—L. R., 58, Tranmere Rd., Earlsfield, S.W.18. [3249

J.E.S.

J.E.S. Motor Cyclette, good running order, 1912; £16/16.—Chandler, Shepherdswell, Dover. [3552

LANCASHIRE and Cheshire Only.—J.E.S. motor cyclette and attachment sets; enquiries invited.—J. Blake and Co., Liverpool-Manchester. [7042

Juno.

JUNO 2-stroke, 1916, lamp, accessories; £29.—128, Offord Rd., Barnsbury, N.1. [3387

Kerry.

3½h.p. Kerry, a.i.v., mag., B. and B., tyres good, ride away; £17.—Houlston, 560, King's Rd., Hulham. [X8970

KERRY 2¾h.p., B. and B. carburetter, new tyres, new E.I.C. mag.; £21.—Limmer, Fernlea, Grove Hill, Woodford, E.18. [3222

Lea-Francis

LEA-FRANCIS, 1915 4h.p. J.A.P., 3-speed, clutch, kick start, Canoelet sporting sidecar; £85.—14, Canadian Av., Catford, S.E.6. [3188

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LEA-FRANCIS, 1919.—Place your name on our waiting list for delivery of these aristocratic mounts.—A. J. Sproston, 198, Gt. Portland St., W.1. [6612

1919 Lea-Francis and sidecar, condition as new, fitted with P. and H. lamp, Montgomery sidecar; £135.—King and Harper, 6 and 7, Bridge St., Cambridge. [3520

Levis.

1919 Levis, new; £45.

1919 Levis, lamps, etc., done 200 miles only; £48.

CAMBRIDGE Auto. and Engineering Co., 21, Hobson St., Cambridge. [3215

LEVIS 1916 Popular, splendid condition; £43.—Bull, St. Giles' Sq., Northampton. [V8799

CYRIL WILLIAMS, for early delivery of Levis.—Chapel Ash Depot, Wolverhampton. [X8626

2¼h.p. Levis, in perfect running order and appearance as new; £30.—20, Church Walk, Hampstead, N.W.3. [3246

LEVIS, Popular Model, 1916, lamps, horn, in good condition; £33.—The Motor Cycle Mart, Stafford St., Walsall. [X9063

LEVIS 2-stroke, single and 2-speed models.—Early deliveries from the appointed agents, Lloyd and Son, 29, Station St., Lees. [9582

HOVE Engineering Works, Davigdor Rd., Hove, sole district Levis agents; all accessories and repairs; established 12 years. [9637

LEVIS 1916 2-stroke, excellent condition, electric horn, lamp set, etc.—H.W.D. Motor Co., 1, Broadway Parade, Brent St., Hendon. [3643

LEVIS Popular, the finest 2-stroke in the world; book now for early delivery and super-service.—The Walsall Garage, Walsall. Tel.: 444. [9578

LEVIS Popular, 1916, P. and H. lamps, horn, accessories, tubes, tyres perfect, carefully used; £37/10; combination wanted.—29, Wilton Av., Chiswick. [X9107

LEVIS, 2½h.p., just renovated, lamps, generator, Klaxon, belt, pump, carburetter, all new, back tyre and tube unpunctured; £40; after 6 p.m.—11 Ruskin Av., Kew. [X9286

1916 Levis 2¼h.p. Popular Model, good condition, tools, pump, and 2 belts, but no lamps, ride away; £33; a trial can only be had Sunday.—Lupkin, next Tram Depot, Brighton Rd., Purley. [3754

Lincoln-Elk.

LINCOLN-ELK 4¼h.p., 1914, 2-speed, free engine, kick starter, in excellent running condition; £48.—H. Deerin, Forrestfield, by Airdrie. [X8958

3½h.p. Lincoln-Elk, believed 1914, kick sart, Bosch B. and B., footboards, 2-speed, running order; £28, or offer.—J. Blackburn, Carnadore, Castlefin, Co. Donegal. [3390

Matchless.

MATCHLESS Spring Frame Model H; examine this machine now.—Parker's, Bradshawgate, Bolton. [X9358

MATCHLESS-J.A.P., 7-9h.p., 2-speed and clutch, coachbuilt sidecar; £65.—Elton, Cowley Rd., Uxbridge. [X9071

CROW Bros., High St., Guildford, West Surrey, agents for the new Matchless.—Order now for early delivery. [4085

JONES' Garage, special agents for Matchless, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0035

MATCHLESS 8-10h.p., 2-speed, coachbuilt sidecar, lamps, speedometer, wind screen; £80.—Stooke, 4 Berrylands Rd., Surbiton. [3735

1918 W.D. Matchless Combination, lamps, horn, tools; bargain, £150, or offer.—Wright, 97 Reading Rd., Henley-on-Thames. [X9058

MATCHLESS, Model H, for earliest deliveries, order now.—Newnham Motor Co., 223, Hammersmith Rd., W. 'Phone: 80 Hammersmith. [3035

MATCHLESS Model H., the superb combination will be the success of 1920. Book now for early delivery at makers' list price with Clapham (Motors), King George St., Greenwich, S.E.10. [3555

MATCHLESS Victory Model 8h.p. Combination, interchangeable wheels, spare wheel, 3 Lucas lamps, hood, wind screen, speedometer, splendid outfit; £161.—Lyons, 136, Lambeth Walk, S.E. [3155

1920 Matchless Combination, brand new, Model H, latest spring frame model, wind screen, etc., detachable wheels; £190, or nearest offer. Cambridgeshire.—Box 5,558, c/o *The Motor Cycle.* [3285

MATCHLESS Combination, 1919 (July), full equipped, D.A. cylinder lighting, disc wheels, special adjustable handle-bars, only done 1,000.—Apply, Crips Bros., Main Rd., Sidcup, Kent. [3600

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Sunbeam.

SUNBEAM, 1915, 3½h.p., 3-speed, clutch, kick start, with coachbuilt sidecar, Bosch mag., B. and B. carburetter, Dunlop studded tyres, just overhauled, in fine condition throughout, complete with lamps, horn, luggage grid, etc.; £115; exchange.—R. D. Varty, Thundersley, Rayleigh; Essex. [3713

T.D.C.

1919 T.D.C. de Luxe, 2-stroke, in perfect running order, little used, lamps, horn, pump; £42.—Strong, Woodstock, Oxon. [X9149

1914 T.D.C. 3½h.p. Coachbuilt Combination, 3-speed, clutch, Bosch, B. and B., Saxon forks, recently overhauled, enamelled black; £65.—Rhodes, 28, Helena Rd., Walthamstow. [3578

ONE Brand New 1920 Type T.D.C. 2¾h.p., 2-speed 2-stroke. Dunlop tyres, Brooks's pan saddle, Brampton Biflex forks, E.I.C. mag. (waterproof), B. and B. carburetter, magnificent pair aluminium footboards with raised heel pieces, special crucible steel cones, variable pulley, Dunlop belt, strong carrier and tool bags, horn, and full kit of tools, a luxurious mount, listed £60; first cheque or nearest offer to £48 secures; guaranteed to take a sidecar and 20 stone; immediate delivery; the firm who never profiteer.—Motorities, 191, Sweetman St., Wolverhampton. [3651

Torpedo

4¼h.p. Torpedo Precision, 3-speed, clutch, K.S., etc.; £58; for good piano; cash either way.—Whitehead, 18, Lark St., Burnley. [3109

TORPEDO-PRECISION, 2½h.p., 2 speeds, B. and B., horn and carrier, tyres as new, perfect order; £35, or exchange 3-wheeler.—12, Lesbourne Rd., Reigate. [3449

Triumph.

TRIUMPH Baby, 1916, with lamps, splendid condition; £58.—Below.

TRIUMPH 1914 4h.p., 3-speed, with sidecar, good machine; £85.—Bull, St. Giles' Sq., Northampton. [X8798

TRIUMPH 4h.p., 3-speeds, like new; £68.—365, King St., Hammersmith. [3664

4h.p. Triumph and sidecar, 1919 model; £125.—Wauchope's, 9, Shoe Lane, London. [3703

TRIUMPH, new tyres, lamps, horn, running order; £30.—Warden, Bushes Rd., Sevenoaks. [3624

TRIUMPH, 1918, 4h.p., unused; 76 gns., offers.—112, Colomb St., E. Greenwich. [3225

TRIUMPH, 4h.p., 3-speed Stormey, done only 9,000; what offers?—W. Pugh, Presteign. [X9274

UNUSED Countershaft Triumph; £110, or very near.—6, Boycott St., Everton, Liverpool. [3185

TRIUMPH, countershaft, 44965, in new condition; 70 gns.—55, Wiltshire Rd., Brixton. [3350

NEW Baby Triumph, never ridden; £70, or near offer.—Box 789, c/o *The Motor Cycle*. [X8941

3½h.p. Triumph, 2-speed N.S.U.; genuine bargain, £38.—Nash, 5, Hillside Terrace, Steyning. [3108

TRIUMPH, countershaft model, in excellent condition.—Miss Andrews, 23, Main St., Cockermouth. [3570

BARGAINS.—20 Triumphs for sale, from 1914-18; call or write.—145, Blackhorse Lane, Walthamstow. [2149

TRIUMPH, 1914, 3-speed, clutch, perfect throughout; £55.—Hutton, Red Lion Hill, East Finchley. [X8943

1919 Triumph Combination, as new, complete with horn and fittings; £130.—Hayes, 344, Euston Rd., N.W. [3333

1918 Triumph, 3-speed countershaft model, as new; bargain, £74.—Beecher, 472, Archway Rd., London, N. [3594

3½h.p. Triumph, early model, m.o.i.v., in perfect order, less magneto; £15.—Dudley, Fairfield Rd., Grove Park, S.E.12. [X8843

1916 Triumph, 4h.p., countershaft 3 speeds, clutch model; bargain, £65.—116, Sternhold Av., Streatham Hill, S.W. [3571

TRIUMPH, 1913, clutch model, new Dunlop tyres and belt, all accessories; £40.—Harveyson, Station Rd., Finchley. [3312

JONES' Garage, special agents for Triumphs, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0038

1919 Triumph, 4h.p., excellent condition; £90; viewed by appointment week-end.—Jones, 33, Conyers Rd., Streatham, S.W. [3494

TRIUMPH, late 1916, countershaft, 3-speed, kick start, splendid condition; £70.—Hutton, Red Lion Hill, East Finchley. [X8942

BABY Triumph Motor Cycle, 1919, new end of August; £60, or offers.—To be seen at The Spring, Stoke, Coventry. [X9160

4h.p. Triumph, as new, countershaft, 3-speed clutch, kick starter, new tyres; £78.—Oakdene, Anerley Park, London, S.E.20. [3263

TRIUMPH 1912 3½h.p., clutch model, completely overhauled; £45; afternoons only.—Henderson, 209, King's Rd., Chelsea. [3575

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Triumph.

TWO Brand New Triumphs, £105 each; also new combination, £128, or near offer.—Hazleview, Clarendon Rd., Cambridge. [X9255

TRIUMPH 3½h.p., 1913, clutch, kick start, tyres nearly new, lamps, horn; any trial; £42.—95, Riversdale Rd., Highbury, N. [3096

SEPTEMBER, 1919, 4h.p. Triumph, Milford sidecar, perfect condition, 500 miles; only £130.—22, Mora Rd., Cricklewood, N.W. [X8870

1914 Triumph, cane combination, 3-speed hub, clutch, lamps, tools, good condition; £68.—16, Mervan Rd., Brixton, S.W.2. [X9285

TRIUMPH 4h.p., 3-speed countershaft, kick starter, fine machine; 68 gns.—5, Egloo Mews, Primrose Hill (near Chalk Farm Tube). [3599

TRIUMPH, 1911, recently overhauled, good tyres, lamp, horn, etc.; any trial; mag.; £30.—Nye, Kew Lodge, Heath, Canterbury, Kent. [3631

1919 Triumph, 2-stroke, 2¼h.p., new condition; £60, no offers; seen by appointment.—Burbidge, Darlaston House, Warwick Rd., Coventry. [X9155

TRIUMPH 1918 4h.p. Countershaft Combination, Gloria sidecar, new throughout, spares; £90.—Faulkner, 7, Linda St., Battersea, S.W. [3200

1919 Triumph, 4h.p., splendid condition, tyres unpunctured; £95. 'Phone: Kingtoo 826.—39, Langham Rd., Teddington, Middlesex. [X8802

TRIUMPH, torpedo wicker sidecar, N.S.U. 2-speed, sprung luggage carrier, sound throughout; £45.—Dugdale, 19, Kingsley St., Nelson. [3687

TRIUMPH 1911 3½h.p., lamps, horn, tools, good condition and appearance, ride away; £35.—Whitaker, 51, Penn Rd., Holloway, N. [3137

TRIUMPH, 3½h.p., 1913, 3-speed, clutch, lamps, tools, spare belt, tube, valve, good order; £48.—H. Francis, St. John's College, Cambridge. [3398

TRIUMPH, 4h.p., 3-speed, clutch, new tyres, excellent condition; first £65 secures.—Gray, Fiona, Bromley Rd., Shortlands Station. [3258

3½h.p. Triumph, clutchless, new tyres and mag., B. and B. carburetter, P. and H. lighting set; £35.—J. P. Wakefield, Bretton, near Wakefield. [3161

1918 Triumph, enamelled black and gold, disc wheels, mileage about 2,000; £86. Wanted, lady's Douglas.—37, Arlington Rd., Surbiton. [3680

TRIUMPH 3½h.p., 1909, bright parts recently replated, engine wants slight overhaul; first money order £25 secures.—Prout, Canon St., Taunton. [3160

1919 (Aug.) 4h.p. T.T. Triumph, done 800 miles, experienced driver, unscratched, long copper exhaust, tools, pump, horn, knee-grips, very fast; £75.—Henshaw, 35, Old Dover Rd., Canterbury. [3278

4h.p. Triumph, 3-speed, clutch, Bosch, £50; also 4h.p. Triumph cylinder and piston, £4.—Whinfrey, Butcher St., Thurnscoe, near Rotherham. [X9176

TRIUMPH, countershaft, late model, good tyres and belt, plating and enamel perfect, ride away; £88.—6, Hemstal Rd., West Hampstead, N.W.6. [3752

1919 Baby Triumph, 2½h.p., 2-speed, as new, ridden only 20 miles, makers' grease still on; £68; Cambridgeshire.—Box 799, c/o *The Motor Cycle*. [X9153

1919 Triumph Road Racer, fully equipped, Cowey speedometer, magnificent condition throughout; £85.—Mackenzie Cott, Lion Hotel, Cambridge. [X9348

1919 4h.p. T.T. Triumph, just delivered, not run 50 miles, lamps, Klaxon, tools, owner bought car; best offer over £90.—Pope, Hill House, Esher. [X8967

TRIUMPH 1917-1918 4h.p., countershaft, 3 speeds, re-enamelled, plated, condition as new, genuine bargain; £85.—White, 121, Adelaide Rd., Chalk Farm. [X8821

TRIUMPH, just delivered, 1919, 4h.p., 3-speed countershaft, kick start, 5 gn. Lucas lamp set, and horn, as new; £111.—60, Drayton Gardens, South Kensington. [3318

1919 countershaft Triumph, P. and H. lamp set, tail lamp, pump, tools, small mileage, owner bought car; £110.—T. Blackburne Williams, Ty Mawr, Abergele. [X8871

T.T. Triumph, 3½h.p., Bosch, pilot jet B. and B., new cyl., piston, valves, adjustable tappets, etc., recently fitted; £42, lowest.—100, Lansdowne Rd., Seven Kings, Essex. [3336

TRIUMPH 3½h.p., makers' renovation, new piston, new bushes just fitted, tyres, enamel good, lamps, Stewart mechanical warner; £38, or offers.—97, Violet St., Derby. [X8862

TRIUMPH, 1907, 3½h.p., B. and B., Bosch mag., new belt, splendid running order, trial any time; bargain, £30.—H. Gant, Barnham, Thetford, Norfolk. [X9231

1919 Triumph Countershaft Combination, coach, lamps, mechanical horn, spares, tools, insurance; £120.—53, Riverview Grove, Strand-on-Green, Chiswick. [3307

1919 4¼h.p. Triumph Combination, coachbuilt, lamps, generator, horn, chain-cum-belt, 3-speed gear box; £105.—Smith, Staines Rd., Bedfont, Middlesex. [3674

MOTOR CYCLES FOR SALE.

Triumph.

1919 4½h.p. Countershaft Triumph, new Sturmey-Archer 3-speed gear box, very carefully used, delivered in August; £119.—McGildowny, Cobb Court, Storrington. [3459

1919 4h.p. T.T. Triumph, in excellent condition, complete with accessories, only done 2,000, very fast; £85; seen by appointment.—H. F. Moon, The Camp, St. Albans. [3487

TRIUMPH 3½h.p., clutch model, Lucas lamps, horn, speedometer, tools, in excellent condition, ready to ride away; £48.—Apply weekends, 119, Broadwater Rd., Tottenham. [X8815

TRIUMPH 1919 Model, 4h.p., 3-speed countershaft, excellent condition, all accessories and spares, including new head light and inner tube; 83 gns.—100, Station Rd., Harrow. (D) [3357

TRIUMPH, 1912, 3½h.p., clutch model, Bosch mag., Dunlops tyres, touring bars, excellent condition throughout; £45; exchanges.—R. D. Varty, Thundersley, Rayleigh, Essex. [3712

TRIUMPH, 3½h.p., 1911, new Grado gear, kick starter, just thoroughly overhauled at cost of £16, lamps, horn, accessories; £42, or offer.—De Meur, 20, Sherrington, Codford, Wilts. [X8934

TRIUMPH 2-stroke, 2¼h.p., 1917, just overhauled (£7), re-enamelled, splendid hill-climber, lamps, horn; £55.—2, Victoria Av., Church End, Finchley. 'Phone: Finchley 1427. [X9281

3½h.p. Triumph, reliable, economical, Clinchers, Dunlop belt as new, adjustable pulley, enamel and plating good; £34; seen by appointment.—Sutton, 77, Pelham Rd, Gravesend. [3469

TRIUMPH 1919 Gloria de Luxe Combination, as new, all accessories, small mileage, privately owned; 110 gns., no offers.—Dowding, 23, Gorst Rd., Wandsworth Common, S.W. [3212

TRIUMPH, 1911, clutch, engine just rebushed and overhauled, lamps, horn, Dunlop tyres and belt as new, splendid condition; £35.—Buckerfield, Bungalows, Shelford Rd., Cambridgeshire. [X8819

TRIUMPH Combination, late 1913, 3 speeds, clutch, kick start, Gloria spring wheel sidecar, wind screen, new tyres and belt, excellent condition; £68; evenings, —33, Windsor Rd., Ealing, W.5. [3155

1919 4h.p. Triumph and coachbuilt Sidecar, lamps, horn, etc., spare engine sprocket and valve, mileage under 2,000, condition as new; £130.—Henshaw, 34a, Watling St., Canterbury. [3277

TRIUMPH 3½h.p., clutch, semi T.T. bars, engine overhauled, rebushed, new Dunlop 1in. belt, lamps, horn, liberal spares, fast, sporty mount; £48, no offers. —Rogers, Ellerdene, Church Stretton. [X8797

TRIUMPH 3½h.p., Bosch mag., lamps, horn, new heavy Dunlop tyres, enamel and plating in very good condition, very fast machine; nearest offer to £35. —H. Deerin, Forrestfield, by Airdrie. [X8957

BABY Trimph, 1919, new August, very little used, carefully run in, owner driven only, better than new, owner buying car; 62 gns. — Capt. Hughes, Brabyn's Hall, Marple Bridge, Cheshire. [X9264

TRIUMPH 3½h.p., 1912, clutch, accessories, new Hutchinsons, just overhauled, re-enamelled, excellent appearance, Gradua gear; £40.—Write, Newman, 70, Palmerston Rd., Bowes Park, N.22. [X8857

TRIUMPH 3½h.p., fixed, Bosch, B. and B., nearly new Dunlop belt, Dunlop tyres, footboards, lamps, horn, good going order;, £25 or offer; Saturdays or Sundays.—38, Townshend Terrace, Richmond, Surrey. [X9130

LATEST Countershaft Triumph, done 200 miles only, fully equipped, aluminium discs, T.T. bars, smartest Triumph extant; reason for selling, broke; £85, offer.—Seen at Whiteleys, 238a, Dalton Lane, N.E. [X9289

1914 Triumph, 4h.p., 31127, Mabon variable gear, countersbaft, lamps, horn, coachbuilt sidecar, perfect condition; £71/10.—See Kwiksale advertisement, Miscellaneous Cycle column. Introduction given free. [3729

4h.p. Triumph Combination, quick detachable sidecar, lamp, horn, speedometer, new tyres and forks, perfect condition, £84; similar solo machine, £63.—105, Kenilworth Court, Putney. (View Saturday after 1, or appointment.) [3244

TRIUMPH 1918 Combination, coachbuilt, luxurious sidecar, Sturmey 3-speed countershaft, electric lighting, hood, screen, apron, speedometer, horn, splendid condition.—W., c/o Bryant, Canfield Mews, Finchley Rd., N.W.6. Tel.: Hampstead 563. [3385

1919 3-speed 4h.p. Triumph, sporting Swan sidecar, disc wheels, 2 acetylene lamps, A.A. insurance, and tools, etc., complete, only been delivered a month, perfect running order, very reliable and fast; £130.—Lieut. Watson, Cavalry Barracks, Windsor. [3129

1913 Triumph, 3½h.p., Sturmey-Archer 3-speed, lamp, tools, etc., recently overhauled, new gears, good appearance, mechanically sound; £55; owner just received new B.S.A.; seen Saturday afternoon, Sunday, Monday.—46, Queen's Rd., Richmond, Surrey. [3491

1919 (July) Countershaft Triumph, very little used, plating and enamelling almost as new, complete with lamps, mechanical horn, mirror, full kit of tools, the whole in first-class condition; £105.—Capt. Frith, The Lord Derby War Hospital, Warrington, Lancs. [X8853

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Triumph.

TRIUMPH Combination, 1919, with racing sidecar (cost £18), only done 650 miles, 3 lamps, mechanical horn, speedometer, all accessories, smart turnout, most sporty; genuine bargain, £115.—Kearey, 41, Marsham St., Westminster, London. 'Phone: Vic. 6564. [3367

1912 3½h.p. Triumph, T.T. racer, hand clutch, adjustable pulley, P. and H. lamp set, mechanical horn, 1in. belt, all new, knee-grips, Brooks B170, tools, pump, spares, good appearance, condition; some shifter; £45, no offers.—Write appointment, Scott, 22, Florian Rd., Putney. [3186

1919 Triumph 4h.p., 3-speed, countershaft model, semi T.T. bars, £4/4 Lucas lamp set, rear lamp, large Lucas horn, special exhaust pipe, specially tuned engine, a real sporting mount, only used 800 miles, and guaranteed to be like new and perfect; £99; owner bought car; Cambridge.—Box L5,658, c/o *The Motor Cycle*. [3444

1919 Triumph Combination, 4h.p., 3-speed model, large Mills-Fulford sidecar, large P. and H. lamp set, rear lamp set, sidecar lamp, large horn, Cameo wind screen, all disc wheels cost £7; combination has only been used carefully 800 miles, and is like new; perfect bargain, £132; Cambridge.—Box L5,659, c/o *The Motor Cycle*. [3445

TRIUMPH, 1919 (October), 4h.p., latest gear change, sand-blast finish on brake rods, pedals, etc., wheels, spokes, hubs enamelled grey to match tank and save cleaning, Lucas largest lamps, horn, and tail light, latest Cowey speedometer, 2 sets sprockets and chains, making gears 4¼ or 5 to 1 on top, special sprung Brooks saddle, Binks carburetter-specially made schid leather case, immediately detachable from rear carrier, insured, cost with spares and fittings £130, done 400 miles; accept £105 cash; condition guaranteed perfect; seen Hampshire district; owner going abroad.—Box L5,701, c/o *The Motor Cycle*. [3747

Tyler.

2½h.p. Tyler 2-stroke, single speed, disc wheels and long nickel plated exhaust; £55/10, or, on extended payments, 4% extra; other models in stock. —Harrods Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [3320

Velocette.

CYRIL WILLIAMS, for early delivery of Velocettes. —Chapel-Ash Depot Wolverhampton. [X8623

VELOCE 2¾h.p., 2-speed, free engine, just been overhauled; £38.—54, Queen St., Camden Town. [3089

VELOCETTE 2-stroke, 2-speed, chain drive; £38; or with cash for twin combination.—92, Blyth Rd., Leyton. [X9070

VELOCETTE, 2¼h.p., 2-stroke, 2-speed, Senspray, E.I.C. mag., lamps, horn, etc., discs, T.T. bars, good condition; £45.—Songer, Anchor Lane, Silver St., Cambridge. [3422

VELOCE, 1914, 2½b.p., 4-stroke, 2-speed, clutch, mechanical lubrication, £15 just spent on enamelling, overhauling, tyres, belt, etc.; £42, or offer.—23, Hamilton Rd., Reading. [3234

VELOCETTE 2-strokes, automatic lubrication; order now for earliest deliveries.—Newnham Motor Co., 223, Hammersmith Rd., W. 'Phone: 80 Hammersmith. [3040

Villiers.

1919 Villiers 2-stroke, 2-speed, countersbaft, P. and H. lamps, horn, excellent condition; a bargain, £56.—100, Green St., Bethnal Green, E.2. [3239

V.S.

1915 6h.p. V.S.-J.A.P., 2-speed, large C.B. touring sidecar, hood, wind screen, speedometer, and lamps, complete, the whole combination in beautiful condition, tyres like new, engine not done 500 miles; bargain, 95 gns.—81, Cecil Av., Wembley. (Seen Harris's, Wembley, any time.) [X9172

White and Poppe.

4¼h.p. White and Poppe, Bosch mag., B. and B., new tyres, tubes, and belt, adjustable pulley, mechanical horn; £30, or near.—206, Maxey Rd., Plumstead, S.E. [3689

Wilkinson.

1913 Wilkinson, 7b.p., 4 cyls., 3-speed gear box, re-enamelled, coachbuilt sidecar, lamps, horn, etc.; £75.—Kwiksale, 35, Long Acre, W.C. Introduction given free. [3724

Williamson.

8h.p. Water-cooled Williamson Combination, countershaft gear, kick starter and clutch, brand new heavy 700×80 Dunlop cover and tube on back, Williamson coachbuilt sidecar, machine has been thoroughly overhauled, and is in splendid condition, complete with tools, horn, and lamps; £90.—Griffin, Coombend, Radstock, Somerset. [0081

Wolf.

WOLF, 2¾h.p., new Sept., 1919, countershaft 2-speed, Villiers engine, perfect; £58.—73, Risbygate, Bury St. Edmund's. [3477

Wooler.

LOCKWOOD'S Garage, Commercial Rd., Eastbourne. Sussex agents for Wooler motor cycles. [3448

SIDECAR ATTACHMENTS.

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MIDDLE

MIDDLETON'S, London, oldest established sidecar makers, note with pleasure the growing popularity of the sidecar, which they helped to create.

MIDDLETON'S note a number of new sidecars on the market. There's also a lot of new Bacon about since the war. Be careful.

MIDDLETON'S now ask Bacon and Box to oblige with song and dance to cheer up the Garrett-Cellar Sidecar Makers' Association.

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MIDDLETON.—Now ladies, gentlemen, and others, to business. We have three models for immediate delivery.

MIDDLETON'S Touring Coach Model, bulbous, with lockers under seat and at rear, sprung upholstery; £24, fitted free.

MIDDLETON'S Lightweight Coach, bulbous back, lockers, etc., same as touring model; £20, fitted free.

MIDDLETON Flier, the fastest sidecar in the world; £19. We are willing to pay a proportion of any fine for speed inflicted on a purchaser of this model, as we feel to blame for selling such a speedy sidecar to the general public. This offer holds good for three months after purchase.

MIDDLETON'S, the oldest established sidecar makers in London. Also repairs. Trade supplied.—27, Stroud Green Rd., N.4 (near Finsbury Park Tube Station). [1215

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SIDECAR Chassis, off 4½h.p. James, good order; £1/15.—Wm. Boyer, 1, Curzon St., Ibstock. [X9280

LIGHT Coachbuilt Canoelet Sidecar, good tyre; cost £16/16, sell £11.—Sharps, South St., Yeovil. [3394

UNDERSLUNG Coach Sidecar, suit 4-6h.p., 26in. wheel; £12.—51, Beckenham Rd., Beckenham. [3499

SWAN Chassis, 28in. wheel, good tyre and tube; £10.—Broom, 77, Marylebone Lane, Oxford St., W.1. [3543

THREE Empire C.B. Sidecars, good condition, off Triumph and Harley.—Majestic, 197, Stonhouse St., Clapham. [3670

1919 Light Henderson Chassis, fitted with racing torpedo body; £12.—90, Ashbourne Rd., Mitcham, Surrey. [3580

SIDECAR large wicker in grand condition upholstered as new; £7/10, or offer.—38, Townshend Terrace, Richmond, Surrey. [X9131

CANOELET Coachbuilt Sidecar, 4-point attachment, with tyre, tube, wind screen; £15.—Gleaves, 105, Lewisham Rd., S.E. [3107

INDIAN Tandem Sidecar, new, complete with hood and screen, to fit spring frame.—Ratcliffe Bros., 200, Gt. Portland St., W. [3328

BRAMBLE Coachbuilt, green, A1, side door, pockets, locker, 4-point, suit 3½-4h.p.; offers to £14.—2, Clarence Rd., Exmouth. [X9217

DOUGLAS Sidecar Chassis, complete with wheel and tyre, appearance new; £8.—Huttou, Red Lion Hill, East Finchley. [X8944

CAMBER Sidecars, to suit all makes.—Makers, Bright and Hayles, 78, Church St., Camberwell, London. Established 1899. [3508

NEW Perfection Lightweight Coach Sidecars; £17/12/6; prompt deliveries.—Halifax Motor Exchange, Union St. South, Halifax. [3721

RENNOC Sidecars are manufacured at the Rennoc Motor Sidecar and Engineering Works, 86, Victoria Rd., Stroud Green, London, N.4.

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SIDECARS, second-hand and clearance, several; also clearance bodies. Send for special list.—Rennoc Works, 86, Victoria Rd., Finsbury Park, N. [2849

BROOK Bros., Burnham-on-Sea, have a few new sidecars to offer at special prices with hood and screens; write us to-day for particulars. [9593

DOUGLAS Sidecars.—Three for sale, perfect condition, brand new, C.B. bodies, good tyres; £15 each.—Lieutenant, Vineys Cottage, Amesbury, Wilts. [3349

CANOELET Sporting Wedge Sidecar, finished royal blue, disc wheel, not done 300 miles; £18/10, or close offer.—Park, Rose Cottage, Forest, Melksham, Wilts. [3342

PRACTICALLY new very light Sidecar, wicker upholstered body, with apron, 26in. wheels; seen between 6 and 7; £10/10.—3, Palmerston Rd., Wimbledon. [3564

ROYAL Leicester Sidecars.—Models for all purposes, first-class finish; quick delivery; satisfaction guaranteed. Write for catalogue.—The Willowbrook Co., Leicester. [0049

COACHBUILT Sidecar, off 1916 3½h.p. Sunbeam, complete, £10/10; wicker torpedo sidecar, off Triumph, complete, £5/10.—Burrows, Motors, Barnsley. 'Phone: 160. [3401

FOR Sale, Sandum Flyweight C.B. sidecar, with coverall apron, delivered 3 weeks, only been 10 miles, suit 3½h.p. T.T., cost £20/10; first cheque £19/10 gets it; bought heavy combination.—Cardell, Tretherras, Newquay, Cornwall. [3220

SIDECAR ATTACHMENTS.

SWAN Sporting Sidecar, cost £30 in Aug., accept £25 or near offer; would exchange with Gloria and cash adjustment; seen by appointment.—A.J.E., 113, Helix Rd., Brixton Hill, S.W.2. [3501

MOTOR Cycle, sidecar, C.A.V. lighting set, accumulator, complete with special box, wiring, and switch, ready for fixing, good condition; £4/10.—Major Lathbury, Chipperfield, Herts. [X8936

COACHBUILT Sidecar, underslung, off Triumph, £15; Fullford light sidecar, coachbuilt, boat-shape body, splendid condition; £12.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X9186

SUNBEAM olive green coachbuilt 4-point attachment sidecar, waterproof apron, P. and H. lamp, new September 10th off Model H Triumph, tyre and tube as new, mileage 480, first-class condition, Glamorgan district, reasonable trial given; £25.—Box 804, c/o *The Motor Cycle*. D. [9218

CLAPHAM (Motors) Greenwich.—Grindlay de Luxe, the last word in comfort. See it at Olympia or Greenwich, immediate delivery from stock, all models. Large selection of high-class sidecars just arrived. Henderson, Willowbrook, Comfy, Burbury, etc. Chassis, auxiliary arms, etc.—Book now for early 1920 delivery with Clapham (Motors). 119, King George St., Greenwich. [3559

SIDE-CARRIERS AND PARCEL-CARS.

MOTOR, Auto-Carrier, in good condition; very cheap; reason for selling, want a large car.—Apply, 243, Dalston Lane, Hackney, E.8. [3426

WALL Parcel Car, 8h.p., 6-cwt., model van body, as new, £120; ditto tricar, 4½h.p., second-hand, £40.—Wall, Ltd., Hay Mills, Birmingham. [3343

RUNABOUTS AND CYCLE CARS.

CYCLE Car, 2-seater and dickey; £65, bargain.—232, Brixton Rd., S.W.9. [3140

A.V. Monocar, September, 1919, 2-speed, complete.—Baker, Wollescote Rd., Stourbridge. [X9067

HUMBER 8h.p., a.c., 3 speeds and reverse, screen and hood; £85.—77, Guildford St., Chertsey. [3091

MORGAN, 1914-15, splendid condition, very fast, fully equipped; £175.—Oakleigh, Charlestown, Weymouth. [3676

NEW Carden Runabout, fitted with lamps and horn; £150.—King and Harper, 6 and 7, Bridge St., Cambridge. [3527

LANCASHIRE (except Fylde) and Cheshire Only.—A.V. monocar; enquiries invited.—J. Blake and Co., Official Dealers, Liverpool-Manchester [7037

G.N., single-cylinder, about 1913, electric lights, good running order; £60, or nearest.—W., Bandora, Granville Rd., North Finchley, N.12. [3692

SABELLA Tandem Cyclecar, complete; ideal set of components for making up own cycle car during winter, 8h.p. J.A.P. engine, as new, £55.—Railway Garage, Staines. [3648

1919 Grand Prix Morgan, perfect condition, lamps, hood, screen, discs, horn, tools, spares, as new throughout; nearest £193; take late solo part.—55, Watling St., Wellington, Salop. [X8837

8h.p. J.A.P. Cycle Car, recently overhauled, coach painted, friction drive, Bosch, B. and B.; absolute bargain, £65, or near; needs very slight attention.—46, Chapel St., Marylebone. [X8816

DE DION 8h.p., single, exceptionally good condition, 4-seater, 2 behind for children, Bosch h.t. and accumulator, 760×90 tyres, screen; £65.—Hunt's Motor Stores, Hawkinge, near Folkestone. [X9110

HUMBERETTE 8-10h.p., exceptionally smart, yellow and black, disc wheels, Stepney, dickey seat, hood, screen, and electric lights, very fast and sporty; £155, or exchange.—17, Cecil Rd., Enfield. [3190

CYCLE Car, 7-9h.p. water-cooled twin, 3 speeds and reverse, lamps, horn, and Stepney, tyres as new, in splendid running order; first cheque over £70 secures this bargain.—Westrope, Ashwell, Herts. [X8869

MORGAN Runabout, 8h.p. J.A.P. engine, new hood, driving shaft, bevel gears, dogs and chain sprockets fitted, acetylene head lamps and generator, electric tail lamp; any trial; £120.—Mugleston, Overseal, nr. Ashby-de-la-Zonch. [X9247

1917 G.P. Morgan, 8-10h.p. w.c. J.A.P. engine, disc wheels, 3 lamps, mechanical horn, complete set of tools, recently overhauled and repainted helio by Messrs. Morgan, in perfect running order, driven anywhere; £210; no dealers.—Box 444, Smiths' Advertising Agency, Ltd., 100, Fleet St., London, E.C.4. [3546

TAMPLIN (late Carden) Tandem Cars, £150; supersede sidecar combinations; a car-comfort vehicle at motor cycle price; economical, smart; ideal for professional use or pleasure; finest components: 8h.p. J.A.P. engine in front, Sturmey-Archer 3-speed gear hox, seat kick-starter, inside controls, weight 3½ cwt., consumption 60-80 m.p.g., 1920 features, deeper rear seat, car type wheel bearings, live rear axle, coach finish blue and black, delivery about 8-12 weeks against deposit with order; demonstration cars running outside Olympia.—Temporary showroom: 71, Hammersmith Rd. (Opposite Olympia side entrance in main road.) [3645

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MORGAN 1916-17 Sporting 10h.p., M.A.G. engine, o.i.v., air-cooled, hood and screen, kit of tools, pump, acetylene lighting, oversize tyres, disc wheels, in good condition, little used; price £170, no offers.—Bromilow, 78, Plank Lane, near Leigh. [X911

CARS FOR SALE.

NEW LEADER 2-seater 4-cyl. Car, overhauled; first cheque £95 secures.—Garrett, The Bungalow, Gomeldon, near Salisbury, Wilts. [359

AUTO-CARRIER 2-seater Sociable, 5-6h.p., in splendid condition, screen, very reliable; £7[illegible]—103a, High St., Wandsworth. [330

16-20h.p. 5-seater Wolseley, 1913, Lucas accessories, in excellent condition; £425.—H. Liddiard, Downing St., Cambridge. [354

RUNABOUT, 3-wheel N.S.U., in perfect running order; £60; any evening; stamp, photo.—Parris, 7 Old Paradise St., Lambeth, London. [345

HUMBERETTE, special body, done up, repainted, perfect condition; £148.—Write appointment, 40, Queen's Av., Muswell Hill, N.10. [325

1919 Morgan 4-seater, new September, mileage about 500, water-cooled J.A.P. engine; offers, Herts.—Box L5,564, c/o *The Motor Cycle*. [329

SERVICE'S, the Bargain Specialists, 26, Page St., Westminster, absolutely can't fathom why people are such pie-cane as to buy cars elsewhere.

SERVICE'S are really doing the philanthropist stunt especially for a few weeks, just to make an impressive start. We're newcomers, savvy? (Fortunately not "established 1902.")

SERVICE'S, 26, Page St.—Nice little De Dion Bouton light car, 2-seater, Bosch watertight, horizontal Solex, good; £65.

SERVICE'S, 26, Page St.—Smart 8-10h.p. Jackson flush-sided torpedo 4-seater, De Dion engine; bargain, £95.

SERVICE'S, 26, Page St.—Sporty 12h.p. 4-cyl. Sizaire Naudin, 2-seater, dickey, monobloc, Zenith; £165

SERVICE'S, 26, Page St.—12h.p. Unic taxi-landaulet, smart, economical hire car, runs nicely; £185.

SERVICE'S, 26, Page St.—Smart 8-10h.p. late model De Dion, 2-seater, double dickey; bargain, £225.

SERVICE'S, 26, Page St.—15-18h.p. Bedford-Buick torpedo, detachable wire wheels, domed mudguards, £235.

SERVICE'S, 26, Page St.—11.9h.p. Belsize streamline 3-seater, dickey, worm drive, monobloc, smart, £285.

SERVICE'S, 26, Page St.—Smart 11.9h.p. Briton torpedo, detachable wheels, pointed radiator; £285.

SERVICE'S, 26, Page St.—Sporty 1915 Horstman light car, 4-cyl. monobloc, self-starter, smart, £285.

SERVICE'S, 26, Page St.—15.9h.p. Arrol-Johnston torpedo 2-seater, dickey, detachables, enclosed valves; £385.

SERVICE'S.—3½-ton 1915 Seabrook-Standard lorry, 40h.p., enclosed valves, thoroughly overhauled and retyred; £485.

SERVICE'S, 26, Page St.—50-cwt. 1916 Vinot lorry, worm drive, 4-speed, runs nicely; £585.

SERVICE'S, 26, Page St.—Super-sporting 20-43h.p. Prince Henry Vauxhall, bulbous-back 4-senter, 6 m.p.h., dynamo; £850.

SERVICE'S, 26, Page St., Westminster (Manager, Victor N. Lavender), have above all on view. Please call. [365

WEST Norwood.—Paxton Car Depot for bargains. 10h.p. 4-cyl. light car chassis, live axle, mag, good tyres; £80.—Paxton.

WEST Norwood.—10-12h.p. 4-cyl. Humber 2-seater, runs well, £135; 10-12h.p. Siddeley-Wolseley torpedo 2-seater, nice, bargain, £150.—Paxton.

WEST Norwood.—15.9h.p. Berliet semi-sporting 2-seater, Zenith, fast, £275; 15-18h.p. Hupmobile streamline torpedo, sporting, detachables, £385.—Paxton

PAXTON Car Depot (Proprietor, Stanley J. Cooke), 228a, Gipsy Rd., West Norwood, have above bargains. Call. Service 3 'bus to Paxton Hotel opposite. [365

ALLDAYS 8-10h.p. 2-seater, C.A.V. electric light, repainted, perfect condition; £155; exchange 1919 twin combination.—2, South Park Rd., Wimbledon, S.W. [361

HUMBER 2-seater, w.c., reupholstered and renovated, lamp, horn, etc., requires slight attention; offers; 8-10h.p. Blumfield twin engine, Zenith fram, cheap.—10, Gap Rd., Wimbledon. [X883

8h.p. Rover 2-seater, dickey, hood, wind screen, Stepney, in good running order, would make fine tradesman's lorry, for countershaft Triumph; or sell £85.—Box 5,570, c/o *The Motor Cycle*. [329

RAILWAY Garage, Staines ('phone: 139) offer 4-seaters: Wolseley-Siddeley, 12h.p., 2-cyl. vertical, £85; R.C.H., 1913, new gears, £135; 2-seaters: Studebaker, 1913, £195; Whiting-Grade lighting, starting, £265.—Call week-days only, clo 6 p.m. [364

TYRES.

BASTONE'S for Covers and Tubes, new and clearance lines.

BASTONE'S.—Hutchinson, Tourist Trophy, rubber-studded covers, 26×2¼, 44/-.

BASTONE'S.—Dunlop rubber-studded heavy, 26×2½ 51/9, 26×2¼ 47/3.

BASTONE'S.—British-made rubber-studded, 26×2¼, 33/-.

BASTONE'S.—Palmer heavy, 4-ply, ribbed, 28×3, 65/-; ditto, 2-ply, 24×2, 35/9; 26×2, 40/-; 26×2¼, 43/-.

BASTONE'S.—Goodyear all-weather diamond tread 28×2½ diamond studded 45/-, 29×2¼ (oversize for 28×2½) rubber-studded 42/-, 650×65 heavy diamond 81/6.

BASTONE'S.—Goodrich safety tread, 26×2½, 55/-; 25×2½ (to fit 2½), 60/-.

BASTONE'S.—Wire edge Michelin, 26×1¾, 11/6.

BASTONE'S.—Tubes 26×2¼, 7/6; 26×2½, 9/-; 28×3, 10/-.

BASTONE'S for Belts.—John Bull and Pedley, all sizes in stock.

BASTONE'S.—Hours of business, 9 till 6, Saturdays 9 till 1.

BASTONE'S, 228, Pentonville Rd., King's Cross, London, N.1. Tel.: 2481 North. [1230

1,000 Dunlop Tubes; 2/6 each.—Speechley, 1, Gunnersbury Lane, Acton Hill, W.3. [3600

CAST no more tyres aside; we can repair and retread equal to new again, no matter how far gone.—Below.

POUNDS can be saved by letting us help you to get the very last out of your old tyres: 26in. 17/6, 650×65 ditto, 28in. 20/-. Repairs from 3/6, returned carriage paid, done in 3 days.—The Phœnix Tyre Repairing Co., 224, Sherlock St., Birmingham. [X9183

NEW Wire Edge Covers, 26×2¼, 21/-; good make; can be used on sidecars.—Burrow, Blackwell Garage, Kidderminster. [X7489

TYRES.—See Buncroftian Advertisements under Miscellaneous. Stelastic, Pedley, Kempshall, Hutchinson; extraordinary prices. [0054

BRAND New Clincher, rubber-studded, 28×3, 42/6; 26×2½, 39/6; 26×2¼, 35/6.—Wandsworth Motor Exchange, Ebner St., Wandsworth Town. [7862

SECOND-HAND Dunlop Tubes, 2¼, 2⅜, slightly patched; 3/6; money returned if not satisfied.—Williams, Cycle Agent, Wandsworth Rd., S.W.8. [3619

ECONOMIC Tyre Co.—New clearance covers, tubes, belts, at greatly reduced prices; standard goods sent on 7 days' approval, carriage paid, against remittance.

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ECONOMIC.—26×2⅜ non-skid, 45/-, listed 69/3; 28×3 heavy anti-skid, 45/-, listed 74/3.

ECONOMIC.—24×2¼ Clincher, 45/6; 26×2¼, 60/-; 26×2½×2¼ Rom square stud, 52/6; 26×2⅜ Kempshall anti-skid, 54/9.

ECONOMIC.—26×2½ Moseley grooved, 61/6; Rom rubber bar, 77/-; rubber stud, 50/9; Dunlop heavy, 61/9.

ECONOMIC.—28×2½ Goodyear diamond, 45/-; 28×3 Dunlop heavy, 69/-; Rom combination, 127/8.

ECONOMIC.—Tubes: 26×2¼ clearance, 7/6, list 10/3; 26×2⅜, 11/-; 26×2½, 11/6; 28×2½, 11/-; 28×3 American valves, 8/6; British, 10/-; 650×65, 13/3.

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DO You Want reliable high-class retreading, bursts, vulcanising, chafed beads remoulding, or butt-ends fitting? Then get in touch with The Melton Rubber Works, Melton Mowbray. You will never regret it. [1323

NEW Heavy Beaded covers, 26×2 25/-, 26×2¼ 27/6, 26×2⅜ 30/-, 26×2½ 32/6; butt-ended tubes, 26×2 7/6, 26×3 10/6; endless tubes, 26×2 6/6, 26×2¼ 8/6, 26×2½ 9/6, 26×3 10/-; new rubber belts, 7ft 6in.×⅞in. 12/6, 8ft. 6in.×⅞in. 15/-; sent approval, carriage paid receipt remittance.—Palmer's Garage, Tooting, S.W. [2002

1,000 Brand New Dunlop Covers, also Kempshall non-skid and Hutchinson. These tyres are brand new and not clearance, as received from the makers, 28×2½in., 2 qns. each; maker's price £3/17/6. Also 1,000 tubes, 26×2in., brand new, 6/6 each; 500 Hutchinson tubes, in boxes unwrapped, 9/- each.—J. Smith and Co., 16, Hampstead Rd., N.W. [8590

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TANKS of every description; repairs, re-enamelling, write for booklet.—Green, Water St., Blackfriars, Manchester. [0006

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ROYS, Ltd., invite enquiries for insurance of all kinds. Prospectuses and rates, quotations and proposal forms sent on application.—The Secretary, Insurance Offices, 170, Gt. Portland St., London, W.1. Tel.: Mayfair 2272 and 2273. [0055

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AUDEL'S Automobile Guide is a standard book on American practice, and should be in hands of all motorists; price 8/6.—From Edwin Mansfield, Engineer, 94, Victoria Rd., New Brighton. [3479

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J. E. S. LOCKWOOD, Motor Patents Specialist.—Guide free.—3, New St., Birmingham. [4264

INVENTORS' Advice and Handbook Free.—King's Patent Agency, Ltd., 165, Queen Victoria St., London. [0052

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1911 Douglas Crankshaft.—Particulars to 132, Stansfeld St., Blackburn. [X9126

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FRAME, Etc., heavy, dropped top tube, belt drive.—57, Princess Rd., Kilburn. [3237

WANTED, sidecar for Scott or chassis alone.—Vale, Stapenhill, Burton-on-Trent. [X9197

TRIUMPH Parts, any year.—Ward, Gower House, 11 Radford Rd., Leamington Spa. [X9362

WANTED, screen, also hood, 8h.p. Rover car; state price.—Horne, Douglas, Man. [3735

3½h.p. or 4h.p. Triumph Engine, also T.T. bars.—76, Western Rd., Southall Middlesex. [3430

WANTED, lined leather suit, 6ft. 42 chest; cheap.—D., Boulton, Saffron Walden. [3405

C.B. Sidecar, in good condition, 26in. wheel.—Lancaster, 124, Maple Rd., Surbiton. [3262

CYLINDER for 1906 Triumph, 78 mm. bore.—Jenner, 8, Hope St., Maidstone. [3180

WANTED, motor cycle, modern, frame; cheap.—Box L5,563, c/o *The Motor Cycle.* [3290

LUCAS King Road Lamp Set, also Lucas hooter.—38, Airthrie Rd., Goodmayes. (D) [X9054

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TRIUMPH Wanted, must be cheap; send full particulars.—56, Roseneath Rd., S.W.11. [3534

2-STROKE Cycle, Levis preferred, condition immaterial, cheap.—26, Bath St., S.E.1. [3257

A.J.S. 6h.p. Combination; state price, etc.—Bogg, 167, Church St., Eccles, Manchester. [3435

W.D. Sunbeam or A.J.S., in new condition.—Write, Hall, Cresthill Av., Grays, Essex. [3592

1912 Indian Gear Box, good condition essential.—Douglas, 6, Spring Gardens, Newark. [X9258

2-SEATER Car, 4-cyl., wanted, not earlier than 1915.—76, Western Rd., Southall, Middlesex. [3431

ARMSTRONG Gear Parts Wanted, good prices given.—Simpson, 16, King St., Weymouth. [3678

100 Motor Cycles Wanted; spot cash paid; bring or send.—Palmer's Garage, Tooting. [0006

WANTED, cylinder and piston, 1913 Triumph, 3½h.p.; state bore.—Higgins, Lostwithiel. [3483

COACHBUILT Combination or Cycle Car, reasonable price.—27, Gayhurst Rd., Dalston, E.8. [3462

GOOD Motor Cycle, also combination; cash waiting.—16, Osten Mews, Emperor's Gate, Kensington. [2836

WANTED, combination, or Morgan, perfect, with accessories; cash.—97, Sheffield Rd., Barnsley. [3403

WANTED, N.S.U. gear for Triumph; pair of N.S.U. 650×65 wheels.—Pearson, Woodview, Armagh. [X8939

SIDECAR Wanted, light Watsonian or similar, fit P. and M.—51, Beckenham Rd., Beckenham. [3500

REX.—Wanted, front cylinder and piston for 1911 7-9h.p. Rex.—Clifton, 18, Montague St., Rushden. [3372

£2,000 Waiting.—Wanted, several good lightweights; reasonable prices given.—Booths Motories, Halifax. [7392

WANTED, solo or combination; also lady's and gent's cycle.—H. Teat, Ancaster, Grantham. [X8662

J.A.P. 8 h.p. Engine wanted, new, integral magneto platform type.—Railway Garage, Staines. [3649

SECOND-HAND or New Accessories, spares, tyres, wheels, etc.—Smith, 28, Mossbury Rd., S.W.11. [3530

WANTED, motor cycle frame, complete, suit 4¼h.p. Precision; good condition.—Saunders, Cranby, Eye. [X8824

HARLEY, Enfield, or Matchless combinations wanted for cash.—51, Maplethorpe Rd., Thornton Heath, S.E. [3586

DOUGLAS, 2¾h.p., not earlier than 1915, good price.—Write, J.N., c/o A. Brook, 19, Oakley Sq., N.W.1. [3209

DOUGLAS, 1915 or later, lightweight 2¾h.p.—Particulars, price, to Box L5,678, c/o *The Motor Cycle.* [3531

N.S.U. Gear, any condition, also magneto and carburetter, cheap.—Box L5,696, c/o *The Motor Cycle.* [3742

WANTED, motor cycle, also combination, Enfield or A.J.S. preferred.—73, First Av., Walthamstow. [3561

ENFIELD 2¾h.p. Spare Parts: Crank pin and bush, thrust bracket and pinion.—Sharps, South St., Yeovil. [3393

WANTED, 1912 Rex engine; state price and condition.—J. Squires, Barrow-on-Soar, Leicestershire. [X8108a

WANTED, cylinder for 2¾h.p. Minerva, or would buy engine, cheap.—Jessup, 47, Argyle St., Cambridge. [3498

FIRST-CLASS 1919 Combination wanted immediately.—Whitehead, 77, Marylebone Lane, Oxford St., W.1. [3544

FORKS, minus fittings, for 1916 Powerplus Indian; state price.—Harold Petty, Ltd., Halford St., Leicester. [X7942

MOTOR Cycle wanted, cheap, useful machine; give full particulars.—Ashton, Thorohill Edge, Dewsbury. [3541

WANTED, flywheels for 1910 Triumph.—Particulars to T. Battersby, Holme-on-Spalding-Moor, Yorkshire. [3590

WANTED, Morgan or similar runabout, good going order; cheap.—Honnor, Aberglaslyn, Loose, Maidstone. [X9345

WANTED, 4-cyl. F.N.'s, T.A.C.'s, T.M.C.'s, Hendersons.—Wandsworth Motor Exchange, Ebner St., Wandsworth [1137

WANTED, front cylinder for 1914 New Hudson Big Six, good condition.—Baldock, Whitesmith, Halland, Sussex. [3102

WANTED, 26×2¼ wired motor cycle front rim or wheel, new or second-hand.—F. Ellis, High St., Beaconsfield. [3457

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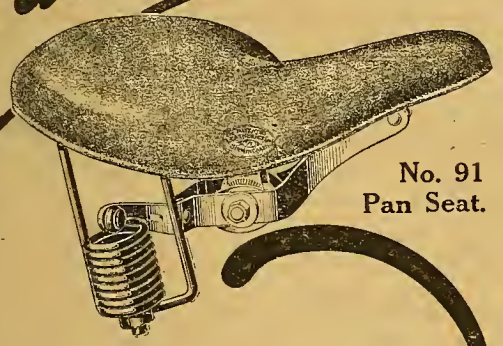

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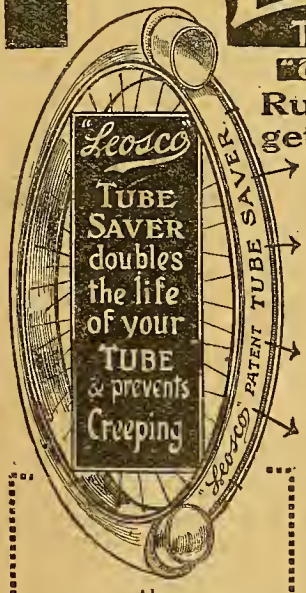

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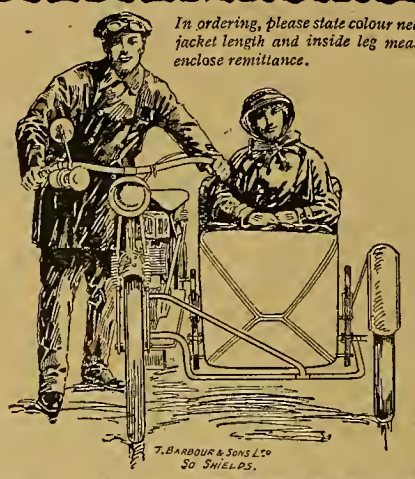

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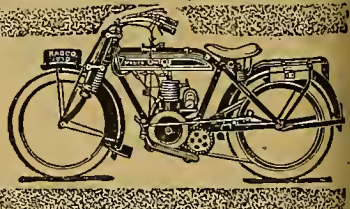

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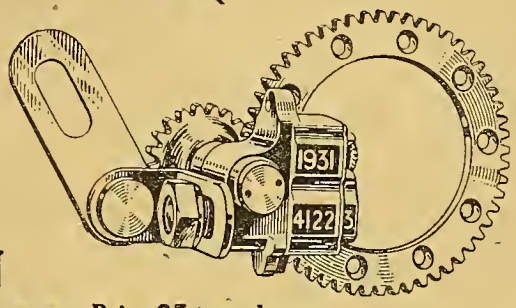

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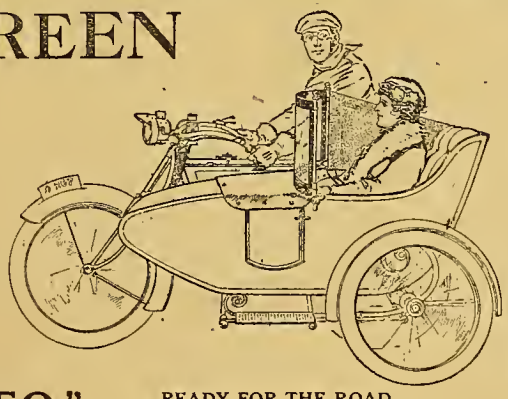

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Carriage paid to your door. Illustrated booklet giving particulars of Draperstyle Overalls for all occupations. Sent post free on request.

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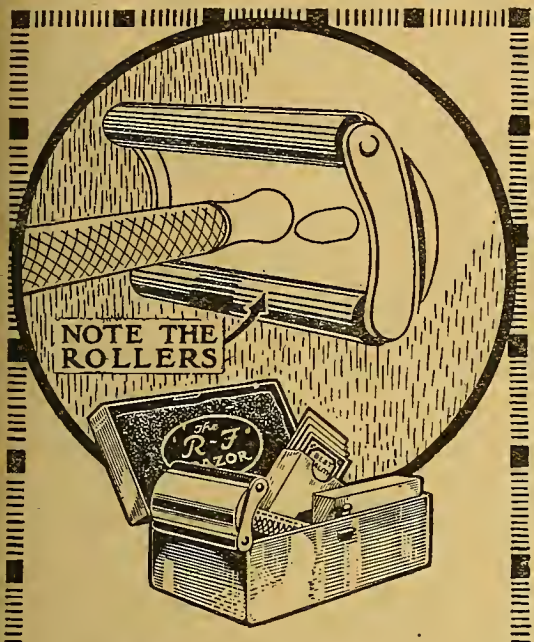
NEW MODELS OF THIS FAMOUS SADDLE.

NO 1920 COMBINATION COMPLETE unless fitted with MODEL H.27

FITTED WITH FOLDING BACKREST.

X-L-ALL LTD., Hall Green, BIRMINGHAM.



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All users — and to-day they are numbered by the tens of thousands— admit that by using "Coolie" Motor Cycle Oil they have been able to secure a cool engine even under stress ; that even at the end of long strenuous journeys cylinders, etc., are exceptionally clean, and that perfect lubrication is absolutely assured by its use.

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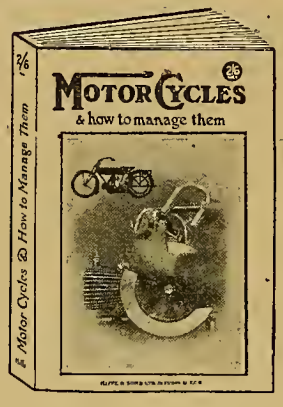
(THE TWENTIETH)



of "MOTOR CYCLES AND HOW TO MANAGE THEM"—the Standard handbook on the motor cycle, its care and management. Fully revised throughout by the staff of "The Motor Cycle." Fresh matter added dealing with new models, lubrication, springing (forks and frames), etc. Many new illustrations. All obsolete matter deleted. 286 pages. Nearly 400 illustrations.

NOTE.

The Nineteenth Edition sold out in a few weeks, and as the demand for this edition is likely to be as great, copies should be secured without delay.

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The New Cover.

TRACING MOTOR CYCLE TROUBLES

The Fourth Edition of "Tracing Troubles,"
By "Road Rider."

Carefully Revised, and corrected where necessary to bring it up-to-date, this book will be found invaluable to all motor cyclists, and particularly useful to those who have recently purchased their first machine.

Price 2/- Net. By Post 2/3.

A reliable system for tracing motor cycle faults and of remedying any trouble when found.

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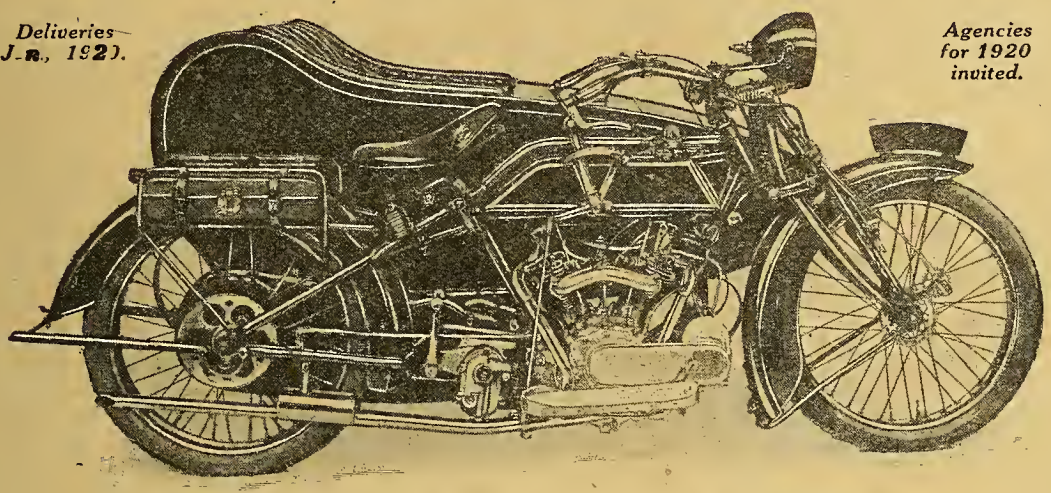
MARTINSYDE - NEWMAN

Deliveries Jan., 1920.



Agencies for 1920 invited.

6 h.p. "V" TWIN COMBINATION.

Specially designed coachbuilt sidecar.

SPEED, RELIABILITY, and COMFORT.

PRICE £170.

SPECIFICATION.

ENGINE.
70 m/m bore x 88 m/m stroke 680 c.c. 50 degree Twin Cylinder with special overhead exhaust valves, designed and finished to give perfect cooling, also giving a perfect scavenging stroke and ensuring even cylinder expansion. Side inlet valves, streamline valve pockets permitting high velocity of gas intake and exhaust. Fool-proof automatic lubrication of all internal parts by means of timing case-sump, thence by specially designed flywheel splash action regulated by carefully designed baffle plates. Twin-roller big end bearings. Extra large size ball bearings to both sprocket and timing sides of camshaft, set in specially thickened crank case to eliminate distortion.

IGNITION.
High Tension M.L. Magneto.

CARBURETTOR
Special Amac fitted with double control on handle-bar All parts heavily plated.

CONTROLS.
Ignition, throttle, air, exhaust valve lifter, clutch and front brake, all controlled from handle-bars.

GEAR BOX
A.J.S. 3-speed Countershaft with cork inset plate clutch kick-starter (manufactured under licence).

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Chain enclosed in oil-retaining case.

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Foot controlled, band brake fitted to the rear hub.

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Scientifically constructed and designed to give low saddle position, rigidity and comfort.

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Brampton Biflex action springing, giving both vertical and horizontal motion (manufactured under licence).

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Square design, capacity 2 gallons petrol, ½ gallon oil. Fitted with large diameter filler caps, priming tap hand pump and semi-automatic drip feed.

FOOTREST.
Specially designed to give comfort.

SADDLE.
Brooks Saddle.

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Strongly constructed to take two Brooks long Pannier Tool Bags.

MUDGUARDS.
Designed to give ample mudguarding with side Valances.

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Separate stands are fitted for jacking up either wheel.

WHEELS.
650 x 65 heavily plated black centres lined gold.

TYRES.
Dunlop's special 650 x 65.

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Every machine is fitted complete with carrier, tool bags, number plates, inflator, horn, oil can and spanners and the machines are fully tested on the road before being delivered.

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The highest possible workmanship in every detail. Enamelled black and lined gold. All bright parts heavily plated.

SPECIFICATION OF SIDECAR

CHASSIS.
For left hand side of Motor Cycle built of the finest quality steel tubing. Specially designed for accessibility and quick detachment.

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3 Leaf Cee Springs

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650 x 65 heavily plated black centre lined gold, fitted with Dunlop 650 x 65 Tyre.

MUDGUARD.
Specially designed for accessibility and ample mudguarding fitted with side valances to protect body from mud.

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Coach built painted Royal Blue panelled, lined gold and fitted with specially designed Luggage Carrier at the rear of body Upholstered Royal Blue.

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Chassis finished in best black, bright parts heavily plated. Lamp bracket fitted, spanners supplied

EXTRAS.

HOOD.
Fitted with Auster's patent fittings and water-proof cover.

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Auster's patent windscreen fitted as near the passenger as possible.

THERE WILL BE NO INCREASE IN PRICE DURING 1920 SEASON.

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P. & M. 1920 Improvements

Engine Lubrication. P. & M. mechanical lubricator delivers fresh oil positively to the cylinder and big end alternately. No valves or springs are incorporated, the pump being foolproof. Increased engine efficiency, and reduced oil consumption are obtained.

Ratchet Hand Brake. P. & M. introduces a unique and much-desired innovation in motor cycle brakes. The P. & M. foot-brake ("the brake that never fails") is interconnected with a hand lever working in a notched quadrant, enabling the machine to be left on any gradient with perfect safety.

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Suspension. P. & M. spring forks provide enormous bearings at the wheel spindle, and are, therefore, positively proof against sidecar drag. P. & M. abolishes useless seat pillar, and provides perfect saddle comfort.

P. & M. replaces straps on tool bags by quick-acting spring plates; fits a really efficient silencer, and provides mudguards and chain cases, which are unapproachable for neatness and strength.

P. & M. workmanship is the best in the world, and 1920 P. & M. finish will be more than worthy of P. & M. reputation.

P&M
THE PERFECTED MOTORCYCLE

1920 Model - - - - Price, £95.

An honest machine at an honest price.

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In answering this advertisement it is desirable to mention "The Motor Cycle."

DECEMBER 4TH, 1919.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
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Telegrams: "Cyclist, Fleet, London."
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Hertford Street, Coventry.
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199, Deansgate, Manchester.
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Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
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UNITED STATES—The International News Agency, New York. CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
AUSTRALIA—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).
NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin INDIA—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Lessons of the Show.

STARTLING novelties were no more common at the Olympia Motor Cycle Show than in previous years. There were one or two innovations in engine design which show real promise, but this is not unusual at show time. To those who remember the Max and Motofrip, even the scooter is not new, though there are more exhibitors of this type of runabout than in previous years. Flat twin engines have encouraged the use of duplex frames, and in one or two instances these show that the designers have realised essential points in frame construction which are too often neglected.

Two-strokes have improved immensely, but there is often plenty of room for further advance. This stricture does not apply to two-strokes only, for the average four-stroke is still lacking in many refinements, particularly as regards silence and protection of valve gear, and the arrangement of cooling surfaces.

On the other hand, gear boxes show an enormous advance, and in some cases are well ahead of car practice.

Spring frames have obviously come to stay, and in this connection our readers will remember that the motor cycle has striven for this end for several years past. There is a general improvement also in spring forks, and a welcome tendency to an all-round increase in tyre sizes.

Dynamo lighting is increasingly common, and we note with pleasure the fact that many motor cycles look more like designed machines rather than a set of components strung together. Nevertheless, a lot of cleaning up remains to be done, and, if more designers had to look after and clean their own motor cycles, there would undoubtedly be an increase in accessibility and better mudguarding *of the engine and transmission.*

An increase in the number of passenger machines is particularly noticeable, and sidecars have improved to a very large degree. The passenger's comfort is a most important point, especially as it is usually one of the fair sex who occupies the sidecar. We were particularly impressed with the luxurious appointments of many high-class sidecars, and welcome with joy the reintroduction of spring sidecar wheels. This is perhaps the simplest and best method of overcoming the difficulty of chassis breakages.

There is a danger of the heavier sidecar outfits becoming over-developed, in which case they will undoubtedly suffer from the competition of light three- and four-wheelers, which start with the advantage of protection for the driver, while the more elaborate passenger motor cycles can no longer claim that they can be used as solo mounts if so desired.

Automatic carburetters and mechanical lubrication are two features which are becoming increasingly prominent, and we venture to prophesy that both will become almost universal in the course of the next few years, though at the present time the opinion of highly skilled riders and the prejudice of the old hands are often against them. At the present moment a few unsuccessful examples might cause a regrettable setback to what is undoubtedly a step in the right direction.

There were but two or three real lightweights in the Show. On the other hand, there are thousands of potential lightweight riders amongst those who are forced, by the shortage of houses, to live long distances from their work. There should be a fortune awaiting the firm that will first market a mass-produced lightweight shorn of all but essentials.

Scooters will probably attract a small portion of this market, but the main function of these little vehicles is to provide a handy method of quick shopping for the lady of the house, and of covering quite short journeys, while the lightweight motor cycle will undoubtedly form a convenient method of transport for quite long week-end outings, provided that really severe hills be avoided.

An Index to the advertisements in this issue will be found on advertisement page 76.

The Glory of Electric Lighting.

THE lighting dynamo will undoubtedly prove itself to be the most fascinating novelty of motor cycling in 1920. In a sense, it is not a novelty, for years ago we had good outfits on sidecar machines; but never before have we enjoyed powerful and reliable lamps on solo mounts. It is no exaggeration to say that the outfits transform nightwork. The road is flooded with light at a touch of the button—there is no "waiting for the smell," or blowing through a dust-choked water valve. The light is better than that of the best acetylene equipment, partly because it is absolutely steady, partly because there is no burner to interfere with the action of a scientifically-designed reflector. After three or four hours, the light is just as good as it was at the start, and you know its efficiency will continue all night, if need be; this is better than having to gouge out a sodden mess and recharge with carbide and water stored in awkward receptacles. The chances of trouble are so entirely remote that they are out of mind. Hour after hour the long beam stretches ahead of you, serving equally to illumine and to clear the road. Finally, when the destination is reached, there is no cleaning to be done.

Chances of Trouble.

FOR a year or so motor cyclists will probably display a certain nervousness about the reliability of dynamo outfits, but there is no longer any rational cause for alarm. So far as my experience goes, dynamos are nearly as reliable as magnetos. The possibilities of trouble are in practice confined to the accumulator, the wiring, and the lamp bulbs. The accumulator can, and should, be tested before each long ride. If it is fully charged at the start, only one mishap can befall it *en route*, namely, an internal short-circuit due to loose packing and vibration, for the fuse wire will protect it against external shorts. Therefore a fully charged accumulator, properly packed in its case, can be trusted to the limit. Wiring has made an enormous advance since the days of accumulator ignition, when our mounts were festooned with flimsy wires of indifferent quality and thoroughly bad fitting. Armoured wire, impervious to oil and wet, too sturdy to fracture as the result of "pull" or vibration, and very neatly fitted is the rule nowadays; and short-circuits on such wiring should be practically unknown. If a short occurs, the fuse wire localises the damage; and the tracing of the short is as simple as finding out whether petrol starvation is due to a choked jet, a choked feed pipe, or an empty tank. Lamp bulbs must give out occasionally—that goes without saying: but the modern filament is extraordinarily strong, and a bulb will often last a full year. Lamp stops by the roadside promise to become increasingly rare.

Sudden Darkness.

I SHALL not be surprised if the standard outfit does not undergo one modification in the course of time. An electrically-lit motor car is normally driven at night with four forward-facing lamps. Should one, two, or even three of these lamps suddenly be extinguished by an electrical fault, no danger arises; the surviving lamp or lamps give sufficient light to enable the driver to pull up in safety. Solo motor-bicycles only carry one forward-facing lamp, and, if it is suddenly extinguished—especially on a twisty road—the situation is none too pleasant. Of course, this peril is common to electricity and acetylene alike. But two factors add to its unpleasantness where electricity is the illuminant. Acetylene very seldom fails instantaneously; indeed, I have never known it to do so, except when a rider's body pinches a badly fitted gas tube. But a solitary electric bulb may plunge the rider into Cimmerian darkness at any moment, though in practice such a mishap will not occur more than once a year. The second factor is that electric lighting is so bright that riders are tempted to drive rather fast with it. Perhaps there will be 100,000 dynamo-lit motor cycles on the road in 1921: if each of them is suddenly plunged into darkness once in that year, some of them will be riding fast on awkward roads at the time and a crop of accidents will occur, most of them quite petty, no doubt, whilst the total will be insignificant compared with the enormous mileage which will be covered in safety and pleasure. Still this consideration rather suggests that it is unwise to rely on a single forward-facing bulb, and that the outfit of the future will include a second low-power bulb, consuming very little current, which will safeguard the pull-up when the main head lamp bulb chances to go out of action without warning. Subject to this consideration, the new dynamo sets are simply ideal.

The Fair Sex and Scooters.

TWO correspondents have assailed me privately with much vigour for a paragraph published under the above heading on November 13th. I cannot retract a word of it. Not a word of it had reference to experienced girl riders. It was inspired simply and solely by the somewhat cynical fashion in which a section of the trade is inclined to exploit a section of its potential female custom. Feminine motor cyclists as a class stand to-day pretty much where men stood twenty years ago. They are keenly interested in the hobby, but know next to nothing about it. Even the ex-Service girl riders cannot wholly be excluded from this assertion, for most of them handled machines which were inspected and overhauled nightly by male mechanics: conditions which in no sense apply to private ownership. Hence the girls must not take it amiss if men who have paid dearly for experience try

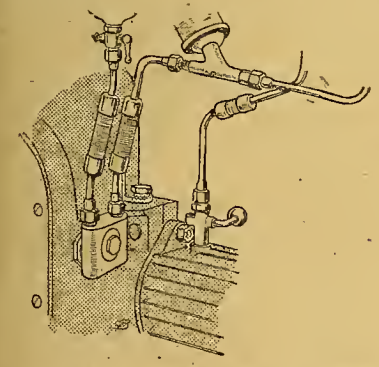
Occasional Comments.—

to help them. Years ago the trade pretended that their machines were much more efficient than the facts justified. We accepted their word and bought machines which were fundamentally bad. So far as touring mounts are concerned, the girl novice of to-day runs no such risks as we men ran in our novitiate long ago. These machines are so good that a feminine novice without mechanical instincts should have a very happy time in her first season. But, as I stated on November 13th, this is not necessarily true of scooters. Scooters have been largely ordered by women, and by women of a type who may never make motor cyclists, even under the best conditions: for example, elderly women, who are not even pedal cyclists. Some of these women live in districts where the roads are more often greasy than not and where hills which will puzzle any scooter are common. The local agent in most cases does not yet possess a demonstration mount on which a trial run can be accorded: in some cases he has never either seen or ridden a scooter himself. On the other hand, there are scooters on the market which cannot be termed good hill-climbers. It follows that some firms and agents have slipped into grossly unsound business methods. If I were a scooter agent in Newcastle or Torquay or Inverness, and an elderly woman tried to place an order with me for a scooter which I had never seen, I would not jump at the business. I should accept the order provisionally, maybe; but I should invite her to come round and test my demonstration model as soon as it was delivered and give her the option of cancelling her order if she desired.

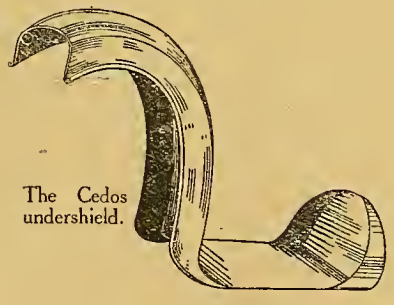
A Show Memory.

IT is hardly conceivable that a few years ago the new model motor bicycles were thinly sprinkled through a giant assembly of push bicycles, and that the whole caboodle was easily stored in a far smaller building than Olympia. Most stands staged twenty or more pedal cycles to each motor cycle, though the latter usually had the place of honour. It took the centre more because that was the only way of balancing the exhibit than because it was answerable for the bulk of the business done. The general public consisted largely of youths with exaggerated calves and thin black stockings, and the few motors on show evoked quite as many sneers as plaudits. The provincial agents treated the petrol side of the affair quite cavalierly, and the visitors drew caustic contrasts between the pleasing appearance of an exhibition motor on a red velvet platform and its subsequent eccentric, noisy, and dirty progress on the road. If one desired to make a technical enquiry, or—*mirabile dictu*—to place a definite order, one shouldered one's way into the office through a crowd of sleek people discussing free-wheels. When one secured a hearing and the astounding fact that this well dressed fool actually wanted to *buy* a motor bicycle became plain, there was a frenzied search for "our Mr. Jones," who alone of the staff knew how the beastly thing worked. Unless memory has betrayed me, I once attended a Stanley Show which was graced by just one solitary motor cycle, and the crazy individual who had the temerity to invade the holy of holies with the contraption had to seek refuge from the chaff of an outraged industry in an outside bar for the remainder of Show week.

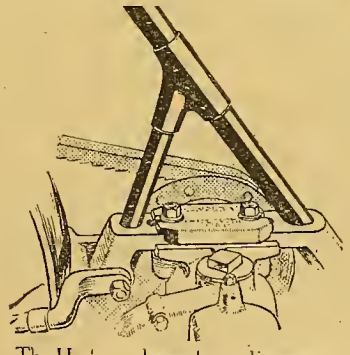
A FEW DETAILS AT THE SHOW.



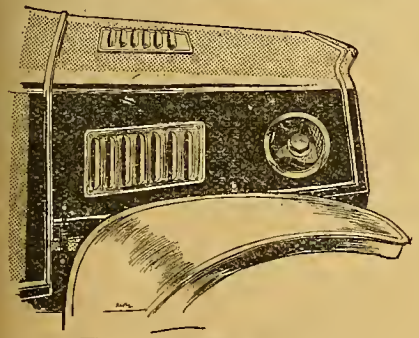
Lubrication on the 3½ h.p. Douglas is effected by means of a mechanical pump in conjunction with an emergency hand pump.



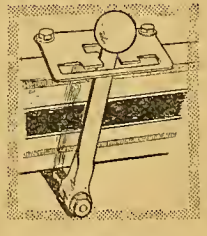
The Cedos undershield.



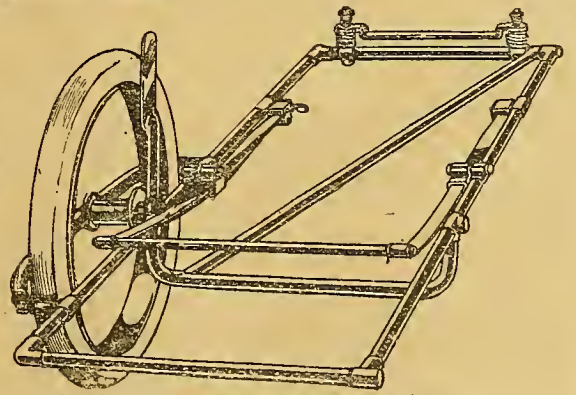
The Hazlewood gear box adjustment



The new bonnet on air-cooled Morgans.



The Sparkbrook gate change.



Cantilever springing for the body is a feature of the simply designed Rex sidecar chassis.

SOME NOTES ON SIDECARS AT OLYMPIA.

A General Review of Sidecars with Special Reference to the Comfort and Convenience of the Passenger.

By W. G. ASTON.

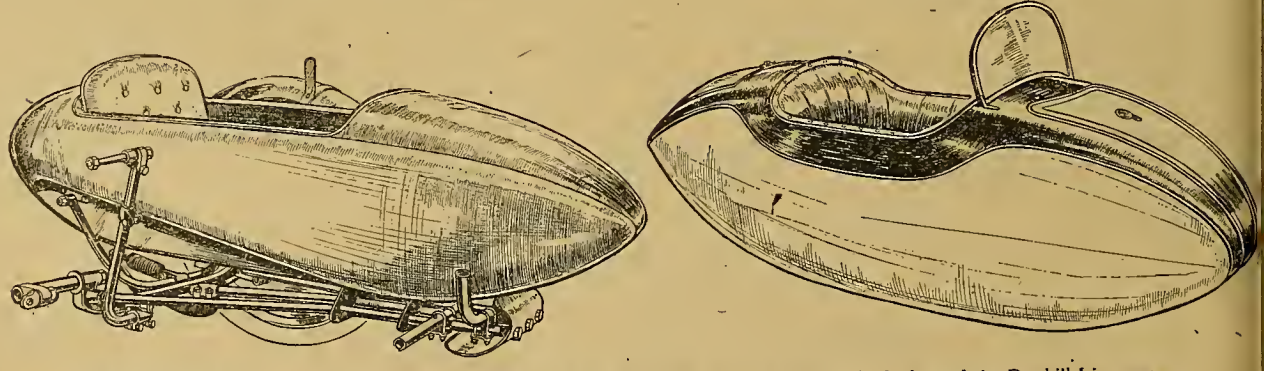
CONSIDERING how very little he knows about them, the average motor cyclist takes quite an interest in sidecars. At Olympia Show, under the benign influence of feminine persuasion, he even goes so far as to try some of the more attractive-looking models—an action which, in so far as real judgment is concerned, is just about as effective as trying to assess the merits of a car by sitting in the dickey seat. But it leaves him in total ignorance of the fact—as from personal experience I am prepared to testify—that the modern sidecar represents probably the most luxuriously comfortable form of road travel known to mankind. The motor cyclist—wise man—appraises the sidecar purely and simply as an auxiliary to his machine. Will it make a favourable-looking combination? Is it light enough? Is it strong enough for those hill-climbing stunts, etc.? Once upon a time I adopted this attitude myself. I permitted any justifiably regular passenger to select her sidecar, whilst I attended to the wangles associated with early delivery of the gallant machine that was to propel her and me. I have since perceived that I was grievously mistaken. I ought to have sent her to a motor school to learn how to control a powerful twin, whilst I sampled and chose the attachment that was to float me over the rough roads and lull me into delicious mental abstraction with its lazy, nonchalant, easy-going motion.

Converted from Saddle to Sidecar.

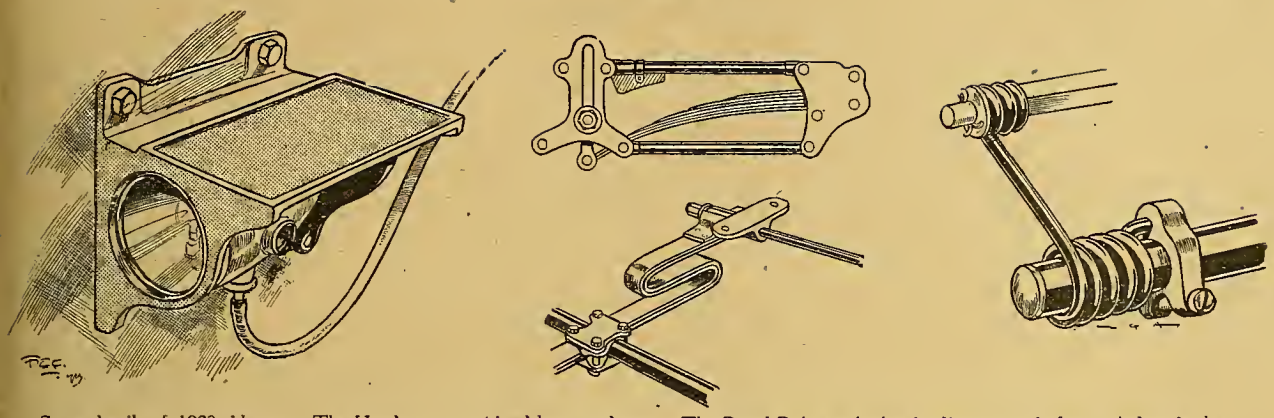
This enthusiasm for sidecars is a war product, purely and simply. In the course of duty I used to bestride Triumphs, Douglases, and Clynos, and do my best, as in duty bound, to dash them to pieces on the highways and byways of Flanders and Northern France. But one day, in a fit of generosity—I had been consistently putting a vertical gust up my mechanist sergeant, and thought it only fair to let him have a return match on me—I climbed into the sidecar. From that day forward I renounced the saddle in favour of the life of padded luxury which I found was assured by acceptance of the passenger seat.

Perfect Comfort.

Such being the case, I hold it quite impossible that the Editor of *The Motor Cycle* could have pitched upon anyone ready to deal with sidecars with greater enthusiasm. Had I the liberty to do so, I could write reams of appreciation. As it is, space forbids me to let myself go. Suffice to say that, the war being over, fate ordains (without regard to my own personal views upon the subject) that, with no mechanist sergeant, I must return to a saddle that is a little less strenuous than of yore—thanks to spring frames. I shall do so without protest, for the saddle has joys of its own—but I shall never look upon the sidecar again as once I did. Setting aside malice and all uncharitableness, I shall still regard its occupant with envy. The sidecar combination may be, and I make no doubt certainly is, the *Ultima Thule* of economical motoring, but from the moment he or she climbs into the nest of cushions and repose, the sidecar passenger is one of the idle rich. Idle, you who have mended punctures whilst she powdered her nose, will easily grant. Rich? Who wants greater wealth than the enjoyment of speed, air, scenery, and perfect comfort. And all that with a complete detachment that is only comparable to sleep.



Sporting doorless sidecars: The Canoelet, which has a wide section domed guard sprung on the body, and the Dunhill Limousette.



Some details of 1920 sidecars. The Henderson combined lamp and step. The Royal Ruby springing in diagrammatic form; below is the body springing of the same machine. On the right is seen the front springing of the Montgomery.

It appears as if the resources of science had been ransacked in the interests of promoting sidecar efficiency. The modern sidecar is a good-looking affair, graceful in outline and pleasing to the eye no less than to the vertebræ. The suspension is a miracle of thoroughness. Between the passenger and the bump on the road are interposed a variety of shock-absorbing devices. First, the cushions—and these are better than ever. Secondly, the body springs connecting the *carrosserie* (this is the word!) to the chassis. Thirdly, the chassis springs connecting the frame to the axle. Finally, the pneumatic tyre. Here is a fourfold defence that nothing short of an explosion can penetrate. Some designers cut out the chassis springs altogether without, apparently, ill effects. But whether or not, in solving the problem of providing perfect comfort to the only thing connected with the modern motor cycle that does not work, they seem to have all found a different solution.

Here follow a few notes on sidecar design as revealed after a buffeting walk round Olympia.

A Welded Chassis.

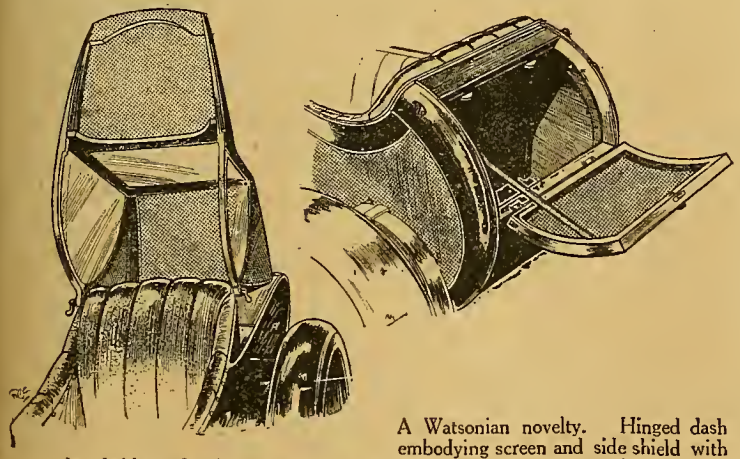
The Bamco design is full or originality. The body reposes upon coil springs contained in cylindrical housings, which act as slides and guides for a pure up-and-down motion. At the base of each slide is a rubber buffer to take up the return shock. The axle is itself sprung, the hub of the wheel being supported by a link arrangement with coil springs in tension. There is a neat little aluminium stepboard, so beautifully polished that it would be a shame to set foot upon it. The chassis is made of tubes acetylene welded together according to the best aircraft practice. There are no lugs of the ordinary kind whatever. A two-seater model chassis, in which the axle is not sprung, has been tested for a long distance with a load of one and a half tons. Sidecar passengers will regard this no doubt as an insult, but it certainly is the right sort of test. On another Bamco model (all sidecar firms make a great many models—they are all so good that no one can make up his mind which is best) the chassis is suspended on leaf springs and the body on the usual strip C arrangement.

Detachable Wheel.

The Mills-Fulford models are distinguished by great strength in the frame, whereof the tubes are duplicated to provide great rigidity. When lugs occur, these are generously webbed. The mudguards, one noticed, in the new design, are supported by stays radiating from a star or spider at the hub. This has been done to facilitate ease of replacement in case of crash, and to eliminate any possibility of looseness or rattle.

In the Rex combination detachable wheels are fitted. The sidecar wheel is enclosed by an elliptic tubular stay carrying the outer extremity of the hub. This stay, however, is easily freed, so that it can be hinged out of the way. The spare wheel is carried at the back of the sidecar in a metal pan, and has its hub secured to a slotted standard. The sidecar itself has a rigid frame, and the body is suspended each side on long cantilever leaf springs. In front it is supported on double coil springs capable of absorbing the rebound. A noticeable point is that to relieve the chain stays of possible strain, a long diagonal tube runs from the front head of the cycle to the rearmost sidecar attachment. The sidecar chassis is also itself heavily braced diagonally.

In the Grindlay design one finds that the chassis is carried on a couple of long half-elliptic springs, one each side of the wheel; whilst the body is independently supported on full cantilevers, with double coil



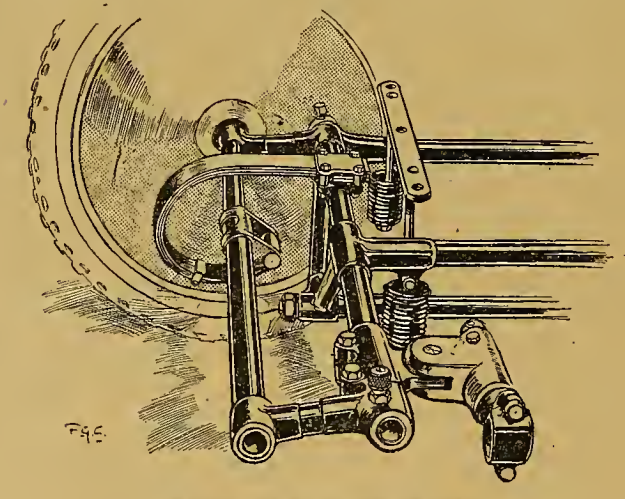
A Watsonian novelty. Hinged dash embodying screen and side shield with detachable roof and curtains. On the right is seen the Rover rear locker.

Some Notes on Olympia Sidecars.—

springs in front. The *modèle de luxe* has a celluloid screen with metal and wood framing. This is carried on folding tubular stays, in the manner of the Auster rear screen for cars. It is adjustable as to angle and distance from the passenger, and when not required folds down flat on the apron. The hood is effective and simple in operation.

Ample Carrying Accommodation.

The Henderson is one of several samples which unmistakably suggest that, as a master of springing, the sidecar designer has no equal. In this case, the chassis being rigid, the body is mounted upon cantilever springs, at the normally fixed end of which are additional coil springs in compression. The front springing is of the flat-leaf C variety. At the back of the sidecar one finds admirable luggage accommodation. A big locker has a rubber-covered top with a rail, so that suit cases may go both without and within. On a lighter model, the body is carried on plain coil springs. As if this were not enough, there is a special model definitely designed for rough roads (as though there were anything but patches of the other sort nowadays!). In this the axle is sprung upon a central inverted C spring, whilst between the body and chassis are coil springs in tension at each side.



The spring axle on the latest Henderson.

These people have a neat little aluminium step, which contains a side lamp, and is screwed on to the sidecar flank. It can also be made to act as a bracket for a metal-covered tool case.

The Watsonian models are equipped with the conventional form of suspension, *i.e.*, C springs behind and coil springs in front. A *de luxe* type consists of a sort of coupé having a weatherproof head with front screen, and side panels of celluloid, which, after being lifted up to allow ingress, close down upon the passenger in a somewhat formidable manner. However, if she is disposed to "go quietly," you can unbutton the leather part of the hood. Adjacent to this stand I heard one or two anxious motor cyclists breathing the magic words, "mother-in-law," and evidently the design appealed to *them*. This is, of course, only chaff. As a protection against wind and rain, I would give the design something approaching "full marks," especially as it comprised really good luggage capacity. It had a commodious boot big enough for a couple of petrol tins, and an aluminium-covered lid, quite large enough for ordinary luggage. There was also a sporty fishing-float shaped light sidecar: long, neatly streamlined, and roomy. In this there was a good sized locker behind the back cushion.

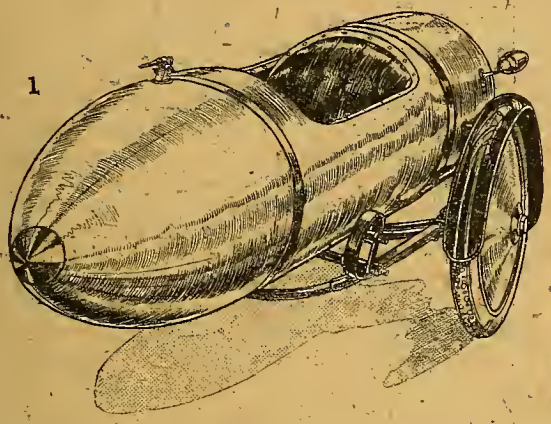
Super Springing.

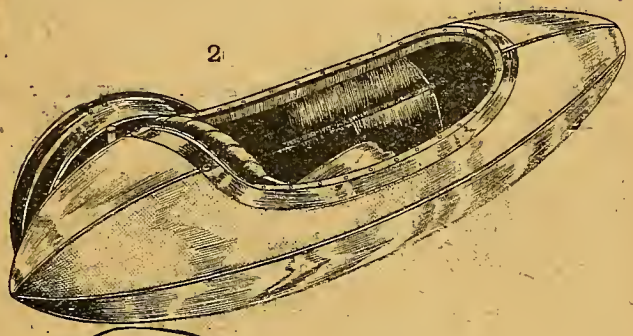
I imagine that it would take a considerable road shock to get past the A.B.C. sidecar suspension. The wheel is connected to the chassis with a many-leaved "grasshopper" spring. The body rests upon long C's behind, and upon a transverse-shaped leaf spring, semi-elliptic, in front. One noticed also that the rear sidecar attachment embodied a ball universal joint on the chain stay of the bicycle, so that absolute independence of action as between sidecar and machine was provided for. I likewise admired the very graceful Gracemill body on an A.B.C. chassis. This was an excellent example of neat aluminium panel beating. Weighing only 44 lb., the body had locker room in the "toe," and cupboard space under the seat. When unoccupied, it could be completely covered in with a detachable twill apron fixed by patent fasteners.

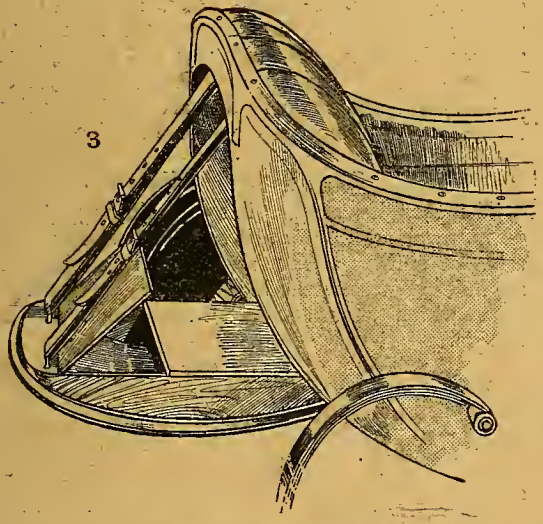
A curious exhibit was the Shell sidecar body on the Sidecar Body Co.'s stand. It was even complete with a copper obturator ring which is guaranteed to give it a gastight fit when passing through the air. The "shell" was of aluminium, the rear portion squared off contrary to aeronautical principles, but strictly in accordance with projectile design. This provided considerable locker accommodation. As far as I could see, the only point in this highly original design was the very sharp fuse cap in front. A more practical type was a sporting sidecar of hydroplane form, shallow, but remarkably roomy. For its kind it struck me as being unusually comfortable, and was agreeably well sprung and light.

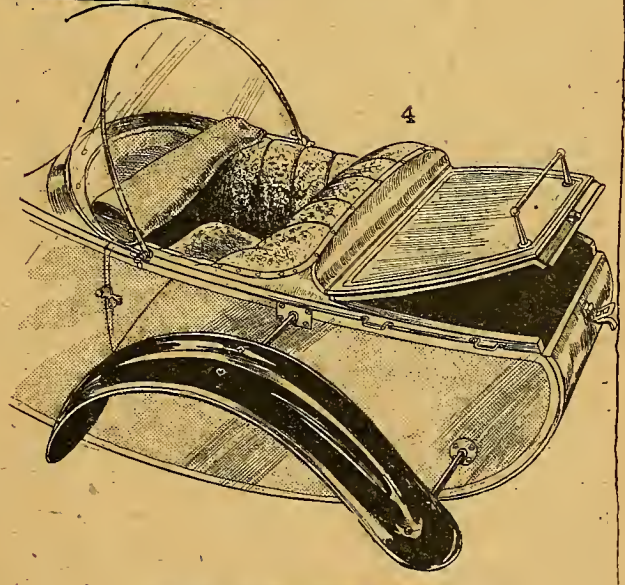
On the Sandum stand, one perceived that sidecar makers have no fear as to the power of motor cycles. Here are found a couple of comfortable two-seaters, one of the permanent type complete with a separate door for each passenger. Considering the accommodation provided, this model was remarkably neat. A second design had a folding front seat, which, when not required, almost miraculously slid into the top panelling, out of sight and out of the way. In order to provide the front passenger with extra leg room (standing over six feet I was touched to the quick by this solicitude), a portion of the toe of the body opens out into a capacious pocket like the bellows of a camera. The more ordinary type of body I had the more cause to admire. The chassis was unusually strong and the finish good. The feminine passenger would appreciate the glove box and mirror—this is real luxury—provided in the single-seater. There was also a neat and light racing type. One of the most practical sidecar screens I saw in the Show was on this stand. It consisted of a broad celluloid shield with leather edging held in standards in such a way as to be adjusted in all required directions, and, furthermore, it gave instant ingress and egress from the body. I also inspected details of a distinctly

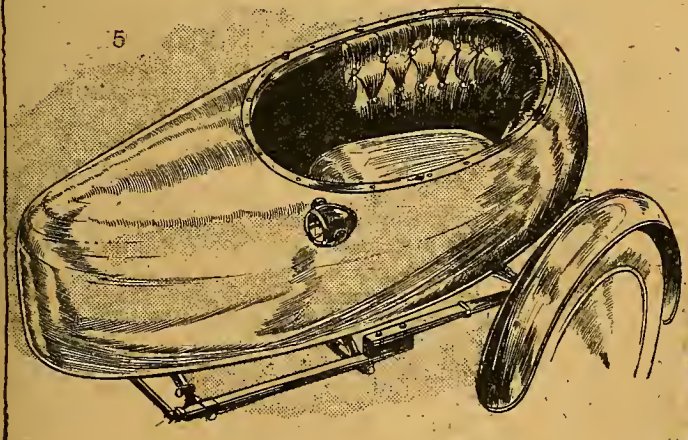
SOME EXAMPLES OF SIDECAR BODY-WORK FOR 1920.

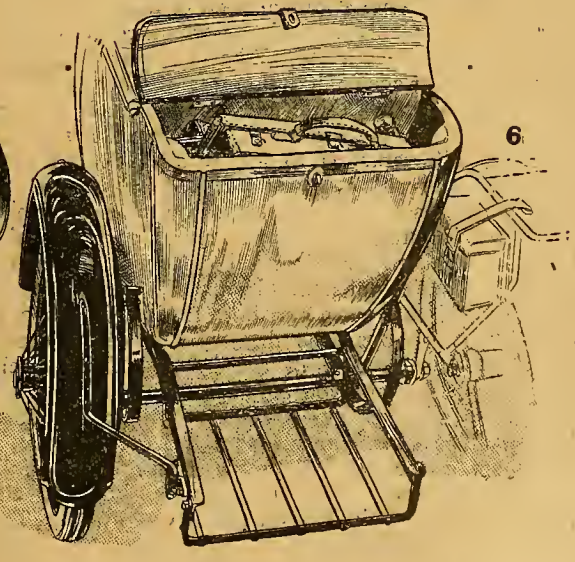












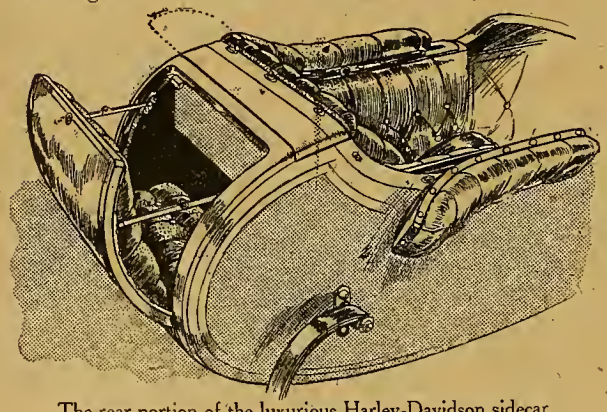
1. A shell type body exhibited by the Sidecar Body Co.
2. Watsonian "R 34" type, sporting model sidecar.
3. A newly designed Millford sidecar with a folding grid.
4. A very capacious locker in the rear of the Henderson.
5. An egg-shell aluminium body fitted to the A.B.C.
6. Rudge sidecars are provided with a deep locker.

Some Notes on Olympia Sidecars.—

clever and practical screen used on a sort of coupé hood. This works on the roller blind principle, and appears to be perfectly weatherproof.

Infant Necessities.

Dunhills are people who evidently believe in the need for roominess. Their Limousette—I do not know why so-called any more than did the stand attendant—has a body of agreeable and unusual depth and of remarkable comfort. I would have asked nothing better than to recline in it, peruse *The Motor Cycle*, and listen to the melodious band. Alas, other duties called. But I had time to observe and admire the adequate locker accommodation at the tail of the body and to appreciate the neat fixed windscreen. A second Dunhill design of sidecar has a body swelled out on the off side, *i.e.*, towards the motor cycle, so as to allow the mother and the che-ild to be there. This seemed to me to be a sound solution of the family problem, the infant being firmly fixed between Mamma and Dadda, so that, in the event of precocity, he can get it from both directions at once.



The rear portion of the luxurious Harley-Davidson sidecar.

In Mr. Norton's excellent design, he displays a true knowledge of motor cycling requirements. His sidecar, whether it be just the ordinary standard model or the *affaire de luxe*, has plenty of roominess. He provides broad semi-elliptical section mudguards, and he allows for plenty of locker accommodation, as is well shown in the sketch. What I particularly liked about the locker accommodation was that it was divided into two spaces by a hinged wooden panel, so that clothes may be kept separate from petrol tins. The screen is adjustable as to angle, and is fixed to a hinged scuttle, which is readily lifted out of the way to allow the passenger to get in and out. Mr. Norton's views on children are, however, at variance with Messrs. Dunhills. In the family machine the child's dickey seat opens out at the back. Should the fire of juvenile questions come too hot, Daddy, in response to a signal, can open the throttle a little and drown inquisitive conversation in the breeze. Well, well, Mr. Norton, perhaps you are right.

There is a rather unusual suspension in the Scott sidecar. The body is carried on, and sprung from, a cross tube connected with a bell-crank, which pulls against a horizontal central tension spring. In the front the car is mounted on small C springs. The arrangement is very simple and efficient.

No examination of sidecar design would be complete without reference to the Royal Ruby, which embodies an unusual volume of elaborate workmanship. The body is supported upon Z shaped leaf springs, four in number, whilst the axle responds to the action of a grasshopper leaf spring which is limited in travel by a rubber buffer. The chassis as a whole, to say nothing of the motor cycle, is a remarkable example of tube work. For ease of interchanging the detachable wheels, the sidecar mudguard is readily removable. The sidecar chassis, by the way, is connected solely to the sprung part of the cycle frame. At its rear is a box of sufficient size to hold two two-gallon tins of petrol, and this is surmounted by a luggage rack. The battery box for the electric lighting set is under the sidecar seat. These points are made clear in the accompanying sketches.

I could not possibly pass by without mentioning the nice-looking Harley-Davidson sidecar, with its windscreen complete with adjustable side panels, its child's dickey seat at the back, and its—wonder of wonders—concealed hood. It just showed what a sidecar designer could do when he let himself go, and was enough to make any Rolls-Roysterer envious. It is a good thing that in this article I have been able to keep away from the question of prices!

Simple and Effective.

The Douglas sidecar has a springing system quite of its own, and, I should say, both simple and effective. C springs at the front work in conjunction with an inverted transverse half-elliptic leaf spring at the rear, which should result in complete freedom of motion.

On the Triumph outfit one finds that, whilst C springs are used for the body suspension, the wheel is separately sprung on volute springs, and a stout U-shaped link hinged in front. Room for a can of petrol is provided between the cycle and the sidecar.

I came to the conclusion that the Rudge sidecar was extraordinarily well made, and I confess I liked the polished aluminium toe panel. I hope this was not just "Show finish," as it lent an agreeable air of distinction to the *ensemble*. There was a sizable luggage grid of L section members sprung with the body, and also a roomy locker at the rear covered in with a lid that had every appearance of being really weatherproof.

In the new Rover sidecar combination one found several points to admire. First, the wide domed mudguards, then the general neatness of the body with its good locker accommodation at the back. One noticed also that to get the chassis nice and low the attachment to the cycle chain stay was made through a rigid right-angled stay — possibly ungeometrical, but effective.

The Clyno sidecar has been well considered to act with a spring frame. The chassis thereof is suspended on a long leaf spring, in addition to which the body has C springs. The sidecar wheel is well supported each side by an elliptical tubular framework which acts as a front-pivoted radius rod. In the rear one finds a useful luggage carrier.

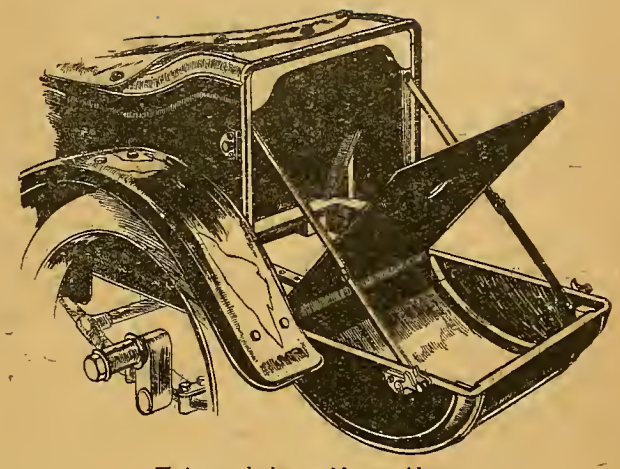
I was enjoined not to get into the Bat limousine sidecar: a reduction in miniature of the sort of thing

Some Notes on Olympia Sidecars.—

one associates with a 45 h.p. Daimler. However, it *could* be got into, as I saw several people in it. Another mother-in-law joke! Needless to say, the unlettered halfpenny press leapt at it, and the explosion of their flashlights o' mornings was as the bombardment preliminary to the Somme push.

The A.J.S. people have a shrewd and practical idea as to what a sidecar should be like: at all events, in point of luggage capacity. Under their suit case platform they provide a useful toolbox, and (which is something to make a note of) the spare wheel can be extracted without trouble, even when the suit cases are strapped in position.

The Matchless designers always express strong individuality. In their sidecar are found coil springs used throughout, the same being adopted on the motor cycle spring frame. By this means both chassis and body were independently suspended, though at the front quarter-elliptic leaf springs were adopted.



Twin rear locker on Norton sidecar.

The Fifth Annual Banquet of the Cycle and Motor Cycle Manufacturers' and Traders' Union, Ltd.

THE annual banquet of the Motor Cycle Manufacturers' and Traders' Union was held at the Criterion Restaurant on the 21st ult., under the chairmanship of Mr. C. A. Hyde, the president.

The toast of "The Manufacturers' Union" was proposed by Mr. Edward Manville, M.P. for Coventry. He said that Coventry was the centre of the industry, and he hoped it would long remain so. Speaking of motor cycles, he mentioned the great strides that had been made in the construction of these machines. He dwelt at some length on the importance of exhibitions.

In reply, Mr. C. A. Hyde spoke of the demand for motor cycles, and referred to them as the most efficient and reliable means of light transport at the present time. The demand was in excess of the supply, but he hoped that this would soon be overcome.

Mr. A. Brampton, J.P., proposed the toast of "The Guests," which was replied to in a speech by Lt.-Col. Sir Rhys Williams, Bt., D.S.O., K.C., M.P. Speaking on behalf of the Transport Ministry, and not, he said, as a motor cyclist, he mentioned what the Ministry was doing for the roads, and pointed out that the Ministry was greatly interested in the motor cycle industry.

This was replied to in an excellent speech by Mr. H. Massac Buist.

The toast of "The Chairman" was given by Mr. H. Bowden, who in the course of his speech said how fine a thing it would be for the industry if workmen and masters agreed upon peace just for one year, so that the remarkable results in the way of output achieved during the war might be repeated now the war is over.

The I. A. E. Meeting at Olympia.

A Discussion of the Judges' Report on the A.C.U. Six Days Trials.

ON Thursday, November 27th, the Institution of Automobile Engineers held a meeting at Olympia to discuss the judges' report on the A.C.U. Six Days Trials. The meeting was open to all interested.

The Chairman, Mr. Clarkson, in introducing the subject, stated that there appeared to be a considerable divergence of opinion as to the justification of certain views expressed in the report.

Mr. Webb *(The Motor Cycle and Cycle Trader)*, who was partly instrumental in the meeting being convened, called upon constructors to give their views; and

Mr. Basil Joy (secretary I.A.E.) read extracts of the report, calling attention to the more contentious points.

Many well-known figures in the motor cycle world took part in the discussion, including Messrs. H. A. Collier, E. B. Ware, D. Leechman, J. E. Greenwood, Hugh Gibson, J. L. Norton, and others.

The subjects of the silence test, consistent driving test and examination of machines were much criticised. Several pointed out that old machines which completed the trial successfully were likely to be unduly penalised on the score of condition.

Mr. Norton made some telling remarks against water-cooling and the adoption of large multi-cylinder engines, as suggested in the report; and Mr. Leechman and others criticised frame design, from an engineering standpoint, in no uncertain terms.

Mr. Loughborough, in an excellent speech, made a masterly reply for the A.C.U., and Dr. Low gave a turn of humour to his defence of the audiometer.

The Chairman, in summing up, stated that the discussion was most useful and practical, and that a report, in full, of the proceedings would be forwarded to the A.C.U. for reference.

The meeting, at which about fifty well-known trade representatives were present, was concluded by a hearty vote of thanks to the chairman.

SOME SHOW IMPRESSIONS.

Political Tendencies of the Motor Cycle Movement: Observed by B. H. Davies.

THE keynote of the 1919 Olympia is not mechanical, but political. Veteran Show *habitués* like myself enter its portals with brains bubbling over mechanical innovations. In five minutes we have completely forgotten the new engine for which we were making tracks, and are gazing in mute astonishment at the crowd. The Show is the first incarnation of a changed England. In former years, until the Saturday night came round, the stands were thronged by tweed suits and the Oxford manner. This year the bulk of the buyers who mean business are plainly men who wear fustian, corduroy and dungaree from Monday morning till Saturday midday; and most of them adorn the King's English with a charming burr or accent of some kind, which banishes wet, foggy London, and reminds one of bygone tours to the West or the North or to Shakespeare's country. We welcome these new recruits warmly on all grounds. Hardly less noticeable is the influx of riders of the fair sex. *The Motor Cycle* always prophesied their coming, even in days when petrol and petticoats were poles asunder. The war has transformed thousands of girls into embryo engineers. The scooter has opened the door to the mothers no less than the maids. The new wage standards have solved the special financial problems, for the modern maid does not have to wheedle cash out of Papa—she earns plenty, and can afford to motor cycle if she can resist the rival temptation of the lingerie shop.

The New Type of Motor Cyclist.

Whereas a typical 1913 customer wanted a single-geared 8 h.p. J.A.P. with overhead valves, a quite predominant type of 1919 customer is after a powerful combination with ample accommodation for several olive branches. He does not want a stunt machine. Most of his riding is done at week-ends. It is his safety vent from the mine, the factory, and the Bolshevist microber. There is no nurse to mind the babies, so they must come along as well. He plunges for solid, reliable family transport. He does not mind getting dirty, for his job is a dirty one; so he is not as down on current mudguards as the man who wears pale mauve socks might be.

The maidens, too, will have their say presently. At present they do not know enough to be sure what they want. They are acquiring their experience, and the critical mood will develop later. Besides, there have never yet been enough of them to interest the factories. At the moment, we can offer them very little choice. Many of them must elect to straddle machines designed specifically for males. But they will stamp their own hall-mark on the industry in a year or two. And who can doubt that their influence on technical developments will be a corrective.

Turning from the spectators to the stands, my brain kept running on the two new types of customer broadly outlined above, and I consequently felt less astonished at the general similarity between the exhibits of 1919 and those of 1913. On the bulk of the stands all that was new might be summed up as "dynamos and details." Complete breaks with the past are certainly to be seen: witness particularly, of course, the A.B.C. and the Precision. But whether the cause is innate conservatism, or the desire for early production, or the fact that the industry is nearer its technical zenith than dreamers fancy, or the trade grasps on the fact that most of its 1920 customers desire staunchness rather than novelty and frills, fundamental innovations are scarce. In the old days we made the best motor cycles in the world, bar none. To-day we offer the same stuff, perfected in detail, and adorned with the first roadworthy lighting system motor cycles have ever had. The new breaks are like the gold medal blooms at a National Rose Show. Everybody has a stare at them. The specialists and the rich men buy them. The canny enthusiast with a limited purse covets them earnestly, but often decides, "I'll wait and see if she is a good goer!"

Sighs for the Ladies.

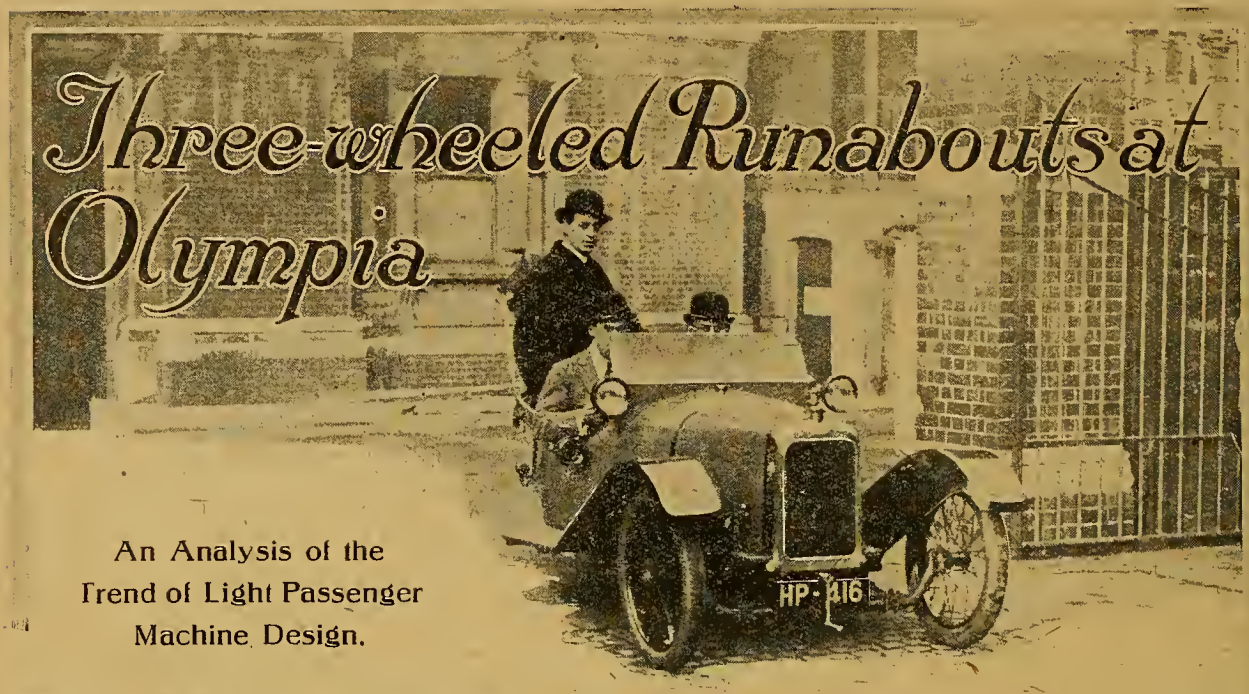
History, nevertheless, repeats itself. Items which are no longer novelties to the journalist, because he bought and tested them when they were audacious experiments, are practically novelties to thousands of users. But only a small percentage of the great crowds at Olympia last week have ever owned a lighting dynamo, a detachable cylinder head, a spring frame, a two-stroke engine, an overhead valve, or any flat twin larger than 350 c.c., not to speak of all-chain drive, automatic carburetters, integral speedometer gearing, four-speed gears, leg-shields, underscreens, and other items, which now excite no heavy comment from experts, and may all be standard practice within a year or two. Mechanically speaking, the real novelty of the Show lies in the popularisation of items which were semi-experimental in 1913. The average buyer of a new machine will take delivery of a specification including five or six vital items which are absolutey new to *him*, and his 1920 riding will, therefore, be pregnant with excitement.

I confess to feeling rather sorry for the girls. I have often lent my machine to them, and taught them to ride. When they can handle a mount, and produce the cash to buy that first mount which is either the grave or the parent of many dreams, I seldom know what to advise. Recommend a man's machine: they may take to it, they may hate its weight, or they may dislike trotting round in breeches when the day's run is over. Recommend something small, and when the bridal ecstasy is over, they will either rave about it continuously, or stigmatise it as a mere toy. I give my girl friends a wide berth at Show time, and I earnestly hope the trade will give their needs more attention before November, 1920. But I notice that they are all very interested in the A.B.C., and I have the wind up; for many of them noticed a picture in *The Motor Cycle* for March 20th, which showed me dandling the experimental bantling in my arms, and as they haven't read the A.C.U. trials report they don't know what the production model weighs. One or two slim-wristed damsels I wot of will murder me when they find out, but, please, ladies, it wasn't I who put the dynamo, etc., on it.

Impressions of the Show.

By Helen McKie.

Three-wheeled Runabouts at Olympia



An Analysis of the Trend of Light Passenger Machine Design.

THE increased and still increasing cost of motor cycle and sidecar combinations has had the effect of drawing closer attention to the alternative type of passenger-carrying three-wheeler, for there no longer exists the pronounced difference in prices that obtained at the time of the signing of the Armistice and for several months after. The price of the three-wheeler with two seats side by side, giving protection for the driver equal to that afforded on a car, very closely approximates the cost of some fully equipped sidecar combinations of 6 to 8 h.p. The respective prices do not differ to any great extent and for the most part are in the region of £200, although in one case a three-wheeled light car costs £250. In all cases the price covers comfortable seating for both occupants, a windscreen shielding the driver as well as the passenger, and a hood that protects both from the elements. But £250 is an exceptional price, and includes a four-cylinder engine and shaft drive. The examples embodying motor cycle practice, and comparing more closely with the sidecar combination, are not far removed from the price of the latter—the neighbourhood of £200. A decision to select the alternative to the sidecar does not invariably carry with it, as it did of old, a necessity for a deeper dip into financial reserves.

The three-wheeled light car on motor cycle lines may therefore be said to appeal with direct force to the motor cyclist, and the examples of this type of machine at Olympia should give rise to considerable interest. As regards speed and hill-climbing abilities there is little, if anything, to choose between the best examples of the two types, while in cost of running it is questionable whether one holds an advantage over the other.

Engines.

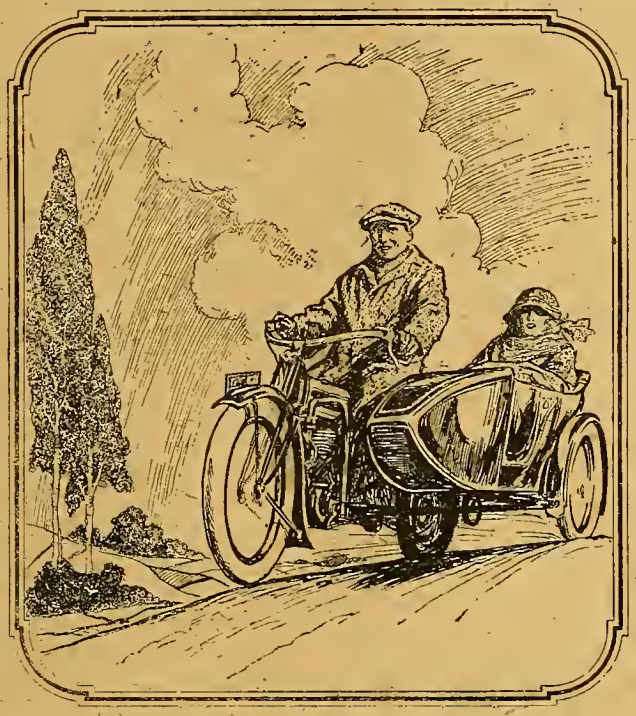
Reviewing the outstanding characteristics of the runabout—as the three-wheeler of the type in question is called—the prevailing practice is to use a V twin engine of 8 to 10 h.p., the result frequently being a replica of the power plant standardised for sidecar machines. It occurs with both air-cooled and water-cooled cylinders, and has proved quite as satisfactory in the simpler form as the air-cooled twin engine on motor cycles. But water-cooling can be provided much more conveniently on the runabout, and the scales are not so weighted against the system as they are in the alternative type of machine. Air-cooling has undoubted points in its favour, of which simplicity is not the least important. Water-cooling, however, has advantages, and personal opinions vary as to which is the better proposition all round. The water-cooled engine is not so prone to "konking" as the other, and is less liable to overheat. But under certain conditions, and at certain times of the year, it causes the cylinders to be kept cooler than is desirable from an efficiency point of view. The best working temperature of an engine is well above the boiling point of water, and yet 212° Fahrenheit is theoretically the highest temperature a water-cooled engine can attain.

As suggested already, one example of the runabout at Olympia has a four-cylinder engine. This is a water-cooled type on car lines, with thermo-syphon water circulation.

The engines of these machines are invariably placed in front under a bonnet, and have their crankshafts set longitudinally in the frame. At some point in the transmission, therefore a right angle drive is necessary, and, unless a complete shaft drive is adopted, the bevel gears that are generally used must occur in front of the final transmission unit. But this point will be referred to later.

Engine Lubrication.

The most frequently adopted lubrication system is that embodying a hand pump, with or without a sight-feed drip, with splash from the crank case. But in one instance, a fully forced system is used, the oil



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Three-wheeled Runabouts at Olympia.—

being led through a drilled crankshaft to the main and big end bearings. One engine—the four-cylinder already referred to—has a sump for a large supply of oil below the crank case proper, and a pump draws lubricant therefrom, and delivers it to constant level troughs arranged under the big end bearings, and into these the latter dip at each revolution of the crankshaft.

Clutches.—The cone type, faced with leather or fabric, is most widely in use; but the multi-plate pattern is represented. Pedal operation, as in car practice, is invariable.

Gear Boxes.—Sliding gears are in the majority, though in the best known example of the runabout—the Morgan—the gears are changed by meshing one of two pairs of dog clutches; but then the Morgan has not a gear box in the usual sense, as the two ratios of transmission are provided by the duplicated final chain drive. One machine has an epicyclic type of gearing, giving two speeds forward and a reverse: the latter, by the way, being in evidence in all the recently designed runabouts. Epicyclic gearing is not novel in motor cycling practice, for the hub type of variable gear embodied the same principle. But in the runabout in question the gear box is a separate unit, somewhat on the lines of the Ford car gear, the low speed being brought into use by depressing a pedal, which, when released, allows the clutch and top speed to be engaged; neutral is the mid position, where the pedal may be held by partially or fully applying the hand brake. The reverse is obtained by depressing a second pedal; this also serves as a transmission brake.

Complete Transmissions.

If we consider details minutely, it may be said that no two runabouts have the same systems of transmission from engine to rear wheel. But they may be roughly arranged in three classes:

1. Shaft, bevel, and chain.
2. Shaft, spur gears, bevel, and chain.
3. Shaft, spur, and bevel.

The last is really an all-shaft drive, for on top gear the drive is direct, without intermediate gears in use, from the engine to the bevels on the wheel. The Morgan is the protagonist of No. 1, while the Premier and L.S.D. are in the second class.

Wire spoked wheels predominate, though the pressed steel type of artillery wheel has appeared in its detachable form. The question of rear wheel detachability and the interchangeability of all the wheels has received close attention. In several cases there is no need to touch the chain adjustment, brakes, or brake adjustments to remove or replace the rear wheel. Knock-out spindles are generally used to attain this very desirable end.

Quarter-elliptic springs of the leaf type are very popular, and only one machine at Olympia did not use this kind, either at the back or front, or both. But coil springs within the steering pivots occur in three cases in front, and a pair of semi-elliptics, one each side of the back wheel, obtain in the new Castle runabout. It is pleasing to note that more careful consideration has been given to stiffening up the rear part of the frame and suspension to provide greater lateral stability, and to the matter of centralising the pivot axes of back forks, chains or shafts, and rear springs—the vertical movement of the back wheel allowable by the springs should not result in imposing longitudinal stresses on shafts, chains, or springs themselves. Brake adjustments, also, should be unaffected by spring flexion, and the final rods should be centred at their front ends on the same lateral line as the rear fork axis.

Brakes.—With one exception only, the two brakes invariably take effect upon the rear wheel hub; but arrangements differ, both in regard to the placing of the brakes and in the type of brake used. Band brakes occur both on one side and applying to the same drum, and, alternatively, to a drum at each side of the wheel. The Premier, on the other hand, has two sets of internal brakes on the same side, and more consideration than usual has been given to rendering the adjustments accessible.

Chain Protection.—It is disappointing to find that all the makers using a chain or chains for the transmission have not given more attention to the protection of the chains. But this criticism can certainly not apply to the runabout mentioned in the last paragraph, for the chain is fully enclosed in an easily detachable case, but is, nevertheless, readily adjustable.

Steering Systems and Frame Construction.

Steering.—Four types of steering gear are in evidence: direct, rack and pinion, worm and sector, and epicyclic. All have car type wheel control. The direct type has a lever at the lower end of the column, which acts directly upon the rod leading to the coupled steering pivots. This type may be deficient theoretically, but in practice it has proved successful.

Frames.—Tubular, pressed steel, and ash reinforced with flitch plates are the three types of frames in evidence, and so long as the principle is carefully worked out, each has points in its favour. But the pressed steel variety has eliminated the others in car practice, and there is a probability that it will eventually be the survivor in runabouts. The first costs in manufacturing are higher, for there are special dies to be made; but afterwards it becomes a simpler proposition, low in cost, convenient for supporting the engine and gear box, and without disadvantage to the user.

General.—Crude though the original runabouts were, design has gradually but obviously improved, and as practical machines for everyday use they are at least the equal of the sidecar combination, possessing, in respect of passenger protection, points in their favour that cannot find their equivalent in the more prevalent two-passenger motor cycle. The advent of the readily detachable and interchangeable rear wheel has removed an objection that previously had weight, and the carrying of a spare with fully inflated tyre puts the user in a position equal to that of the car driver, so far as punctures and bursts are concerned.

One objection is sometimes raised against the runabout, and that is, its three tracks, which make it difficult for the driver to "straddle" pot-holes and loose stones. But this drawback is, to a large extent, counteracted by the excellent systems of all-wheel spring suspension that are in evidence in one form or another.

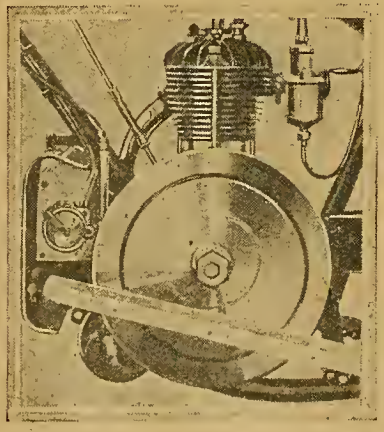
PROPRIETARY ENGINES AT OLYMPIA.

A Survey of Engine Units to be marketed in 1920.

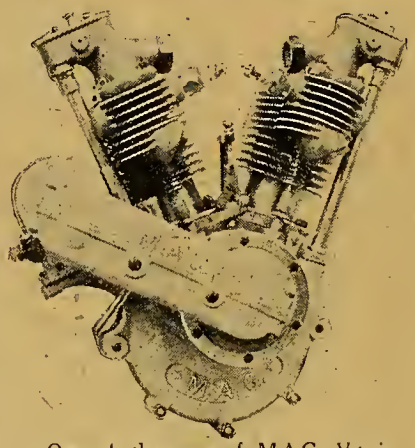
SOME of the best features of engine design seen at the Show were found in component power plants constructed by firms which specialise in their production. It is interesting to note that the adoption of a standardised unit has always been a characteristic of a great many motor cycles, and this policy is being now taken up very widely by car manufacturers. It is undoubtedly a sound one, as through specialisation and the fact that large outputs are handled, economy in cost and efficiency in the service of spare and replacement parts are simultaneously obtained.

Blackburne.

The Blackburne engines were found on several stands, and it is safe to say that no single motor has had a more salutary influence upon motor cycle engine design, especially in the direction of outside flywheels and efficient valve cooling. There are three types—singles of 2¾ and 4 h.p. and an 8 h.p. twin. In each case the head is separate from the cylinder barrel, thus minimising any distortion due to unequal expansion. The method of holding down each cylinder by three bolts is admirable in every way. Each bolt has a hexagon shoulder towards its lower end, which forces the flange at the foot of the cylinder hard up against the crank case. The extension of each bolt passes through the cylinder head, which is secured by ordinary nuts. This method of attachment is simplicity itself, and has the advantage that the removal of the cylinder head, which comes away completely with the valves, in no way interferes with the cylinder itself, which latter, in the ordinary course of events, requires to be removed very seldom. The accompanying sketch illustrates the arrangement of the bolts, and also shows the thorough manner in which the valve pocket is furnished with cooling fins. Webs are cast across the exhaust valve cap to enhance radiation. The tappet adjustment will be noted. In this the two hexagons are placed sufficiently far apart to enable ordinary spanners to be used without difficulty, a point which will be appreciated by the practical rider. Another neat item of design is the making of the inner part of the magneto chain case in one casting with the timing gear cover, whereby the engine is made much neater.



The single-cylinder Blackburne engine, with outside flywheel



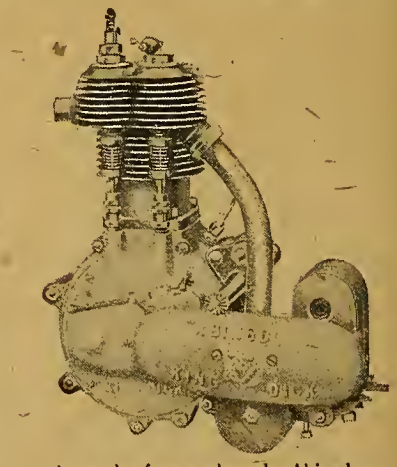
One of the range of M.A.G. V-twin engines, which, as will be observed, has overhead enclosed inlet valve mechanism, lubricated automatically from the crank case

Abingdon-Ecco.

There were two well-constructed types of Abingdon King Dick engine—a 3½ h.p. single, 85×88 mm., and a 6-7 h.p. twin, 73 × 95 mm. In general design they are on similar lines; but whereas the single has its crankshaft supported on ball bearings each side, the twin shaft is furnished with a double ball race—four rows of balls in all—on the driving side and a plain phosphor-bronze bush on the timing side. This bush plays an important part in the lubrication system. At its outer end it is hollowed out into an annular ring into which oil is fed from the sight feed. Inside its bore it has a helical groove, and the rotation of the shaft causes the oil to be driven along this. On emerging, the oil is thrown out by centrifugal force to a circular gutter in the flywheel, whence it passes to the big end bearings. Ducts are provided, so that the oil mist in the crank chamber is directed to the timing gear, and keeps this last constantly lubricated. An interesting point is that if occasion should arise for the engine to be given an extra supply of oil, this first fills the annular chamber in the crankshaft bush, but the rest, without having to pass through the bearing, goes directly to the crank pin, whence it is flung on to the cylinder walls. In other points of design the Abingdon-Ecco engines follow conventional lines, though in many details originality is shown. For instance, the tappets are fitted with hardened steel rollers. The pistons are of the plain cast iron type, with two rings at the top, one at the bottom and a wide guard ring over the gudgeon pin in the middle of the piston waist.

M.A.G.

No engines enjoy a higher reputation, especially for perfection of workmanship, than the famous M.A.G., of which two models are made, both twin-cylinder, of 3½ h.p. and 6 h.p. respectively. The former has a bore and stroke of 64×77 mm. The general lines of M.A.G. design are well-known, and these have not been departed from in the 1920 models. The great feature of the engine is its use of an overhead inlet valve, in which the whole of the operating mechanism, including the rocker and the vertical tappet rod, is entirely enclosed. The accompanying sketch illustrates the scheme. The inlet valve complete with its mechanism is readily removable. The great advantage of this design is the effectual manner in which grit or moisture is prevented from reaching the tappet mechanism. Since this is entirely encased, it receives lubrication from the crank case to keep it in perfect condition; its noiselessness of working is much enhanced. The exhaust valves are operated in the usual



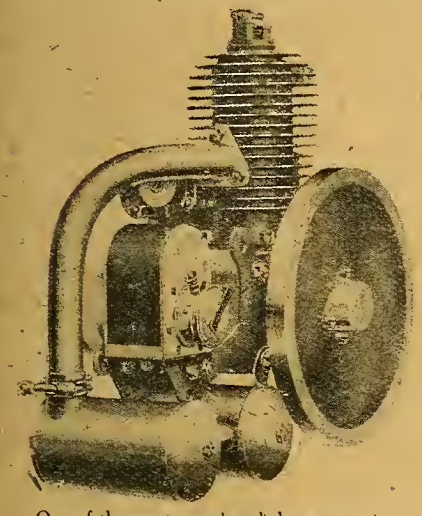
A popular four-stroke—the Abingdon King Dick.

Proprietary Engines.

manner. The magneto is chain-driven, and, instead of being held down on to its platform by the usual set screws, is clamped in position by two long bolts passing through the extremities of an aluminium bridge piece.

Villiers.

The Villiers two-stroke motor cycle engine is one that has long established a high reputation, and a very excellent design it is, as is well proved by its

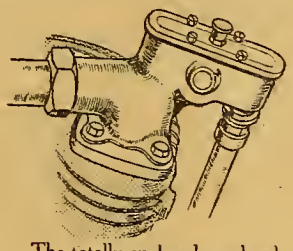


One of the most popular of the two-stroke power units—the 2¾ h.p. Villiers.

popularity, for it was to be found on a large number of stands in the Show. It has the usual arrangement of ports, transfer port at the rear, compression release valve on top of the cylinder head, and the inlet port with Amac carburetter socketed into it at the side. The exhaust port is at the front, and the exhaust pipe, in some models, is swept outwards and downwards, with a rather sharp corner, to avoid the frame down tube. On some machines a double down tube is used, and in this case a straight exhaust pipe can be fitted which passes between them. The sketch illustrates the unusual care which has been bestowed upon the silencer arrangements. The two expansion boxes are "in series," and are carried under the crank chamber, for which they form an effective undershield. The final exhaust pipe will be noted. This double silencer is very neatly and effectively made, and is an admirable feature of an admirable little engine. The lubrication is upon simple yet efficient lines, the oil being delivered from the pump to one of the crank chamber bolts, which is hollow, and whereby it is passed directly to the thrust side of the piston. The outside flywheel is of large diameter.

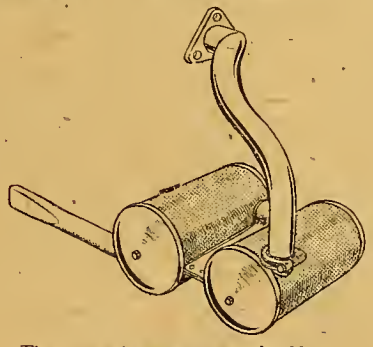
Precision.

In addition to the 8 h.p. twin, the design of which is well known, and calls therefore for no particular comment, Precision engines for 1920 comprise a very neat 359 c.c. two-stroke, which has a bore and stroke of 74×81 mm. This is the type of engine which is fitted in the interesting new Beardmore-Precision motor cycle. The design is up-to-date in every respect, the big end having large diameter roller bearings. The most outstanding feature of the motor, however, is its unique lubricating system. A supply of oil is carried in the crank chamber sump, and is circulated by the



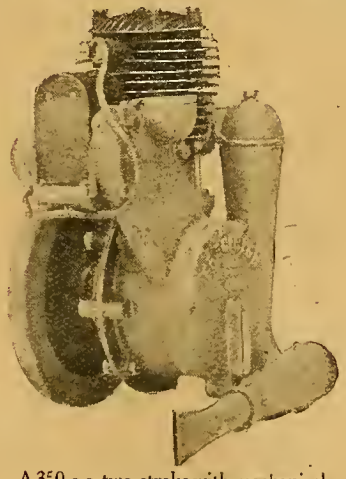
The totally enclosed overhead valve mechanism of the M.A.G. 4 h.p. engine

magneto driving chain, which dips into the sump and lifts the oil up to a filter chamber cast on the chain case. After passing through a filter, the oil proceeds through an adjustable valve to the engine, every part of which it lubricates before dropping down again into the sump and being again put into circulation. It will



The twin exhaust boxes on the Villiers two-stroke power unit.

be remarked that this exceedingly clever system calls for no additional working parts whatever. It may be added that

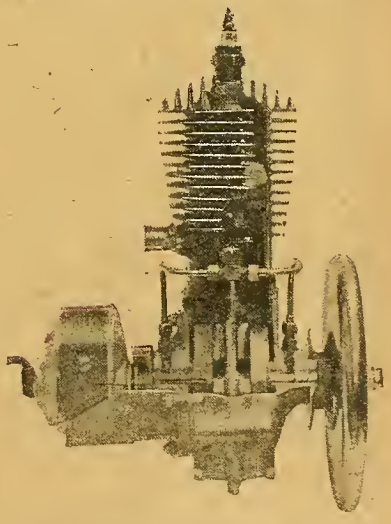


A 350 c.c. two-stroke with mechanical lubrication—the Precision.

the engine alone is sold and not the integral gear unit incorporated in the Beardmore-Precision machine.

Union.

The Union two-stroke engine is a modern power plant on which it is clear that much careful thought has been expended. Examination of its details indicates that in no way has the construction been skimped, but that rather a new standard of efficiency has been sought. A good point is that the exhaust port is slightly to one side of the cylinder barrel, thus facilitating the mounting of the engine in the frame, as the exhaust pipe does not have to be bent at a sharp angle to escape the down tube. The crank case is of the pill-box type, with a detachable end plate which carries a webbed extension forming a bracket for the magneto. The latter is driven from the crankshaft directly, and without the intervention of chain or gearing. An unusual feature is that the transfer port, which is at the rear side of the cylinder, is cast with its top end open, so that the port itself can be smoothed out and shaped, the opening being covered in subsequently with an aluminium plate. The crankshaft is of the two-bearing type with balance weights, and is an excellent piece of sturdy workmanship. The lubrication system is very thorough. Oil led to a distributer on the cylinder, whence it passes, first, directly to the thrust side of the piston, and, secondly,



One of the several complete power units at the Show—the Union, a model produced to meet the demand for lightweights

to each main bearing. The compression release valve delivers by a short branch pipe into the main exhaust pipe.

Victor.

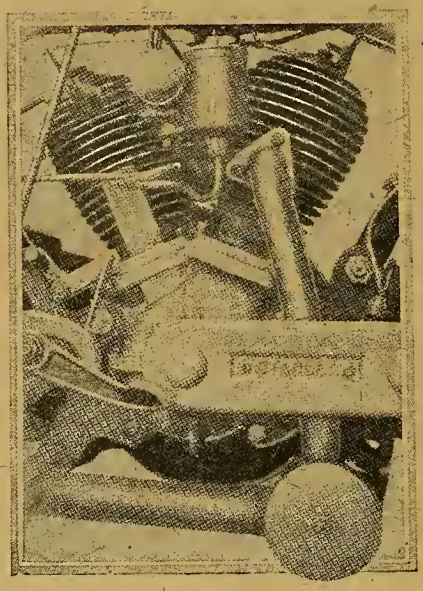
A new proprietary engine is the horizontally-opposed Victor of 5-7 h.p. In general, it follows conventional lines, the offset being quite small and the cooling ribs running parallel with the cylinder axis. The timing case is of pyramidal shape, and is carried on the top of the crank chamber. The valves, which are over the cylinder and are not inclined to its axis, are side by side and interchangeable. Screw-down priming cocks are provided half-way down the cylinder bore. The engine is designed to be supported on two parallel tubes, which pass through

Proprietary Engines.—

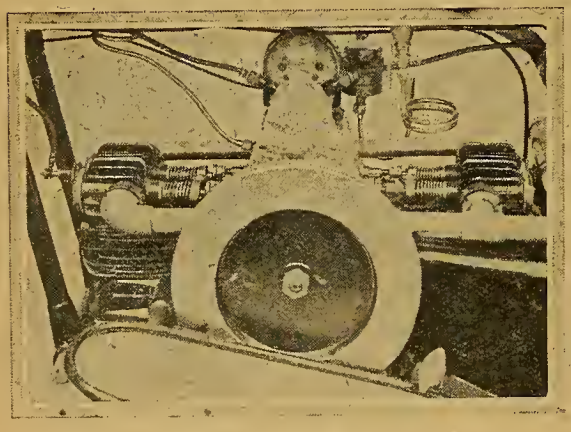
grooves cast in the crank chamber bottom half, and this certainly provides a very neat form of mounting. The outside flywheel is of good diameter. The magneto is mounted on the top of the timing case and is gear driven. The carburetter is placed on the top of the inlet pipe, and is of a curious inverted pattern. The exhaust pipe passes between the flywheel and the cylinders, and although the front cylinder discharges into it through a curved portion the rear cylinder exhaust enters it through a short right angled pipe.

Stanger V Twin Two-stroke.

In the issue of November 20th there appeared a full description of the Stanger two-stroke engine. Multi-cylinder two-stroke engines are comparatively rare on motor bicycles, and so the exhibit under notice did not fail to attract attention. The engine is a V twin of the three-port variety, the radiating fins are of large dimensions, and the cylinders are placed in a staggered position on a double aluminium crank case and are set at 45°. Every effort has been made to avoid rough places in the cylinders and so prevent carbonisation by machining their entire interior. Cast iron pistons of the deflector type are used with two rings at the top and one at the skirt. Hollow gudgeon pins are fitted. The two-throw crankshaft is hollow and made in one piece. It is composed of 50 ton case-hardened steel, and the cranks are set at 180°. It runs on double self-aligning ball bearings, and compression is retained by means of special compression-tight bushes. As the crank case is divided into two portions each throw revolves in a complete crank chamber of its own.



V twin two-stroke Stanger. A type of engine of which only one representative was exhibited.



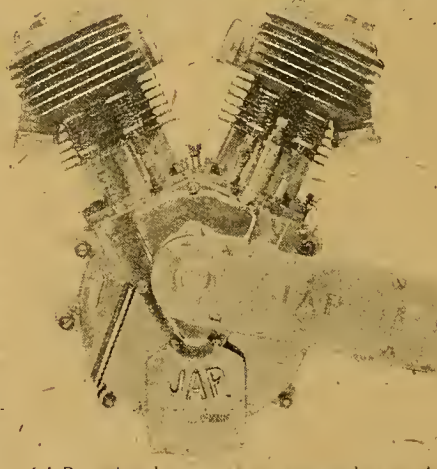
Coventry Victor flat twin

J.A.P.

J.A.P. engines may be said to have grown and developed with the pastime itself, and there is no doubt that the industry owes a great deal to them. They first saw the light in 1903, when British motor cycle engines were practically non-existent, and the then small works of Mr. J. A. Prestwich were devoted to turning out a certain number of those engines which helped to make the success of the earliest all-British motor cycles.

To-day, scarcely one motor cyclist in ten thousand is unaware of their existence, and literally thousands are in use at the present time, hence any alteration in models is of great interest to the motor cycle fraternity.

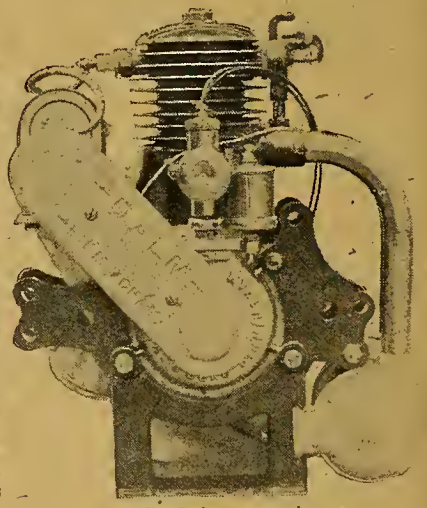
The improvements which have been incorporated in the latest models include the lightening of the distribution and tappet gear, which is now only half the weight it was previously. Particular attention has also been given to the valves, which are made from a steel of a particular specification. It is not generally realised that the J.A.P. system of lubrication is a genuine force feed, but this is actually the case, and the crank case compression is utilised in a most ingenious manner to force the oil to all the principal bearings. In the later models the design has been slightly modified, one of the most important improvements being the increase in size of the oil chamber cast integral with the crank case of these engines. The pistons are now fitted with narrower and lighter rings, while the gudgeon pin bearings have been increased in size from $\frac{1}{2}$in. to $\frac{5}{8}$in.



J.A.P. engines have a reputation extending to the early days of the motor cycle.

We have already made reference in these pages to the $2\frac{3}{4}$ h.p. single-cylinder, formerly known as the $2\frac{1}{2}$ h.p., which is now equipped with a chain-driven magneto, a perfectly oil-tight timing gear case, two bearings to the cam wheel spindle instead of one, an internal exhaust valve lifter and adjustable tappets. All bearings have been enlarged.

The range of engines which Messrs. J. A. Prestwich are now manufacturing includes the $2\frac{3}{4}$ h.p. single-cylinder, 70×76 mm.; 4 h.p. twin, 70×64·5 mm.; 4 h.p. single, 85.5×85 mm.; 5 h.p. twin, 70×85 mm.; 6 h.p. twin, 76×85 mm.; and the 8 h.p. twin, 85.5×85 mm., which may be had either air or water-cooled. J.A.P. engines *per se* were not shown at Olympia, but numerous examples of them were found on different makes of motor cycles throughout the Exhibition.



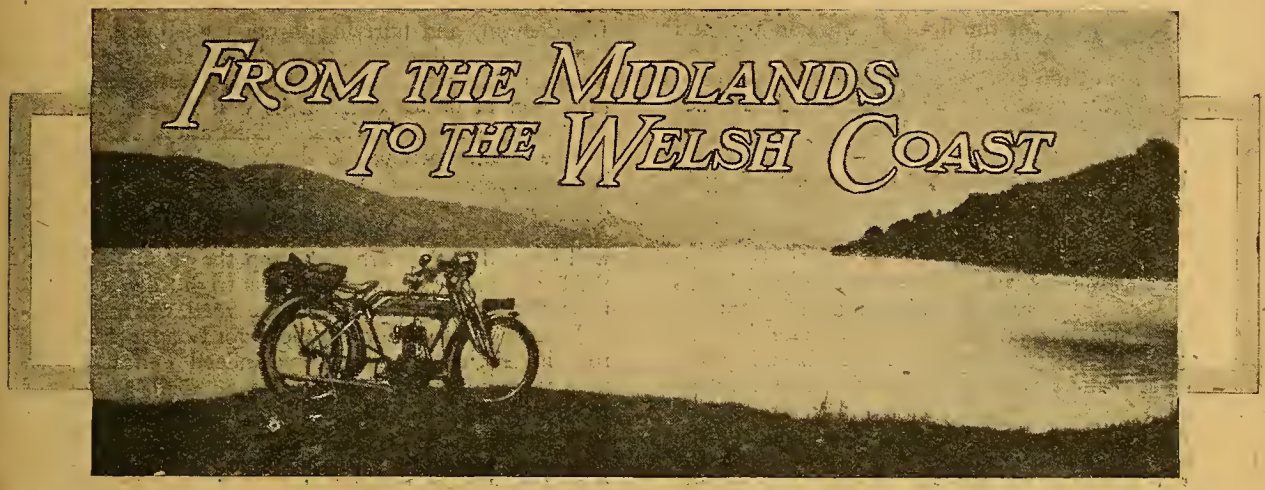
The Dalm two-stroke.

Dalm.

It is hard to conceive a more simple straightforward design than that of the Dalm, two-stroke engine. A one-piece crankshaft runs in plain phosphor bronze bearings lubricated through ducts from a well round the base of the piston. The engine is of the three-port type, and has two exhaust pipes leading directly from the cylinder to the silencer. This arrangement avoids the sharp bend in the pipe so often necessary to clear the frame tube, and gives a free run to the gases.

Cast with the crank case is a platform for the magneto, this unit being placed behind the cylinder and driven by an enclosed chain.

Balance weights are riveted to the crankshaft, and the gases from the exhaust release valve are led directly into the exhaust port casting.



A Short Trip into North Wales on a Sporting Solo Mount.

THE touring department of *The Motor Cycle*, which deals with the recommendation of routes, received so many enquiries regarding the state of the roads in North Wales that during the holiday season it was considered advisable to obtain some first-hand knowledge thereon.

Accordingly, we planned a sketchy route with the idea of covering as much of the district as possible in the short time available—and so, armed with camera and notebook, we set out from Coventry a little before three o'clock one bright afternoon, mounted on a 3½ h.p. T.T. Norton.

No very hard and fast schedule (or even destination, for the matter of that!) was decided upon—the chief object being the finding of the bad patches and the best roads from the Eastern Midlands, avoiding the larger towns as far as possible.

The Road Across Middle England.

Watling Street, worthy monument of Roman engineering, stretching its unbroken lengths across the face of England in such a proud and uncompromising way, was the first objective, and was reached by way of Stonebridge and Castle Bromwich.

From Chester Road to Brownhills, where the Roman road is really entered, the surface was far from good, being bumpy and loose, and again near Cannock the same discomforts were met; but the "street" has its advantages in the form of long straight—dare we suggest it?—speedways singularly free from towns, for, while it is within easy reach of the Black Country and the district around Stafford, one has an uninterrupted run from east to west, Wellington being neatly skirted, until the picturesque streets of Shrewsbury are reached.

Let the traveller be content with the assurance that Shrewsbury *is* picturesque if he has any desire to pass through the town non-stop on a clutchless mount at 6.30 in the evening on market day, as we did. The main street has no mean gradient, and there is a policeman at the end of the town round whom one must do a right angle as neatly as one dodges the bottles in a skilful driving competition at a gymkhana.

Oswestry is quickly reached, and hereabouts the scenery is typical of the foothills surrounding most mountainous districts, rolling and undulating country separating the level plain from the rugged contour of the far distance; the main road through Oswestry and for a few miles beyond was decidedly bad, but it could be avoided by keeping to the right at the Queen's Head Hotel, about fifteen miles beyond Shrewsbury.

At Chirk a sharp rise is encountered as the River Ceiriog is crossed, and the bends are sufficiently acute to prevent one getting anything but a fleeting glimpse of the imposing double viaduct visible higher up the valley; this was the first real hill of the journey, and shortly a left turn was made into the beautiful Vale of Llangollen.

The valley is quite narrow, and is hemmed in by serried peaks of varying altitudes, which, rising from the road in places with steep and unbroken slopes, give an effect of mountainous surroundings to a much greater degree than in many less confined areas of greater elevation.

Winding along with the course of the Dee the road is one presenting prospects of ever-changing interest, and, although somewhat sinuous and demanding care on the corners, the surface was good, and if the pace be kept moderate there is scenery on every hand worthy of admiration; over to the right, as the vale narrows, may be seen the ruined castle of Dinas Bran at the crest of a minor conical peak, which standing against the dark mountain background in the light of the setting sun, as we saw it, made an impression of almost theatrical vividness.

The Vale of Llangollen.

Passing through Llangollen with regret that time would not permit a stay here, we quickened our speed into Corwen, where the first stop was made for a very excellent meal at the Owen Glydwr Hotel.

From Corwen to Bala there is a choice of two roads, and, as we always prefer the route which gives promise of the best scenery, we naturally chose the one which runs nearest to the water and the mountains instead of that which branches to the right and crosses the Dee just outside the town.

Running into Bala just on nine o'clock, we decided to stay the night, and spent the last hours of daylight by the shores of the lake, which opens out before one almost as soon as the town is left behind. The

From the Midlands to the Welsh Coast.—

sight is probably one of the finest in the country, and the photograph at the head of this article can give no real impression of the blue waters reflecting the clouds, rose-tinted by the after-glow of the departed sun, nor of the pearly greyness of Aran Mawddwy rearing its head in the distance.

Morning brought a shower, but the sun smiled again as we got on the road.

Mountains, River, and Sea.

Quite a steady pace was maintained along the banks of Bala Lake, the scenery being too delightful to permit speeding; beyond Llanuwchllyn, where the road and railway together run between Aran Mawddwy and Rhobell Fawr, the surface was somewhat loose, but no hard climbing was involved. We left Dolgelly on our left hand, and, keeping straight on, crossed the River Eden at Llanelltyd, following the road on the right of the Barmouth Estuary—surely one of the loveliest stretches of road in existence. With Cader Idris towering on the left, and the ever-widening River Mawddach before one, it only needs the strong, ozone-laden atmosphere from the blue sea, soon to come into view, to thrill the jaded pulses of townsmen fresh from sultry streets and stuffy offices.

The road surface from Barmouth to Llanaber, along the coast, was bad, but presently improved. Pausing a moment to photograph Harlech Castle for the sake of its resemblance to Mont Orgueil in the Channel Islands, we regretfully turned inland again near Llandecwyn, and hurrying through Festiniog, assailed the pass over the hills, through the slate quarries of Blaenau Festiniog. This indeed is a valley of desolation, and in winter time might well have formed the subject of a Doré "Inferno" illustration.

The surface hereabouts was stony but firm, and the hill is quite respectable as regards length and gradient (sufficiently so to require a second attempt to enable the Norton to make a clean climb with its Philipson pulley well opened out). From the top the steep descent to the lovely valley of the Lledr was frightfully loose, but from there to Bettws-y-Coed the road was perfect.

From Bettws to Corwen the main London-Holyhead road is delightfully graded, and indeed Telford's highway compares well with the Roman road, over which we came, and is in somewhat striking contrast with the roads of most other hilly districts, where the engineers have shown little apparent desire to skirt the obstacles, and assail the gradients with careless abruptness.

A Place to Avoid.

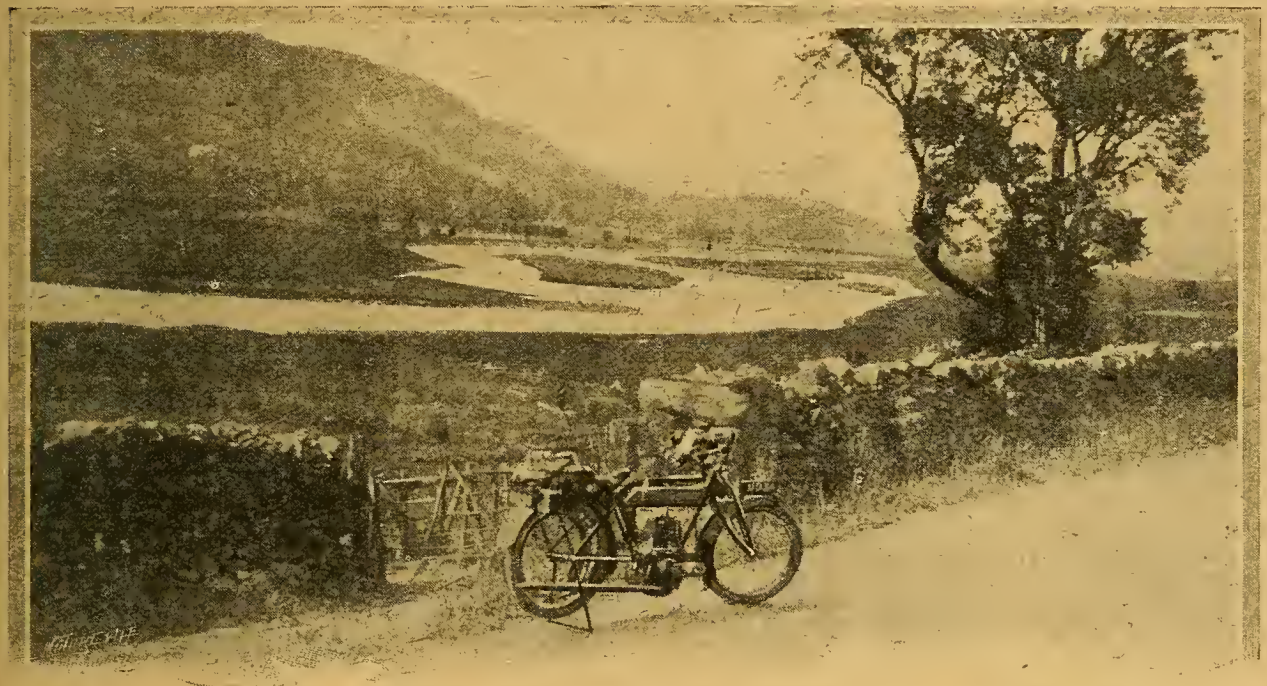
Wishing to call on a friend in Holt, we crossed the river at Llangollen, and followed the Wrexham road through Ruabon. We would strongly urge upon all and sundry the avoidance of the latter place with its three level crossings in the main street. From Holt *via* Malpas, Whitchurch, Market Drayton, Eccleshall, Stone, Rugeley, and Lichfield, the roads were all in

(Left) The mountain road beyond Blaenau Festiniog (Top) A scene near Bala. (Right) Approaching the hills (Harlech to Festiniog

From the Midlands to the Welsh Coast.—

good condition: in many parts, indeed, excellent, and good speed was maintained. At Fazeley, just beyond Tamworth, where the Watling Street is again reached, instead of crossing straight over and passing through Coleshill direct to Coventry, the writer, in a moment of forgetfulness, turned left to Atherstone, thence to Nuneaton, beyond which place a veil must be drawn over his sufferings upon the vile road surface, where, clashing from pot-hole to pot-hole in the gathering dusk, he discovered later that he had left a scattered trail of spares, tools, rear lamp, and dust-coat: indeed, all the loose impedimenta which *could* fall off with vibration did so.

Excepting this last section, the three hundred miles covered during the course of the trip were thoroughly enjoyable, and well worth the while of any keen rider.



The Dolgelly-Barmouth road; a beautiful stretch—Cader Idris above, and below the ever-widening River Mawddach which opens into the sea a few miles further on.

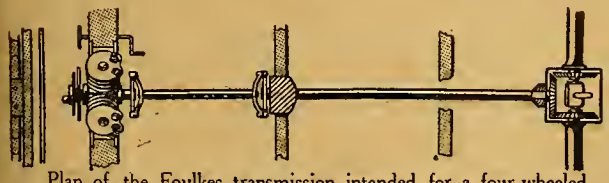
A Simple Change-speed Gear for Runabouts.

Two-speed and Reverse Chain and Shaft Transmission without Complications.

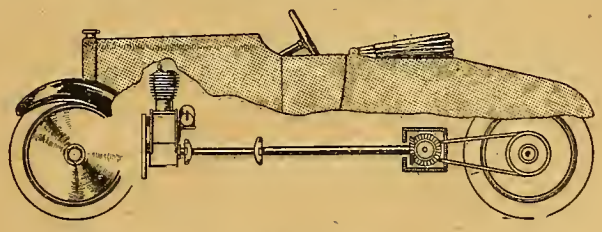
SIMPLICITY in runabout design more often than otherwise means crudity, and, although a large number of designers have striven to produce a transmission suitable for this type of vehicle, very few have fully succeeded. The Morgan transmission, probably, is the most simple form of two-speed gear, but Mr. T. Foulkes, of 145, Cobden Street, Blackley, Manchester, has patented a transmission system which may interest those who are contemplating manufacturing a runabout.

Briefly, the Foulkes system consists of the usual two ratio chain transmission embodying expanding clutches of the Enfield or P. and M. type located under the crank case, where it could be conveniently housed in a hollow steel or aluminium bracket supporting the engine. In one form a starting handle is intended to be carried on a shaft on one side of the supporting bracket, but it would not be difficult to adapt the usual Enfield handle starter to be operated from the driver's seat.

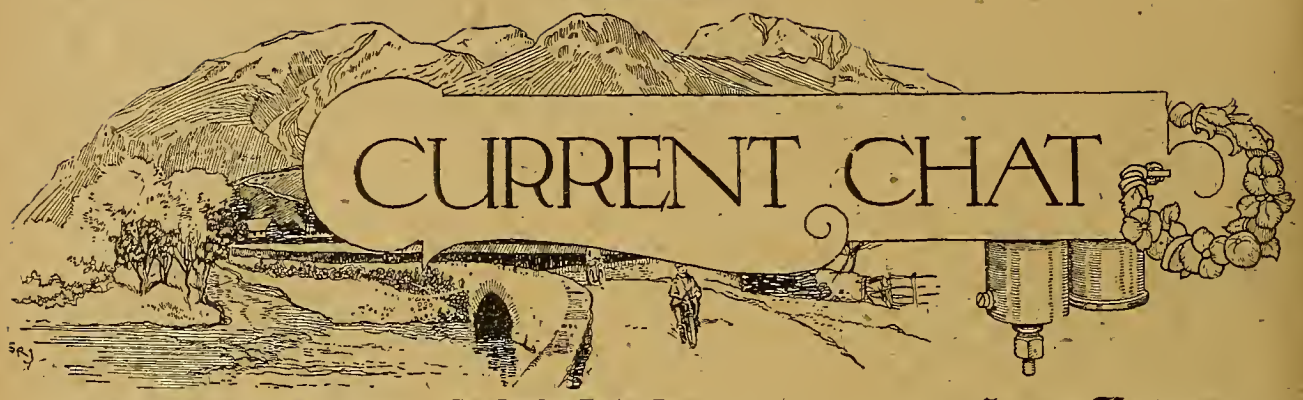
The idea is equally applicable to three and four-wheeled runabouts.



Plan of the Foulkes transmission intended for a four-wheeled runabout. The reverse is obtained by an additional crown wheel on the axle.



Side elevation showing in diagrammatic form the system applied to a three-wheeler.



Times to Light Lamps.

	Greenwich Time.
Dec. 4th	4.22 p.m.
,, 6th	4.21 ,,
,, 8th	4.20 ,,
,, 10th	4.20 ,,

French Scooter Trial.

Our Parisian contemporary, *L'Auto*, will organise a scooter trial next year. April is the month provisionally selected, and there will be a speed contest on the level, a hill-climb, and a competition for the best appearance. The French term for the scooter is *patinette automobile*.

Dangerous Cross Roads.

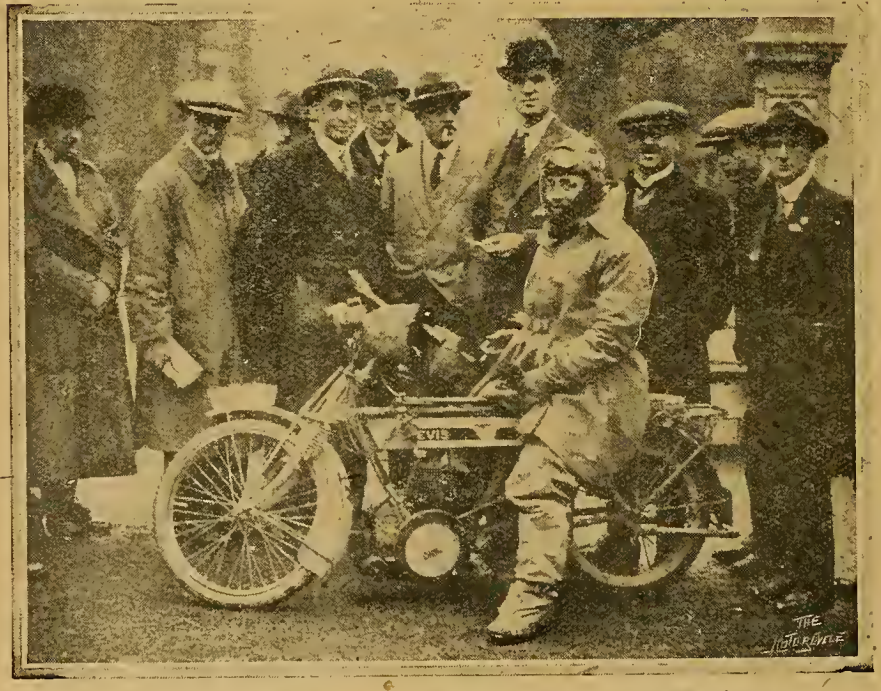
We are informed that a number of accidents have occurred at the cross roads by the "Plumbers' Arms," Limpsfield. This is a junction of the main Redhill-Sevenoaks and the London-Edenbridge roads. Motor cyclists are advised to exercise caution at this point.

The London-Exeter Run.

We understand that over forty new members were recently elected at a committee meeting of the M.C.C., who joined specially for the London-Exeter run, and it is anticipated that there will be well over 100 entries.

Catalogue Fiends at the Show.

Everyone connected with the motor cycle trade knows how difficult it is to protect himself against the assiduous catalogue collector, who has no intention of purchasing a motor cycle. Despite the still existing paper shortage, a vast quantity of literature was distributed, its most ardent collectors being school-boys, who nowadays turn those longings which were once lavished on the productions of the pastrycook towards the manufactures of the motor cycle maker. At the other end of the scale, however, one old gentleman was observed conscientiously touring the stands and filling a large haversack with every available sample of gratuitous printed matter.



G. Kuhn on the single geared Levis, with which he completed an unofficial run from John-o'-Groat's to Land's End and Olympia.

Special Features.

SOME NOTES ON SIDECARS. SHOW REPORTS OF ACCESSORIES AND ENGINE UNITS. REVIEW OF THREE-WHEELERS.

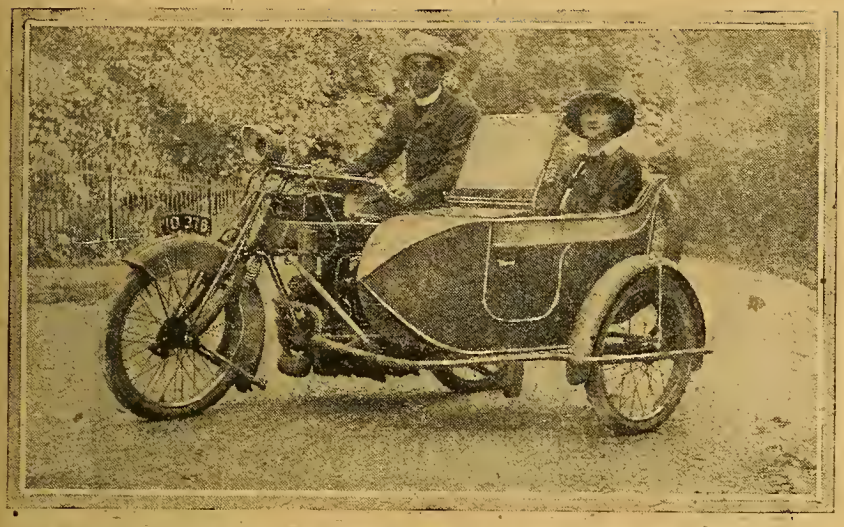
Average Second-hand Prices.

Despite the advent of the Show, with new models in the air and hopes of mass production during the coming year, there is yet no appreciable fall in second-hand values.

The only noticeable tendency is towards a distinct moderation in the prices asked for old type and obsolete models, many of which, in the spring of this year, changed hands at fabulous prices. This, at any rate, is an indication that the day is passing when anything on two wheels and possessing an engine of sorts may be sold off to the highest bidder in a queue of eager buyers. It is to be hoped that this tendency will persist throughout the winter, when it may be possible for production to overtake demand.

Machines of 1919 manufacture, after a season's use, still bring list price, or even slightly more, but the fancy figures demanded by some optimistic owners of certain American products appear to be on the decline.

A.J.S., 1914, 6 h.p., sidecar	£97
,, 1916 and later	£148
Ariel, 6-7 h.p., sidecar	£150
Allon, 2-stroke, 2-speed	£50
B.S.A., 4¼ h.p., 3-speed sidecar	£115
Calthorpe-Jap, 2¾ h.p., 2-speed	£43
Clyno, 1916, 5-6 h.p., 3-speed, sidecar	£110
Douglas, 2¾ h.p., W.D., 1915	£52
,, 2¾ h.p., 1919	£68
,, 4 h.p., 3-speed, sidecar	£112
Enfield, 2¼ h.p., 2-stroke	£50
,, 1917, 3 h.p., twin, 2-speed	£70
,, 6 h.p., sidecar	£110
Harley-Davidson, 3-speed, sidecar	£130
Humber, 3½ h.p. 2-speed hub, and sidecar	£45
Indian, 1914, 7-9 h.p., 2-speed, sidecar	£80
,, 1916, 7-9 h.p. 3-speed, sidecar	£110
Lea-Francis, 1914, 3½ h.p., 2-speed	£70
Levis, 2¼ h.p., single-speed	£37
Matchless, M.A.G. or Victory Models, and sidecar	£144
New Hudson, 1914, 3½ h.p., 3-speed hub, sidecar	£65
New Imperial, 2¾ h.p., 2-speed, 1914 and 1915	£42
,, 2¾ h.p., 2-speed, 1919	£65
P. & M., 1919, 3½ h.p. solo	£90
Rover, 1918-19, 3½ h.p., T.T.	£80
,, 1914, 3½ h.p., 3-speed hub, and sidecar	£70
,, 1919, 3½ h.p., 3-speed c/shaft, and sidecar	£130
Rudge-Multi, 3½ h.p., 1919	£86
,, 5-6 h.p., and sidecar, 1915	£80
Scott, solo, 1919	£125
,, and sidecar, 1915	£77
Sunbeam, 1915-8, 3½ h.p., solo	£100
,, 3½ h.p., and sidecar	£120
Triumph 3½ h.p., 1912, single-speed	£42
,, 4 h.p., 3-speed hub, and sidecar	£65
,, 4 h.p., 1917, 3-speed countershaft, solo	£78
,, 4 h.p., 3-speed countershaft, sidecar	£130
,, 2¾ h.p., 2-stroke	£65
Zenith 6 h.p., solo	£70
,, 8 h.p., 1919 countershaft, and sidecar	£130



The Rev. P. W. Bischoff, who has decided to abandon the ministry and enter the motor trade. Mrs. Bischoff is seen seated in the Clyno sidecar.

From the Church to the Motor Cycle Trade.

It may be said that before the war almost every reader of *The Motor Cycle* had heard of the Rev. P. W. Bischoff, who was so closely associated with competitions on the road and track. He was known as a keen Triumph and Clyno rider, and competed with success in many of the classic trials. Motor cycling was his hobby and the Church his profession. After serving with the Navy during the war, he has now decided on joining the staff of one of our largest manufacturers of motor cycles, and was to be seen on their stand during the latter part of Show week. The Rev. P. W. Bischoff has been a motor cyclist for just twenty years, and has the honour of having been the secretary of the Auto-Cycle Legion, an active body of riders called into existence by the War Office when the Government first realised the possibilities of the motor cycle as a war machine. The Legion was practically the embryo of the despatch riders and the M.M.G., who covered themselves with glory in the late war.

Mrs. Bischoff, too, is well known to all who followed the sport before the war. A very keen rider, as Miss Beatrice Langston she was the first lady competitor to win a motor cycle race at Brooklands. This was the 100 miles non-stop high speed trial organised by the B.M.C.R. Club.

New Models Coming.

Judging from the number of firms who are experimenting or preparing to produce new models, a show held in six months time would produce many more startling innovations than were exhibited at Olympia.

At the present moment manufacturers are too busy turning out modifications of their 1914 models to make alterations to their plant. On the other hand, all go-ahead concerns are at least contemplating more up-to-date designs, and many newcomers to the trade already have experimental models of advanced design under test.

An Absentee.

We regret that Mr. E. C. Paskell, well known as the proprietor of the Colmore depots, was too unwell to be able to attend the Motor Cycle Show. His communication finishes: "You can bet I appreciated *The Motor Cycle*, but I do so keenly regret not seeing the Show. Kind regards and congratulations on your fine issue."

Tank Corps M.C.C. Trial.

A sporting trial among members of the Tank Corps Gunnery Camp at West Lulworth, Dorset, was organised to take place yesterday, the 3rd. At the time of going to press we understand that an entry of about forty had been received, and that there was every promise for a successful event. One of the prizes is a cup awarded by *The Motor Cycle* for the most plucky performance in the race of adversity, an award to the man instead of the machine. In modern trials the competitor who has the best machine has the greatest chance of winning the chief award. *The Motor Cycle* idea is to encourage the man who has ill-luck but "carries on" in spite of it.

The Tank Corps was originally recruited by *The Motor Cycle*, and the majority of its present members are enthusiastic motor cyclists, who should make competition very keen.

A Story of Show Literature.

A certain accessory manufacturer, who deals mostly with the trade, prepared a Show folder embodying some exceedingly attractive pictures, and the first day's experience told him that these were being taken up at a rate which would soon exhaust his stock. Fortunately, a plan suggested itself. Recollecting that a large consignment of annual reports of his local Chamber of Commerce had been given to him for distribution, he got these to Town and placed large piles on his stand, keeping his own matter further back. The ruse was absolutely successful, and there was much amusement amongst those in the know as the "catalogues" were seized by the souvenir hunters.

Reunions.

Olympia was the scene of many reunions. Not only did D.R.'s and M.M.G.S. arrange many gatherings, but with the exception of the A.C.U. Six Days Trials there has been no congregation of motor cyclists to approach the Motor Cycle Show.

Even those who are in constant touch with the trade met many old friends whom they had not seen for the past five years.

M.C.C. London-Exeter Run, Dec. 26-27.

A large entry has already been received for the London-Exeter run organised by the M.C.C. The event, which is an annual one, only interrupted by the war, will take place as heretofore on December 26th and 27th, and is of a thoroughly sporting nature. It will be observed from the subjoined list (complete up to November 28th) that there is no lack of hardy souls willing to essay a journey which is usually enlivened by every variety of winter weather conditions.

Mr. B. Alan Hill, the hon. sec., of Apsley, Fellows Road, Farnborough, would be glad to hear from any motor cyclists willing to act as marshals and observers.

SOLOS.

W. S. Hemy (2½ Metro-Tyler)
Tudor Thompson (2¾ Douglas)
W. S. Jameson (4 Indian)
F. Notari (4 Triumph)
A. Wooding (4 Sunbeam)
V. Oleson (8 New Imperial-Jap)
C. W. Rowe (3½ B.S.A.)
P. T. C. Body (3½ Sunbeam)
W. G. Boyer (4 Triumph)
S. Brown (7-9 Excelsior)
J. Harrison (2½ New Imperial)
Norman J. Sims (2½ Radco)
H. J. Scale (3½ New Scale)
C. Innes-Browne (3¾ Scott)
H. J. White (4 Triumph)
J. Armour (3½ Indian)
George Richardson (4¼ James)
B. W. Bonham-Carter (2¾ Coulson B)
B. E. Lewis (A.V. Monocar)
R. R. Coes (4 Indian)

SIDECARS.

E. A. Bridgman (7 Indian)
J. A. Masters (7 Harley-Davidson)
E. Atkins (3½ Ariel)
Thompson Thompson (4 Douglas)
P. W. White (3½ Sunbeam)
T. J. Rose (8 Matchless)
R. Boxer (8 Matchless)
J. A. Hoult (8 Matchless)
E. J. Pittock (5 James)
H. A. Reyre (5 James)
H. V. Golver (8 Matchless)
F. J. Ellis (8 Matchless)
W. A. Fell-Smith (8 Blackburne)
F. C. Townshend (4 Sunbeam)
H. W. Glendinning (8 Blackburne)
S. Julian (8 Matchless)
H. T. Whitty (4 Triumph)
C. A. McKeand (7-9 Harley-Davidson)
A. Milward (4 Douglas)
Haydon H. Robinson (5-6 James)
E. H. Newnham (8 New Imperial)
C. Wilkinson (4 Douglas)
T. H. Wilby (6-7 Abingdon)
L. Arnold (8 Chater-Lea)
E. W. Choldcroft (6 A.J.S.)
L. Pinder (8 Zenith)
J. A. Hilger (3½ Rover)
F. E. Jones (3½ Ariel)
R. L. Richardson (4¼ B.S.A.)
F. W. Baker (8 Matchless)
G. W. M. L. Henderson (7 Excelsior)
S. Packman (8 Matchless)
Rev. E. S. Powell (6 A.J.S.)
B. J. Blakemarsh (4 Triumph)
L. A. Apsey (8 J.A.P.)
H. Dale (8 J.A.P.)
A. L. Huggins (8 Zenith)
A. C. Carr-Stone (4 Triumph)

CARS.

W. H. Wells (25 Overland)
W. Cooper (11.9 Morris-Oxford)
K. A. Macdonald (8 G.W.K.)
C. Finch (10 G.N.)
W. J. Brunell (11.9 Morris-Oxford)
W. M. Pattison (8 Morgan)
A. E. de Lacey (15 Straker-Squire)
H. M. Lloyd (15-20 Overland)
C. J. D. Chapman (8 Morgan)
S. Ellis-Gilmore (10 G.N.)
B. Alan Hill (not stated)
R. Mundy (not stated)

A New Tandem Sidecar.

A Two-seater produced to Meet the Requirements of the Family Man.

FOR the family man of moderate means, the motor cycle with a double-seated sidecar meets all requirements, even if four adults constitute the family party, and the number of motor cycles now on the road with such a load are a standing tribute to the utility of the motor cycle, the strength of the framework, and the power of its engine.

One of the latest two-seated sidecars to be introduced is the "Luxurette" attachment, made by Messrs. Calland, Lee and Co., of Flint Street, Clayton, Manchester. Unlike many tandem seaters, in the "Luxurette" an exceptionally long appearance has been avoided, and when the body is empty, it is not immediately apparent that it is a two-seater. The construction includes an ash frame, panelled with three-ply birch and upholstered in a good quality leather cloth. Back and seat cushions of the main seat are sprung, and the forward passenger is accommodated in an adjustable bucket seat. The weight of the body is approximately 60 lb., and the price of the complete sidecar is 33 gns.

The Luxurette is one of the very few double-seated sidecars which looks compact, and it is excellently finished in all respects.

A double-seater sidecar of recent design produced by Messrs. Calland and Lee.

Extending the Scope of the Sidecar.

Trade Carrier and Passenger Requirements fulfilled by the Same Body.

MANY small tradespeople who find the need for a light delivery vehicle in connection with their business have considered the sidecar outfit as a suitable medium for their purpose.

Apart from its obvious advantages, such as ease of handling and storage, as well as low cost of upkeep, there is the additional fact that the same vehicle is always available at week-ends and holiday times as a passenger machine, the usual procedure being to use two bodies, one of the usual type, and one for the carriage of goods.

In order to obviate the waste of time and accommodation which this method entails, Messrs. Simkin and Aldous, 13, Croft Road, Coventry, have registered a body design which will answer the dual purpose. The body is very roomy, and has a wide front quite free from interior upholstering and trimming.

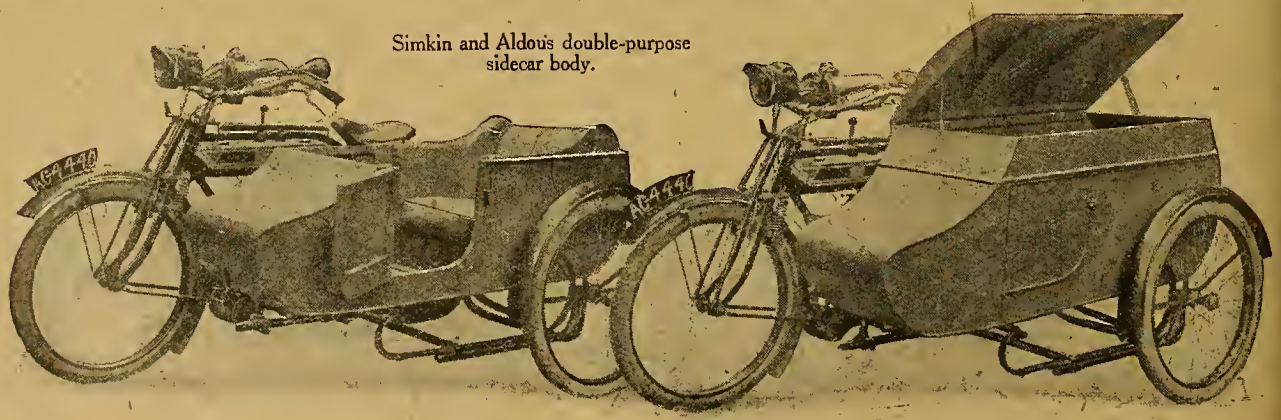
Chair Lifts Out.

At the rear is a well-padded seat, with sides and back in one unit, secured in position by locating pieces which rest against the side posts of the body. On lifting out the seat, the inside of the car is left entirely clear of obstructions or fittings liable to be damaged by merchandise.

A detachable top, secured in position without tools, and having a hinged lid, covers the whole of the body; when this is in position the side door may still be opened, a distinct advantage in wet weather when dealing with goods easily damaged by rain. For purposes of transport the seat can be placed inside the body, even when the cover is fitted.

Both as a passenger and a commercial vehicle, the Simkin and Aldous presents quite a good appearance, and is exceptionally roomy.

The body is made to suit any modern underslung chassis which is free from diagonal stays, and at a later date the makers hope to sell it as a complete sidecar, the convertible body being mounted on a chassis of their own design.



Simkin and Aldous double-purpose sidecar body.

THE T.T. RACES.

Three Classes and No Weight Limit.

THE 1920 T.T. races will be held in the Isle of Man on Wednesday and Friday, June 16th and 18th. At first it was considered desirable to drop the Senior Race for 500 c.c. machines next year, owing to the dangers of the course with such fast machines. The two events proposed were the 350 c.c. and the new lightweight 250 c.c. race, but last Tuesday the A.C.U. leaders entertained to dinner a number of trade representatives, when an informal discussion took place. The manufacturers' feeling veered toward a repetition of the classic 500 c.c. event, notwithstanding the fact that many former adherents of the 500 c.c. engine have now migrated into bigger classes. The proposals were that the 350 c.c. and 250 c.c. machines race together. A race for lightweights created great interest.

A former rule which would prove an obstacle to entries next year is to be waived. We refer to the necessity for manufacturers listing and selling machines entered for the race.

The Present Position.

The A.C.U. will reconsider the T.T. programme and again consult the manufacturers if necessary. But in all probability the events will be :

A SENIOR RACE for machines up to 500 c.c.

A JUNIOR RACE in two classes run concurrently : *(a)* for 350 c.c. machines, and *(b)* for 250 c.c. machines.

It is probable after all that maximum weights will be abandoned, though we regret that this may be the case. It is felt in some quarters that tyre sizes for instance would be sacrificed in order to reduce weight, but this can be guarded against, and, in any case, no one ever heard of a long distance T.T. race being won on doubtful or flimsy tyres.

The A.C.U. Competitions Committee will shortly reconsider the whole matter of the T.T., when final details will be decided.

Taxations.

Knowing that the taxation of motor vehicles will shortly be revised, the Motor Legislation Committee has suggested that taxation should be as far as possible proportional to the use of the vehicle taxed. That the taxation of motor spirit is the most practical method, and that there should be a flat rate of 4d. per gallon import duty on all imported motor spirit used by mechanically propelled road vehicles of every description. They further suggest that the existing basis of taxation for motor cycles and private cars should not be altered.

It was decided that if any annual charge on motor cycles was to be retained it should take the form of a wheel tax on all road using vehicles of, say, 2s. 6d. per wheel, such tax being a fee to use the road for the year from the date of payment.

Additional Premises.

The A.C.U. has taken additional premises at 83, Pall Mall, S.W.1., on the floor below its existing offices.

THE JUNIOR CAR CLUB DINNER.

THE first annual dinner of the Junior Car Club was held in the Great Gallery of the R.A.C. on Thursday evening last. Dr. A. M. Low, D.Sc., was in the chair, and, after proposing the toast of "The King," he rose to propose the health of the visitors, and regretted the absence of several distinguished people who had promised to be present, including Gen. Sir John Nixon, Mr. Charles Jarrott, O.B.E., Gen. Cadell, and Sir Henry Norman. He coupled with the toast of "The Visitors" the name of Mr. H. Massac-Buist.

Mr. Massac-Buist, in his reply, spoke at some length on the future of the light car, in which he had the fullest confidence.

Sir Julian Orde was then called upon to present the prizes won during the various competitions held during the past season.

Among the awards two were given to riders of the type of cycle car with which this journal deals. In the general efficiency trial a gold medal in Class I. was won by E. A. Tamplin (Carden Monocar); in the second class by H. S. F. Morgan (8 h.p. Morgan).

THE PARIS-NICE TRIAL, FEBRUARY 13-14.

WE are able to give further information concerning the Paris-Nice trial to be held between the above-mentioned dates. Cups will be given by *Le Petit Journal, Motocyclisme*, and the Moto-Club de Nice, while a prize will also be given by the President of the French Republic. Two of these cups will be allocated as team prizes for clubs and manufacturers, and we understand that there are several English firms and teams nominated by clubs desirous of competing for these special prizes.

The route will be Paris-Dijon *via* Val Suzon (a non-stop section), Dijon-Lyon *via* Nantua (the same route as in 1914). After Nantua there will be a non-stop section, and competitors will have to traverse a snow-covered pass, but they will be preceded by a snow plough, which will clear the road. The next section will be Lyon-Marseilles, and the final stage will be from Marseilles to Nice, *via* Trets, Brignolle, Fréjus, and Cannes. Though Nice is the actual finishing point, the trial will continue through Nice to La Turbie, eighteen kilometres distant, the final section being a non-stop section finishing at Mont Agel. The last part of the trial will comprise a flexibility test.

M. Gaston Sweerts, who is over in England, informs us that he has received promises of support from a number of the best-known British firms, and Continental entries, he tells us, are also coming in satisfactorily.

OBSERVATIONS AT THE SHOW.

Monsieur Paul Kelecom, the F.N. engineer attached to the Liège factory, was an interested visitor to the Show, showing the same keen interest in the various designs displayed as he did in the Six Days Trial machines at Llandrindod Wells.

Much praise was bestowed on the latest designs of runabouts, two or three forming essentially practical jobs, to use an engineer's expression.

Will anybody *ever* forget the 1919 Six Days Trials? Ask S. L. Bailey!

The suspension of the Clyno Co. for advertising an unofficial Scottish Trial is not likely to last long.

Keen interest was displayed in the A.C.U. decision to organise a real lightweight T.T. for machines under 250 c.c. The go-ahead Cedos firm immediately announced their intention to enter six machines.

A visitor went to the A.J.S. stand to congratulate the makers on such a fine product as he possessed.

We were told that the new Raleigh will not be available for delivery until next June.

The Stanger V twin two-stroke was one of the real novelties in the Show. Its road performances will be watched with interest.

Talk of further A.C.U. observed trials was prevalent at Olympia.

Capt. P. Pike was entertained to dinner on Friday evening following his successful ride from North to South on an O.K two-stroke described in our last issue.

A general reunion of motor cyclists was observable at Olympia. We met many men recently discharged from the Services, including W. H. Bashall, A. G. Fenn, Cecil S. Burney, and J. Cocker.

June, after all, is the month for the T.T. next year, the 16th and 18th having been arranged for the two races. It is highly probable, if the 500 c.c. event is reinstated, that the Junior and Lightweight events will be run concurrently.

Such is the divergency in prices that some high-class sidecar outfits are actually cheaper than solo mounts. Instance the new P. and M. outfit at £127, than which no better finished machine exists. Several motor bicycle prices are much higher than this figure.

Observe that scooters are growing in size, wheels, etc., being increased until the weight approaches 100 lb. We are getting nearer to the miniature open frame motor bicycle every day.

One of the many Show reunions was the meeting with Southcomb May of many of the original members of the M.M.G.S. at the Clyno stand.

NOVELTIES IN ENGINE DESIGN.

A Big Twin with Overhead Camshaft and a Two-stroke Flat Twin with One Combustion for Both Cylinders.

Metric Engines.

AERO practice is slowly influencing the design of motor cycle power units, and one of the latest examples in which our accepted practice has been abandoned is seen in the Metric series, which will be offered in various sizes of single and two-cylinder models.

Many advanced features are incorporated in the design, such as detachable heads, overhead valves and camshaft, and mechanical lubrication.

The camshafts are secured in completely enclosed housings above the cylinder heads, and they are driven by skew gears. Complete details of these engines will be given in next week's issue of *The Motor Cycle*.

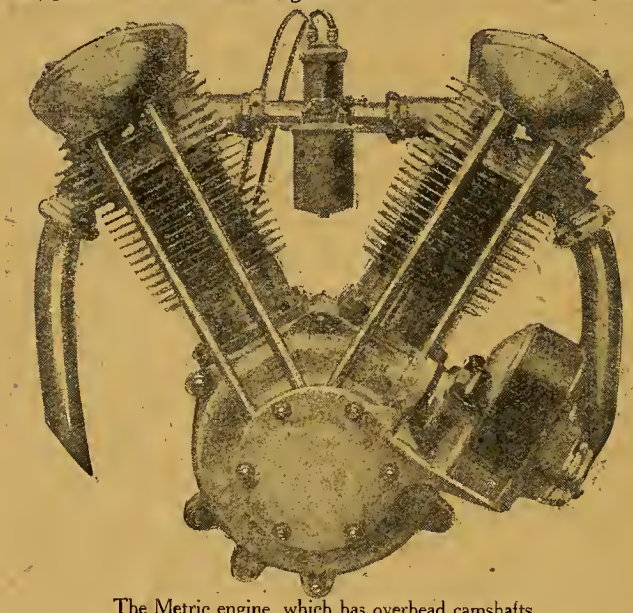
A two-stroke cycle attachment—the Young.

The Young Attachment.

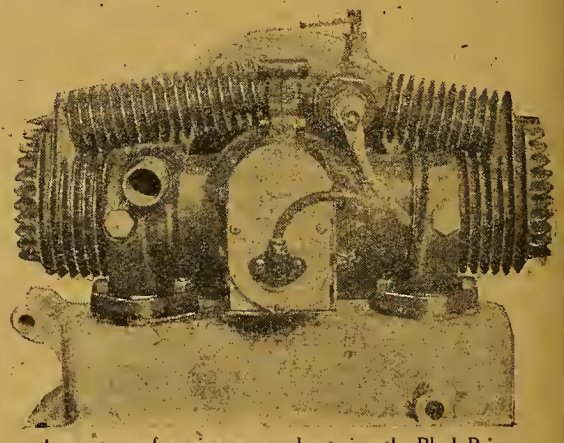
A pedal cycle motor set having a 1¾ h.p. two-stroke engine is the Young, which is handled by the Mohawk Cycle Co., Ltd., Hornsey, N. This power unit has a detachable cylinder head, into which the plug and release valve are screwed, while the transfer passage also is covered by a removable plate.

The Black Prince.

This engine is very unusual, in that, although it is a horizontal two-cylinder, two-stroke, only one sparking plug is used. A passage cast with the cylinder heads brings this plug into communication with both cylinders, so that the explosion occurs in each simultaneously. By this method the torque obtained is that of a single-cylinder two-stroke, *i.e.*, one impulse per revolution, but the balance, of course, is almost perfect. Amongst other novel features may be mentioned the casting of each half of the crank case in one piece with its corresponding cylinder.



The Metric engine, which has overhead camshafts.



A new type of engine, a one-plug twin—the Black Prince power unit.

PROVISIONAL PROGRAMME OF 1920 OPEN EVENTS.

IT is well known that a decision had been arrived at between the A.C.U. and the leading clubs not only to limit the number but also to distribute as widely as possible the open events.

The subjoined list of fixtures is provisional, and may be subject to some slight variation. At the same time, it shows that the sporting element of the motor cycling community has not been forgotten in any part of the country, and it is sincerely to be hoped that adequate support will be forthcoming for even the most outlying competition.

Feb. —.—Sutton Coldfield A.C. Reliability Trial.
March 20th.—Home Counties Club. Reliability Trial.
April 5th.—Westmorland M.C.C. Hill Climb.
April 17th.—Birmingham M.C.C. Reliability Trial.
May 22nd.—Bristol M.C.C. Reliability Trial.
May 29th.—Liverpool M.C.C. Speed Trial and Hill Climb.
June 5th.—Ilkley M.C.C. Reliability Trial.
June 16th-18th.—A.C.U. T.T.
June 26th.—Midland C. and A.C. Reliability Trial.
July 3rd.—Blackburne and District M.C.C. Hill Climb.
July 15th.—Essex M.C. and Southend-on-Sea and District M.C.C. Speed Trials.
July 17th.—Cumberland County M.C.C. Reliability Trial.
July 31st.—Aberdare and District M.C.C., Welsh A. and A.C., and Cardiff M.C.C. Hill Climb.
Aug. 7th.—Sheffield and Hallamshire M.C.C., Loughborough and District M.C.C., North Derbyshire M.C.C., and Nottingham and District M.C.C. Speed Trial and Hill Climb.
Aug. 14th.—Carmarthen and District M.C., and Ystalyfera and Swansea M.C.C. Speed Trials.
Aug. 22nd-28th.—A.C.U. Six Days.
Sept. 1st.—York and District M.C.C. Hill Climb.
Sept. 4th.—Woolwich, Plumstead and District M.C.C., Streatham and District M.C.C., Rochester, Chatham and District M.C.C., and Surrey M.C.C. Reliability Trial.
Sept. 11th.—Bristol M.C.C. Hill Climb.
Sept 18th.—Liverpool M.C. Reliability Trial.
Sept. 25th.—Redditch and District M.C.C., Wolverhampton M.C.C. and Kidderminster M.C.C. Reliability Trial.

A SIMPLE ATTACHMENT.

We learn that Messrs. A. Pickard, 4, New Burlington Street, London, have been appointed general agents for Great Britain and the Colonies for the Cyclo-Motor attachment, which was exhibited at both the Paris and London Shows. This device can be fitted in five minutes to any make or type of pedal cycle, and the method of fixing is such that no alterations are required.

MODERN STEEL.

Dr. Leslie Aitchison, of Sheffield, read a paper on "Modern Automobile Steels," on Wednesday, November 26th, at the Baths Assembly Rooms, Wolverhampton, before the members of the Birmingham Metallurgical Society (who paid a visit to the works of the Sunbeam Co., the Wolverhampton engineers, and the Society of Chemical Industry to the number of 450. Mr. Lantsberry, chief chemist, B.S.A. Co. (Birmingham), presided. Dr. Aitchison pointed out that automobile steels must have comparatively high strengths. This meant that the automobile engineer was primarily interested in alloy steels, since the plain carbon steels could not be relied upon to give the same high strengths as were to be obtained from the alloys. Many of the alloy steels would give any maximum stress between 50 and 100 tons per square inch, but all did not do this with the same ease. The only structural steel of a reasonable price which would give 100 tons per square inch easily was nickel chromium steel.

—We must keep down Expenses—

"The Amateur Mechanic," compiled by skilled craftsmen in simple, non-technical language, and helpfully illustrated, is

The Guide to Show Us How to Do It.

"THE AMATEUR MECHANIC" includes practical teaching for the Motor Cyclist and Motorist on How to Clean overhaul, and do simple repairs to their Motors

It also teaches those money-saving arts which are invaluable to every citizen: Shoe-making; House Decoration Boat-building; Book-binding; Picture-framing; Sign and Ticket Writing; and Repairing of Furniture. Bicycles Typewriters, Windows, Spectacles, Mailcarts, etc., etc.

For the Motorist.

As an instance of the thoroughness with which every subject is treated, we append a list of the titled sub-sections, into which the section on "How to Overhaul a Motor Cycle" is divided: The Wheels —The Frame—The Tank and Fitments—The Carburetter—How the Engine Works—Overhauling the Engine—The Driving Gear—The Ignition Apparatus —The Reassembling. This section has four practical illustrations.

The section on "Overhauling a Motor Car" has titled sub-sections as follows: Introduction—The Preliminary Examination—Engine—Bearings—Carburetter—Couplings, etc.—Flywheel—Clutch Fork, etc. — Change Gear — Steering Gear, etc. — Road Wheel—Frame Springs, etc.—The Ear Test—Testing the Engine: Compression Testing—Testing with the Engine Running—Worn Bearings—Knocking—"Popping"—"Hunting"—Silencer at Fault—Clutch—Change Gear—Undue Heating of Circulation Water—Lubrication—Testing on the Road—Ignition—Valve Timing—Defective Compression—The Shafts—A COMPLETE OVERHAUL: Testing for alignment—Swivel Bearings, Wheel Bearings, etc.—Tyres—Removing Valve Chamber Covers—Grinding in Valves—Removing the Engine—Testing Truth of Pistons—Removing Flywheel—Timing Gear —Magneto—Gudgeons and Pins—Case-hardening—Removing Piston Rings—Engine Repairs—Testing Bore of Cylinders—Truing Journals—Truing Brasses —Bedding the Crankshaft—Big End Bearings—Renewing Clutch Leather—Ball Bearings Gear Renewal, etc.—Oiling Axle Springs—Aligning Gear Box and Engine—Reassembling Engine Accessories—Brakes. This section has 27 illustrations.

MR. LEONARD ROE, Quorn, Leicestershire, writes: "I am very much interested in your 'Amateur Mechanic.' I have mended my watch, which had not been going for twelve months, from its instructions. Now I am going to restore the colour of a pair of old brown boots. The articles on 'Miniature Electric Lighting' are very interesting; I have already fitted my cycle with electric light through these."

To make and to mend, to alter and adapt and improve things used in the house, the office, the works, the field, and the garden.

Invaluable to the motorist as a rider and as a citizen.

For the Citizen.

How to paint and paper a room—To sole and heel and patch boots and shoes—To mount maps—To bind magazines and to rebind old books—To make a pair of hand-sewn boots—To restore colour of old brown shoes—To make household furniture—To reseat chairs—To upholster sofas, etc.—To install a speaking tube—To make a wire bracket for placing over oil lamp or gas bracket, so that food can be heated over it—To clean a Primus or other stove—To repair bicycles—To overhaul a motor car—To repair motor cycles—To work in metal—To colour metals—To make a garden frame—To repair water taps—To varnish a violin—To remedy damp walls —To repair the piano—To make a padded chair from an old cask—To make mailcart and perambulator hoods—To mend penknives—To stuff animals —To dress furs—To stuff and mount birds—To do wood inlaying—To cure a smoky chimney—To prepare working drawings and how to read working drawings—To make a chemical weather-glass—To renovate a grandfather's clock—To make invisible ink—To make garden furniture, arbours, arches, seats, summerhouses, tables, etc.—To use metal-drilling tools—To clean bookcovers—To renovate mirrors—To upholster furniture in leather cloth—To mend broken china—To do fretwork—To build a boat—To make a canoe, etc.—To lime-white poultry-houses—To do gold-plating and silver-plating—To clean a watch—To mend keyless watches and ordinary watches—To distemper ceilings and walls—To make picture frames and frame pictures —All about curtain fittings—To make metal castings—To make tracing paper, waterproof paper, fireproof paper, etc.—To clean paint off glass—To fit up a motor workshop—To clean boilers—To fix an anthracite stove—To regild and restore picture frames—How to use spanners—To make doors and windows draught-proof—To paint walls—To make a garden path—How to do nickel-plating—To cure noises in hot-water pipes—To make soap at home—India and glue varnishes—To clean and repair locks —All about acids for etching metals—Micrometers, how to make and use them—How to make plaster casts etc., etc.

MR. T. G. RIORDAN, Upper Tooting, S.W., writes: "With absolutely no knowledge to guide me, after reading the articles in 'The Amateur Mechanic on Boot-making, I was able to make a pair of boots, partly hand-sewn and partly riveted: and not only make them, but make them well. Since then I have made a very fine pair of lady's shoes, which are also a success. I consider nothing I could say about the work would be too much. . . ."

OUR

FREE BOOKLET

will tell you all about it. It shows pages and pictures from "The Amateur Mechanic."

MR. A. J. TATTON, Keresley, near Coventry, writes: "'The Amateur Mechanic' is beyond praise. I feel convinced I can make or repair most of the articles dealt with depending only upon the beautiful illustrations."

NO CHARGE AND NO OBLIGATION TO ORDER.

To THE WAVERLEY BOOK CO., LTD. (M.C.7. Dept.),
96, Farringdon Street London E.C.4

Please send me, without charge or obligation to order, your Free Illustrated Booklet containing all particulars as to contents, etc., of "THE AMATEUR MECHANIC," also information as to your offer to send the Complete Work for a mere nominal first payment, the balance to be paid by a few small monthly payments, beginning thirty days after delivery.

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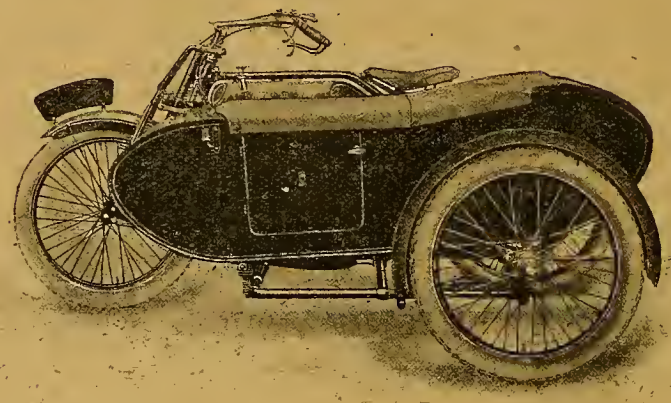
The Masterpiece of Motor Cycle Construction



ROYAL RUBY

Patent Spring Frame and Spring Wheel Sidecar Chassis, and the reasons for its great popularity.

Specially designed head. Eccentric adjustment for chains, giving a forward and backward movement. Patent silencer. Adjustable footboards Patent strengthening stays to front down tube and from seat tube to gear bracket. Interchangeable wheels with spare wheel of knock out spindle type, with Royal Ruby patented quick detachable wheel removing system. Rear internal brake. All chain drive. Hans Renold chains. Lucas Electric Lighting Set, Tank, special registered design. The Sidecar is fitted with Royal Ruby patent spring wheel and other improvements, specially designed body for comfort, fitted with hood and screen.

Facilities have been made for quickly removing pleasure car to be replaced by tradesman's carrier if desired; this only takes a few minutes, without interfering with any springs or shackles.

The Ruby Cycle Co., Ltd.,

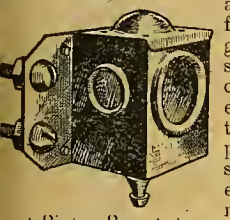
Manufacturers and Patentees of the Royal Ruby Cycles, Motor Cycles, and Sidecars,

CANNEL ST., ANCOATS, MANCHESTER.

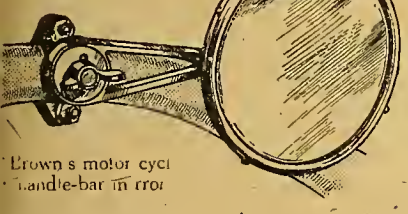
ACCESSORIES for 1920

Not the least interesting items among the Motor Cycle goods introduced for the coming year are the many new accessories which are now available. In the following pages we give a comprehensive review of these small but necessary adjuncts to the pleasures of the pastime which were exhibited at Olympia last week. In addition, there are included other useful fitments which were not exhibited by their makers, but were to be found on the stands of other firms or in the sample cases of city showrooms

MESSRS. BROWN BROTHERS, LTD., 20-34, Great Eastern Street, E.C.4.—This firm has now adopted its well-known Duco spring gaiters for cycle cars. These are most useful for retaining grease in the spring leaves, causing much easier riding to the vehicle and protecting the springs from the elements. A novelty shown on this stand was a pair of electrically-heated gloves, of the type used by our airmen during the war. They should be especially interesting to those motor cyclists who own electrically equipped motor cycles, as they are sold in types suitable for 6-volt outfits. They



A Brown Bros tail lamp.

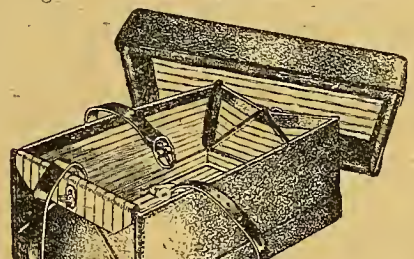


Brown's motor cycle handle-bar mirror

are intended to be worn inside ordinary gloves. Shown for the first time on this stand was the Highlow petrol gauge.

J. B. BROOKS, LTD., Great Charles Street, Birmingham.—The feature on this stand was, of course, Brooks saddles, of which there are several well-known types. All the latest models have a small coil spring under the nose. Besides this feature, the frame of the B.185 is suspended on cantilever leaf springs, the Brooks normal coil spring being used in addition. The B.225 is a saddle with entirely leaf suspension, and the new B.175 can now be supplied to fit directly to the frame instead of by the usual seat-pillar. A collapsible valise was also shown.

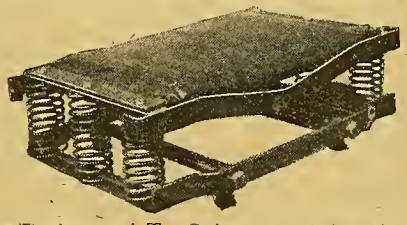
THE COUNTY CHEMICAL CO., LTD., Chemico Works, Bradford Street, Birmingham.—Under the name of Chemico many well-known proprietary articles were exhibited. Coolie motor oil, Chemico patches and repair outfits, enamel, etc., are well-known standard lines, and Apollo electric horns, sparking plugs, etc., were also exhibited and sold by this company.



A collapsible valise for the carrier—one of the Brooks range of leather goods for motor cyclists

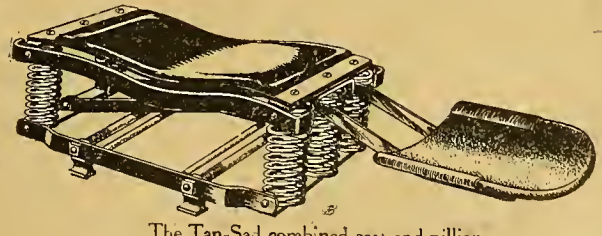
THE TAN-SAD WORKS, 9, Freeman Street, Birmingham.—The exhibit comprised various forms of the well-known Tan-Sad pillion seats, the new seat suspension recently described in *The Motor Cycle*, and the very neat acetylene rear light combined with the rear number plate, which was illustrated in the same issue (Nov. 20th, pp. 604 and 613).

THE LEATHERIES, LTD., Sampson Road North, Birmingham.—The saddles constructed by this firm are already popular. A new feature displayed was a special pan seat for scooters. It will be remembered that the firm manufacture the excellent detachable expanding valises (fitted with special carrier attachments) mentioned in *The Motor Cycle* in the issue for November 20th.



The improved Tan-Sad—now upholstered and having shorter springs.

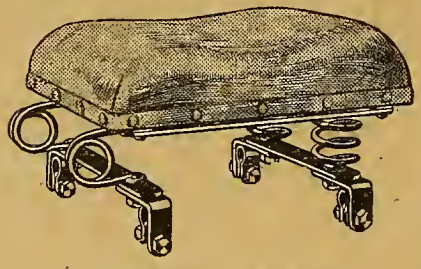
MESSRS. BLUEMEL BROTHERS, LTD., Wolston, near Coventry.—In addition to the usual range of tyre pumps, cycle car steering wheels, celluloid handle-bar grips, and sparking plugs, Messrs. Bluemel Brothers were showing a simple side-car screen of celluloid with side windows and apron, and fastened to the body by means of two clips, one each side. On these being loosened, the screen may be lifted clear, so as to give the passenger access to the sidecar body. This was illustrated in our issue for November 20th.



The Tan-Sad combined seat and pillion.

Accessories for 1920.—

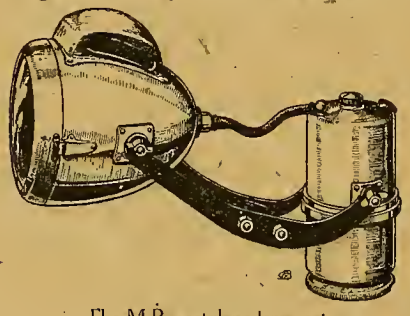
MESSRS. A. E. WILBY, LTD., 113, Holloway Head, Birmingham.—The Burton plug formed the chief exhibit on this stand, though motor cycle accessories of several types were included, such as tube and belt cases and a carrier seat. Burton



A pillion seat by A. E. Wilby

plugs are made with detachable bodies, the steatite being carefully shrunk to the correct limits. One, two, or three-point plugs can be supplied.

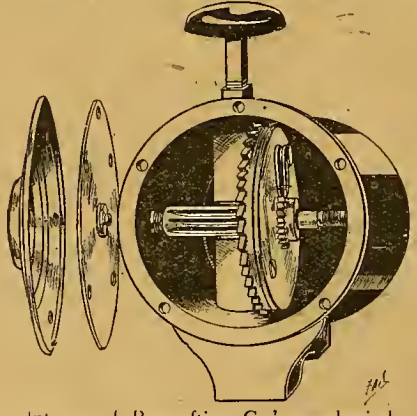
THE MECHANICAL PRODUCTS CO., Armoury Close, Bordesley Green, Birmingham.—A very handsome semi-stream-



The M.P. acetylene lamp set.

line acetylene head light, complete with generator and tail light, was exhibited.

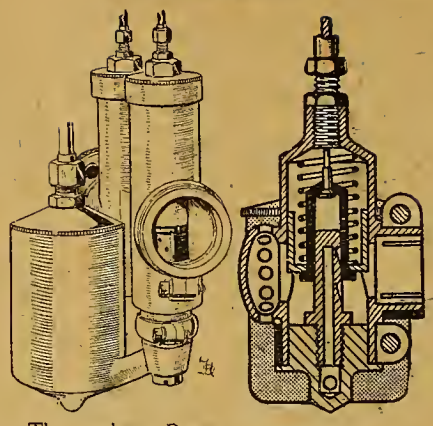
BANCROFTIAN CO., 64-78, Bishopsgate, E.C.4.—A large range of standard accessories, tyres, lamps, spares, and fittings is handled by this firm. Mechanical



Interior of Bancroftian Co.'s mechanical horn.

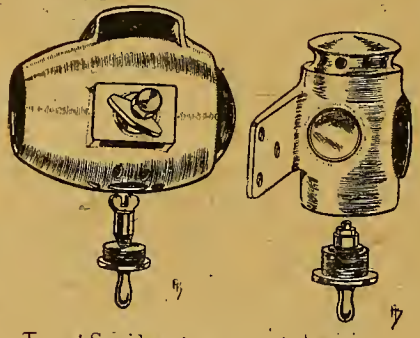
horns are a speciality, and they are one of the few houses with a really large stock of these necessary fitments.

MESSRS. ROTHERHAM AND SONS, LTD., Spon Street, Coventry.—Everest carburetters, also a model of the one-lever variety, specially suitable for scooters



The two-lever Everest carburetter and a section of the Auto-wheel model.

and Auto-wheels, the Bonniksen speedometer, which is being manufactured in large quantities, and an ingenious lubricator consisting of an ordinary lubricator provided with a ball resting on the seating. When the machine travels along the road the ball jumps off its seating and allows the oil to flow through gradually; when the machine is at rest it retains the oil, as the ball remains on its seating.



Two of Surridge's lamps in cast aluminium for sidecar and rear number plate.

R. SURRIDGE, 73, Church Street, Camberwell, London, S.E.5.—Samples of the well-known Holdtite patch, and new and attractive tail and sidecar lamps made of aluminium castings and with air holes scientifically designed, rubber tubing for acetylene lamps incorporating a gas bag, all kinds of head and tail lamps, and horn bulb patches for the purpose of repairing damaged horn bulbs.

MESSRS. C. H. PUGH, LTD., Whitworth Works, Tilton Road, Birmingham, were showing the latest pattern Senspray carburetter in part section, so that visitors to the Exhibition could see its working. As

may be remembered, the Senspray wo on the injector principle. The lat pattern is practically automatic in action, and can be quickly adjusted suit changes in temperature or clima Another feature on the stand was handle-bar control, in which the pull the wires was direct, as they do have to bend round a drum-shaped lev

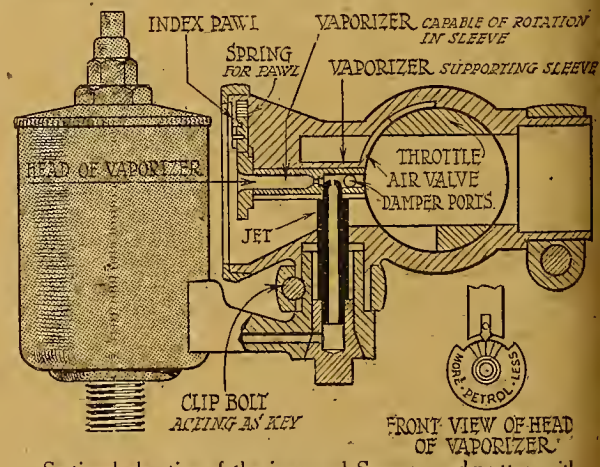
XL-ALL, LTD., Hall Green, Birmi ham.—The parallel motion saddles we of course, exhibited, also the XL-

The XL-All saddle with back rest.

plug and a small model known as t Baby. A sectional saddle showed t interesting features of the parallel moti very clearly. All the latest patterns we shown, including a saddle with a co fortable back rest.

PATCHQUICKS PATENTS, LTD., Tiverto —Patchquick repair outfits are too we known to our readers to need more th a passing reference, but we can speak their excellence after years of experien with them.

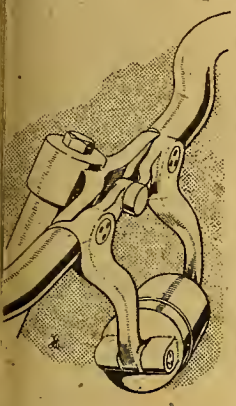
THE ELEPHANT CO., LTD., Neate Stre Camberwell, S.E.5.—Among the numero productions of this company we notic an excellent repair outfit containing, addition to the usual articles, a sm tyre gaiter, a small roll of copper wi a small roll of insulating tape, and sparking plug washer, useful items whi every motor cyclist should be glad have on his machine.



Sectional elevation of the improved Senspray carburetter, with new damper action, which decreases or increases the suction on the jet at low speed

essories for 1920.—

ictory Co., engineers, 146, Lincoln's n, Birmingham.—A very neat floating adle-bar is the invention of this firm. e bars are hinged close to the pillar, d have interconnected extensions so as ensure correct action. A lever exding downwards from each pivot is nected to an ingenious system of springs. Two springs are employed, a light spring coming into action first to absorb slight vibrations, and a more powerful spring to absorb the heavier road shocks. Both springs are enclosed in a telescopic tube, and by an arrangement of spring stops, any upward pull on the bars affects the strong spring, ins ensuring the necessary rigidity to ve a safe feeling. The Victory floating ndle-bar has already undergone road sts with very satisfactory results, and specially adapted for scooters.

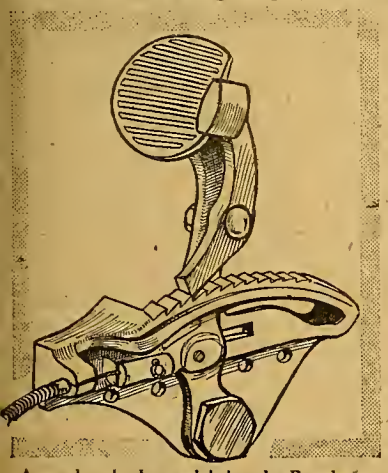


Victory spring handle-bar

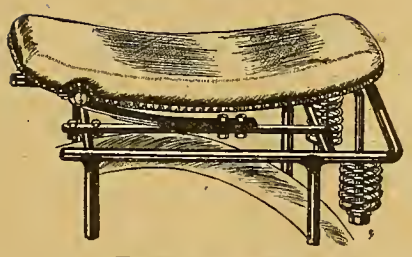
Middlemores (Coventry), Ltd., Little ark Street, Coventry, were showing vo motor cycle saddles of somewhat milar pattern, one of which had the il springs connected to the frame of the ddle by means of plain stright rods, hile in the case of the other single leaf rings were employed instead of the ds.

The Midland Gear Case Co., Ltd., ridge Street Works, Birmingham.—The hibit consisted of tool cases and toolgs, including many other leather ods.

Bowden Wire, Ltd., Victoria Road, illesden Junction, N.W.10. — Well-nown Bowden accessories, such as the owden extra air inlet, Bowden wires d cables of all descriptions, together ith special brake and clutch attachents, form a striking display. The



A ratchet brake pedal by the Bowden Wire Company.



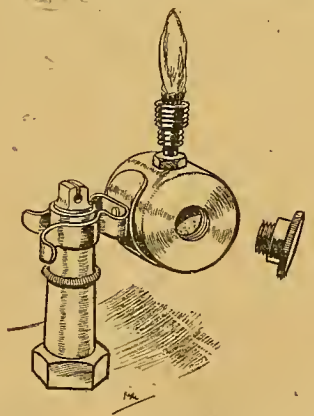
Terry's pillion seat.

standard articles manufactured by this firm are probably known to every motor cyclist.

Messrs. Herbert Terry and Sons, Ltd., Redditch.—This firm was showing the Terry patent spring links for motor cycles for improving the motion of spring forks, spanners, valve spring compressors, pump clips, screwdrivers, belt fasteners, a tyre clamp for holding a section of the tyre in position when mounting it, and springs for every purpose connected with motor cycling.

Terry's check spring for sidecars.

Messrs. Alfred Dunhill, Ltd., 359-361, Euston Road, N.W.1.—Messrs. Dunhill had an extensive exhibit of accessories and clothing. Among the former we noticed an ingenious emergency light, consisting of a small brass container and wick, held in a spring clip and designed to fasten round the burner of an acetylene lamp in the case of the generator failing. This little con-



Emergency petrol light for head lamps marketed by Dunhill, Ltd.

tainer is filled with a few drops of petrol, and will burn with a small light for a considerable time, thus enabling the motor cyclist to reach home. Other specialities of this firm are a lighting set run off the accumulator, consisting of a handsome head light, side light and tail light, finished in black and with plated rims. We were also shown a magneto combination knife, which included a blade, a plug tester for shorting the plug between the terminal and plug body, and a clearance gauge for the contact breaker points.

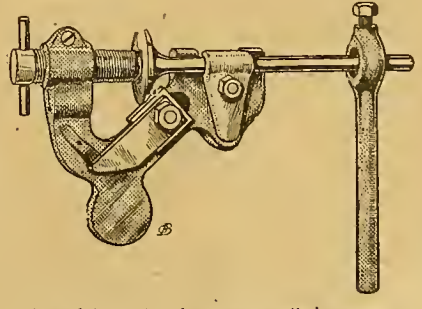
The Coventry Plating and Presswork Co., Ltd., Raglan Works, Lower

V section front mudguard exhibited by the Coventry Plating and Presswork Co.

Ford Street, Coventry.—Various examples of presswork, such as small spanners, change speed gates, also an excellent V section mudguard, wide at the base and slightly turned up at the front, so designed that it prevents mud from being splashed all over the riders, were shown.

Messrs. Joseph Lucas, Ltd., Great King Street, Birmingham.—A fine range of very beautifully finished acetylene head lamps, horns, and adjustable spanners. The firm has long been famous for its magnificent workmanship. Its electrical exhibits are dealt with elsewhere in this issue.

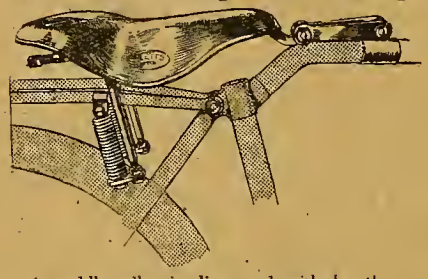
Lake and Elliot, Ltd., Braintree, Essex.—As large manufacturers of tools for the cycle and motor cycle repair trade, some excellent labour-saving devices have been designed by this firm. Two of these will appeal to the rider who effects his own repairs. The first is the Millennium valve truer, which will effectively reface any size of motor cycle valve; it may be held in the vice or in the hand as convenient, and its use will eliminate much of the labour of valve grinding. The other useful little tool we must mention is the magneto sprocket and gear wheel drawer, which has specially toughened jaws of compact form, so that they may pass behind a sprocket in a case where there is little clearance.



A useful tool for the motor cyclist's garage kit—the valve truer made by Lake and Elliot.

Accessories for 1920.—

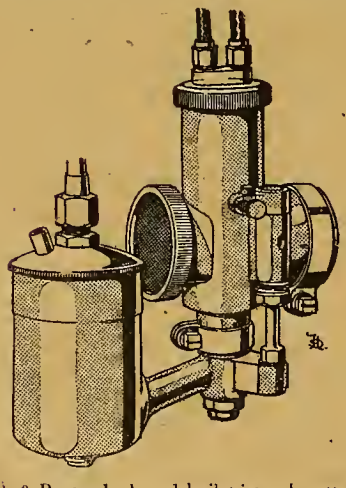
LYCETT SADDLE AND MOTOR ACCESSORIES CO., LTD., Bromley Street, Birmingham.—A large range of toolbags, tool rolls, and a collapsible swag bag for attaching to a motor bicycle carrier which will contain all the motor cyclist needs in the clothing line for touring.



A saddle-pillar is dispensed with by the Lycett patent motor cycle seat.

The firm is showing a saddle hinged to the top tube, and with a crossbar at the rear clipped on to the carrier. This does away with the need for a saddle post. Another form of saddle has the coil spring attached to a hinge so that it follows the movement of the rod attached to the saddle frame, which is fastened to the lower portion of the spring, thus ensuring a direct pull on the spring under all conditions.

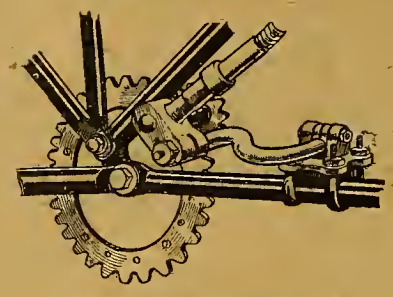
MESSRS. BROWN AND BARLOW, LTD., Westwood Road, Witton, Birmingham.—Examples of the well-known Brown and Barlow carburetters, including the two-stroke variety, specially designed to give even firing at slow speeds without four-stroking. It consists of a small jet and choke, and above the jet a vaporising cup. The back cap over the main air



B. & B. standard model pilot jet carburetter.

intake is supplied in various sizes, with different numbers of holes in each for the admission of air, and by this means the carburetter may be made to suit the particular engine to which it is fitted. The other model shown is the well-known tapered needle pattern, provided with a pilot jet.

MESSRS. S. NORTH AND SONS, LTD., 14, Soho Square, W.1.—An excellent display of the well-known and accurate Watford speedometers, which are now provided with black dials on which there

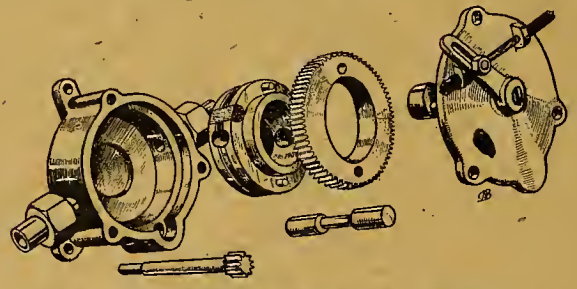


Rear wheel drive is adopted on the Watford speedometer.

are white figures. Numerous examples of magnetos were shown, but unfortunately there was not a single motor cycle pattern among them, which was a pity, as Watford magnetos are famous for their accurate workmanship and high finish.

MESSRS. BRAMPTON BROTHERS, LTD., Oliver Street Works, Birmingham.—The well-known Brampton spring forks, motor cycle lugs and their spring chain, every third pitch of which is connected by a spring. This chain gives a flexible drive, and does away with the necessity of a transmission shock absorber.

MESSRS. S. A. LAMPLUGH, LTD., King's Road, Tyseley, Birmingham.—A plunger oil pump with only three moving parts

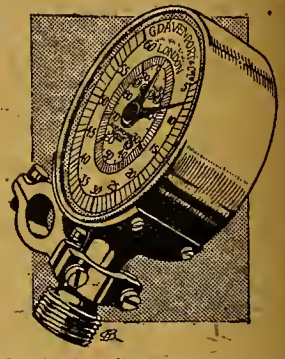


Throttle control is fitted to the Lamplugh mechanical pump which is here shown dismantled.

and without valves. The pump throw is altered by varying the eccentric, and this is interconnected with the throttle so as to give more oil as the load increases. It may be driven off the magneto shaft and is practically a flush fitting in the magneto transmission casing.

THE MICROMETER ENGINEERING CO., LTD., Spon Street, Coventry.—Jelley motor cycle saddles having specially constructed tops were exhibited. These tops are constructed somewhat on the lines of a tyre cover, in that they are made of special composition partly composed rubber and have a canvas lining, whi provides just sufficient stretch to rend the saddle thoroughly flexible. T back plate for the springs is moulded i and the saddle is waterproof and ve flexible.

MESSRS. G. DAVENPORT AND CO., LT 101, 103, and 105, Clerkenwell Roa



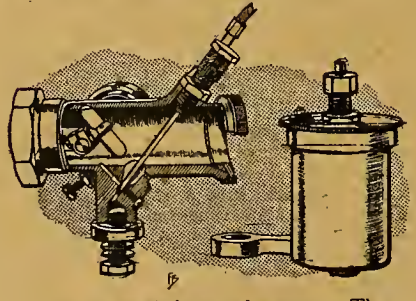
Speed and trip mileages are both indicated by hands and the dial of the Davenport speedometer.

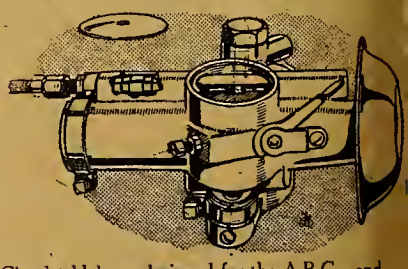
E.C.1, were showing goggles, handle-ba mirrors, motor cycle handle-bar watche and a speedometer working on the cer trifugal principle.

PRICES' COMPANY LTD., Belmont Works Battersea, S.W.11.—Samples of oil for al types of motor cycles Manulav motor soap fo cleaning the hands hub lubricant, and new grade of hub lubricant which retains it properties for a considerable length o time, and which wil be found invaluable fo inserting between the spring leaves of the sidecar.

THE COVENTRY CHAIN CO., LTD., Coventry.—Famous for having made the chains fitted to Tanks, this firm was showing various types of motor cycle chains, including both the roller and silent varieties.

THE EAST LONDON RUBBER CO., LTD., 29, Great Eastern Street, E.C.2.—This was one of the largest exhibits in the Gallery, and staged almost everything the motor cyclist can desire, from the smallest detail to the complete Dalm two-stroke engine. Easting screens, toolbags, tools, clothing, etc., were shown.





Two new single lever carburetters. The new Claudel-Hobson designed for the A.B.C., and the Capac which is already a standard fitting on some makes.

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£1 7 6	£1 10 0	£1 12 6	£1 15 0	£1 17 6

BONUS : 10% reduction on renewal premium if no claim.

If maker's list price, including all accessories, exceeds £100, an extra premium of **10/-** is payable.

Cycle used without sidecar attached to carry passenger on pillion seat or luggage carrier—**50% extra.**

If machine driven by any person other than owner—**10/- extra.**

If **named** extra rider—**5/- extra.**

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To be taken off premiums in schedule only.

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25% " " **£2** "
33⅓% " " **£5** "
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Two cycles insured—one out at one time **25%**

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BENEFITS: Death, **£250.** Loss of two limbs or sight of both eyes, **£250.** Loss of one limb or sight of one eye, **£150.** Total disablement, limited to 26 weeks each accident, **£3** per week.
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(1)				£	£	
(2)				£	£	

Owner's Name (in full).....
Address .....
.....
Occupation (if any).....
Have you any physical defect or infirmity?..... Age.....
Will cycle to be insured be used solely for private pleasure purposes?.....

If not, please give full particulars .....
Will cycle be solely driven by proposer?.....
Have you ever had your licence endorsed or suspended?.....
Are you now, or have you ever been, insured in respect of a Motor Vehicle?.....
Has any Company refused to renew your insurance or required an increased premium?.....

I declare that the above statements are true and complete.

Date..... Proposer's Signature.....

Immediate protection can be obtained by forwarding this Form, filled in, and remittance for first premium to

"THE MOTOR CYCLE" Insurance Dept., 20, Tudor St., London, E.C.4.

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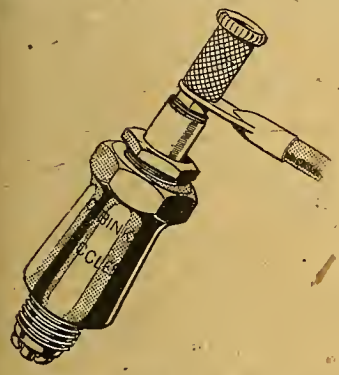
:cessories for 1920.—

Messrs. C. Binks, Ltd., Phœnix Works, Church St., Eccles, Manchester. Naturally, the chief exhibit on this and was the Binks three-jet damping rburetter. This has been described, id has many staunch adherents. Binks



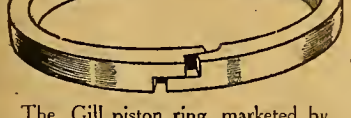
A novel plug—the Binks.

arburetters in all forms were exhibited, ncluding the racing model and three ypes of Binks plugs. In addition, ilencers and other Binks productions vere staged.

Messrs. Markt and Co., Ltd., 93-100, Clerkenwell Road, E.C.1.—We are often sked for mileage recorders which are eparate from speedometers, and motor yclists will find the gear-driven Veeder cyclometer shown at Olympia will fill their wants in this direction. This firm also exhibited the Johns-Mannville speedometer, which works on the centrifugal principle, is graduated up to 60 m.p.h., and has white figures on a black ground. The well-known long horn was also shown on this stand.

Markt's "Long" horn

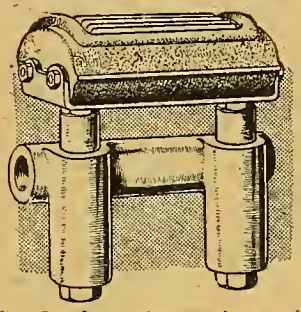
The Stanley Motor Belt and Fastener Co., 32, London Road, Bromley, Kent.—This firm not only makes and supplies a useful belt n sizes ranging from ⅜in. 1¼in., but deals n numerous accessories for belts. The Stanley belt fastener is well constructed, nd can be supplied with three different ize hooks, which adequately make up for ny adjustment to the belt caused by the ecessity for shortening through stretch, r owing to the use of an adjustable ulley. A further adjustment may be ccomplished by the use of the Stanley pare link, while yet another device is the Stanley belt fastener shield, which pre-



The Gill piston ring, marketed by Stanley Watson.

vents wear of the pulleys. It is specially designed for use with Philipson and other expanding pulleys. Quite a useful item is the box of Stanley spares, which contains a belt fastener, a spare link, and a belt shield, as well as various sizes of hooks. The company have also introduced a plain but well-made belt drill, designed so as to cut a clean hole of the correct size.

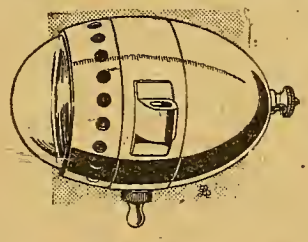
Rose and Co., 365, Foleshill Road, Coventry.—Spring footrests and footboards for standard machines have been introduced by this Midland firm which



The Roseden spring attachment for standard motor cycle footrests.

are of first-class quality and neat in appearance. The footrests are 16s. 6d. per pair, and the footboards £2 2s. A model of the former is also made in polished aluminium.

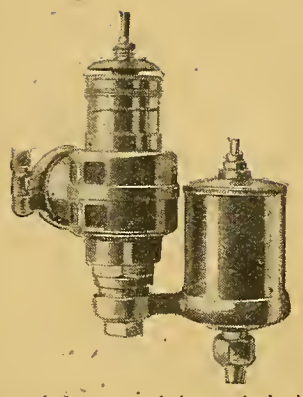
Westwood Rim and Patents, Ltd., Bordesley, Birmingham.—One of the chief advantages of Westwood lamps is that the burner is easily removable by unscrewing the base while the burner union



Torpedo-shaped lamps, such as this Westwood acetylene model, are neat and easily cleaned.

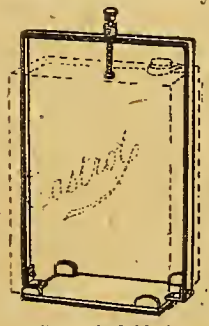
is threaded at the bottom so as to take a pump connection. This is an exceedingly useful feature, as it enables the tyre pump to be screwed on to the base of the burner and a blast of air blown through it, effectually clearing any obstruction. The lamp, which is designed to be bolted on to the number plate, has the white glass of the semi-opaque variety, which effectively distributes the light on to the numbers.

The Aston Motor Accessories Co., Ltd., Aston Cross, Birmingham.—The automobile carburetter, so highly spoken of at the present time, is shown in section; also the two-lever type. A novelty on this stand was a new control lever, which can be made to open either from right to left or left to right, and by removing a washer it can be instantly converted from a single to a double lever. The Aston Motor Accessories Company proudly boast that there is no rise in the



One of the types of Amac single lever carburetters.

prices of their goods while they are of twice the value they were previously.



The Wakefield oil tin carrier for the step of the sidecar.

Messrs. C. A. Wakefield and Co., Ltd., Wakefield House, 30-32, Cheapside, E.C.2.—Grades of oil suitable for all motor cycles, and an ingenious oilcan carrier by which the oil can be clamped to the running board of a cycle car or even clamped on to the carrier of a motor bicycle or sidecar.

The Challenge Oil Co., Ltd., Howard Works, Howard Road, N.16.—A large range of suitable oils, greases, and carbide.

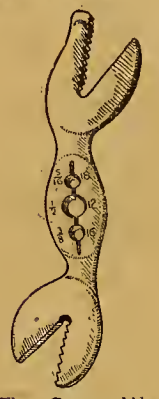
James Grose, Ltd., 4, Old Jewry, E.C.2.—The aim of every motor cyclist

Grose set of spanners; the largest has a three-inch measure stamped on. The sizes are indicated "over-flats."

should be to have a set of spanners which will fit every nut on his motor cycle. Spanners made to take a particular nut are the best to use, as they do not damage the nuts, and save both time and trouble in making adjustments. Messrs. James Grose have lately placed on the market a set of six spanners designed to take the smaller nuts on a motor cycle, which are all held together by one central screw, thus allowing these six spanners to take up very little more room in the toolbag than a single one.

Accessories for 1920.—

THE METEOR MANUFACTURING CO., LTD., 98, Tollington Park, N.4.—An interesting accessory which was exhibited

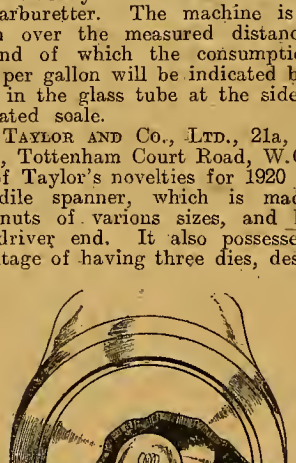


The Crocodile spanner, including a screw-plate.

The M.P.G. petrol consumption indicator.

by this firm, is the M.P.G. consumption indicator, of which there are two models, one for cycle cars and the other for motor cycles. When it is required to test the petrol consumption of a vehicle the machine is driven to the commencement of a measured mile, and the indicator is filled with petrol to the starting level indicated by an arrow. The flexible pipe located below this device is connected directly to the float chamber of the carburetter. The machine is then driven over the measured distance, at the end of which the consumption in miles per gallon will be indicated by the spirit in the glass tube at the side of a graduated scale.

H. TAYLOR AND CO., LTD., 21a, Store Street, Tottenham Court Road, W.C.1.—One of Taylor's novelties for 1920 is the Crocodile spanner, which is made to take nuts of various sizes, and has a screwdriver end. It also possesses the advantage of having three dies, designed

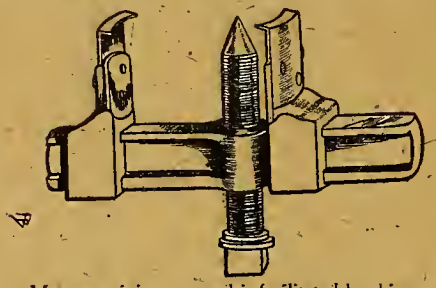


Taylor's adapter for the conversion of acetylene lamps to electric.

to take bolts of the following sizes, $\frac{5}{16}$in., $\frac{1}{2}$in., and $\frac{3}{8}$in., which should prove exceedingly useful in the case of a bolt with a burred end. Another useful accessory is an adapter made to screw into the place of the acetylene burner, so as to convert the lamp into an electric one. It is well made, easily fitted, and provided with a bayonet joint for the lamp and a bayonet joint at the base of the electrical connection.

MESSRS. POWELL AND HANMER, LTD., Cheston Street, Birmingham, were showing a large range of acetylene lamps. The chief novelty, their electric lighting set, is dealt with in another portion of this issue.

MESSRS. ERNEST H. HILL, LTD., Beta Works, Broomhall Street, Sheffield.—Some excellent examples of foot pumps and British-made horns, for which there is now an immense demand.



Magneto pinion removal is facilitated by this neat Lake and Elliot tool.

DOVER, LTD., Northampton.—Dover specialities consist of steering wheels, handle-bars, etc., covered with Doverite, which gives a beautiful black finish. Dover's signals were also exhibited in addition to motor cycle inflators.

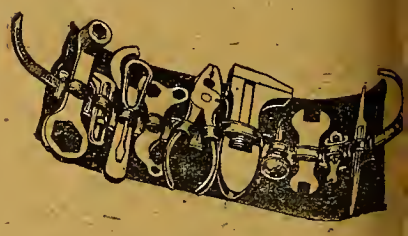
MESSRS. BEST AND LLOYD, LTD., Cambray Works, Birmingham, were showing their clever mechanical lubricator working in conjuction with their sight feed and hand pump, allowing the hand pump to be used when it is desired to give the engine an extra charge of oil. The mechanical oil pump is best fitted to the timing gear, but in many existing models it is fitted to the front end of the magneto chain case against the aluminium casing, with which it is flush-fitted. It is then driven off the end of the magneto spindle by means of a coupling. The throw of the pump may be altered so as to give more or less oil.

MESSRS. GOUGH AND CO., LTD., 180, Park Road, Hockley, Birmingham.—An excellent motor cycle saddle, the rear of which is suspended on the usual coil springs. The peak is also sprung, being provided with a leaf spring.

THE COOPER-STEWART ENGINEERING CO., LTD., 11, Broad Street, Bloomsbury, W.C.2.—Stewart speedometers have long been known to the public, and on this stand were to be seen examples of this popular and accurate instrument. The Stewart speedometer works on the magnetic principle, and is beautifully finished.

Magnetic action is employed in the Stewart speedometer.

ABINGDON ECCO, LTD., Tyseley, Birmingham.—In addition to the well-known Abingdon engines a very complete range of King Dick tools of all kinds were ex

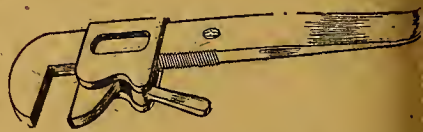


Practical equipment is a feature of the Abingdon King Dick tool roll.

hibited by this firm, which has a world wide reputation for the quality of it adjustable spanners.

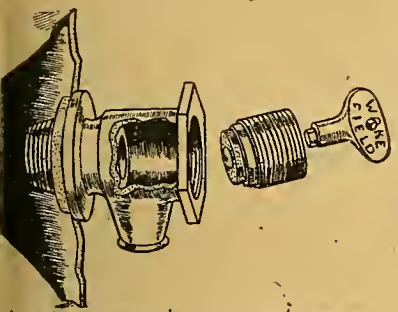
STURMEY-ARCHER GEARS, LTD., Faraday Road, Lenton, Nottingham.—Two interesting models in part section of the Sturmey-Archer two-speed and three speed gears respectively were exhibited These gears work on the dog clutch principle, and the two-speed form was shown for the first time. It is sold with o without a kick-starter. For 1919-20 a new control has been designed, which is carried on the down tube just underneath the tank, so is protected from wet, mud etc. It consists of a circular disc on the face of which are cut V shaped notches which correspond to the gear positions Another circular disc having V shaped projections machined on its face is held in position in the notches mentioned above by means of spring pressure. This disc is securely fastened to the long gear lever, which takes up a horizontal position in bottom gear, along the tank, and is thus more conveniently placed than the old gear lever carried on the box it self. The lever can be set in three different positions to suit individual taste

MESSRS. LEO RIPAULT AND CO., 1 King's Road, St. Pancras, N.W.1.—Oleo plugs for almost every type of engine were shown. One particularly fine example was included. This had a mica insulation, and was covered with a porce



Thumb operated spanner (Leo Ripault).

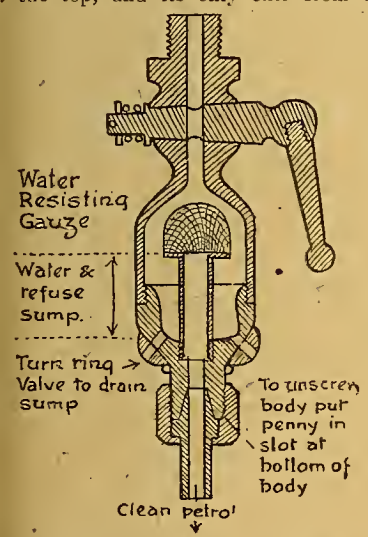
lain dome. The plug is particularly suited for high efficiency engines, and is instantly detachable by the use of the fingers only. Compression plugs and a very neat push-on high tension termina were included, and an adjustable spanner which can be instantly set to the size of nut required was shown. Another useful accessory consisted of a spark tester for shorting plugs while the engine is running. A vacuum tube is included and if the spark at the plug is satisfactory a bright blue flame is visible if, however, the plug is sooted up a small white spark only is seen.



A useful accessory for motor cycle garage men—a self-locking oil tap, placed on the market by C C. Wakefield & Co., Ltd.

The Bowden Brake Co., Ltd., Harrow oad, Willesden Junction, N.W.10.—landle-bars, fitted with Bowden levers, ontrolling the spark and throttle, the rake and exhaust lifter wires being arried inside the bar and passing rough a special lug just above the stem.

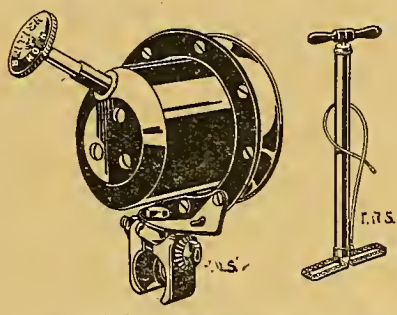
Flitten Bros., East Road, Cambridge. -The Wallis is an excellent petrol filter uitable for motor cycles. Petrol enters the top, and its only exit from the


Water Resisting Gauze
Water & refuse sump.
Turn ring → Valve to drain sump
To unscrew body put penny in slot at bottom of body
Clean petrol

This section of the Wallis petrol tap and filter reveals its ingenious construction.

hamber of the filter is through the ome-shaped gauze at the top of the mall tube, consequently before the petrol an flow through, the chamber or sump as to be full of the liquid, and the water nd refuse is collected t the bottom. The kelihood of the gauze e i n g choked is ex- remely small owing to s position, and it would ppear that the filter eed not be taken down e r y frequently for leaning purposes, as at he base of the sump is knurled ring ground n to the base thereof n which are two holes egistering with two oles in the sump, so hat if the ring be u r n e d opposite the rrow on the filter body both holes will allow water or solid particles to escape.

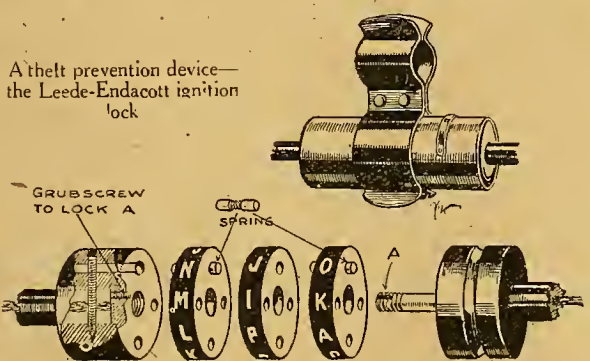
The Mohawk Cycle Co., Ltd., Alexander Road, Hornsey, N.—In addition to the Young engine, the two-stroke cycle attachment which has already been dealt with, the firm exhibited lamps, horns,



Two F.R.S. specialities—the British mechanical horn and a tyre pump with folding foot.

accumulators, handle-bar mirrors, etc. There was a fine display of F.R.S. lamps, both electrical and acetylene.

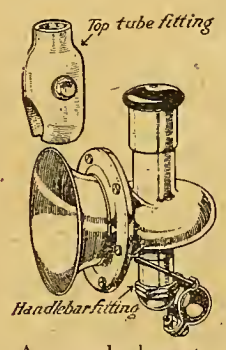
Distribution, Ltd., 7, Grape Street, Shaftesbury Avenue, W.C.1.—Any device which will effectually baffle the motor cycle thief is well worthy of mention in these pages. An ingenious attempt to render a motor cycle incapable of being started is the Leede-Endacott ignition lock. This consists of a small letter lock carried in a compact case and clipped to any convenient part of the frame. When it is required to break or make the circuit, it is only necessary to undo a small clip and slide the switch forward, when it is exposed to view. It consists of an ignition switch interposed at any convenient point in the high-tension cable, and may be had suitable for single, twin, or four-cylinder motor bicycles. It comprises four separate portions, the ends of which are connected to the ends of the high tension cable by means of long screws which penetrate the cable core, and three internal discs on which the letters are printed. Two of these discs allow the contact points to be placed in four different positions, so that at any time the combination of letters required to switch on may be changed. One of the ends is provided with a long brass spindle, on which the discs are free to rotate, and this is held in position by the small grub screw shown in the drawing. The spring contacts which engage with the brass contacts are shown separately.



A theft prevention device—the Leede-Endacott ignition lock

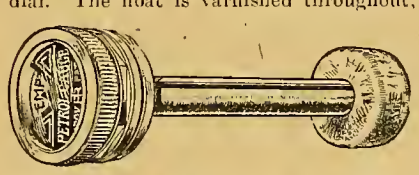
Leo Swain and Co., 237-9, Deansgate, Manchester.—Amongst a general collection of first-rate tyre sundries, the Leosco Non-Nip tube calls for attention. By virtue of a patent method of construction this tube (illustrated on another page) assumes the shape of the outer part of the cover when deflated either accidentally or otherwise. The arrangement prevents the damage which occurs to normal type inner tubes, which drop into the rim when punctured and deflated, and are there easily trapped in the tyre bead.

The Cowey Engineering Co., Ltd., Archer Works, Kew Gardens, Surrey.—In addition to the horn described in the issue of November 20th, the Cowey Engineering Company were showing their new speedometer, which works on an entirely new principle; in fact, two principles are involved in its construction, the centrifugal and the impulse system, which latter system has been the company's speciality for many years. There are two crescent-shaped segments connected by light flat springs, and in the centre of each of these there are two other segments forming a perfect crescent. These are connected to the drive, and as the driven pinion rotates, it transmits the power through a flexible shaft consisting of numerous short links to the segments, which, as the speed increases, tend to fly outwards, carrying, of course, the smaller crescent-shaped segments with them, which, as they fly round, hit a short shaft connected to the impulse movement, which drives the indicator needle. The whole system is extremely interesting, and we hope to deal with it at greater length in a future issue.



An exceedingly neat mechanical horn, the Cowey.

The Coventry Movement Co., Ltd., Spon Street, Coventry.—A neat little petrol gauge, consisting of a float and a dial. The float is varnished throughout,



Petrol and oil level indicator by the Coventry Movement Co.

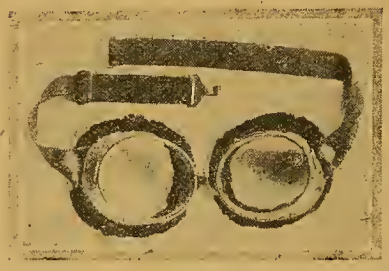
and is unaffected by benzole. The hand on the dial is connected to a tube in which there is a spiral groove cut, which rotates inside the main tube of the gauge.

Messrs. S. Smith and Sons, Ltd., 179-185, Great Portland Street, W.1.—In addition to their electrical accessories, described elsewhere in this issue, we noticed an extensive display of handle-bar watches, productions for which this firm has long been famous, motor cycle

Accessories for 1920.—

head and other lamps, horns, and the well-known Smith speedometer, which works on the centrifugal principle.

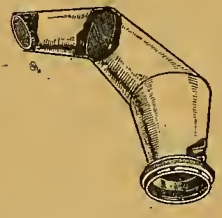
TRIPLEX SAFETY GLASS CO., LTD., 1, Albemarle Street, W.1, have intro-



A sample of goggles fitted with Triplex safety glass.

duced a pair of goggles fitted with Triplex glass, which should specially appeal to motor cyclists of either sex, as in the event of a fall there is no danger of the eye being damaged by flying glass splinters. Triplex safety glass has amply proved its worth on war service.

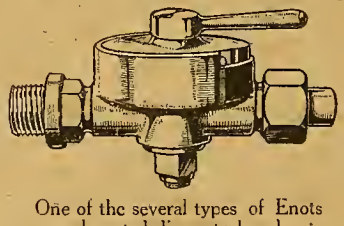
WALLIS, SUTTON AND WILSON, Irving Street, Birmingham.—A handy petrol filter, which can be easily carried by every tourist, should have a ready sale.



A petrol pourer with two filtering gauzes. It screws directly on to the stopper of the tin, and is known as the "Ideal."

Such an article is the "Ideal," illustrated herewith. Being provided with a union nut, it can be screwed on a petrol tin in any position, and contains two gauzes impervious to water. Thus, it enables the tank to be filled quickly and without waste. Made in brass, this useful little article is sold at 5s.; a cheaper model, in tin, costs 3s. 6d.

MESSRS. BENTON AND STONE, LTD., Bracebridge Street, Birmingham.—In addition to their cork-faced petrol tap, this firm was showing an excellent collapsible funnel and a burglar-proof petrol tap. The latter possesses several push buttons round its exterior. Opposite to

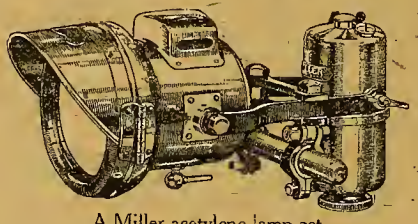


One of the several types of Enots cork seated disc petrol cock.

each of these is a letter, and unless the correct buttons are depressed, or if more than the two correct buttons are depressed, the tap when once shut cannot be opened. We also noticed an ingenious valve spring compressor working on the lazy-tongs principle.

MESSRS. HANS RENOLD, LTD., Burnage Works, Didsbury, Manchester, were showing various types of motor cycle chains, of both the silent and the roller variety. The popularity of the Hans Renold chain is well deserved, and they were showing on their stand a photograph of practically every make of motor bicycle which is equipped with their production. The latest chains are being fitted with an even further improvement in stud material.

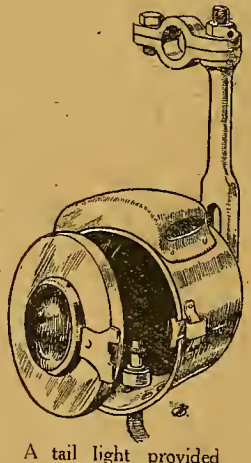
MESSRS. MILLER AND CO., LTD., Miller Street, Birmingham.—A large range of



A Miller acetylene lamp set

acetylene lamps. We were particularly impressed by the handsome little lightweight set, plated, complete, and fitted with a black finished bracket designed to clip on to the handle-bars. Electric equipment is described elsewhere.

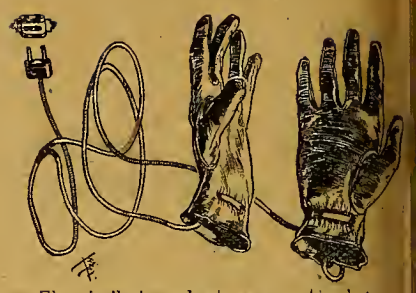
MESSRS. HOWARD S. COOKE AND CO., 116, Northwood Street, Birmingham.—Some excellent Steatite plugs were displayed, and, in addition, a new plug with mica insulation and detachable centre was shown for the first time. In this plug there are no loose parts except the washer. Cooling fins are turned on the body. Another H.S.C. feature was the quickly detachable weatherproof terminal, in which device the high tension wire can be attached to the terminal with extreme ease. On the same stand the R.P. variable pulley was shown. This is a variable pulley gear, in which the tension of the belt is kept constant by an eccentric motion of the internal geared pulley; fifteen ratios are provided for by notches on the quadrant.



A tail light provided with a reflector—the Miller.

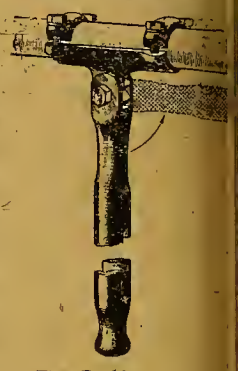
THE COOPER-STEWART ENGINEERING CO., LTD., 11, Broad Street, Bloomsbury, W.C.2.—The Stewart speedometer has long been known to the public, and on this stand was to be seen examples of this popular and accurate instrument. The Stewart speedometer works on the magnetic principle.

R. V. SIDECAR CO., 92, Humber Avenue, Coventry.—A neat sidecar stand



Electrically-heated gloves, marketed by Brown Bros.

which may be readily fitted to any standard chassis of tubular construction is manufactured by this company. It is attached to one of the main chassis tubes by a four-bolt clip, and contains a spring-loaded plunger, whereby it is retained either in or out of action. This device should be very useful, also, in the case of a sidecar which is often detached from the motor cycle, as by fitting it on the chassis near the chain stay attachment, it would form a support, and so be of considerable assistance in handling the sidecar when it is separated from the machine.



The R. V. sidecar stand.

The Leosco non-nip tube, showing the position it assumes when deflated.

TRADE EXHIBITS AT OLYMPIA.

At Olympia last week there were a large number of exhibits which, while not of great interest to the motor cyclist, were of goods which play an important part in the construction and equipment of their machines. We refer to what are known as the "trade" exhibits, included for the benefit of the manufacturers of motor cycles. Perry and Co. were showing chains, as were the Alfred Appleby Chain Co. A. R. Atkey, of Nottingham, showed tool equipment; the British Hub Co., hubs for motor cycles and cycle cars; W. Canning and Co., plating and polishing equipment; the Hoffmann Manufacturing Co., ball and roller bearings; Accles and Pollock, box spanners and tubes; J. A. Ryley, spring clips; the Stonehouse Works, brake equipment; and Alfred Smith, oil cans, pump clips, etc. In addition, there were several large wholesale houses, like Hobday Bros. and the Manufacturers' Accessories Co., showing lamps, horns, carburetters, and general accessories.

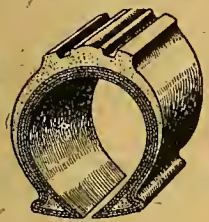
TYRES AT THE SHOW.

A Description of the Motor Cycle Tyre, Belts, and Allied Accessories.

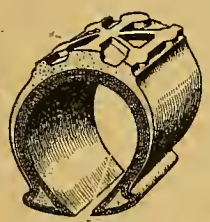
AVON.

wide range of Avon covers was n in all motor cycle sizes. Three- nd combination treads, together with led and the well-known Stonehenge re tread with transverse grooves are made in various sizes and weights. rests, rubbers, brake blocks, inner

von Stonehenge.



Bates.



Clincher Dreadnought.

s, and generator tubing are also ngst the products of the Avon ber Co.

BATES.

his Leicester firm has decided that variation from its previous range ecessary. A speciality is made of oughly sound and heavy covers for -powered machines. Two patterns tread are principally favoured, one g of the well-known form having a inuous rounded centre portion with ridges slightly undercut function as sideslip pre- ers while the other has outer ribs with a central of long rectangular studs. s tyres have been success- used in South Africa, the rity of finishers in the great nnesburg - Durban Race ng successfully completed arduous event on them.

CAPON-HEATON.

xcellent quality is a characteristic of Capon-Heaton inner tubes, which e shown amongst a varied assortment tyres and general rubber manu- ures.

CLINCHER.

o change has been made in Clincher adnought, A-Won, and De Luxe tyres latter being supplied with heavy extra heavy casings), nor in the ncher Flexis belts. The Dreadnought De Luxe tyres earned a very en- le reputation for the manner in ch they performed on W.D. motor es. Scooter tyres are being manu- ured by the North British Rubber Ltd., and we noticed an ex- lingly robust model of this type in standard 16×2⅜in. size.

CLIPPER.

lipper motor cycle covers and tubes made in all standard sizes and pat- ns.

DUNLOP.

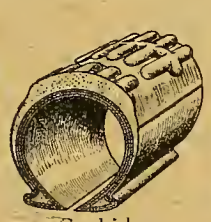
s one of the pioneer firms in the umatic tyre industry, the products of Dunlop Rubber Co. are always of interest, even though no change in de- sign or construction have been found necessary. The various tyres manufac- tured are the result of long experience, and the well-known tread with its double row of large staggered studs has proved its worth in innumerable competitions. There are also light sidecar, heavy com- bination steel and rubber-studded and three-ribbed treads.

Scooter wheels too are made by the Dun- lop Co., and a neat sample of the disc type with a detach- able rim was noticed. Many other samples of Dunlop specialities were seen at the Show, such as belt punches, tyre levers, repair outfits, and lastly, but by no means the most un- important, the round-topped Dunlop belt.

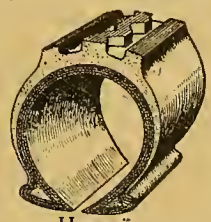
GOODRICH.

These American tyres are built up on a heavy casing, reinforced beneath the point of road contact. Skidding is guarded against by the Safety Tread pat- tern, which consists of thick parallel rubber bars longitudinally disposed, with a crossbar on each series of three.

Dunlop.



Goodrich.



Hermetic.

HERMETIC.

Specialities of this name are shown by the Self-sealing Rubber Co., of Bir- mingham. A heavy motor cycle cover is being made, known as the Z Peerless. It is moulded on a heavy four-ply casing, and is manufactured on motor car lines. A 28×3in. model is being introduced, suitable for American size rims. Amongst the large selection of patches, rubber- faced canvas for cover repairs, and motor cycle belts, we noticed a decidedly prac- tical horn bulb. This is reinforced with canvas insertions and additional rubber moulded at the neck, where vibration usually has such deleterious effects.

HUTCHINSON.

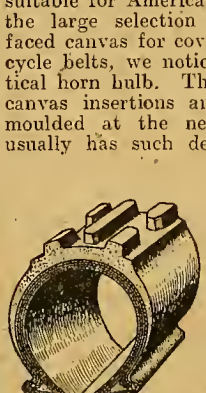
Studded and the popular three-ribbed treads are used on Hutchinson tyres, and it is interesting to note that Pike, on the recent Inverness-Land's End run, used tyres of this make on his O.K.-Union machine.

JOHN BULL.

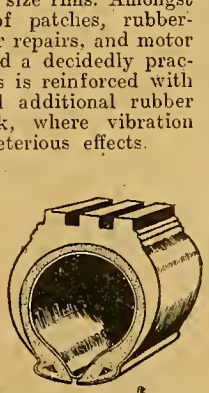
The Leicester Rubber Co. exhibited a comprehensive range of John Bull tyres and accessories, including their famous cross groove and rib-stud covers, which are extremely heavy and suitable for powerful machines. While somewhat similar to a three-rib tyre, the rib-stud has its ridge interrupted at intervals, so that long studs are formed. A lighter and cheaper cover may be made early next year. Amongst other things which are manufactured under the John Bull name are the new pattern cushion grips for handle-bars, which were very popular amongst competitors in the Six Days Trials. Riders of belt-driven machines will be interested in a new belt fastener, which is fitted with leather pads at the sides of each end, thus preventing click- ing on the pulley and eliminating wear of the belt ends. Used in conjunction with the John Bull deep drive belt, an exceedingly efficient drive should be obtained. Also amongst items not to be overlooked is Mend-a-Tear, the handy repairing material for rents in all kinds of fabric, such as raincoats, overalls, or clothing of any description.

KEMPSHALL.

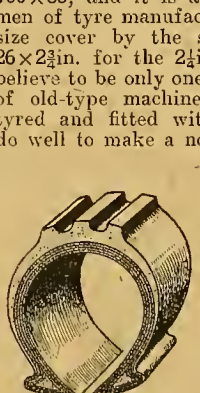
Having a fabric base of special construction and a tread justly famous for its anti-skid and non-slip properties, the Kempshall tyres have earned a truly famous reputation. Their successful use on the machines of the winning teams in four Six Days Trials is greater testimony to their ex- cellence than anything we can say. All standard motor cycle sizes are offered; a new oversize cover is being made for 650×65 mm. rims, and it should be very acceptable to owners of high-powered outfits; the dimensions of this cover are 700×85, and it is a really sturdy speci- men of tyre manufacture. Another over- size cover by the same makers is the 26×2¼in. for the 2¼in. rim, and this we believe to be only one of its kind. Riders of old-type machines which are under- tyred and fitted with small rims would do well to make a note of the above.



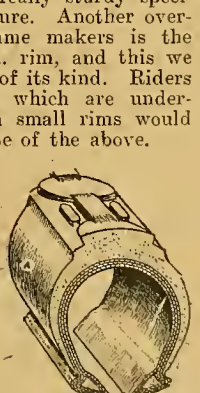
John Bull Rib-Stud.



Hutchinson 3-rib



Reflex Clipper "Ideal."



Kempshall.

Tyres at the Show.—

KERRY.

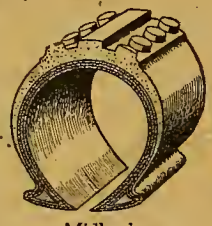
Marketed by the East London Rubber Co., the Kerry motor cycle tyres have long held a name of repute for excellent quality. They have a heavy tread of satisfactory anti-skid properties and are built upon various weights of canvas casings. Suitable inner tubes are also supplied, and a comprehensive range of sizes is manufactured.

MACINTOSH.

Only one motor cycle tyre is at present manufactured by Chas. Macintosh and Co., Ltd., but another heavy moulded pattern will shortly be placed upon the market. The tyre which was exhibited is known as the Anti-skid, and is of particularly robust construction, with a tread composed of two ribs enclosing a series of long rubber studs, which are of peculiar shape, resembling obtuse-angled V's, with one arm parallel to, and the other crossing, the tread at an angle.

MAX.

Several motor cycle tyres are manufactured by Chas. Cuthbe and Co., Ltd., amongst them being the Cycar, having a heavy grooved tread with a central row of elliptical studs; the Combination, having T shaped rubber projections combined with steel studs; and the Mileage, which has a car type of cross-grooved tread. The same company also manufactures, amongst other rubber accessories, the Silverstreak belt, which is built around a canvas core, each layer of which is insulated from the next by an appreciable thickness of rubber. We noticed that a great variety of repair outfits were put up by this firm, and it was evident that the practical rider's requirements had been studied, since generous supplies of solution and also some excellent long strip patches, suitable for dealing with bursts and slits, were included.



Midland.

MIDLAND.

A standard range of covers, inner tubes, and belts is manufactured by the Midland Rubber Co., Ltd., of Birmingham. Three-ribbed treads and also a pattern with a central rib between two rows of studs are applied to the four-ply Midland casings, while the two and three-ply Britannic covers are of the standard studded pattern. Inner tubes are, of course, supplied, and attention must also be drawn to the excellent belts offered under the Midland name.

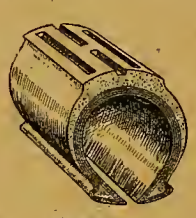
MOSELEY.

The products of this Manchester house are undergoing no change, their success in the past having fully justified the reputation gained during the makers' long experience of tyre manufacture. Various popular tread designs are made, and an extensive range of sizes and weights is available.

PALMER.

All the usual range of Palmer tyres, together with endless and butted tubes,

Kerry.



Macintosh.

are being manufactured by the Palmer Tyre, Ltd., and, in addition, a 16×2⅜in. scooter pattern has been added. The last-mentioned is of the three-rib type, on a four-ply canvas casing. Owing to the success of the Palmer Cord Combination cover in the smaller sizes, a 28×3in. model has been added to the list; the tread has two outer ribs of solid rubber and a central row of steel studs, and is admirably adapted to the heavy side-car machines which are now being fitted with this size and section. In addition

Moseley.

Palmer Cord.

to the well-known Cord tyres in the standard sizes, various cheaper patterns are made on different thicknesses of canvas casings, and they are suitable for all types of motor cycle from the light-weight solo machine to the heavy passenger outfit.

PEDLEY.

Every variety of accessory suitable for the motor cyclist that can be made in rubber is manufactured by J. Pedley and Sons, of Birmingham. One of the special lines is the Pneumatic Handle-bar Grip, which is supplied complete with the necessary fixing tape for attaching to the bars. It gives a particularly flexible and comfortable grip w eliminates the greater portion of vibration which is not absorbed by spring forks. Other lines are thre tyres in light, medium, and h weights, and a full range of belts, hubs, and motor cyclists' weather suits are also offered. The Pedley t are extremely sturdy, and, although are not cheap in price, their servic such that true economy is the ri of their selection. Belts also manu tured by this house are superio quality, and per excellently on ably-geared mach

Max.

RICH DETA ABLE TUBI

These excellent tachable tubes, w incorporate handiness of butted tube with advantage of an less air passage, shown by the Thames Rubber Leather Co. Having been many y on the market, they have proved t efficacy many times, both in private and in competitions. Although are so well known as almost to need detailed description, it may be wel remind the reader that the joint of tube is made by means of thickened slightly "undercut" rims at the of the tube. These are smeared wit lubricant provided, one inserted wi the other, when the internal pres after inflation h the joint.

Pedley.

ROBERTS.

A great variety tyre accessor is manufactured Alfred Roberts Sons, Ltd., and range should gre interest the m cyclist. Excel repair outfits made up, also handy boxes of du patches and both inside and outside gaiters. The latter are clipped u the bead, and form a most useful for any rider who undertakes journeys, or who runs his covers to state of absolute breakdown.

ROM.

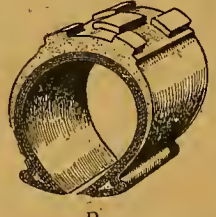
Large studs of rectangular form, rubber bars, and a combination of latter with steel studs comprise the t patterns of Rom tyre treads. T covers are extremely heavy, and have excellent thickness of rubber where is most needed. Powerful canvas cas are used, and in the round-base voitur sizes the driver of a heavy three-whe will find that he has a sound investm

WOOD-MILNE.

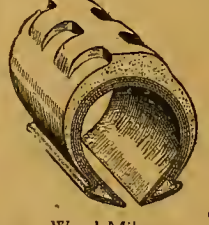
An advantage of the Wood-M tyres, in both Combination and Key- patterns, is that while they presen continuous surface in contact with road, a practical anti-skid design is corporated. Unlike many firms, makers are laying themselves out for requirements of the scooter manu turers, 16 and 18×2⅜in. sizes being offe

Thames.

Redstreak.



Rom.



Wood Milne.

C 76

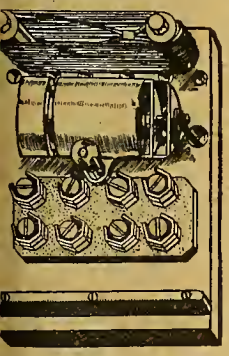
Electrical Equipment at Olympia.

A Short Survey of Lamps, Magnetos, and Plugs.

ADVANCING years and an increasing love of comfort lead one to seek with deep interest for anything that can ıooth the way of the motor cyclist, and ld to the ease and pleasure of riding. ıll electrical equipment has arrived in e car world, and to go back upon its lights is unthinkable. Modern progress ints towards the ultimate achievement a similar position also in the motor cycle world.

P. and H.

In surveying the excellent variety of ectrical equipment in the Gallery, one turally considered whether, by the time l desirable items had been fitted to ıe's machine, it would be grotesquely er-burdened. On the stand of Messrs. owell and Hanmer, however, a 4 h.p. ouglas was shown fitted up with their ectric lighting outfit, the whole equipent being remarkably neat and incon-icuous. The dynamo is fitted in front low the down tube, and driven by a hittle belt from a pulley on the outside the flywheel, and the accumulator box ıd special junction box are located, the one in front and the other behind the seat tube. The dynamo, it will be recollected, is fitted with a very ingenious patent clutch, which ceases to drive automatically when a certain predetermined output has been exceeded. A feature of this lighting set is the neat arrangement of the combined ammeter and vitch on the top tube, the latter affordg positions whereby either full light dim light may be used.



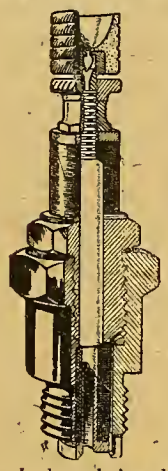
Internal arrangement of the P. and H. accumulator junction box.

Lodge.

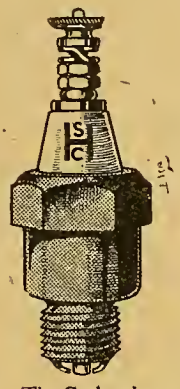
Of the full range of Lodge plugs shown Messrs. Lodge Plugs, Ltd., the most teresting is naturally the new model .E.P. priming pattern. The model, hich is made specially for motor cycles, is very small and neat, and is lapted either to replace or to supplement the usual sparking plug, and may so be used in the position of the compression tap, its length being such that will even fit in under the top tube of ost vertical single-cylinder machines. he construction is simple; the priming alve can be opened easily by hand, and not likely to leak. The standard model 3 Lodge plug, which is made in two ieces only, and can be very easily taken part for cleaning purposes, also naturally ppeals strongly to those who prefer a lug which can be readily dismantled and eaned when occasion arises.

Miller.

On the stand of H. Miller and Co., Ltd., was exhibited their new patent self-regulating dynamo, which is another welcome addition to the number of neatly-designed and readily adaptable instruments for motor bicycle use.



The Lodge priming plug.



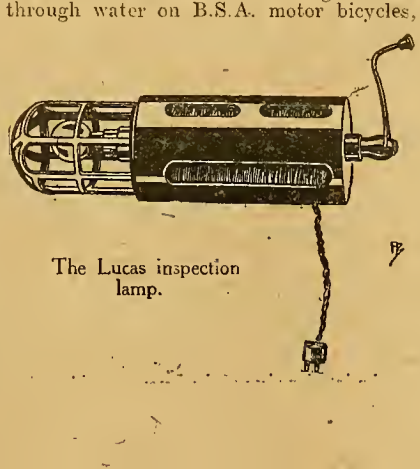
The Cooke plug.

Smith.

A six volt set, designed for sidecar use, including three lamps and an electric horn, was shown by S. Smith and Sons, Ltd., adapted to a 6 h.p. Blackburne and sidecar. The dynamo fits neatly in front of the front down tube, whilst the accumulator box is carried on the left footboard, and the electric horn is mounted on the front stay connecting the sidecar with the motor bicycle. We were given to understand that the makers are still experimenting with these sets, and modifications in design may be expected in future patterns. The dynamo is of the self-regulating type, and a neat design of centrifugally controlled cut-in is incorporated in the machine.

E.I.C.

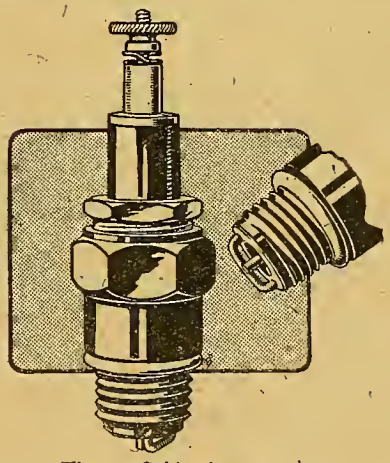
Passing further along, one next arrived at the stand on which E.I.C. magnetos in considerable variety were displayed. It will be remembered that these magnetos have performed some very remarkable feats of endurance in being driven through water on B.S.A. motor bicycles, which tests were carried out quite independently of the makers of the magneto, who had no special intention of guaranteeing that their machines would spark under water. The principal difference in the various types made by this firm is in the base, which is altered to render the machines adaptable to different makes.



The Lucas inspection lamp.

Sphinx.

One could not pass by the Sphinx stand without being arrested by the very remarkable and admirable scheme of decoration, which was suitably set off by an enormous scale model of the Sphinx sparking plug in the centre of the stand. The firm make sparking plugs in great variety, claiming that they can provide the necessary ignition point for every kind of machine, ranging from the smallest scooter to the largest tractor. Two new designs are now upon the market, differing only in the nature of the material used. The feature of this plug, the Bar-type, is the design of the firing points, which are so formed as to give the hottest possible spark when the magneto is running slowly and its impulse is at its weakest. The two models are the "Steatite," which is the general purpose plug, whilst a mica insulated type is recommended to be used where excessive heat or vibration is involved.



The new Sphinx bar type plug.

Cooke.

Upon the opposite side of the Gallery one next perceived a very full and complete range of the Cooke sparking plugs. In this case, also, the makers provide a plug for every form of vehicle from the smallest to the largest, and in great variety as regards length of body and length of screw thread.

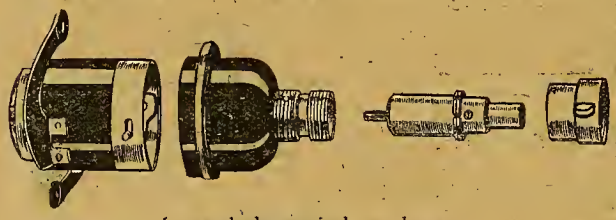
M-L.

Another exhibit which arrests the attention of the electrical enthusiast was that of M-L magnetos, and the merely curious onlooker with no special interests was invited to light his cigarette at the flood of sparks which were being poured

Electrical Equipment at Olympia.—forth from one of these machines running on this stand at a speed of 3,500 r.p.m. The testing of magneto armatures was also displayed on this stand, the standard test being carried out at 15,000 volts and a frequency equivalent of 2,000 sparks per second, conditions the severity of which at the present time, it may be remarked, are never even approached in ordinary running. One special feature of these machines is the design of the condenser, in which rectangular mica plates are used; also the very neat and compact little boxes of spare parts which were exhibited could not fail to attract the attention of all those who seek to equip themselves against every possible contingency.

Oleo.

All motor cyclists of long experience are familiar with the Oleo plugs, and the latest designs shown at Olympia displayed still further advance on the well-known reliability of these old friends. The Oleo weatherproof terminal is particularly neat and handy, and provides an instantaneous method of connection to any plug fitted with a spigot end. Particular care has been taken to make it proof against vibration. The Oleo motor cycle plug, No. 2, is guaranteed to be gas-tight, as is



Lucas single terminal rear lamp.

tested to withstand a pressure of 200 lb. per square inch in every case.

Lucas.

The principal attraction on the stand of the Lucas Electrical Co., Ltd., is, naturally, the combined lighting dynamo and magneto, which is a concentration in one compact machine of two entirely separate instruments. By swinging aside the strap over the commutator cover the dynamo may be instantly withdrawn intact from the machine, the magneto portion of which remains and acts independently. Thus, if it is desired to mount the dynamo separately from the magneto such an arrangement is still possible with this combination. The complete Magdyno set for sidecar use formed a very attractive exhibit. Also shown was the full range of the Thomson-Bennett magnetos, a particularly neat and attractive example of which is the Midget single-cylinder magneto, intended especially for lightweight engines up to 2½ h.p. The question of weight in electrical equipment, it may be added, is one which is naturally deserving of special study, since the tendency for a long time has been for the weight of motor bicycles to go up, owing largely to the somewhat elaborate equipment which is now demanded. Those who favour the lightweight look eagerly for examples of electrical equipment in which weight has been reduced, as in this case, to a minimum.

Hunt's handle-bar magneto cut-out.

C.A.V.

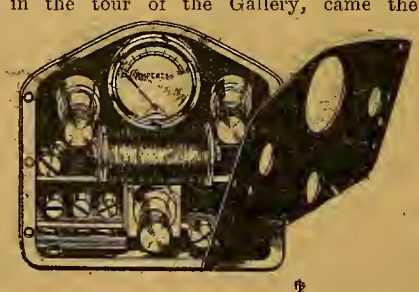
Perhaps the most cheering exhibit in the whole Gallery was that of the C.A.V. magnetos. A really large number of these instruments was displayed upon the C.A.V. stand, truly suggestive of the mass production which the firm is undertaking. Twelve of these magnetos were shown running, and a thirteenth delivering a large number of sparks round the circumference of a revolving ring. A new motor cycle type of head lamp with a special aluminium bracket is also being made by this firm, which will maintain the admirable reputation already achieved by its products. The new C.A.V. magnetos are of the single magnet type and totally enclosed. The utmost care has been taken to make it impossible for water to enter, and either of the two latest designs is guaranteed to continue sparking under water. The carbon brush holder is worthy of special attention, the holder and terminal being formed in one piece, thus ensuring a secure and absolutely waterproof electrical connection.

Xl'All.

Xl'All detachable plugs were shown in full range on the stand of the manufacturers, Messrs. Xl'All, Ltd., Hall Green, Birmingham. The features of this design are that the central electrode can be removed and cleaned with great expedition. A large insulating surface is provided by the porcelain, thus obviating the chances of shorting in wet weather. Three different designs of electrode are manufactured, one being for general purposes, another recommended for use in high compression and hot running engines, whilst the third is intended for cool running water-cooled engines.

Hunt.

Last, but by no means least in the matter of electrical accessories displayed in the tour of the Gallery, came the



An interior view of the Lucas switchboard.

stand of Messrs. A. H. Hunt, on whic an exceedingly interesting range equipment was shown, including not few real novelties. We are asked state that this firm is moving into larg works, and that there will be a chan of address after Christmas, the ne address being H.A.H. Works, Tunst Road, Croydon. The well known ar proved Hellesen hand lamps were show together with a full range of Helles dry batteries. Complete electric lighti sets with either accumulators or d batteries are also made in variety adap able to any type of solo machine or sid car outfit, but to one interested in au to the easy maintenance of a machin perhaps the most interesting items exh bited were the H.A.H. wiring sundri and the new variety of insulating ta of only ¼in. width. How often has th writer not found the standard tape t too cumbersome for some finicky job th had to be done? The new handle-b or top tube lamp switch, with its simp positive screw contact, is also a ve practical innovation.

F.R.S.

Though not a dynamo set in the tr sense of the term, a very simple ligh ing outfit is supplied by the makers the well-known F.R.S. lamps. Exce current from the magneto is employe

Hunt's plug protector and terminal attachment.

and, after passing through the necessa damping arrangement, lights a head a tail lamp. The lamps are of ne and sound construction, but somewh less bulky than those of the avera dynamo set. The necessary coil housed in a neat black finished bo which may be attached to the tank ra or other convenient spot. The box al contains a small accumulator to provi light when the machine is stationar Four-volt bulbs are fitted, but a tw volt accumulator is supplied, so that t light produced when the engine is n running is dimmer. One of the adva tages of this system is that no mechanis or driving gear is needed, and it is on necessary to find room for the sma accumulator box. The price of the hea and tail lamp, three-way switch, accum lator, coil, and all necessary fittings f a motor cycle set is £6 3s. 6d.

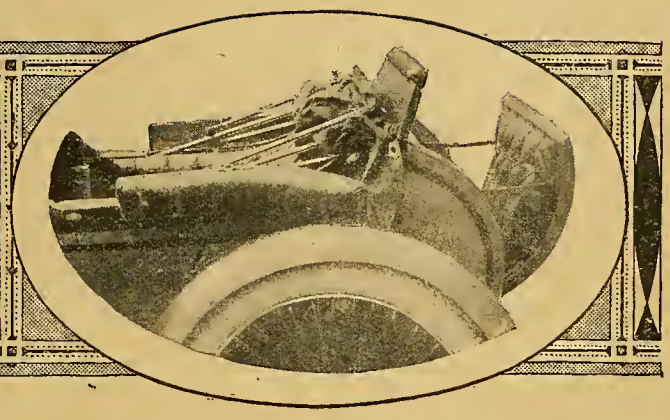
B.L.I.C.

Eight types of the B.L.I.C. magne were exhibited by the British Lighti and Ignition Co., which, incidentally, a branch of Vickers, Ltd. The mode shown included those suitable for ligh weight single-cylinders, lightweight fl twins, large V twins,

Having had enormous experience magneto manufacture, and possessing works organisation extending back to t earliest days of magneto manufactur this company is in a very favourab position, not only in regard to productio but to repair work, which it also unde takes.

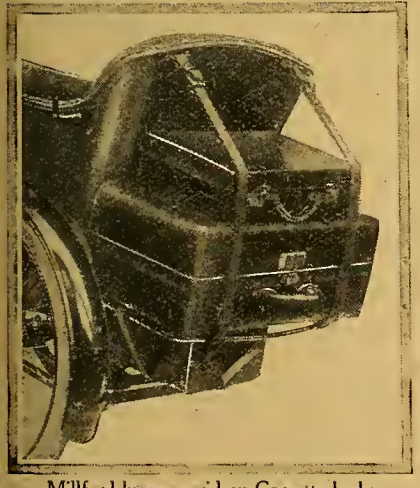
MODERN SIDECAR DESIGN.

A commentary on the constructional details of passenger attachments at the show.



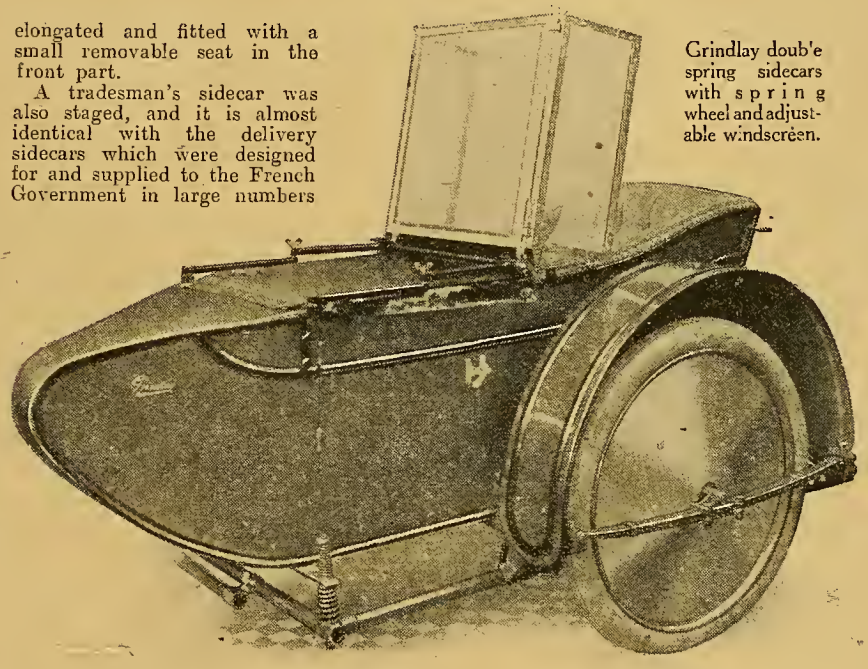
MILLFORD.

MILLS-FULFORD., LTD., Crown Works, Coventry.—Mills-Fulford, Ltd., are one of the oldest established sidecar manufacturing firms in this country, and they exhibited an extensive range of all types. The well-known Millford light chassis, while retaining the straight axle, also permits quite a low body position. To those who possess high-powered machines and desire the utmost luxury and strength in the passenger attachment, the *modèle de luxe* will especially appeal. All the chassis tubes of this sidecar are duplicated with the exception of the front cross member, while the diagonal stay from the seat lug of the machine to the axle is adjustably secured on the latter by a double clamp which divides the stresses equally between the two tubes. The coachwork on this model is of the most elaborate order, and the upholstery is edged with aluminium beading. Luggage accommodation, morever, is provided for in a remarkably neat and unobtrusive manner. Behind the seat the bulbous back of the body is hinged and may be lowered and secured in a horizontal position by the same straps which are used to hold a suit case or whatever other luggage may be carried. When out of use the existence of this luggage carrier is quite unsuspected. Amongst other models shown was the "Family" double-seated sidecar, which follows the general lines of the Corvette, but is suitably elongated and fitted with a small removable seat in the front part.



Millford luggage grid on Corvette body.

A tradesman's sidecar was also staged, and it is almost identical with the delivery sidecars which were designed for and supplied to the French Government in large numbers during the war. The body is not particularly attractive in appearance, being merely a large wicker box with a removable lid, but the carrying capacity is exceptionally great.



Grindlay double spring sidecars with spring wheel and adjustable windscreen.

GRINDLAY.

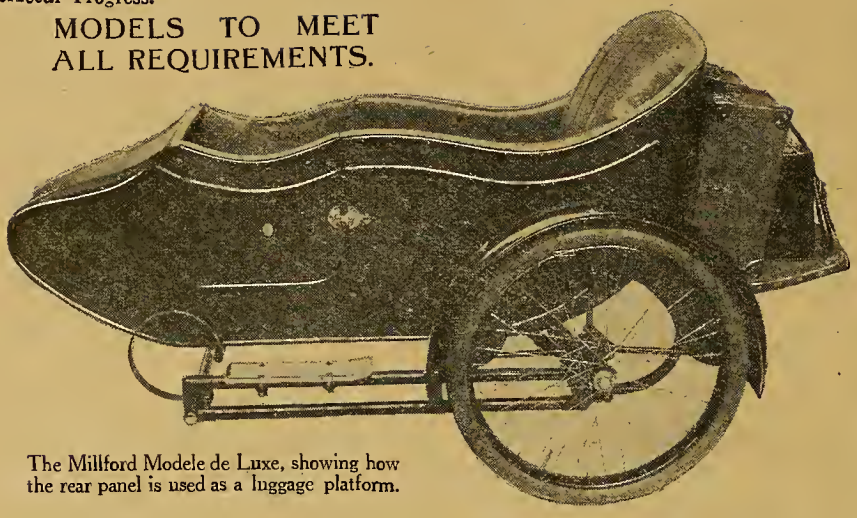
GRINDLAY SIDECARS, LTD., Spon End, Coventry. — Six Grindlay bodies were shown, and five of these embodied the well-known spring suspension of this make. The wheel is carried between two long semi-elliptic springs, these being shackled at the rear. By this method all unsprung weight is eliminated except that of the wheel itself. The standard bodies are sufficiently roomy easily to accommodate a full grown passenger in addition to a child, and, owing to the efficient system of springing, no excessive strain is thrown upon the motor cycle or the connections by such extra loading. A new type of luggage carrier has been fitted to the body in place of the one formerly attached to the rigid part of the chassis, and a simple and convenient petrol can grip is located under this. One especially luxurious body was fitted to a Harley-Davidson outfit, and this has a mahogany framed windscreen with folding side panels, which may be adjusted at various angles and inclinations across the front of the sidecar by means of the double-jointed arms on which it is supported. The upholstery on this model was worthy of the highest class of car, being carried out in a cord cloth beautifully patterned in grey and brown.

SANDUM.

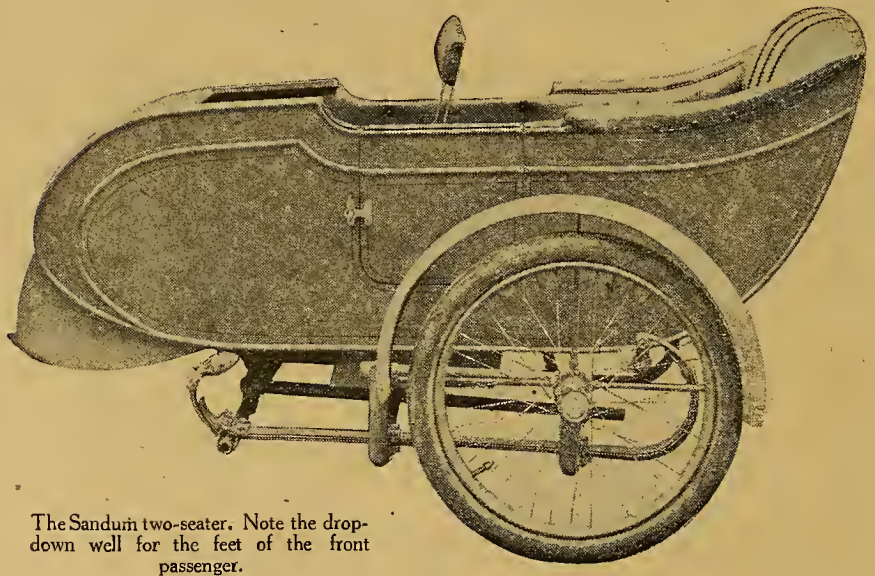
THE SANDHAM ENGINEERING CO., 336, Gray's Inn Road, W.C.1.—Double-seated sidecar bodies are a speciality of the Sandham Engineering Company, a special type of chassis being manufactured. This is of underslung construction, and has two sets of C springs, one before the other, so that there is a bearer bar underneath each passenger. Since a double-seated sidecar is not always fully occupied, the firm have designed a shorter body which is readily convertible to the single-seated model. The accommodation is almost equally as good as in the larger one, owing to the fact that the dash over the front seat is cut away

Sidecar Progress.—

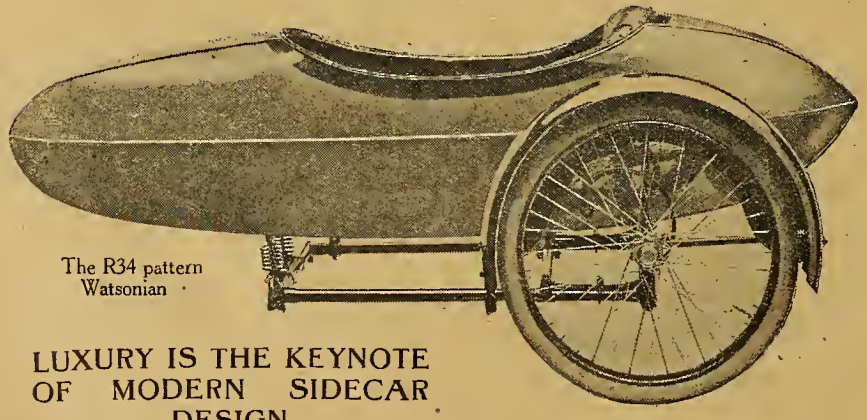
MODELS TO MEET ALL REQUIREMENTS.



The Millford Modele de Luxe, showing how the rear panel is used as a luggage platform.



The Sandum two-seater. Note the drop-down well for the feet of the front passenger.



The R34 pattern Watsonian

LUXURY IS THE KEYNOTE OF MODERN SIDECAR DESIGN.

to give the foremost passenger ample room. When the single seat alone is required, the one at the front is taken out, folded up and reversed, when it slides along runners at the sides of the front of the body, and acts as a panel, filling the cut-away space just mentioned. The touring model attracted a good deal of attention amongst prospective lady passengers, by virtue of the fact that the flap of the small locker in the front of the sidecar was fitted with a mirror. Also shown on this stand was a very original sidecar windscreen.

WATSONIAN.

The Watsonian Folding Sidecar Co., Conybere Street, Birmingham.—Featherweight, Tourist, Coupé, Semi-sporting, and Sporting models were exhibited by this well-known firm of sidecar specialists. Little alteration has been found necessary in the Featherweight model, the chassis of which is of the simplest construction. The body is extremely light, and is supported by large compound springs similar to those used on the Brooks saddle. It is essentially a passenger attachment suitable for low-powered machines. The Tourist and Semi-sporting models follow conventional lines, and are fitted on a very substantial underslung chassis. The Coupé, however, is a new type, and offers very complete protection against the weather. Scuttle dash, screen, side windows, roof, and hood form one unit, which is hinged at the back of the seat and secured at the front by a catch, and in order to enter the sidecar it is merely necessary to swing back the whole assembly as one piece. The screen and side windows cannot be removed, but the roof and hood, which are of leather-faced material, may be quickly detached. By unscrewing the wing nuts, the upper part of the coupé may be removed completely, leaving a body of the normal open type. Behind the seat a long extension of the body forms a boot in which it is possible to carry petrol cans and spares. The top of this receptacle is covered with aluminium, and is sufficiently large to accommodate a large suit case. Another new model is the R.34. This is of an extremely low and racy torpedo shape; no side door is fitted, but a step is situated on the side of the chassis, thus permitting easy entrance.

BAMCO.

Birch Aircraft Manufacturing Co., High Road, Willesden Green, N.W.10.—Bamco sidecars manufactured by the Birch Aircraft Manufacturing Company are amongst the few from which the ordinary type of brazed lug construction is eliminated, since they are made entirely of heavy steel tubing suitably mitred at all the joints and acetylene welded. Wheel springing is carried out in two entirely different ways. The first method, which was to be seen on the No. 4 Modèle de Luxe, is somewhat similar to that recently described in *The Motor Cycle*, and consists of a fork hinged at the rear of the frame and supported at the front by two shackles at right angles to each other, and bridged by spiral springs which are hooked on; they are thus easily replaceable in the unlikely event of breakage. The springing of the body itself is effected by coil

Sidecar Progress.—

springs working in cylindrical housings, and exceptional shocks are provided against by rubber buffers at the base of these. On the second spring wheel model a large half-elliptical spring swung on a bracket in front of the wheel and a shackle at the rear carries the lug which holds the stub axle. This is an extremely simple arrangement, and promises to become one of the firm's most popular features. The bodywork on the Bamco sidecars is exceptionally fine, only the highest class of coachwork and finish being used throughout. Prices in consequence are somewhat higher than usual, the figures for the No. 4 model being £45 to £50, according to the finish.

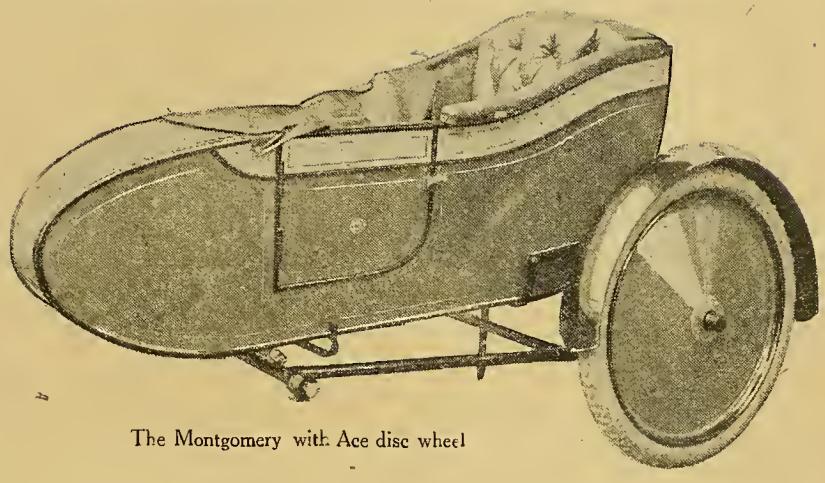
MONTGOMERY.

W. Montgomery and Co., Lower Ford Street, Coventry.—Twelve models of Montgomery sidecars were staged, and almost without exception they embodied a simple chassis with a straight rear axle. Dropped below this is another cross-member, from which lead the main tubes; these converge towards the front. Four-point attachments with connections of the nut and union type are used. Great variety is displayed in the style of the bodies which are sprung on C springs at the rear and S shaped coils at the front. A comprehensive range of additional fittings can be supplied with Montgomery sidecars, such as windscreen, hood, and luggage grid.

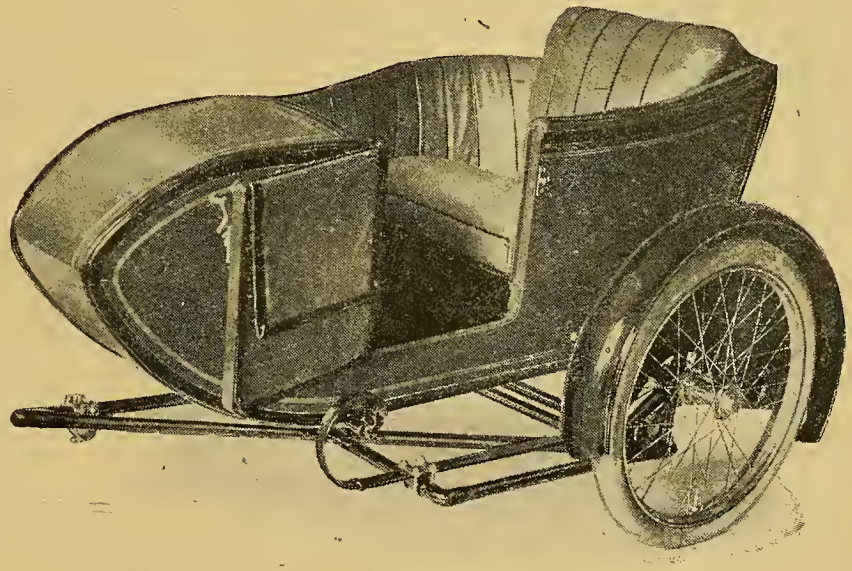
DUNHILLS.

Dunhills, Ltd., Euston Road, N.W. —Three models of Dunhill chassis are made and the same general principle is followed in all of them. The essential feature of the design is the employment of a tube running from the front connection to the lug which holds the hub spindle. In plan view, therefore, the chassis has the form of a right-angled triangle, the axle representing the base, the longitudinal member being parallel to the motor cycle, and the remaining tube forming the hypotenuse. According to the weight of body, requirements of spring fixing and power of the machine modifications are made by the addition of extra cross-members; also three, four, and five-point connections are used as required. Wheels in all cases are detachable, in the simpler models being fitted with a cone and nut fixing of the axle, while the mudguards may be readily removed. On the heaviest chassis the wheel is completely surrounded by a frame, and on removing the mudguard, which is quickly detachable, and reversing one of the stays which acts as a stand, the wheel may be lifted out from the top, thus avoiding any lifting of the chassis.

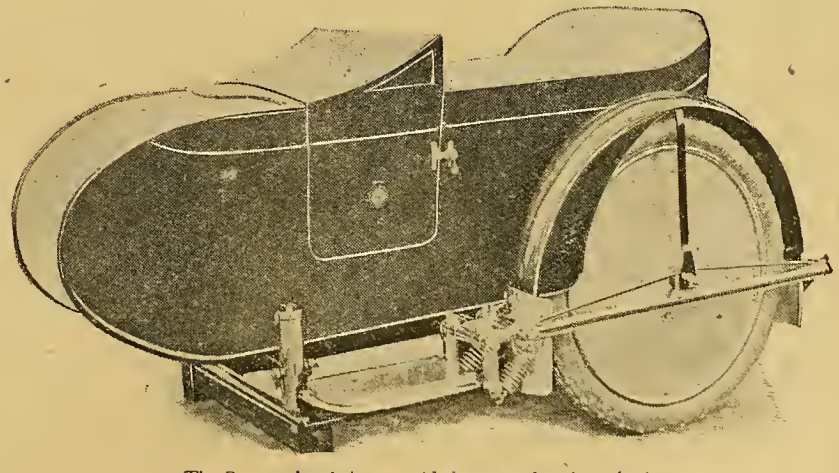
Various types of bodies are fitted, one which is extremely original being of the sporting type, bulbous in form, and without side door. The passenger reclines in a deep comfortably padded well in the interior and is protected by a small windscreen. Also small lightweight bodies, a handsome purple finished touring type with hinged dash and very complete equipment. The later model is extremely light for its size and luxury, the total weight being only 140 lb. with all fittings.



The Montgomery with Ace disc wheel

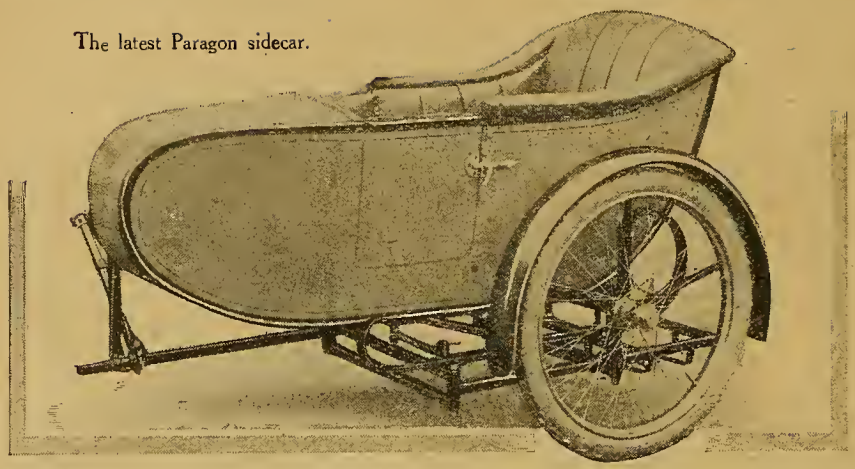


A Dunhill family sidecar. Note the method adopted to obtain an extra wide seat to accommodate adult and child.



The Bamco chassis has a welded joint and spring wheel

The latest Paragon sidecar.

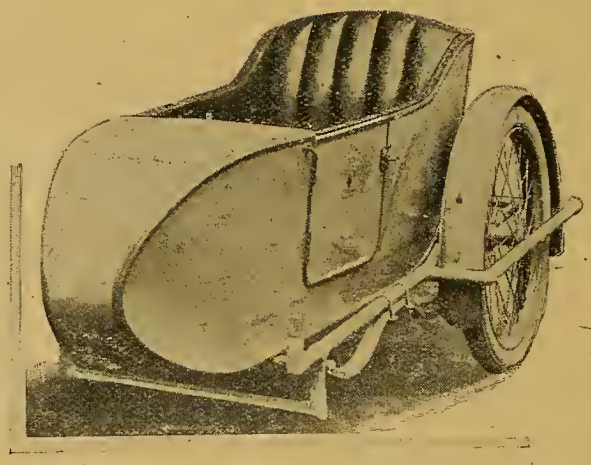


PARAGON FOLDING SIDECAR.

WINCYCLE Co., 236, High Holborn, W.C.1.—We have previously referred to the Paragon folding sidecar, which is a great boon to all those motor cyclists who have not wide entrances to their houses or gardens. When folded up, the motor cycle and sidecar chassis will pass through a 30in. doorway. It also possesses another feature, and that is the fact that the body is very quickly detachable, so that the tradesman may use the machine for delivering goods during the week and as a sidecar outfit over the week-end. The latest pattern is fitted with a comfortable and well upholstered body. The long side member of the sidecar chassis is now in one piece, and the lugs in the latest models are at the sides of the members, so that the bolts do not pass through the tubing; and the axle is now underslung.

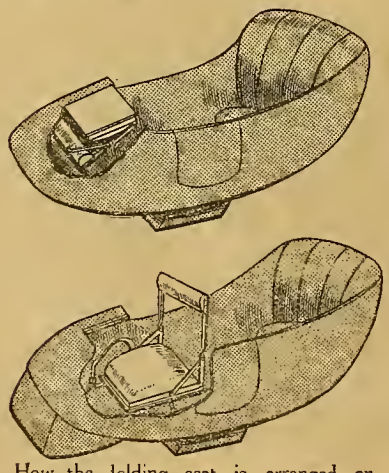
HENDERSON.

HENDERSON SIDECARS, LTD., Fitzwilliam Street, Sheffield.—This exhibit was undoubtedly one of the most interesting in the Show, since the maker of the Henderson sidecars has designed his products not only from the practical, but also from the theoretical, standpoint. A special feature of all the chassis which were shown on this stand is the employment of steels of varying specifications, according to the nature of the stresses which they are called upon to resist. Thus, all the bright parts are of stainless steel, while special high tensile metal is used in the axles and bearings. All moving parts are fitted with bronze bushes, and even a special process is used in order to secure perfect uniformity in the malleable castings which form the lugs. A new type of spring wheel is shown, and this achieves a point often sought by designers, namely, the elimination of the bulk of the unsprung weight, only 11 lb. dead load being carried by the axle. All the touring Henderson bodies are equipped with a large locker behind the seat, and accommodation for luggage is provided on the top of this. On the heavier models 8in. car type domed mudguards are used, and these are sprung with the body. A further novel feature of the Henderson construction is the type of frame attachment. This consists of a heavy casting with a taper hole at one end, corresponding to the conical projection on the clips which are attached to the machine. At the outward end of this casting are two small set-screws, which project within the bore, and passing between them is a long sleeve nut operated by a tommy bar and having the outside diameter of its central portion somewhat reduced. When screwed up this nut draws the casting tightly on to the frame lug, making an extremely secure connection. When it is desired to detach the sidecar, the nut is unscrewed until the shoulder of its larger diameter abuts against the above-mentioned set-screws, when it withdraws the casting from the cone, thus enabling the sidecar to be easily removed without hammering or any other violent means being employed. Others models on this stand are the well-known Featherweight, which has

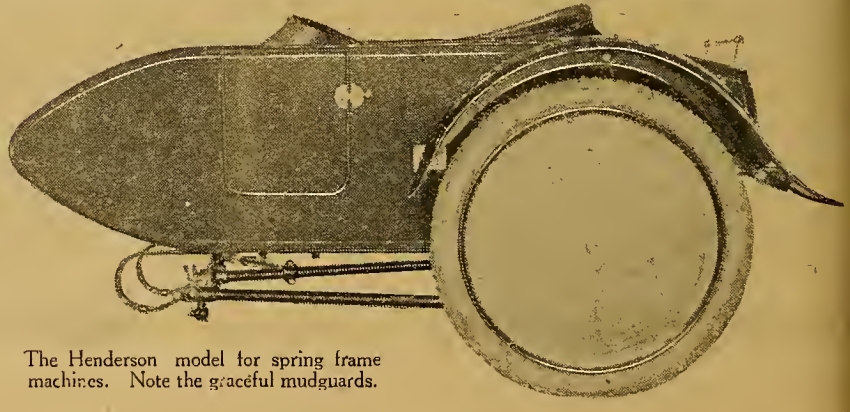


On the Williamson sidecar, the springing is effected by double-ended laminated springs.

A Dunhill sidecar screen with side wings, which are adjustable in any position.

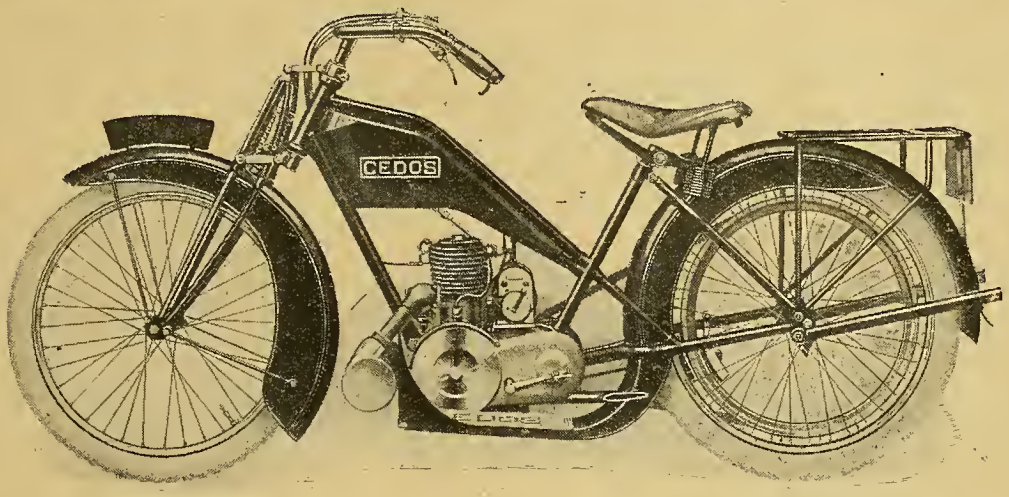


How the lolding seat is arranged on the Sandum.



The Henderson model for spring frame machines. Note the graceful mudguards.

LADIES' MODEL, 62 gns.



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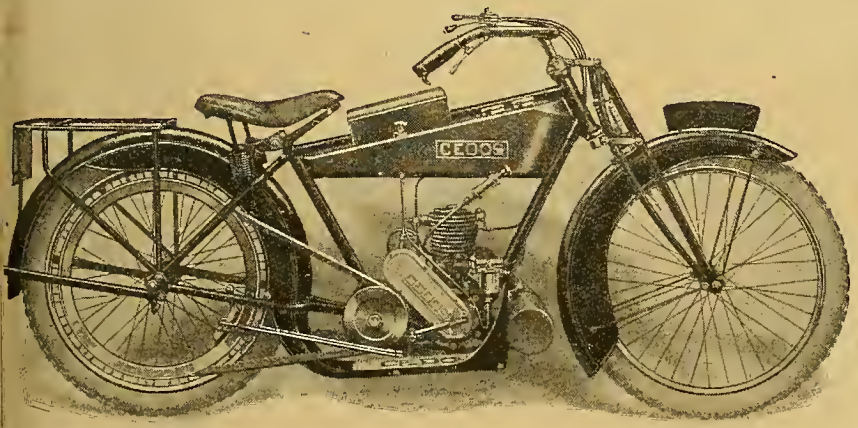

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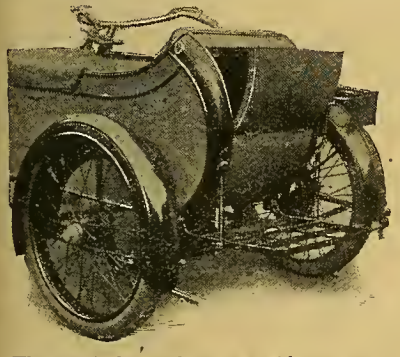
Sidecar Progress.—

an extremely light triangulated chassis and three-point suspension, and the Model B, which is a somewhat heavier pattern, suitable for 3½ and 4 h.p. motor cycles. The springing of the body on the latter is somewhat unusual, short quarter-elliptic springs being fixed almost vertically on the rear axle, and the body is hung from these on a type of coil spring shackle which is adjustable. A further model is the Elite. This is suitable for high-powered machines, and embodies most luxurious detail fittings. The accommodation for the passenger is extremely roomy and comfortable. A large luggage locker is fitted at the rear, and, as an example of the manner in which detail is studied on this attachment, the lock is of special construction, in order that it may hold the lid securely and without rattle when the machine is running. Special fittings are made to render this chassis suitable for Indian and other sprung frame machines.

CANOELET.

MEAD AND DEAKIN, LTD., Tyseley, Birmingham.—A large range was shown by this firm, one model, the Canoelet-Nor-

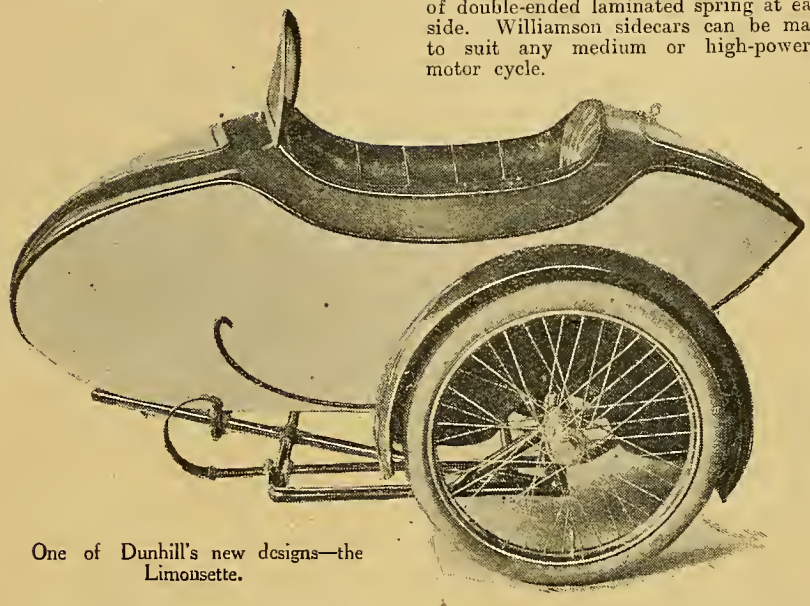


The rear locker and spring grid are now regarded as essentials on the modern sidecar. An excellent example—the Rover.

wood, being entirely new and a great departure from conventional practice. The axle is a steel stamping of H section, and the chain stay connection and wheel axle are held in conical housings. Springing of the acetylene-welded sheet steel body is effected through a link action controlled by a single adjustable tension spring. Other types shown include the famous Canoelet Minor sporting model, while some ingenious luggage and petrol tin openers are also exhibited, the latter being of such a form that two tins could be securely fixed in addition to other packages.

TRIUMPH (GLORIA).

GLORIA SIDECAR CO., LTD., Coventry.—Gloria sidecars were shown on the new chain-driven Triumphs, and these embody the well-tested wheel springing arrangement which is extremely popular. Incorporation of sidecar fixing lugs in the motor cycle frame has simplified the attachments, which are particularly neat. Another new feature is a sprung luggage platform, covered with rubber matting, fitted at the rear of the chassis. No comment is required regarding the excellent appearance of the Gloria purple coachwork.



One of Dunhill's new designs—the Limousette.

CHATER-LEA.

CHATER-LEA, LTD., 74-84, Banner Street, E.C.—Both light and heavyweight sidecars were shown, and these were on conventional lines. The heavy model has an extremely substantial duplex chassis.

SIDECAR BODY CO.

SIDECAR BODY CO., 25, Upper Clapton, E.C.5.—A variety of bodies was shown by this firm, ranging from conventional light and mediumweight types to an extremely novel projectile model. This was constructed of aluminium, cylindrical in form, with a pointed nose, and having a broad copper band immediately behind the seat.

WILLIAMSON.

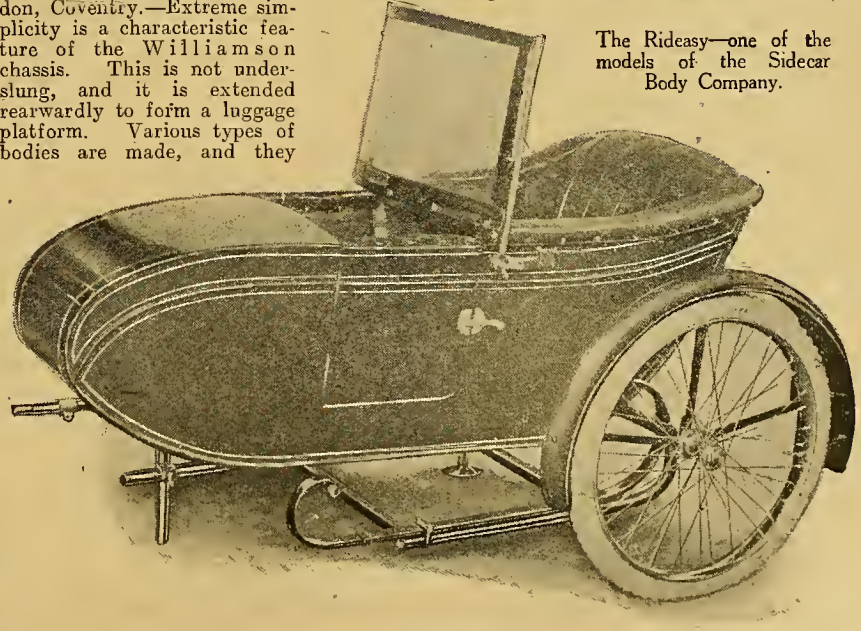
WILLIAMSON MOTOR CO., LTD., Earlsdon, Coventry.—Extreme simplicity is a characteristic feature of the Williamson chassis. This is not underslung, and it is extended rearwardly to form a luggage platform. Various types of bodies are made, and they are carried within the frame by a form of double-ended laminated spring at each side. Williamson sidecars can be made to suit any medium or high-powered motor cycle.

BROUGH.

The sidecar for the 5 h.p. Brough flat twin embodies a neat wheel springing device. The wheel stub axle is carried on a short pivoted link, and a slide at the end of this bears on the underside of a flat laminated spring anchored at the rear of the chassis. The body is roomy, and is carried on C springs at the rear and on a transverse leaf spring hung from two shackles at the front.

REX.

The Rex Chassis construction is extremely simple, and the main portion entirely surrounds the body. The outer portion of the wheel-supporting member is readily detachable, thus permitting the wheel to be withdrawn outwardly without raising the sidecar high above the ground. Four connections are fitted



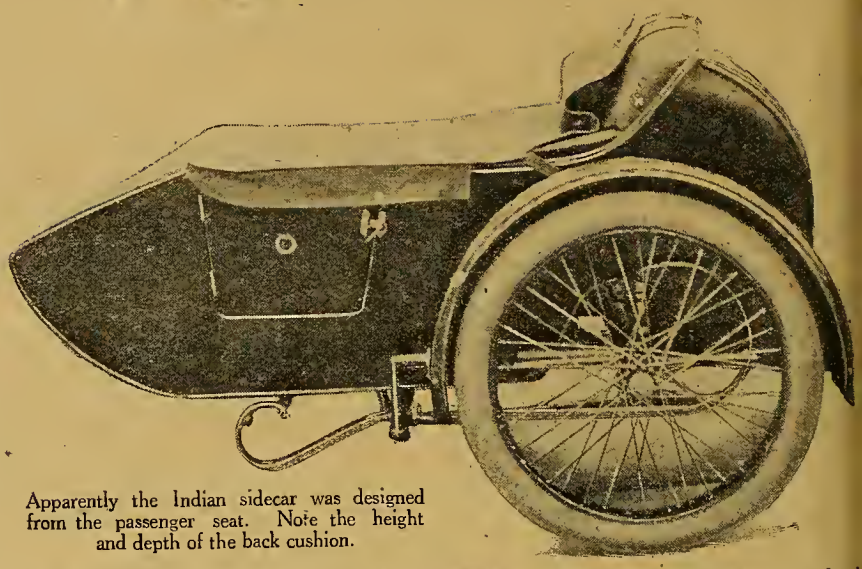
The Rideasy—one of the models of the Sidecar Body Company.

Sidecar Progress.—

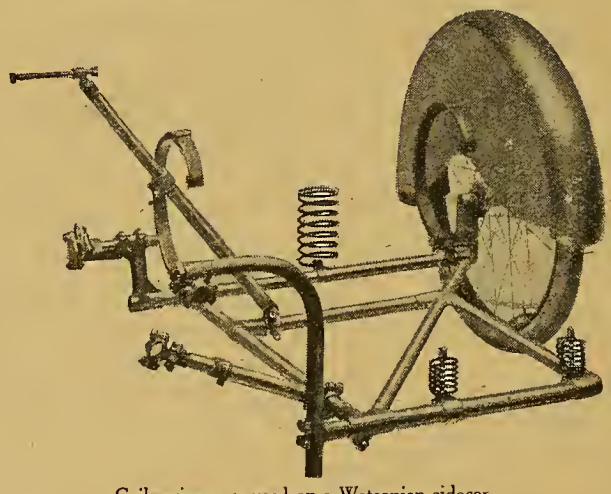
between the machine and sidecar, and the lugs forming the points of attachment are integral with the cycle frame. For the springing, long cantilever springs are used at the front and coil springs at the rear. At the extreme end of the body is a small well, into which the spare wheel drops, and it is thus carried vertically and secured by means of a bolt passing through the hub.

A.B.C.

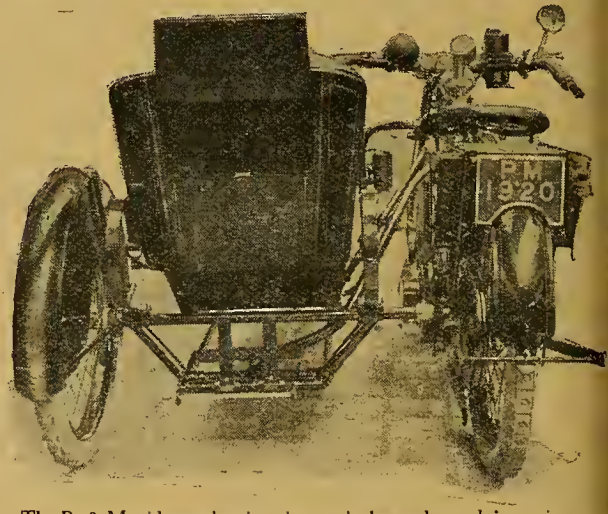
Owing to the enormous amount of interest which has been aroused in the A.B.C. productions, this stand was one of the most largely attended in the Show. The sidecar fitted to the 3 h.p. A.B.C. was the subject of much admiration, since its design is extremely good and on thoroughly workmanlike lines. Rigidly attached to lugs incorporated in the sprung portion of the motor cycle frame, the chassis forms an extension somewhat in the nature of an outrigger, and the rear cross-tube, or axle, is carried at the rear end on two cantilever springs. This tube is also fixed to the chain stay of the machine, by means of a simple



Apparently the Indian sidecar was designed from the passenger seat. Note the height and depth of the back cushion.



Coil springs are used on a Watsonian sidecar.

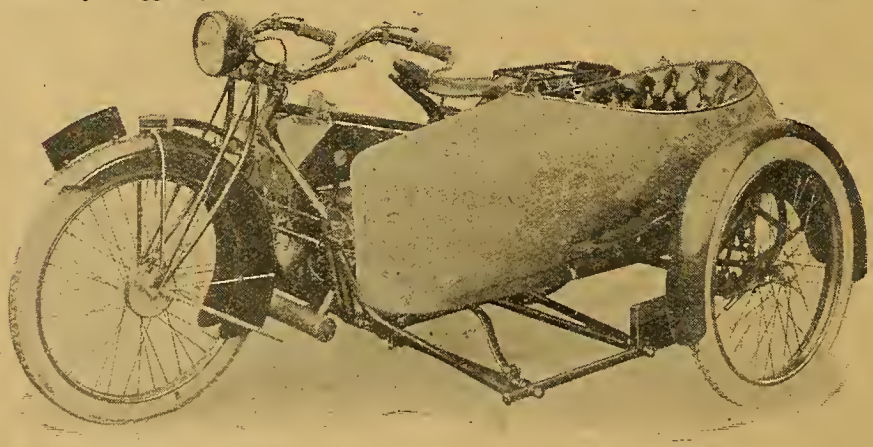


The P. & M. sidecar showing the rear locker and petrol tin carrier.

form of ball joint, in such a way that the rear wheel and sidecar wheel may move to some extent independently. The body is egg-shaped, of polished aluminium, and has no side door, being entered from a step between the cycle and sidecar.

ROYAL RUBY.

The Royal Ruby spring wheel sidecar is characterised by robust construction. Behind the body is a large platform, and here is accommodated the spare wheel and also a petrol tin carrier housing two tins, which are covered by a lid and then secured by a special crossbar, which grips the handles, and is then secured by a tommy-headed screw.



A lightweight body of polished aluminium—the Gracemill attached to an A.B.C.

NORTON.

Very substantial connections are used in joining the sidecar to the Norton "Big 4" motor cycle frame, and particular attention has been paid to luggage accommodation. A most capacious locker is fitted in the rounded back of the body, and a dickey seat suitable for a child can be incorporated.

A.J.S.

A.J.S. sidecars are almost too well-known to need description. A hinged dash, which extends over the front of the body to the level of the seat, carries an adjustable windscreen, which forms part of the standard equipment. In common with the general tendency, the A.J.S. sidecar has a folding luggage platform mounted on the body, so that it has the advantage of the insulation afforded by the springing. The platform is covered with rubber matting, and beneath it is

Sidecar Progress.—

a tool drawer, which is very readily accessible. The spare wheel is mounted immediately behind the body, and is held in position by two special clips, which are clamped firmly on the bead of the rim by means of easily-operated wing nuts.

F.N.

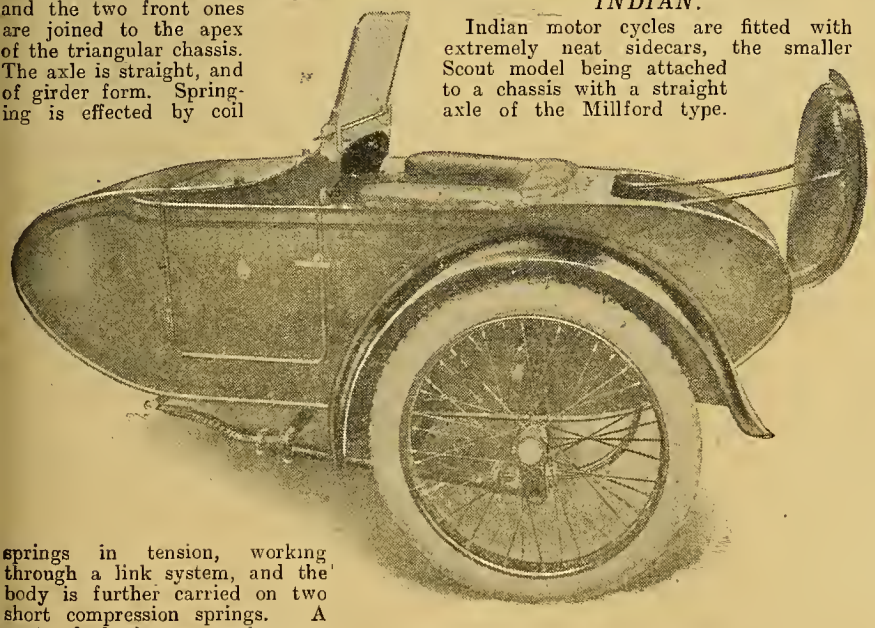
The sidecar shown by the English representatives of the well-known Belgian firm was attached to the new 7 h.p. four-cylinder model. No lugs or brazed joints are employed in the construction, the whole chassis being built up of steel tubes welded together. Three-point attachment is adopted, and the connections are made to sidecar lugs integral with the motor cycle frame. The body itself is of the normal coach-built type.

EXCELSIOR (BRITISH).

Only one sidecar model was shown on the Excelsior stand, and this is a large double-seated pattern on a Millford type of chassis. Single-seated sidecars, however, will be made by this firm. Provision for carrying a spare wheel is made on the folding luggage grid, which is attached to the rear of the body. One of the lugs is drilled and tapped, and the wheel is secured to this by passing a long bolt through the hollow spindle. When no luggage is carried, the platform and the wheel may be pushed close up to the back of the seat, but when the former is in use the wheel lies horizontally, and is out of the way of the luggage which is being carried.

SCOTT.

Scott sidecar chassis are unique in being the only type in which complete triangulation is achieved, not only in themselves but in relation to the frame of the machines to which they are attached. Four points of attachment are incorporated in the motor cycle frame, and the two front ones are joined to the apex of the triangular chassis. The axle is straight, and of girder form. Springing is effected by coil springs in tension, working through a link system, and the body is further carried on two short compression springs. A neater body is now made, composed entirely of aluminium, handsomely enamelled in Scott purple, and having the locker at the rear enlarged sufficiently to admit petrol tins.



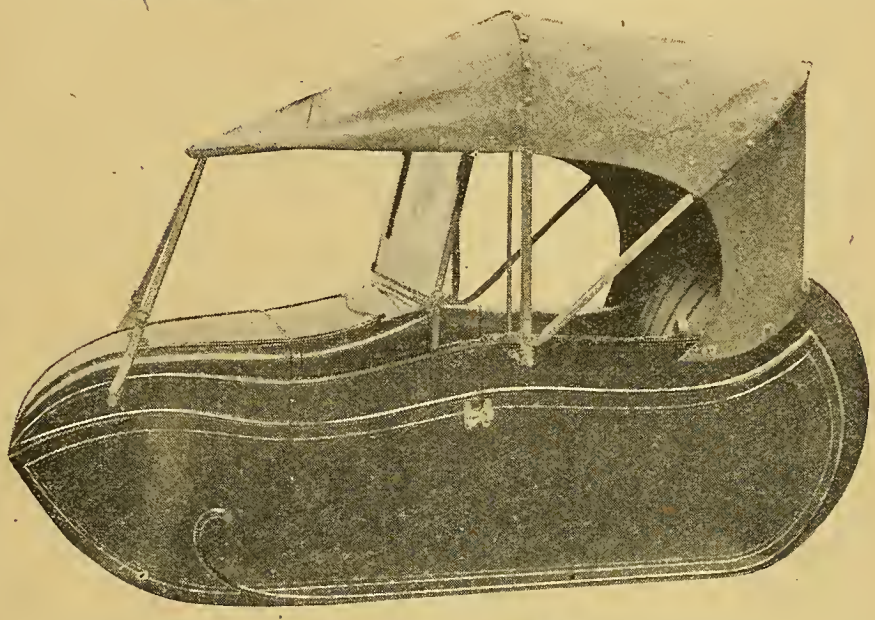
The Norton sidecar with dickey seat

HARLEY-DAVIDSON.

Some extremely luxurious sidecars were fitted to these powerful American machines, one especially being a splendid example of the coachmakers' art. It was equipped with a disappearing hood, which, when out of use, is concealed beneath the uppermost rolls of the upholstery. This body was replete with every possible refinement conducive to the passenger's comfort, and was one of the most elaborate on show.

INDIAN.

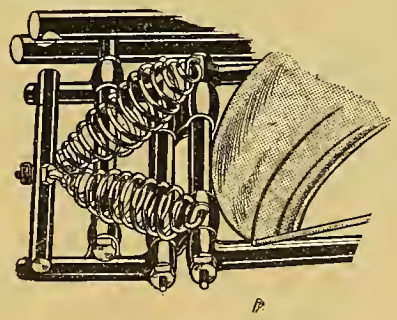
Indian motor cycles are fitted with extremely neat sidecars, the smaller Scout model being attached to a chassis with a straight axle of the Millford type.



The Zenith sidecar body with folding dash.

The top front connection clamps both tubes of the motor cycle duplex frame, while the lower one reaches from the engine lug almost to the extreme outer end of the chassis front cross-member.

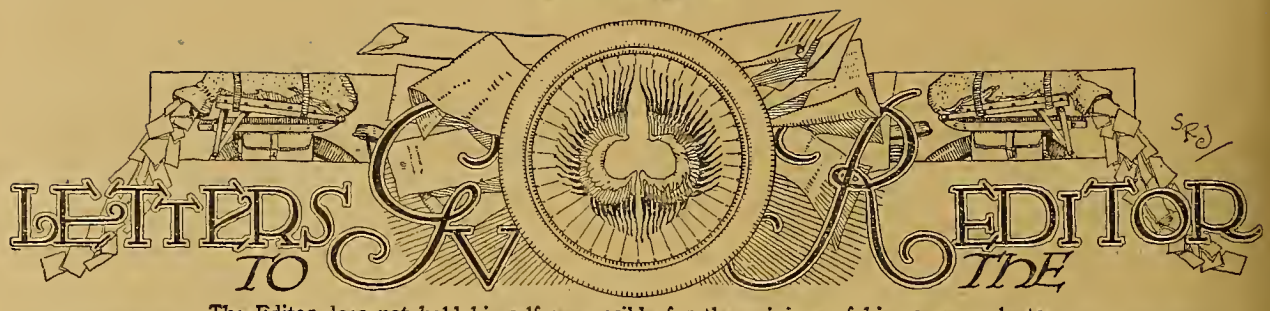
This feature is also noticeable in the heavy model, which has special connections to suit the spring frame of the Powerplus machine. A commodious body is fitted on this sidecar, and a large compartment for spares is provided in the rounded rear portion. The upholstery is exceptionally deep and the back is high, which should make for easy riding, a point to be appreciated on long journeys.



Coil springs are used to suspend the Bamco wheel.

CLYNO.

In plan view the Clyno chassis is a truncated triangle, and it is attached to the spring frame of the motor cycle by four connections, which are only capable of slight adjustment. The wheel is carried in a fork hinged at the front, and controlled by a laminated quarter-elliptic spring. Luxury is the keynote of the body, which is provided with every convenience for the carriage of spare wheel, luggage, and petrol. It is equipped with hood and screen.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

MOTOR CYCLING IN INDIA.

Sir,—I am contemplating taking an appointment in India (Plantong), and understand that a motor cycle is a necessity.

Now, I have a 2½ h.p. two-stroke Metro-Tyler, which has given me every satisfaction, and I am wondering if this would stand up to the work required in India, or whether I should do better to invest in a higher-powered mount in England and take it with me, or whether it would be better to purchase a machine on arrival.

If any of your readers could help me in this matter, I should be obliged. TWO-STROKE.

Bristol.

SCOUTS AND ROAD GUIDES.

Sir,—I read with the greatest pleasure what the A.A. scouts have been doing in all parts of the kingdom. My father, who has been using his motor cycle for the last eight or ten months in travelling about Cornwall, joined the A.C.U. in April or May last, thinking that their scouts might be useful to help him. Much to his surprise, he has not seen a single A.C.U. scout up to this day. A.A. scouts are frequently met at St. Austell, Truro, Camborne, and Penzance. Once they had the courtesy to help my father, who then definitely decided to substitute his present badge for an A.A. one.

Surely the motor cyclists of the south-western districts are entitled to the benefits of the Union as much as other districts, or is it that other districts are suffering as we are? I should like the A.C.U. to give me an answer. J.H.B.

THE LIGHTING REGULATIONS.

Sir,—As a humble push cyclist, I should like to support strongly your remarks with regard to the rear lighting of push cycles on the road.

As "Sommon Cense" remarked in your columns recently, the purpose of rear lights on any vehicle is to give due warning to other vehicles approaching from behind. If there are three vehicles on the road, A, B, and C, with respective speeds of 30, 20, and 10 m.p.h., it stands to reason that if any one of them is to be exempted from carrying a rear light that one should be vehicle A, the fastest, because it is not overtaken by anyone else. Of course, in practice, a rear light is necessary on all, if only for stoppages, but the same principle applies, viz., that the slowest vehicle on the road should be the most careful to carry rear lights.

It is foolish for "Sivel" and others to be "forced to the conclusion" that the desire for rear-lighting "is the outcome of the unfortunate craze for speed among the more reckless members of our fraternity." Such an argument can only be advanced by those who are unaware how invisible a cyclist usually is from behind at night, especially if the road surface happens to be dark (unless, of course, he has the consideration to carry a rear light). When riding quite slowly at night on a push bicycle with a good front lamp I have often had considerable difficulty in avoiding lampless cyclists in front, who, until within a very short distance, are well-nigh indistinguishable.

Personally, my opinion is that cyclists' objection to carrying a rear light is rooted in mere laziness, the feeling of "I cannot be bothered to mess about with another lamp." I have discussed this matter with many cyclists, and they all agree that, both in order to ensure safety and from a regard for the feelings of other users of the road, a rear light should be carried. TOLERATION.

Clifton.

Sir,—Will you kindly allow me space in which to reply to the letters appearing in *The Motor Cycle* of November 20th referring to my communication published in a recent issue?

It is evident that no result profitable for anybody can ensue from any discussion with a man who treats the subject as does "Iorwarth." His deliberate misquotations from my letter, and imputations of lack of sense on the part of all cyclists, coupled with generally cheap rhetoric, do not "cut any ice" in this matter. It is a poor cause that necessitates such bolstering.

I deny emphatically the statement of "M 5229" that "there can be no doubt of the advantages of the rear lamp." Its notorious unreliability, both as regards its keeping alight and it value as a preventive of accidents, is surely too well known to anyone who reads the daily papers regularly to need comment.

"Sommon Cense" treats the matter much more reasonably. But the whole kernel of the matter is that the enthusiasts of the rear light start from an erroneous basis. I hold the unalterable view that the onus of avoiding accidents should lie with the overtaking vehicle. It does not matter whether the "obstacle" is a cyclist, pedestrian, vehicle, child, or anything else, and if I had the ordering of things, rear lights on *all* vehicles should be done away with. What, in the name of sense, do we carry a head light for? Surely to show us what is in front, and, for our own skins' sake, if for nobody else's, to avoid running into it! I repeat that no one has any right to be travelling at night at such a speed that he is unable to discern any other traffic in time to avoid it. Instances are common enough of cyclists being run into in spite of their rear lamps.

There are probably road hogs amongst cyclists, as there are amongst motorists (I hold no brief for either in this matter), but, amongst cyclists, can "Iorwarth" match me the incident that has occurred since my last letter was published, where, in a West-end street, a doctor was knocked down by the driver of a car, and (for all the driver cared to the contrary) left to die there? SIVEL.

London, N.

SCOOTERS.

Sir,—I have read one or two letters in *The Motor Cycle* on the future of the scooter, and as I believe I have probably had more experience of these machines than anyone in Great Britain, I am venturing to air my views on the subject. I cannot yet decide whether or not they will survive. As at present constructed they fall between two stools. To the experienced motor cyclist they provide a cold, undignified, and altogether miserable mode of progression. On the other hand, the complete novice will have such difficulty in starting them and keeping them in working order that he is likely very early to abandon them as hopeless. I can assure those who favour a seat on scooters that they had better abandon the idea right away. A scooter with 10in. wheels is rideable on quite bad roads standing and no inconvenience is felt from vibration. The scooter does not skid except under extreme provocation, and when it does so it is neither dangerous nor in the least alarming. On the other hand, "Speedman's wobble" (or wabble) on a scooter is a truly harrowing experience. As far as steering and balance are concerned, a scooter can be ridden by almost anyone at the first attempt. Yet, before it can become popular, there are one or two very thorny problems to be overcome. The most serious difficulty is to provide a small

engine of considerable efficiency which is easily pushed off from cold on a very low gear. The propulsive power of the average girl hopping along on one leg is lamentably small. She is also utterly unable to carry 100 lb. up the front steps. She does not know when the mixture is too rich or too thin, and takes a very long time to learn; much longer than she takes to get utterly fed up with scooters.

Such refinements as automatic inlet valves and drip feed carburetters helped to brighten the life of our old friend Herr Gottlieb Daimler. But they became obsolete on road vehicles. They enjoyed a fresh lease of life when the internal combustion engine was first applied to aeroplanes, and again when it was applied to farm tractors. In every case they blossomed and died, and there is no very obvious reason for going all over these ghastly experiments again in the case of the scooter. It is otherwise with the flywheel magneto, which is simple and understandable, and provides a useful low-tension current for the lamps.

I am quite sure it is neither necessary nor desirable for a scooter to be capable of a greater speed than 15 to 20 m.p.h., nor to be able to climb anything more trying than an ordinary main road hill of 1 in 12 to 1 in 10. It grieves me to read that the A.C.U. proposes to take a hand in scooter design. From an engineering point of view, I sympathise with what I imagine is their ideal scooter, namely, four cylinders, water-cooled, three-speed and reverse, electric light and self-starter, etc., etc., but it is not the slightest use to my Aunt Jane. It is she who in her thousands is going to design the ultimate scooter.

In conclusion it is well to remember that the tractive resistance of a scooter is much greater, wind resistance at least equal, and weight not much less than in the case of a motor cycle. Consequently, any old engine will *not* do.

J. KENNEDY (Maj., R.G.A.).

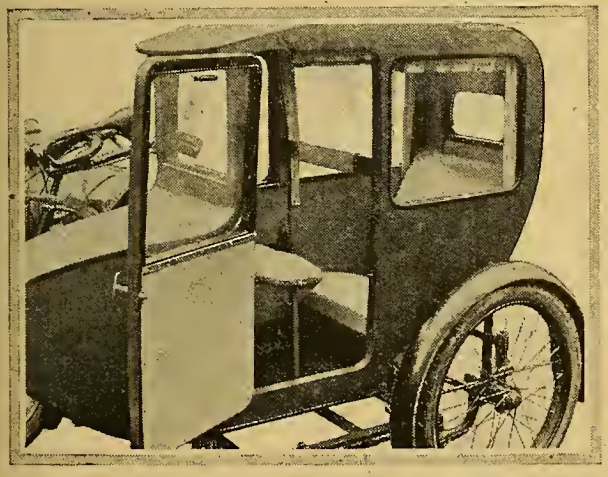
A.C.U. SIX DAYS TRIALS.

Sir,—In looking over the results of the 1919 A.C.U. Six Days Trials, I was rather surprised to see that one or two machines of some of the well-known makes retired during the trial, whilst the remaining machines of the same make obtained gold medals. In the entry, for instance, of two machines of the X.Y.Z. make, one obtained a gold medal and the other retired, so that the average value of the performance could not be considered as very high. The reasons for failure I am not going into now. They are very interesting, and are, in many cases, particularly if due to tyre trouble or baulking, quite unavoidable. To the average man (who is, I suppose, a sort of half brother to that mythical person the "man in the street") the average performance of the particular machine he uses or fancies may be of interest, and, consequently, I have roughed out the following list, and hope it will be of interest to your readers:

Make of machine.	No. of machines starting.	Average No. of marks.	Order of merit.
Class A.—250 c.c. Solo.			
Levis	1	175	1
James	1	162	2
Velocette	2	87	3
Class B.—350 c.c. Solo.			
Verus	1	165	1
Douglas	2	146	2
Class C.—500 c.c. Solo.			
Rover	3	177	1
Blackburne	2	170.5	2
James	1	170	3
Ariel	3	130.5	4
Sunbeam	9	150	5
P. and M.	3	121	6
A.B.C.	2	65	7
Class D.—750 c.c. Solo.			
Rover	1	189	1
A.J.S.	1	188	2
B.S.A.	5	180	3
Norton	2	170	4
Triumph	4	165	5
Scott	5	146	6
Zenith	4	133	7
Class E.—1,000 c.c. Solo.			
Ariel	1	178	1
Class G.—500 c.c. Sidecar.			
Ariel	1	152	1
B.S.A.	1	148	2
Class H.—750 c.c. Sidecar.			
Norton	1	169	1
G.L.	1	167	2
Douglas	1	155	3
A.J.S.	5	136	4
James	2	134.5	5
Triumph	2	133.5	6
B.S.A.	2	25.5	7
Class K.—1,000 c.c. Sidecar or Cycle Car.			
Harley-Davidson	1	182	1
Blackburne	1	178	2
Matchless	5	173	3
Enfield	4	172	4
Clyno	1	165	5
Indian	2	141.5	6
Morgan	5	105	7
Ariel	2	61	8
Class L.—Sidecar or Cycle Car exceeding 1,000 c.c.			
Morgan	2	80.5	1

In closing, I will point out that the marks were obtained by adding together the total marks awarded to each machine of the same make and class and dividing the sum by the number of machines of that same make and class that actually started, but not necessarily finished

STANLEY WELLS.



TWO LUXURIOUS SIDECARS.

(Left) A two-seated saloon body made by a Coventry enthusiast and fitted to a folding chassis.

(Right) A French *coupe* sidecar, designed for taxi service.

SPARE PARTS.

Sir,—While overhauling my Calthorpe-Jap lightweight I found it necessary to renew several parts. I wrote to the Calthorpe Motor Cycle Co., who quoted the price of the spares per return. I sent the money and received the spares in two days. When buying a new machine I shall not forget the firm who sent spares as quickly as possible. I have no interest at all in the Calthorpe Motor Cycle Co., but am quite satisfied with their goods. F. C. HOWLING.

BENZOLE.

Sir,—We were all very patriotic towards our country during the war. Now that the war is over, I think a lot of us are getting rather slack in this direction.

Benzole has been tested, and proved to be as good as petrol for fuel as regards motor cycles. Why, therefore, do we not use more benzole? Benzole is made in our own country, and its manufacture means increase in home industry and labour.

Now that we are on reconstruction, we should all do what we can to help this great work.

Anvers, Belgium. A BENZOLE USER.

AUTOMATIC CARBURETTERS.

Sir,—I was interested in "Ixion's" remarks on automatic carburetters in your issue of November 6th.

I notice he does not mention the Capac, which is entirely automatic (not even an air slide to twiddle), and the smoothness of the working of the Bowden control is a joy unknown to the owners of the two-lever type, who occasionally suffer broken wires even in these days.

As regards consumption, my 2¾ h.p. Coulson B used one gallon two gills of petrol on a 150-mile run, which compares favourably with other types, I think.

The Capac is standard on the Coulson B.

I should like to add that the Coulson Engineering Co. are an ideal firm to deal with, always a reply by return, and nothing too much trouble, and the machine they make is very near to perfection.

The usual disclaimer. L. HEMINGWAY.

THE JUDGES' REPORT, A.C.U. TRIALS.

Sir,—The judges of the A.C.U. Six Days Trial are to be congratulated upon their report, which is, in general, good and very interesting reading, and should be of undoubted value to that section of the trade who are not too wise to learn.

I was, nevertheless, disappointed to read that section devoted to engines, where it said: "The judges regret to see so few examples of the larger multi-cylinder engines, both four and two-strokes. They consider also that attention might usefully be directed to water-cooled multi-cylinder two-strokes for sidecar use where cleanliness, together with the absence of uneven torque, noise, smell, and dirt, is of maximum importance."

In spite of the qualification, and without in any way depreciating the excellence of the Scott—which is deservedly mentioned—I am sorry to see the recommendation, and it surprises me that a quintet with the experience of the A.C.U. judges should advise water-cooling for the motor cycle. The opinion of such authorities cannot be lightly set aside, but, even so, I am among those who are not convinced that the recommendation is a good one, and who consider water-cooling unnecessary and therefore to be deprecated. We know a good air-cooled motor cycle engine will do all that is required of it (except possibly under extraordinary conditions); why then advise additional weight, cost, and complication, rather than improvement in the direction of efficient simplicity? Water-cooling is a concession to imperfect design or material, with the useful effect of largely equalising the temperature of cylinder walls; but there are other ways and means of doing this, and I am firmly of opinion that such means will, in the end, prevail, and water-cooled engines on vehicles (except for very special purposes) will become obsolete. Even to-day a water-cooled car cannot be said to be truly up-to-date, because of not fully utilising the fruits of modern research, and yet water-cooling with its costly weight and complication is recommended for a vehicle whose birthright should be low cost and simplicity.

The expression of regret to see so few large multi-cylinder engines also comes as a surprise. Personally, I would rather have seen it reported that the judges regretted to find it was considered necessary to fit large and heavy engines into a type of vehicle, *the very existence of which depends upon its comparative light weight and handiness.*

My comments are made in some little fear and trembling, but from an earnest desire that the greatest possible value should be obtained from the trial, and that the motor cycle should not suffer from the evil known as over-development, or development in the wrong direction.

JAS. L. NORTON.

WOMAN AND THE MOTOR CYCLE.

Sir,—It is not often I trouble your correspondence columns, but sometimes an onlooker sees most of the game, and I therefore ask leave to put before you some views and suggestions regarding the motor cycle.

First of all, I am such a lover of the solo motor bicycle, believing it to be of all forms of motoring the most genuinely sporting, that I feel compelled to ask whither is this pastime drifting?

We find to-day the motor bicycle becoming heavier and heavier, more powerful and yet more powerful, more car-like every day. It can never be a car; it must always remain a bicycle, but in this striving after what it never can be, I think it is losing its charm and individuality, and, consequently, losing many potential adherents. The reason is, of course, the sidecar, and if we seek further we find the real reason is what is contained in the sidecar, that is, "*la femme.*"

If motor cycling is going to become simply a method of transportation—draughty, uncomfortable, and a cheap imitation of a car—well and good, but it is not that way that the sport will be kept alive; the woman must become also a motor bicyclist; she must taste the joys of a light solo, and not be content to remain luggage.

The war taught us many things; one was that a woman was a biped (a great discovery this), and that when dressed in breeches she does not lose in any way her femininity (if this is in doubt, see Fay Compton as a motor cyclist in "Summer Time"); finally, that a girl can drive a motor cycle as well as a man.

The future of motor cycling depends, therefore, on her. Will she be persuaded to share the pleasures of the road as a co-equal with man, or is she content to freeze at his side?

Propaganda and education alone will evolve the motor cycling girl, and in your hands, Mr. Editor, lies the future. We do not want a lady's machine; it would be as logical to try and breed a drop-framed horse; if you can get her to like it, that is all that is required.

What should be done at present is to encourage women to enter competitions, reserving every time a class especially for them; also compelling all entries by firms for team trials of whatever kind to have one at least of their machines mounted by a woman.

I know that I have set you a heavy task; I know that the class that motor cycle are very conservative—in some ways very prudish—but their education lies in your hands. Should you succeed, much happiness will be given to many; many more bicycles will be sold. It is a task that is worthy of an endeavour, and your success in it is the earnest wish of J. T. C. MOORE-BRABAZON.

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QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Lubricating Valve Stems.

[?] On the 1911 twin Rex there is a pipe with a tap and union running from the crank case to the branch of the induction pipe. What is its purpose?—H.T.

The tube from the timing case to the induction pipe of the Rex engine was so placed in order that a certain amount of oil should flow from the crank case into the induction system in order to lubricate the inlet valve stems.

A Fluffy Exhaust.

[?] I have a 4 h.p. Bradbury, and on my last run the sound of the exhaust, which is usually very sharp and clear, all at once seemed to become hoarse, or muffled, and I had to keep the throttle well opened, which has never been necessary before. Loss of power and difficult starting, with large petrol consumption, and the exhaust muffled are the symptoms of the trouble. Could you kindly help?—H.T.

The probable cause of your engine trouble is that the exhaust valve has become burnt or stretched. Note whether there is any clearance between the end of the valve stem and the tappet. There should be about one-hundredth of an inch. If there is no clearance, or if the valve seating has become burnt, you will lose compression and find all the defective symptoms which you describe. A new valve will be required if it has stretched badly, but if only slight the stem may be filed short enough and the valve refaced.

The 2¾ h.p. F.N.

[?] (1.) Oil is splashing from the flywheel to the outside of the machine. Is it due to over-lubrication? (2.) When taking the engine out for cleaning purposes, I presume that I need not detach either the magneto or gear box, but only the shaft drive. Am I correct? (3.) Shaft drive. How is this connected and disconnected when I want to take out either the engine or back wheel? (4.) Could I get the fixed type Bosch magneto converted into an advance and retard type?—W.L.

The overhauling of the 2¾ h.p. F.N. was thoroughly dealt with in an article which appeared in *The Motor Cycle* of January 9th, 1919. (1.) The trouble of oil splashing from the flywheel is probably due to wear in the main shaft bearing. (2.) The engine unit can be removed complete with magneto, flywheel, etc. (3.) The connection between the transmission and the engine is merely a sliding one, and you can draw the engine forward clear of the front universal joint. To remove the rear wheel take out the axle bolt, when the wheel may be drawn out. The shaft drive does not require disconnecting in any other way. (4.) We cannot state whether the magneto can be converted as you suggest without examining it.

A Misrepresented Bargain.

[?] On September 18th an advertisement appeared in *The Motor Cycle* offering a 1918-1919 combination for sale. I journeyed over 200 miles to bring it down by road, but, on my arrival, I found the description entirely wrong, as it was a 1915 model, and in a shocking state. Do you think, under these circumstances I can sue the advertiser for damages? I consider it entirely wrong of him to allow one to do such a journey on a false errand. I should feel grateful if you could advise me.—L.E.B.

The point which you raise is novel and interesting. We presume the correspondence would clearly show that you were making the journey for the express purpose of inspecting the machine, the owner agreeing to this. If you had actually bought the machine you could have commenced an action against the seller on account of his misrepresentation, and would have succeeded, whether the seller made the representation innocently or fraudulently, because there would have been a breach of contract. In this case, however, there was no contract, and in order to succeed in an action you would have to show that the owner of the motor cycle made the representation fraudulently. In other words, you would have to show that the owner knew that the statement in the advertisement was false, or else that he made the statement with recklessness as to whether it was true or not. Of course, the owner might have made the misrepresentation quite innocently, as he may have bought it himself under a similar misrepresentation, and without discovering it was in fact a 1915 machine. In such a case he could not be held responsible for the inconvenience involved.

A SCENE IN THE O.K.-UNION INVERNESS-LAND'S END TRIAL.

The road from Birmingham to Bristol commences with about four miles of tramlines. Capt. Pike, accompanied by an observer, is here seen heading for Bristol on the afternoon of Friday, the 21st ult.

Carburetter Blow-back

Will you tell me the cause of petrol being thrown back through the carburetter? There have been no alterations to the valve timing or carburetter; in fact, the valves are on the makers' mark. The valves have been ground in, and there is the recognised clearance between the tappets and valve stems. Compression is good, and there are no air leaks about the induction pipes. I shall be greatly indebted if you can suggest a remedy.—J.M.S.

Blow-back through the carburetter is a common fault with many engines. As, however, you feel sure that the valve timing is correct, we can only suggest that it is caused either by a delayed closing of the valve or bouncing of the valve on its seating. Stronger inlet valve springs might cure the trouble. If not, try timing the valves to close a little earlier, say, an advancement of one tooth on the half time wheel.

Claim after Purchase.

Early this season I had a well-known motor cycle and sidecar offered me for £50; and, after a short trial run and being told that the machine was a 1912 and in thorough good order, I agreed to give £40 for it, giving a cheque for £20 on account. During the next few days, on further trial, the machine developed engine and gear trouble, and, on taking it to a garage, I was advised to have it put right, which cost about £7. On seeing the late owner, and explaining matters, he took off £5—I giving another cheque for £15, making £35, for the turnout. Ever since that time the cycle has been more or less a trouble, costing in repairs and extras another £7, and the last time I was at a garage I was there informed it was not a 1912, *but a 1910*. Now, I shall be very much obliged if you will tell me if I have any claim against the late owner, seeing I have spent this money on the machine, and had it several months.—B.A.C.L.

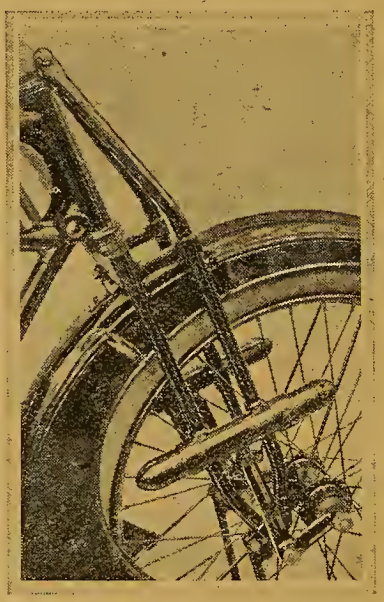
We do not think, under the circumstances, that you can make any further claim against the late owner of your motor cycle. As you obtained it at a considerable reduction in price in the first instance, we think that in the event of a legal action, the amount deducted would be taken as balancing the subsequent expenditure necessitated in putting the machine in good running order. Of course, if you can prove that the date was wilfully misrepresented, you have good grounds for demanding compensation, but these appear to be prejudiced by the fact that you have retained and used the machine so long.

READERS' REPLIES.

I notice a reader, "R.N.B.," requires to know of some preparation for blacking cylinders. I have used many of the various preparations sold for the purpose, and Rosco, made by Owen Bros., of Hull, is the best I have tried. Many of these are simply enamels, and are harmful to the cooling, but I have never found Rosco to affect the cooling in any way. Of course, you require to paint it on periodically.—R.S.

Norton Big Four.

In your issue of October 9th I noticed a query as to the wearing qualities of the Norton Big Four. If the enquirer cares to write me I can put him into communication with scores of private riders who can testify to the excellent wearing qualities of all Norton engines. Or I can show him in Sheffield two 1919 Big Four, Norton combinations which have both done over 5,000 miles, some of it in strenuous competition, and the engines of which have had not the slightest attention except for decarbonising. These engines are in perfect condition, and open to any examination. I recently met a man who had just purchased a Norton combination under the impression that he had bought a 1914 Big Four. (It was described as such on his receipt.) I pointed out to him that he had got a 1910 3½ h.p. But even then he expressed his complete satisfaction with the machine, and averred that the speed and power were a revelation to him. That machine was nine years old.—DAN BRADBURY.



A novelty in spring forks on the new Corona motor cycle; the action is obtained by the use of bell cranks and enclosed coil springs.

EXPERIENCES WANTED.

"R.S." (Oxford).—5 h.p. Zenith-Gradua-Jap, clutch model. Petrol consumption, starting, hill-climbing, gear, and belt drive, sidecar and solo.

RECOMMENDED ROUTES.

LINCOLN TO COLWYN BAY.—R.V.W.

Lincoln, Newark, Nottingham, Lenton, Derby, Mickleover, Uttoxeter, Stone, Eccleshall, Market Drayton, Whitchurch, Wrexham, Mold, St. Asaph, Abergele, Colwyn Bay.

SHEFFIELD TO ELY (CAMBS.).—E.B.

Sheffield, Worksop, Ollerton, Newark, Grantham, Stamford, Peterborough, Wisbech (straight on *via* King's Lynn for Hunstanton), turn right for Ely.

SPARKLETS

Change of Address.

The makers of Velocette motor cycles have removed to larger works, the new address being Veloce, Ltd., Victoria Road, Six Ways, Aston Manor, Birmingham.

Vacuum Oils in France.

Motor cyclists who have occasion to visit France, and who propose taking their motor cycles with them, will be glad to learn that Vacuum Mobiloils in all the well-known grades are readily obtainable throughout that country.

Merrall Brown Three-wheelers.

Owing to confusion with similar names in the motor industry, the Premier Motor Engineering Co., of Bolton, Lancs., who manufacture the Merrall Brown three-wheeled runabout, will in future be known as Merrall Brown Motors, the address being St. George's Road Works, Bolton.

Royal Ruby Prices.

Owing to the increased cost of material and labour, the Ruby Cycle Co., Ltd. regret that an advance in prices is unavoidable. The nett figures now stand at £48 for the single geared two-stroke and £155 for the 8 h.p. sidecar outfit, the cost of the motor cycle and sidecar being £122 and £33 respectively.

Anglo-Mexican Staff Lectures.

Professor C. R. Darling, A.R.C.S., F.I.C., gave an interesting lecture on "Heat" to the staff of the Anglo-Mexican Petroleum Company, at 16 Finsbury Circus, on Wednesday last. The lecture, which was the first of a series to be given during the winter months, was illustrated by sundry experiments and was greatly appreciated.

C.A.V. Magnetos.

We have received a folder describing the new KU1 and KU2 C.A.V. magnetos, issued by Messrs. C. A. Vandervell and Company, Ltd., Warple Way, Acton Vale, London, W.3.

Of these, the KU1 is a lightweight magneto for single-cylinder motor cycles up to 3 h.p., while the KU2 is a twin-cylinder model for engines rated up to 3 h.p. firing at 180°.

1919 Speed Trials.

In reviewing the results of the past season's speed events, it is interesting to observe that the thirty-three competitors who secured "firsts" in the Essex Motor Club Open Speed Trials, the fourteen "firsts" in the Weston-super-Mare Speed Trials, the fourteen "firsts" in the Luton Speed Trials, and the six "firsts" in the Scottish Speed Trials, all pinned their faith to Wakefield Castrol, in addition to which all the competitors who finished in the Scott Trial used the same oil.

DECEMBER 11TH, 1919.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
20, Tudor Street, London, E.C.4.
Telegrams: "Cyclist, Fleet, London."
Telephone: 2848 City (nine lines).

Editorial Offices:
Hertford Street, Coventry.
Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

Northern Offices:
199, Deansgate, Manchester.
Telegrams: "Iliffe, Manchester."
Telephone: 620 City.

Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

COLONIAL AND FOREIGN AGENTS:
UNITED STATES—The International News Agency, New York. CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
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SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Motor Cycle Taxation.

WE cannot but congratulate the Auto-Cycle Union on its attitude towards the question of motor taxation which is bound to come up in the near future. The A.C.U. has not gone on the lines "we want to be taxed," but it has realised that an alteration in the present taxation of motor vehicles is inevitable, and it therefore has approached the authorities with a reasonable suggestion, putting forth proposals which, if adopted, will bring in a useful source of revenue and will, at the same time, be fair to all users of motor cycles.

The suggestion is that the taxation of motor spirit is the most practical method of spreading the burden fairly over the whole motoring community, and that there should be a flat rate of 4d. a gallon import duty on all imported motor spirit used by mechanical road vehicles of every description. This scheme covers everyone alike; commercial vehicles, touring cars, and motor cycles of all kinds and used for all purposes. Everyone, therefore, bears an equal share, and no one has preferential treatment. The A.C.U. also thinks that if, in addition to the tax based on the use made of a motor vehicle, an annual charge on motor cycles is also to be levied, this should take the form of a wheel tax on all road vehicles, say, 2s. 6d. per wheel, such tax being a fee or licence to use the road for one year from the date of payment, and this, again, is a very reasonable suggestion. It means that, in addition to the petrol tax, the motor bicycle owner would have to pay 5s., the three-wheeler owner (including sidecars and three-wheeled cycle cars) 7s. 6d., and the four-wheeled cycle car owner 10s.

An important point is that the road tax, in other words, what is now known as the local taxation licence, would, if the scheme be adopted, be available for one year from the date of payment. Under the existing conditions the local taxation licence expires on December 31st, irrespective of the date on which the user takes out the licence. This means that since the only rebate is 10s. from October 1st, a motor cyclist may only get six months' use of his machine and yet have to pay the full fee.

Tourist Trophy Events in 1920.

IN our last issue we outlined the present position with regard to the T.T. Races in 1920. Whereas the original proposal was that the 500 c.c. event should be dropped next year (largely on the score of the risks attendant upon the rider, and to the increased efficiency and, consequently, added speed of modern machines), manufacturers who take an interest in racing feel that to abandon the classic 500 c.c. event would be wrong policy. As a result, the question is being reconsidered, and there is a distinct probability, if we are able accurately to judge the feelings of the trade by our conversations with them, that the 1920 Isle of Man programme will include a 500 c.c. event on one day, in addition to races for 350 c.c. and 250 c.c. machines run concurrently on another day. The fastest machine in this latter event will probably be awarded the Junior T.T., and the winning 250 c.c. machine the trophy offered by *The Motor Cycle* some months ago to encourage lightweight development. Weight limits, as already recorded, may be abandoned, and we regret this course from many points of view, particularly in the case of the smallest machines. The average solo rider wants a light machine, and he regards the weight factor as being more important than engine size, provided always that the engine is up to its work. As engine efficiency is increased, the usual course is to strengthen the frame and so increase its weight. Instead, the lightweight idea should be retained and the engine gradually cut down in size to suit the light frame.

We fear that many critics are drawing upon ancient experiences with lightweights when discussing the question of weight limits.

An index to the advertisements in this issue will be found on the page facing the back cover.

OCCASIONAL COMMENTS

BY 'IXION'

Slow Work!

I DO not know whether it took longer to get round the Cycle Show or the Car Show. At the latter one was jammed in an impenetrable, slow-moving mob. At the former the gangways were comparatively clear, and encounters with old friends were continuous —few of them seen for years owing to the war. On top of that the exhibits demanded far more attention than authorities had predicted. It was common talk that there would be few real novelties staged, whilst the revolutionary designs had been published long enough ago for us all to have realised them and discussed them. But when we got in front of the actual machines, whether they were sedately conventional or audacious to the verge of the *bizarre*, we began to fall out with our best friends as argument waxed warm.

Flat Twins, for Example.

FOR instance, the flat twin has long ago ceased to be a novelty. Jones, just home from Russia, waxed enthusiastic about the Raleigh. Three of us, who had then spent four days in Olympia, prepared to be bored. But inside ten minutes we were cawing like a rook's parliament. Somebody said something about housing such engines in a motor cycle frame. We went to see the Brough, with its lonely front cylinder sticking out all by itself in front of the down tube. Then we adjourned to show Jones the transverse mounting of the A.B.C., and from that we wandered on to marvel at the Harley-Davidson ideas on the subject. By this time we had veered into a discussion on flat twin induction pipes, and the pilgrimage oscillated in the reverse direction, and was extended to include every flat twin in the Show—not forgetting the quaint Black Prince. Bored? Not a bit of it. When once the notions of different designers begin to soak in, a week is far too short, even when—as the *blasé* expert callously pretends—"there is really nothing new"!

Should be Standard.

THERE is a pleasing strain of innocency in my make-up, and, as I grow older, my cerebellum revs. rather feebly. So I stood for a long time with goggling eyes fixed on the enormous brake belt rim of the Dunelt front wheel. Still, many humiliating memories have rendered me cautious. I did *not* say to the designer, "You are a fool to fit such a powerful brake to a front wheel. Halve its diameter, or fit two shoes to the rear wheel rim, as the Cedos folk rather wisely do." Not me. I put on my best plough-boy expression (Monsieur Dunelt does not know me from Adam), and said meekly, "Please, sir, why is your front brake rim larger than any other in the Show"? He accomplished a lightning feat of legerdemain, and, hey presto! he had swopped the front and back wheels round! Not a bad idea, is it? For one thing, it is much nicer to sit on a low wall and cuddle the front wheel in your lap when it punctures than to lie on your tummy in the road. For another, when the canvas of the rear tyre begins to show through the tread, you do not have to dismount both covers—you merely change the wheels round. Wonder nobody has deliberately applied this to solo machines before.

A Promising Absentee.

HALF by accident, I stumbled on one of the "cleanest" engines I have ever seen, which ought to have been inside the Show instead of in a window in Hammersmith Road. The Metric is turned out in eight sizes—four singles and four twins—by a little *coterie* including Brewster, the ex-Norton expert, and Bacher, who has had a big finger in sundry J.A.P. engines. It is not a hybrid between those two famous power units, though it evinces the cleanliness of both: for it has been heavily crossed with aero engines in the second generation. Overhead valves, with pump lubrication; two exhausts per cylinder and one inlet; cylinders with detachable aluminium combustion heads; ball bearing crankshaft; and roller bearing big ends (rollers *and* races by Hoffmann). It is a super-modern hot-stuff engine, and we shall hear a lot more of it. Mr. Blackburne was in charge. I am not going to tell you the names of all the motor cycle magnates who have been sniffing at it, but he told me he had booked orders for 23,000!

Combined Cylinder and Crank Case.

IN the car world it is quite common to find cylinders cast in one with the top half of the crank case; but I fancy the Black Prince is the first motor cycle engine constructed on these lines, and it is certainly something of a feat to produce the entire "body" of a 4 h.p. flat twin out of two castings. Little brain waves of this type suggest how it may be possible to cheapen the motor cycle without making it nasty. If similar simplification were applied to every detail of a machine, we should see the long-awaited "Ford" pattern two-wheeler arrive.

Cheap Sidecar Combinations.

I PUT in the centre word lest the ungodly should guffaw. It was commonly stated before the Show that a decent sidecar combination was going to cost at least £200 a time in 1920. Some of our experts have darkly hinted that four-wheeled cars would put the breeze up sidecars by underselling them. Of course, one expects to pay £200 and a bit for such an outfit as the Bat limousine, with cut-glass chrysanthemum holders. But, even now, Olympia contains combinations which have no kinship with mangles and sell at far less than £200. Perhaps the most astonishing example is the 7 h.p. four-cylinder F.N., at £175—including 33⅓% import duty! I hear the Huns left the jigs intact at Liège, and stacks of *bijou* Bosch magnetos, which were too small to suit any military purpose. Or again, the Scott combination

Occasional Comments.—

at 140 guineas is quite of the *de luxe* class, if it is not high-powered for its job. The four-wheeled cycle car has a long furrow to hoe before it competes with such bargains as the above, both of which are as smooth running as anything money can buy.

The New Precision.

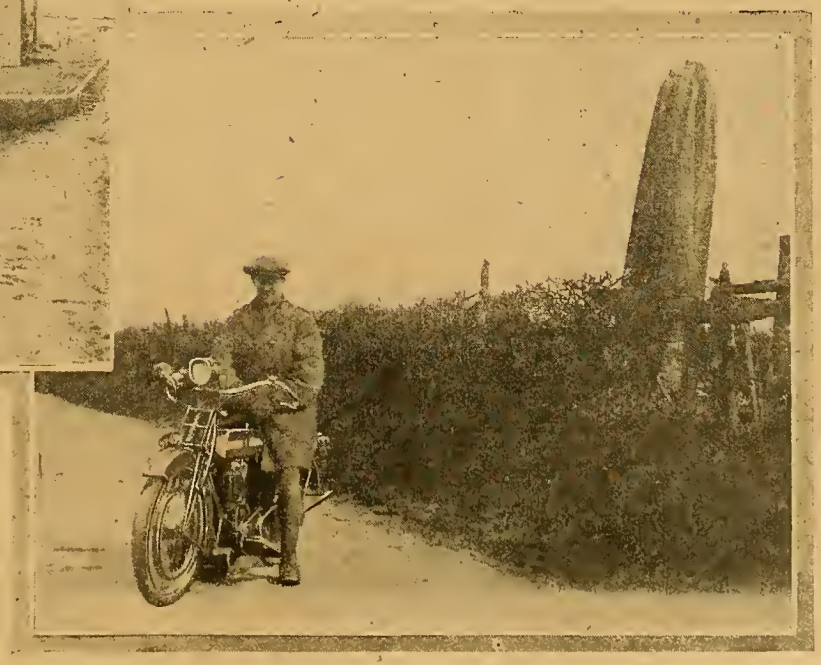
MACHINES like the new Precision are sure of a particularly warm welcome. During the war both design and production made great advances in allied branches of engineering. We expected a big infusion of new wine when peace returned. We have not had it. Our disappointment is explicable enough. There was an immense shortage of machines. The obvious thing was to go ahead and make that which was easiest to make, and which was known to be good. But we do not want to see the whole industry bogged in the old rut. Every few years some revolutionary machine—a Douglas or a Scott—astounds the industry, and proves that our previous best is not better than some previously unthought-of alternative, and, indeed, may not be quite so good for sundry special purposes. We all hoped that the aftermath of the war would include perhaps a dozen revolutionary machines, appealing to users beset by special requirements, offering a fresh sensation to the palates of jaded veterans, stimulating conventional designers to improve the weaker points of old designs, and so on. The A.B.C.—as yet largely untried—was the first of the expected débutantes. The new Precision is the second.

A Quadruple Slogan.

A GLANCE at the specification of the new Precision suggests that cheapness, light weight, comfort, and simplicity are its four inspirations. When production is in full swing, and we have all tried the newcomer for ourselves, we shall be able to estimate how far it goes towards success. Personally, I am sure its sponsors may be congratulated. A famous preacher once said that the chief secret of the pulpit consisted in knowing what to leave out. The Precision designer must have been tempted to insert a lot of items which are not essentials. Previously light, cheap machines have often been spoilt by uncomfortable frames, bad gear boxes, ill-balanced engines, shortage of power, and flimsiness of detail. The Precision seems to have steered a happy mean, disregarding nothing which is vital, and incorporating no weighty or expensive luxuries.

Still Room.

THUS two of the expected revolutionaries may be said to have made their bow—the A.B.C. as a mediumweight *de luxe*, the Precision as a mediumweight built down to the lowest weight and cost consistent with quality. A yawning gap remains. We are still waiting for the principal need to be supplied—the Ford motor cycle. The greatest demand of all is for a machine absolutely devoid of frills, selling at a rock-bottom price, and capable of 40,000 miles at economical maintenance costs. It need not be fast. It need not be any more comfortable than the average single-cylinder with a rigid frame (and that is not saying much). It cannot be conventional (or it will cost too much). It need not be beautiful (nobody ever loved a Ford for its looks). Simple, cheap, substantial, and a reliable goer—who will be the first to build it? It would be of incalculable political value, for it would ventilate Bolshevism out of the country, arrest the trek off the land, and, incidentally expand its producer into an international financier of the first water.



YORKSHIRE LANDMARKS.

(Left) The ruins of Middleham Castle, the home of the "King Maker," Earl of Warwick. (Right) The Devil's Arrow, an ancient stone on the roadside near Boroughbridge, supposed to have been placed there by the Romans.

The Year's Competitions.

A Brief Review of Post-war Reliability Trials.

Hill-climbs and Other Speed Trials of 1919.

ALTHOUGH the year has been a blank so far as records are concerned, owing to Brooklands being "closed for repairs," there have been numerous speed events to show that, had the track been available, some high speeds would have been recorded. The Luton Hoo, Weston-super-Mare, St. Andrews, and Southend flat events were revived, and the hill-climbs, at which some really remarkable speeds were obtained, included several events on Stile Cop and Sutton Bank. In the Stile Cop events, undoubtedly the star performances were those of the Sunbeams and Levis two-strokes in their respective classes; while the Indian, A.B.C., A.J.S., and Triumph figured conspicuously on Sutton Bank.

At the Luton Hoo speed trials, the outstanding achievements were those by H. Le Vack (3½ Edmund M.A.G.) and E. Baragwanath (8 Zenith); while at Weston Douglas machines shared the honours with Sunbeams, Harley-Davidsons, and Nortons. In the Scottish speed championships meeting at St. Andrews, the Douglas carried off the lightweight events, and a Triumph and an Indian scored in their respective classes.

Of all the speed trials, the Essex Club's speed event at Southend was the best attended, and the honours were so well distributed that it is difficult to recall any particularly outstanding performance, but single riders on a Zenith, Douglas, and Matchless, each won three events.

The Trials.

Reliability trials have been organised in greater numbers, and, apart from the two Six Days events, the most important have been held by the Midland clubs. The first big trial of the year, and one which created a great deal of interest, was the Victory Cup event organised by the Birmingham M.C.C. The trophy was carried off by G. Kuhn on a Levis in competition with seventy-seven machines of all types. There were so many equally good performances that the premier award was made on a speed-judging test, and in consequence brought forth a storm of protest against the inclusion of "speed-guessing" in trials which are organised primarily to prove the efficiency of motor cycles. As a result of this, most subsequent open trials eliminated split second timing for the purpose of finding a winner, a notable example being the one-day two hundred miles trial organised by the Midland Cycle and Athletic Club, in which were incorporated a number of tests including Alt-y-Bady Hill in Wales, a gradient on which very few of the sidecar machines succeeded in making a clean ascent. The premier award was won by H. B. Denley on an 8 h.p. four-speed Morgan; while out of an entry of seventy only three sidecar competitors secured gold medals. These were F. W. Giles (6 A.J.S.), J. Stevens (6 A.J.S.), and L. Newey (4¼ Ariel); while the gold medal soloists were L. L. Sealey (4¼ B.S.A.), G. A. Strange (5-6 James), and H. J. Stretton Ward (4 Triumph).

Contests of Increasing Severity.

Of the several one-day events, the M.C.C. team trial for *The Motor Cycle* Cup, the Scott sporting trial, and the Liverpool Club's event in Wales, were among the most important. The former attracted an entry of fifteen teams, and resulted in a win for the Coventry Club. The Scott event was an arduous trial over moorland tracks and through many watersplashes. Geoffrey Hill, who won the event on a 4 h.p. Triumph, averaged 22 m.p.h. over a course which the organisers considered a most difficult one at a 17 m.p.h. schedule.

This trial is unique in being one of the few specially organised to include the most arduous conditions possible, and it is of immense value as a test of machines produced to withstand overseas conditions.

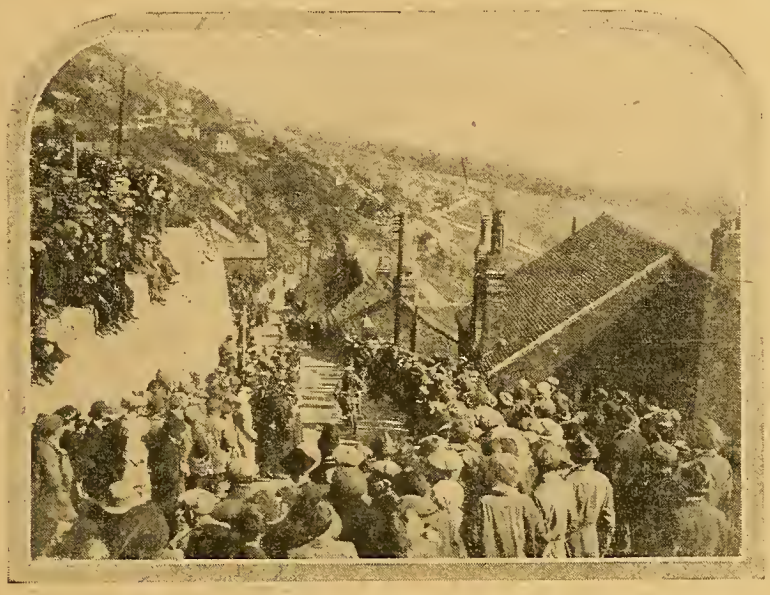
The Liverpool Club's Autumn Trial for the Reliance Cup was a hard day's gruelling over greasy mountain lanes and through watersplashes which heavy rains had turned into deep and swift torrents. The premier award was won by E. L. Boston (3½ Sunbeam).

Although not exactly in the same category as a trial, the London-Edinburgh Run at Whitsuntide should be included in the year's competitions. The single journey only was made this year, and no fewer than

The Year's Competitions.—

142 members competed, of which 125 completed the run. It was a most successful event and will long be remembered as the first big reunion of competition riders after four years of war.

The Arbuthnot Trophy Trial, although exclusive, bids fair to be one of the annual classic motor cycle events of the future. As its title suggests, the competition is for a perpetual trophy put up for competition among naval officers by the A.C.U., the trophy being a statuette of the late Rear-Admiral Sir R. K. Arbuthnot, Bart., and the event was inaugurated as a memorial of his gallant death at the Jutland battle. The honour of being the first holder of the trophy fell to Lt. E. S. K. Evans-Greaves, R.N. (4 Triumph).



Showing the great public interest shown in motor cycle trials. The photograph was taken on the Old Wyche, Malvern, during the Victory Cup Trial last April.

As in the days before the war, the Scottish Six Days proved a popular and most sporting contest. There were seventy-two entrants, of which fifty started, most of the withdrawals being due to the trade organisation's delay in coming to a decision regarding the trials to be supported by them. Eleven competitors secured first-class awards, ten second-class, and three third-class. Retirements in the solo class represented 50% of the starters, while in the sidecar class the proportion was a little over 55%.

The 1919 A.C.U. Six Days Trial proved to be a strenuous and trying event of a nature which has characterised the big trials of the chief motor cycle organisation. As in previous "English" Six Days Trials, the sporting spirit was subservient to a more serious demeanour as befitted the importance of the event. 111 competitors started, of which 82 finished, 26 being awarded gold medals, 34 silver, 14 bronze, and 9 no awards. A B.S.A. team won the much coveted team prize, and perhaps the outstanding feature of the various performances was the consistent good showing of the two-stroke twin Scotts and, in fact, of all two-stroke machines. F. G. Edmond (4 Triumph sc.) was the only single-cylinder sidecar competitor to secure a gold medal, and two 3½ h.p. engined sidecars succeeded in obtaining silver medals.

The competitions of the year 1919 will be completed by the historic London to Exeter and back run and the Bristol-Land's End trial, both of which will be held on Boxing night.

Altogether, one may conclude that motor cycles have improved since 1914, and that the men who ride them are in every way the compeers of their fellow enthusiasts whose names figured in the prize lists of pre-war days.

Is the Ford Type of Motor Cycle Wanted?

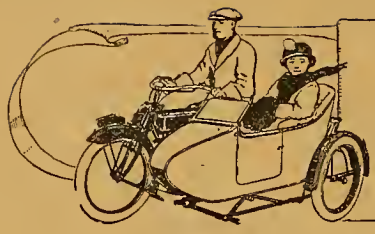
A GOOD many words and a great deal of ink have been wasted on the subject of the "Ford" or "quantity" production motor cycles to be marketed at a ridiculously low price in this country. These machines were to be produced in the United States according to some rumours, and again by newly capitalised companies in England. On the face of them, the various statements were absurd, and a writer in our American contemporary, *Motor Cycling and Bicycling*, airs views on the subject which are refreshing and candid. He says:

"The trouble is, what factory do you know of in the production end of motor cycling that would have the daring to risk a year's business to sound out the desires of the purchasing public? We blame the whole thing on the American idea, this seeming limit to the use of motor cycles. Too many citizens are eager to own a car, for that is a sign of affluence, no matter how old and decrepit it may look and sound. Haven't you had 'em ask you, 'Why don't you buy a car? I think it would be so much nicer than a motor cycle.' Sure you have, and they cannot grasp the idea of better quality and more fun you get when you possess a motor cycle.

"The Whozis, down the street, roll up in a new car. The neighbourhood is in an uproar of covetous gossip, and it swells their pride to be the subject of talk. This is lacking when the same family purchases a motor cycle. So you can count that one of the big factors against more folk riding motor cycles—an overweening desire to put on 'dog,' to say it bluntly.

"The motor cycle factories are ever eager to double their output, but they are cautious about making experiments that may prove too costly.

"It sounds good in print, this talk of all types and prices for motor cycles, but it doesn't work out well in fact. More than one dealer has a second-hand problem that has him worried. Probably not now, with the scarcity and high prices of new machines, but it was present a season or so ago. Try to convince a prospect that a 1912 single-cylinder outfit, lacking the refinements of later models, will be just as efficient transporting him to and from work as a 1919 electrically equipped three-speed, and use that lure of the difference it will make in the size of his bank roll. Then see him flop for the shiny new outfit, regardless of price. With a 'Ford' type of motor cycle selling for 'Ford' prices, you'd run up against the same snag, and your 'Ford' type machine would not be near so good a proposition as an old-timer of a few years back."



What the Ladies Think.

Comments on 1920 Machines by Two Well-known Lady Motor Cyclists.

WE live in an age of luxury, and modern motor cycles are well designed for ease and comfort. We have long asked for elegant sidecar outfits combined with more locker space, and many 1920 models have these good points. Prices have risen; but that we must expect and, given all our whims, we must not grumble on the score of expense, but rather readjust our minds to the change. Practically all the firms who market a motor cycle of 3½ h.p. and upwards list it as a passenger turnout. One of the gems of sidecar construction in the recent Show was attached to the big Harley-Davidson *de luxe* model. It was a wonderful piece of craftsmanship. By some contrivance the padded elbow rests of the sidecar could be turned back and the hood passed down out of the way and out of the reach of damage. The bulbous back concealed a locker, or could be used as a dickey seat for two children. There were no projections in any of the woodwork, all hinges and such things being buried out of sight. The finish of the bodywork in fawn enamel was superb.

Sidecar Comforts.

There are also other sidecars that provide additional seating accommodation in various ingenious ways. I know, personally, a family who take their jaunts with a tiny girl tucked down in the toe of the sidecar. This is not really comfortable, and no excuse can now be offered for this mode of travelling. The Canoelet has a new model which ought to be popular. It is most sporting in appearance, yet gives far more convenience than is usually found in such models. It gives three distinct seating positions, good locker room, and is well sprung. No door is provided, but a slight compromise exists in the form of a step. The finish is a bright colour with aluminium disc wheel. I overheard a middle-aged lady say that the sidecar seats were most of them too low. Adjustable seats are really necessary, as the older generation were taught in their youth to sit upright, and cannot forget their early training and recline in the manner of the youth of to-day. Some six years ago I designed a screen for my own motor cycle. The glass or celluloid was attached to a scuttle arrangement that hinged back to allow the door to be used. I found in this year's Show quite a number on exactly these lines. Evidently great minds still think alike! There are, however, many passenger machines that have no fripperies but give solid comfort. The Sunbeam, New Imperial, Enfield, Ariel, and P. and M. outfits are especially noticeable in this respect, and sell at a reasonable figure.

Runabouts bid fair to compete with the more expensive machines. The well-known Morgan three-wheeler costs less to-day than several of the *de luxe* sidecars, and, if only delivery were more easily obtainable, would be preferred by many who require car comfort and cleanliness in the bad weather. The Premier runabout is a promising newcomer with a pleasing layout. The Castle-Three would also appeal to the lady owner, and one could not go far wrong in selecting any of these in 1920.

Scooters.

To digress, we must have suitable clothes for winter riding, and the Dunhills stand in the corner of the Gallery came in for a good deal of attention. Riding coats and other motoring apparel were displayed, combining protection with good taste, so that there is small excuse nowadays for the woman who is not clad suitably for hard weather riding.

I must not overlook the scooters. So many people are interested in these that it was a difficult matter to get near. The Whippet deserved to be a favourite. The weight was well distributed, neither too far forward nor too far back for good design. The Quadrant autocyclette was another that was particularly neat, and may take the place of a lady's open-framed model motor cycle. These little mounts will bring many women into the motor cycling world. There is room for them all, and if Olympia becomes overcrowded and confined, on the broad highway will be found space enough.

MAY WALKER.

MANY MODELS REVIEWED.

THE first thing to attract my attention on entering Olympia was the spring frame Royal Ruby, and I was delighted with it, as I was later with the other frame springing systems, which I soon learned were becoming universal.

This was a good beginning to the day's enjoyment, and I passed on to the next item, and found a much altered old friend fitted with a Sturmey gear and an automatic Amac: to wit, the Connaught two-stroke, which seems an ideal lady's machine. Everywhere my eager eyes turned they seemed to find the spirit of dear old 1913-14, together with the advancement of 1919.

Take it from me, some of the two-stroke people have not been asleep! The new Scott is something which should be examined by every lady, for the whole affair is simply lovely, and it should appeal to all who desire a machine that is clean to ride and on which no special protection for the feet is necessary.

Among the "sporting 'bus" element, I saw several "first-raters," and one of the nicest was the Diamond four-stroke, for the riding position was about the best that I have ever experienced, and the speed

capabilities of this bicycle need not be enlarged upon. Another, this time a two-stroke, was the new Dunelt 500 c.c. model, which I should like very much to try for its power on hills, as its engine should pull better at low speeds than a 500 c.c. four-stroke.

But there are many from which to choose, and, as ladies nowadays will ride anything on two wheels, it becomes difficult to class any particular machines as "ladies' mounts."

Three American exhibitors who are running for star places for our next season's riding are the Indian, Harley, and Reading-Standard.

The new Indian Scout is quite in a place by itself, and if I had been born in Australia I should call it "Dinkum," for it was simply gorgeous. My favourite, the high-powered Reading-Standard, was also shown off to advantage.

Among flat twins the Harley-Davidson is certainly a winner, for it has a medium-sized engine, automatic carburetter, and all the refinements which the V twin possesses coupled with several new features, such as the absence of the noisy high-speed front chain.

Of course, the Precision motor cycle is about the only thing which is entirely brand new in every detail. It even has a countershaft brake, not to mention the audacious design of springing, and the compact tool box. If Henry Ford had designed this 'bus, he could hardly have made a better production job.

I met some old friends on the Zenith stand, and, after Mr. Sumner had tried to make us purchase the entire stock of Zenith flat twins, I hopped over to see Mr. D. R. O'Donovan about something serious, for, horrors! I could see a T.T. Norton with what appeared to be an N.S.U. gear attached, and I was rolling up my sleeves for a frontal attack when I discovered the gear to be the new Bradbury epicyclic, so "all clear" was sounded.

I am saying nothing about the rest of the Nortons, because it goes without saying that Mr. J. L. Norton makes everything worthy of his name.

By this time I had gathered a new host of impressions about the trend of things in general, and it must be said that everything is going ahead in a wonderful way for the future happiness of us *motocyclistes*.

In conclusion, I must mention the dear little A.B.C. flat twin, which is quite as unique as the Precision. Its really well thought out front leg guard system, incorporated with the frame duplex down tubes, appears to be just what one would desire.

MINNIE TULLY.

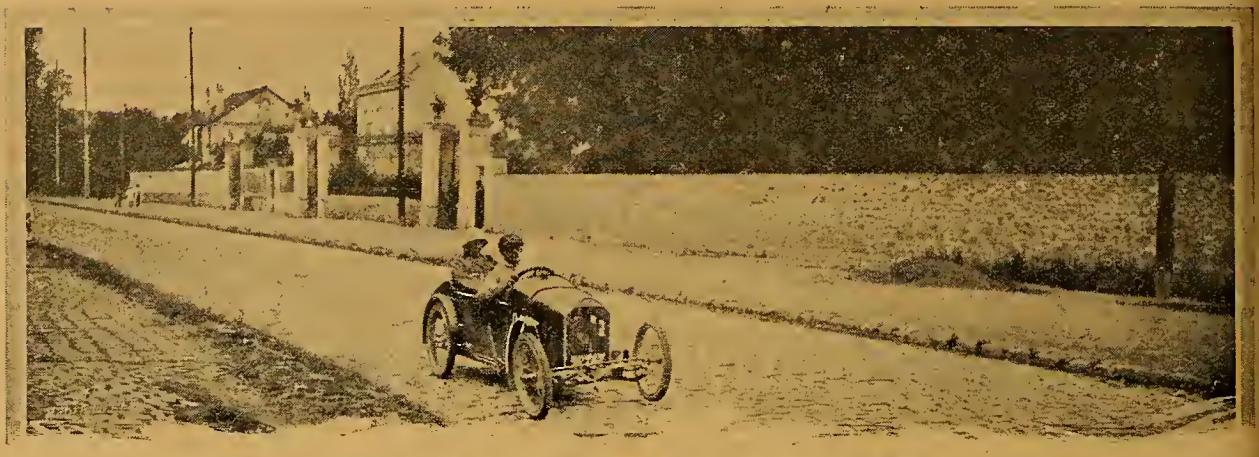
AT THE MEET. In these days of high cost, the comparative economy of the sidecar is appreciated, especially on purely pleasure runs.

THE PARIS-NICE TRIAL, FEBRUARY 13th-16th, 1920.

THE Paris-Nice Trial has always been an attraction to English motor cyclists. In 1913 *The Motor Cycle* organised a most successful party of some twenty riders, who took part in this event. They all enjoyed themselves thoroughly, the novelty of the competition and the beauties of the Riviera greatly appealing to them. In 1914 an English team also took part in the trial, while for next year the organisers, Le Moto Club de Nice, aided by *Motocyclisme* and *Le Petit Journal*, are endeavouring to improve upon the rules of previous years. Mr. G. Sweerts, editor of *Motocyclisme*, is endeavouring to get entries of teams of military despatch riders entered by the Governments of the various countries who will take part. He has already approached the French Minister of War, and, we believe, the British War Office. Provided the French Minister of War agrees with the idea, it is possible that Great Britain may send a team, as well as Belgium, Switzerland, and possibly Italy, while the Americans are also being approached. We hope to publish the rules shortly, and shall keep our readers well informed with the progress of the organisation of the event.

FORTHCOMING FRENCH EVENTS.

Strenuous and Interesting Competitions.



A French cycle car, the Noel, passing over typical French *pave* roads.

THE year 1920 will be a busy one in French motor cycle and cycle car circles. Not only will there be several big international races and competitions held by the national authority in France, but all the local clubs are showing signs of activity, and are preparing to request permission to hold races, hill-climbs, and touring competitions.

It is impossible, at the present moment, even to outline the full programme, for the clubs are just beginning to discuss their future events, and cannot definitely decide on them for several months to come.

The first big event of the year will be the Paris-Nice trial, which has been fixed for February 14, 15, 16, and 17. This promises to be well supported by both trade and amateur riders, and machines of many makes and nationalities will be represented. Already the Union Motocycliste of Brussels has selected its official team, which will consist of M. Taymans on an American Excelsior, Madame Taymans on a Triumph, M. Werder on a Harley-Davidson, M. Dandois on a James, and Lieut. Réquillé on an undesignated make of machine. It would be contrary to French custom to select a team so long in advance, but the Frenchmen will be there nevertheless. English riders may be counted on in substantial numbers, and altogether the early-spring trip to Nice should be full of interest.

Races.

The great reliability trial of the year will be held in the French Alps, radiating from Grenoble, during the middle of the summer. With such climbs as the Galibiers, the Lautaret, Col d'Allos, etc., from six to ten thousand feet above sea level, to say nothing of the run from Grenoble to Paris, the severity of the trials is undoubted. There is, moreover, further attraction in that they take the competitors through some of the finest scenery to be found in Europe, and they will introduce riders to wonders of nature unknown at home.

The great speed event of the year will be held in the neighbourhood of Le Mans, during either August or early September. The Automobile Club of the West of France intends to organise either a two or three day meeting. It is more than probable that there will be separate long distance races for motor cycles, for cycle cars, for voiturettes—by which is meant machines weighing not more than 10 cwt.—and also for three-litre cars. This will be a race pure and simple, over a very fast, level course, specially prepared, boarded off, and guarded by troops.

There is a proposal to hold another race in the hilly district around Lyons. This suggestion comes from the Lyons Club, which is one of the most vigorous of the many provincial clubs in France. The exact nature of the competition has not been decided, nor has the date been settled.

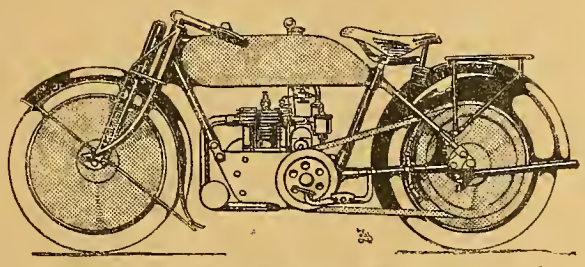
In the neighbourhood of Paris quite a number of races and competitions may be expected. Among them are the Circuit de l'Eure, Paris-Trouville, Paris-Deauville, Circuit de Paris, etc., all interesting in their way, but all more or less of a local nature.

Growing Activity.

It is rather curious that, while car manufacturers in France are not very enthusiastic about racing and competitions, the makers of motor cycles, on the other hand, are only too anxious to enter public trials. Probably this may be accounted for by the fact that there are immense possibilities ahead of the motor cycle, and its development will be favoured by the high prices prevailing for motor cars. The cheapest motor vehicle is now really expensive according to pre-war standards, and, as motor transportation must be secured, the motor cycle and the sidecar will be adopted. Before the war the great centre for motor cycle competitions and trials was England. It looks now as if France is to become a competitor.

This week the French postal authorities put into service for the Fifteenth District of Paris four motor cycles and sidecars for collecting letters from pillar boxes to the central office. Trials have already been made in another district of Paris, so that this move must not be looked upon in the nature of an experi-

Forthcoming French Events.



An example of French motor cycle design, the Bleriot 4 h.p. vertical twin. The two-speed gear box is combined with the crank case. Note the neat spring frame and disc wheels.

ment. The French postal authorities have been led to this action by reason of the increasing cost of labour. It is believed that one man with a motor cycle and sidecar will do as much work as three men afoot. Experiments have been made in Paris with electric vehicles, but these were not found satisfactory for the work required of them.

The French postal authorities also contemplate purchasing motor cycles for country postmen, and particularly for those in mountain regions. The French gendarmes have already been provided with motor cycles, and a number of these men are under training at the present time at the military motor park at Dourdon, where they are taught not only to ride but to care for their machines. In view of this statement, the visitor to Paris must not expect to see city police running up and down the boulevards on motor cycles. Gendarmes, who have been motor cyclarised—if the term may be permitted—are an entirely different body from the city police, with whom they are often confused by foreign visitors. The gendarme is half policeman, half soldier. He has authority on all the roads and in all the villages of France, but he is never found on duty in the streets of Paris.

A SIDECAR LANDAULET.

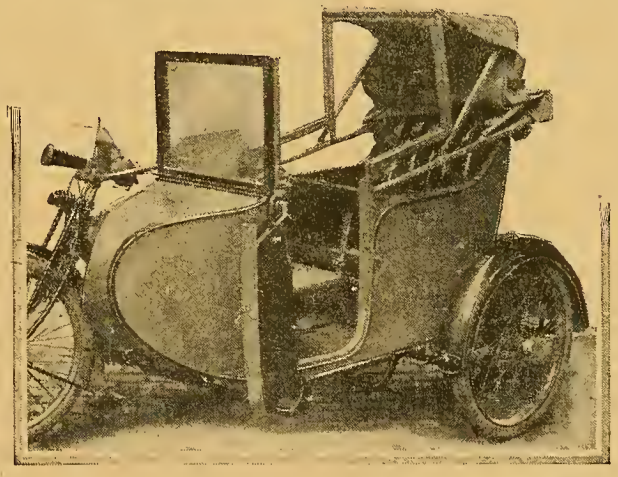
Complete Protection from the Weather. A Comfortable Double-seated Body.

THE idea of placing "taxi" sidecars on the road was mooted with a view to relieving traffic problems and providing a quick and inexpensive method of passenger transportation. Unfortunately those local authorities who were approached, for some unknown reason refused to issue hackney carriage licences for the swift and handy sidecar outfit, and in consequence the scheme has so far come to nothing, although we now hear of the possibility of its successful revival.

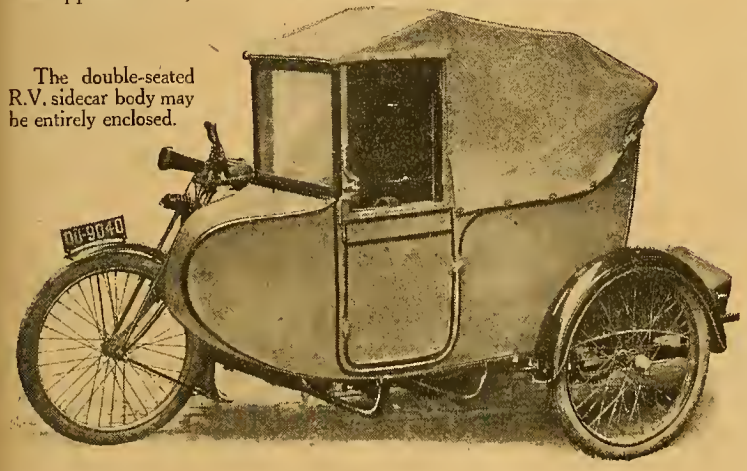
The Taxicab Body.

We have lately examined a most creditable piece of the sidecar bodybuilders' art, which was designed primarily for the above purpose, and regret that, owing to the official attitude, large quantities of these are not on the road fulfilling the duties for which they were intended. The body, shown in the accompanying illustrations, is fitted on a Gloria chassis attached to a Triumph motor cycle, and it is so little heavier than the standard coachbuilt body that the engine has suffered no noticeable distress in consequence of its use. Mr. H. S. Harvey, of the R.V. Sidecar Co., 92, Humber Avenue, Coventry, is responsible for the design and production of this body and its fittings. It will be noted that exceptional depth is given to the seat and sides of the sidecar, and that an additional folding seat is fitted, enabling two children to be comfortably accommodated in front of an adult passenger.

Sliding celluloid windows are fitted in the door and on the opposite side, while the windscreen is of the same material, and, when the hood is collapsed, may be tilted to any angle. A neat spring-operated locking device enables the slope of the screen to be permanently maintained without the use of the usual friction or serrated washers and wing nuts. Erection of the hood (which incorporates the frames for the side windows) is easily effected by one hand of the passenger, who can carry out the operation without moving out of the sidecar, and complete protection from the elements is assured.



Interior of the R.V. sidecar, showing extra seat and readily erected hood. The screen may be set and retained at any angle by means of a spring locking hinge.



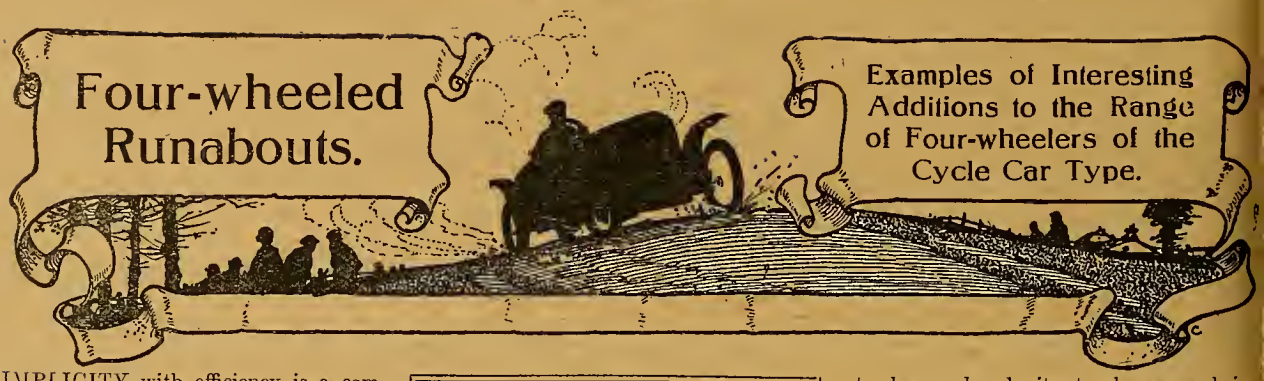
The double-seated R.V. sidecar body may be entirely enclosed.

Excellent Detail Work.

A large spring luggage platform is fitted to the rear of the chassis, which will accommodate a suit case and also has provision for the carrying of a spare petrol can.

The external finish of the bodywork is quite in keeping with the rest of the outfit, the general scheme being grey (to match the tank), with black mouldings and mahogany screen and window frames. The hood material is also of the same shade of grey. Well padded upholstery and comfortable seats are provided, and special care has been devoted to prevent ingress of water at the windscreen and hood joints.

Four-wheeled Runabouts.



Examples of Interesting Additions to the Range of Four-wheelers of the Cycle Car Type.

SIMPLICITY with efficiency is a combination hard to obtain in a runabout, if only for the reason that it has to equal the reliability of the motor cycle and be almost as silent as a car. It has been proved many times that a machine following motor cycle practice is not always a satisfactory commercial proposition, because the noise which is usually tolerated in the simpler type of vehicle is accentuated when the same kind of engine and transmission is enclosed.

By raising the back cushion of the Victor, access is obtained to a large locker. Incidentally, the construction of the body is shown in this illustration.

Notwithstanding the difficulties to be faced, however, there are still many fresh designers who are making big efforts to produce a comfortable four-wheeler which approximates to the motor cycle so far as the mechanical elements are concerned. Some of these machines are far superior to those of 1912, and these may become serious competitors to the motor cycle. On the other hand, there are others which reveal lack of appreciation of the causes of failure in previous designs. It is interesting, however, to watch the trend of design, and to record the advent of new designs and endeavours.

The Coventry Victor.

Recently we were able to take a trial run in a little four-wheeler fitted with the first of a new water-cooled engine produced by the Coventry Victor Motor Co., Ltd., who are making a 5-7 h.p. air-cooled opposed twin for motor cycles.

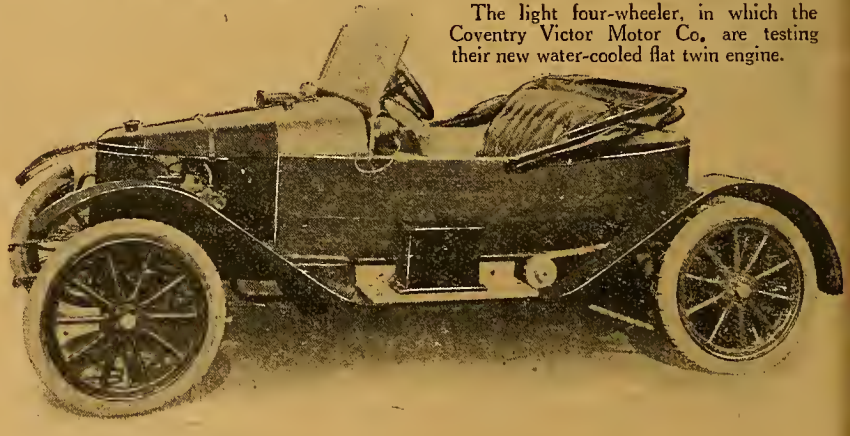
"Officially" there are no cycle cars. All three-wheelers are motor cycles, and any type of machine on four wheels is a motor car. Thus at the recent Olympia Shows there were anomalies to show the results of such a clear cut line of demarcation. It would appear that the number of wheels does not quite adequately mark the point where the motor cyclist's interests become those of the car owner, and whether a machine has three wheels or four, it cannot fail to interest a section of the motor cycling fraternity if motor cycle practice in engine and transmission is followed, and above all if the price is approximately the same as that of a motor cycle and sidecar. The small four-wheeled runabouts described and illustrated in the following pages are of this type of four-wheeled motor cycle.

The little car itself is extremely interesting if only for the system of construction, which is reminiscent of the canvas canoe, but, instead of canvas, aeroplane fabric is stretched over a light lathwork of wood. This construction is not obvious, however, and at first sight the body appears to be built of wood. At the rear of the body there is a capacious locker, access to which is obtained by raising the back rest.

Little can be said at the present time regarding the vehicle as a commercial proposition, but we understand that in all probability a company will be formed to market it. That it is more than the average experimental chassis put together to test an engine or transmission becomes evident when the car is examined.

The main object of our run in the car was to test the engine; and we can say that for a first engine of the batch about to be produced, it struck us as being remarkably quiet and flexible. The capacity is only 750 c.c., the bore and stroke being 80 and 78 mm. respectively, and since the car weighs about 8 cwt., gear changing was naturally somewhat frequent; but on the whole the vehicle had a good turn of speed, and whether in low gear or "top," engine vibration was unnoticeable.

The transmission is the subject of a pending patent, and therefore cannot be described. We think, however, that the designers will be well advised to instal larger countershaft pulleys.



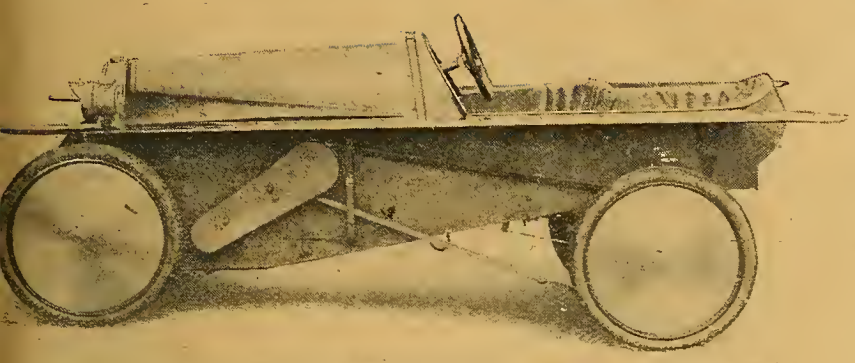
The light four-wheeler, in which the Coventry Victor Motor Co. are testing their new water-cooled flat twin engine.

A Novel Sidecar Alternative—the Tamplin.

A four-wheeled vehicle which created a great deal of interest outside the car and motor cycle shows is the Tamplin tandem-seated cycle car, which, in spite of its curious appearance, is possessed of many pleasing features.

An 8 h.p. air-cooled J.A.P. engine is located at the front end of the frame, the drive being transmitted, through a universal joint, to a chain sprocket on the near and outer side of the body, and thence through a standard Sturmey-Archer gear box to a single belt pulley on the live rear axle, which is mounted on large Skefko ball bearings, enabling the single belt to drive both rear wheels.

The Tamplin on the road requires careful handling during the first few miles of initiation, as the direct steering gear necessitates a very light touch on the wheel. Later, however, we found the control to be most satisfactory, and in dense traffic the narrow track and quick response to the steering wheel enable the driver to gain much advantage over larger vehicles. The comfort provided for the driver is excellent, but



A £150 tandem-seated runabout—the Tamplin, which is fitted with an 8 h.p. twin engine Sturmey-Archer gear box, and final drive by single belt to live axle.

ne accommodation for the passenger not over roomy. When fitted with windscreen and hood, the Tamplin hould be of great utility. The price of his machine, less accessories, is £150, nd it is manufactured by Messrs. 'amplin, Railway Garage, Staines.

A Four-cylinder Air-cooled Machine.

Another proposition designed as a idecar alternative, but which follows nore conventional lines, is the Barnard ycle car, which its makers intend to roduce at a figure comparing favourably vith the price of a sidecar outfit. £168 s the suggested figure for a standard nodel, but in order to permit its produc- ion at the price mentioned, such refine- nents as detachable wheels, reverse gear, nd dynamo lighting are omitted. A *de uxe* model will be made, however, in- corporating these features, the price of vhich will be £188.

The engine is a Henderson four-cylinder ower unit, arrangements for the import- ng of which are well in hand. As most

Canvas covers are used over chains to back axle on the Barnard cycle car.

notor cyclists know, the unit embodies a three-speed gear and multi-plate clutch, so the manufacturers are left very little to do but to connect it up to the rear axle by a chain.

An auxiliary cooling fan and a pedal starter worked by a rack and pinion will be embodied, however, whilst the trans- mission will be by a single chain from gear box to countershaft, thence by another chain to the centre of the rear axle. Provision is made for adjustment of both chains, and the countershaft runs on roller bearings of generous dimensions.

Two radius rods attached to the top and bottom of the axle sprocket housing are utilised to form a frame for the chain case, which is made of canvas fabric stretched over the rods and buttoned together.

Roller bearings are also used to support the rear axle, and quarter elliptic springs are fitted front and rear. The specification includes 700 × 80 mm. tyres and steering by double cable and bobbin.

The St. Mary's Engineering Co., 104, Whitechapel Road, E.1, are equipping a factory with the intention of producing vehicles immediately the power units are available from the U.S.A.

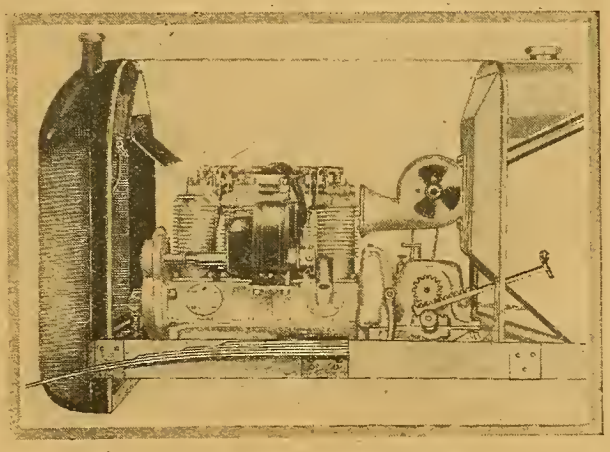
One of the earliest vehicles in the class under review was the Chater-Lea, which competed in a London-Edinburgh run several years before the term cycle car was originated. This machine was to all intents and purposes a redesigned quadricycle with the engine on one side and the drive taken to one of the rear wheels by means of a belt. The idea has been revived several times, and among the new propositions now reviewed there are two which follow the same general idea, while a third is undergoing experiments in the hands of one of the largest motor cycle manufacturers in this country.

The first is an Italian machine, and is interesting for the fact that it is a development of a machine designed to be steered by the feet.

Landini Foot-steered Runabout.

The first idea of the inventor of another vehicle, Signor Landini, the chief pilot at Cameri aerodrome, near Nevara, Italy, was to provide a light car which should accustom the pupils to control the direction of flight by foot instead of instinctively doing so by the hand lever, which is not intended for that purpose. A system was found to effect this, and the machine was put through regular road tests by the military authorities, and became the recognised first step to flying instruction at that school. The development of the idea for the help of the armless and maimed came as a matter of course.

The power plant is an 8 h.p. V air-cooled Stucchi engine mounted on the re-



The Barnard power unit, a 10 h.p. four-cylinder Henderson engine. Observe the fan and foot starter.

inforced right side footboard and driving the back wheel on the same side by chain through a two-speed gear integral with the motor.

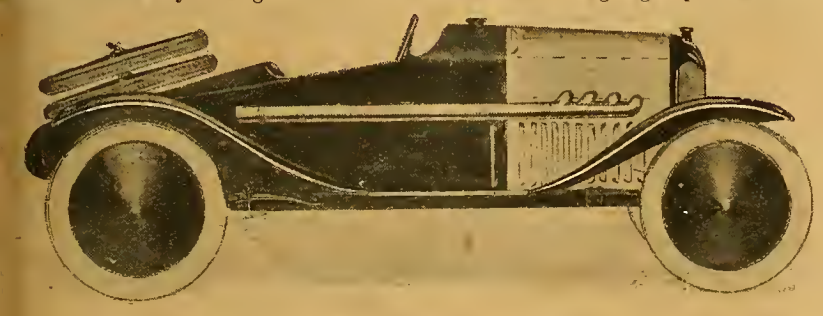
Steering in the original model was effected by a tiller-like bar pivoted at the centre and running transversely to the car's line of travel, slipping of the feet, which are accommodated in footrests at its extremities, being, of course, provided against.

A kick-starter or an automatic engine starter was fitted, and the gears and accelerator were operated by a sideways movement of the knees, much as is the swell of an harmonium.

One illustration shows a standard car with a gear lever in the normal position, which is a development of the first type towards a bigger and more usual type of four-seater which it is proposed to sell at a figure in the neighbourhood of £125, and which the Cameri works are now turning out in quantities. It is reputed to do fifty-five miles to the gallon.

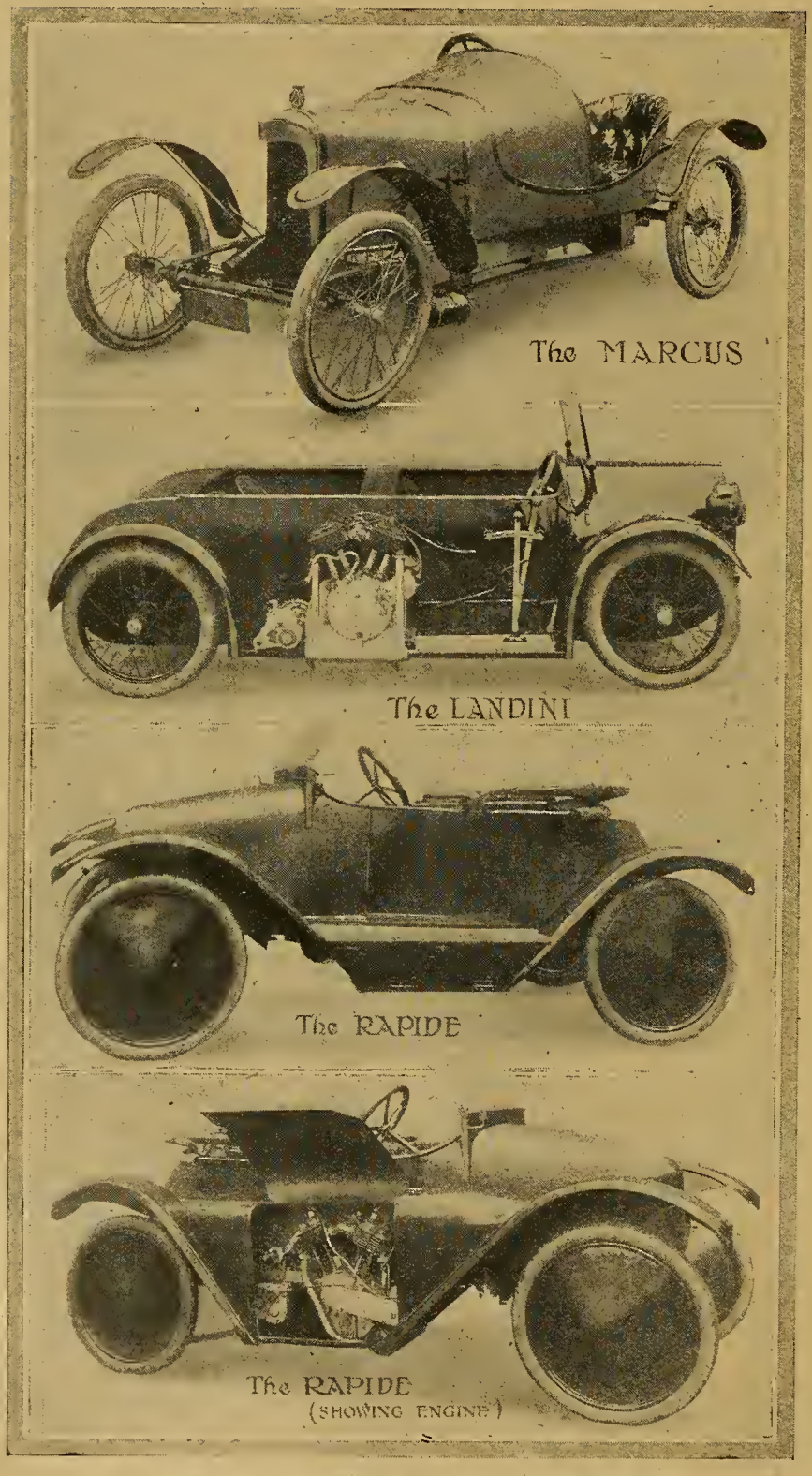
La Rapide.

A machine, on similar lines so far as the layout is concerned, and called La Rapide, is about to be placed on the market by Mr. H. Jordan, of 7, Pall Mall, London. It is to be built in quan-



A sporting little vehicle, the Barnard embodying a four-cylinder motor cycle power unit.

EXAMPLES OF FOUR-WHEELED RUNABOUTS.



A light machine with single belt drive to live axle—the Marcus.
An Italian four-seater with the engine and gear box on the running board—the Landini.
La Rapide, an English design which follows the Chater-Lea idea.
The power and gear units in La Rapide are located in a compartment on the side of the body like the Scott Sociable.

C2

tity and marketed at £200. As in the Landini, a motor cycle power unit is located on the right side running board. Between the two special wings is a compartment in which is placed an 8 h.p. J.A.P. air-cooled twin engine driving through a chain to a three-speed Sturmey-Archer gear box and clutch, and thence by belt to the right-hand rear wheel. The front mudguard protects the engine and gear box, but at the side between the mudguard and the body there is a cowl which directs the air on to the engine cylinders, similar cowling allowing it to escape at the rear.

Steering is direct, and the chassis, composed of angle iron, has one forward and one rear cross-member, being mounted both at the front and the rear on quarter-elliptic springs.

We are informed that there will be a considerable number of modifications to the machine before it is ready for quantity production; for instance, the type of engine will be altered, a three-speed and reverse gear box of a different design will be fitted. Whatever the engine, however, an extension of the crankshaft will be brought under the driving compartment in order that a rack and pinion hand starting gear may be fitted, while on the same shaft a pulley will be placed to drive the dynamo, supplying current to the accumulators for two powerful side lamps and one tail lamp. The price mentioned includes these accessories.

There is a certain amount of experimental work to be carried out concerning braking systems and such minor points. At present internal expanding brakes are fitted to each rear wheel separately, operated by hand and foot respectively. The side-by-side seats are quite comfortable, and the body is equipped with the usual instrument board, hood, and screen. At the back of the seats is a large compartment to hold a suit case, spare petrol and oil tins, while below one running board there is a large tool locker.

The Marcus.

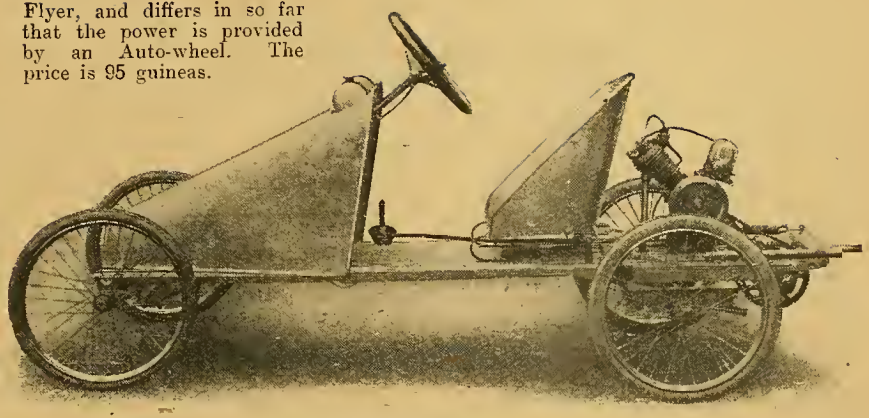
A little four-wheeler of the simple type, and one which closely resembles one of the early G.N.'s, is the Marcus runabout, designed to sell at £100. Originally known as the Challenge, this little vehicle has double quarter elliptic springs front and rear and is steered by cable and bobbin. The engine is located at the front, with the crankshaft across the frame, and drives by short chain to a gear box, from which a single belt transmits the power to a belt drum in the centre of the live axle. The maker is L. Marcus, 9, Golders Green Crescent, Hendon, N.W.4.

Provided the weight is kept low and a little more attention is paid to the design of the body, there are no reasons why the Marcus should not be a mechanical and a commercial proposition. The single belt for the final transmission should be satisfactory, as the Marcus is light, and the single belt is long and drives both rear wheels. The modern belt is a very different proposition from some of those which were sold before the war, and, after all, the chief failure of belt drive in 1911 was due to the inconsiderate use of expanding pulleys of too small a diameter.

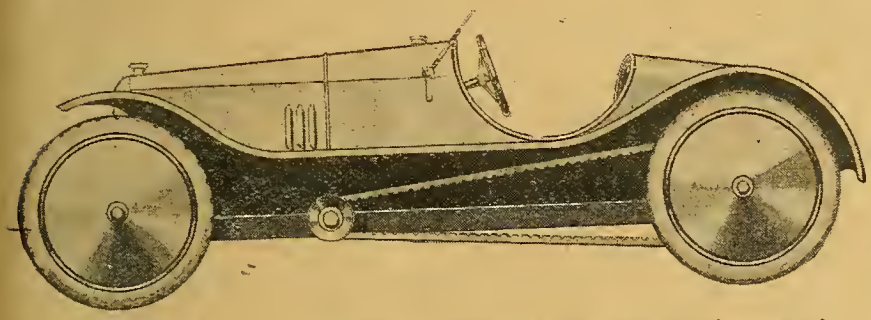
Four-wheeled Runabouts.—

The Buckboard.

The simplest of all new four-wheelers, the Grahame-White Buckboard, may be said to occupy the same position in the "car" world as does the scooter in the sphere of motor cycles. It is a small vehicle consisting of little more than a motor-driven rear axle and a front axle connected by a platform of wood without springs, the flexible qualities of the wood being considered sufficient to insulate the passengers from the worst road shocks. A 3 h.p. two-stroke engine provides the power, the transmission being by chain to a countershaft gear box at the rear of the platform, thence by belt to the axle. Incidentally, this Buckboard is a development of a little machine which has been marketed in America for some time; it is known as the Smith Flyer, and differs in so far that the power is provided by an Auto-wheel. The price is 95 guineas.



The simplest of all four-wheelers—the 3 h.p. Grahame-White Buckboard



The Black Prince £100 cycle car having two Union two-stroke engines, epicyclic two-speed gear and single belt drive.

Black Prince.

Another £100 proposition is the Black Prince runabout, a small four-wheeler embodying several features which depart from the conventional. The springing is by coil springs, and the power is provided by two Union two-stroke engines having a total capacity of 584 c.c. These are placed side by side in a vertical position, and depend upon a 180° magneto for ignition. An epicyclic two-speed gear is fitted at one end of a countershaft, at the other end of which is the pulley for the final single belt drive. The frame and body are made in one, and the total weight is said to be under 3 cwt. The manufacturers are Black Prince Motors, Ltd., Barnard Castle, Co. Durham.

1920 MODELS.

An Index to Advance Descriptions Already Published.

For the benefit of new readers we give the accompanying list of dates on which advance descriptions of new models have appeared.

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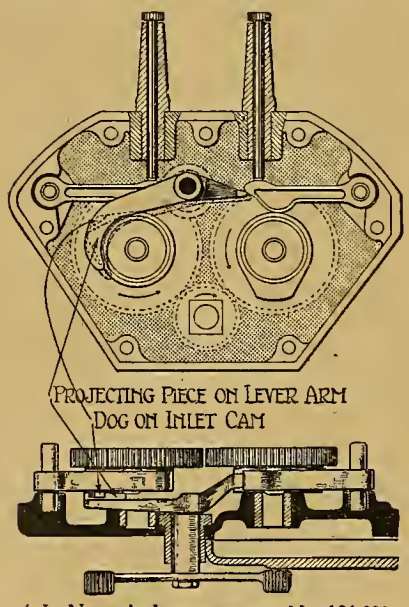
RECENT PATENTS.

REVIEWED BY B. H. DAVIES.

THE new Norton decompressor has the merit of being cheap to make and simple in action. The rider's control pedal rocks a short shaft, carrying a double-armed lever. With the control pedal in the operative position, a dog projecting sideways from the inlet cam engages another dog on one end of the decompressor lever, and lifts the other end of this lever, which in turn raises the cam runner interposed between the exhaust cam and tappet. The parts are, of course, so "timed" that the decompressor comes into action after the inlet stroke is complete.



L. Norton's decompressor. No. 126,200. 22/6/18.

A Scavenging Two-stroke.

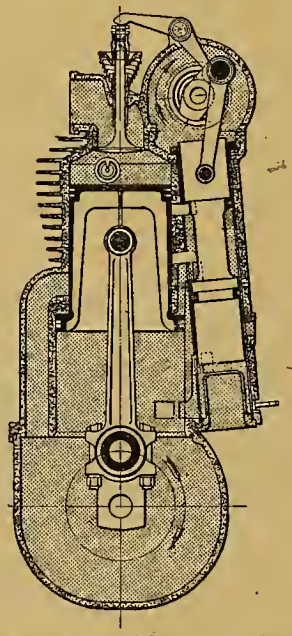
Messrs. Alexander and Halliday have designed a two-stroke engine with motives which seldom govern such labour so far as motor cycle engines are concerned. When an engineer concentrates his brain waves on a wee air-cooled two-stroke, he is usually thinking of the "dud" type of buyer, and trying to evolve a particularly *simple* engine, so that the wayfaring man, though a fool, may not err therein. The present inventors consider that the two-stroke has such an attractive *cachet* of its own that it is worth cultivating on other grounds, and seek to evolve what the knuts would term a "hotstuff" two-stroke; in doing so they have jettisoned the simplicity of the conventional three-port design, as will presently appear. As the drawing indicates, the piston is of the compound type, and the upper portion, *i.e.*, the smaller diameter, governs the explosion and exhaust strokes in the usual way. The ring-shaped ledge of the lower portion, which is of greater diameter, attends to induction and transfer, whilst the underside of the piston forces a scavenging blast of pure air up the transfer pipe at the left of the engine, and scours out the exhaust. The overhead poppet valve is an ordinary exhaust, and the slide valve on the right controls the ports essential to the rather complicated cycle. The cycle in outline is as follows:

1. Explosion occurs.
2. During the *descent* of the piston the control of the three ports in the right-hand side of the cylinder is as follows:

(a.) Top port (gas transfer) closed first by piston, and later by slide valve.

(b.) Middle port (intake from carburetter to large diameter of piston) opened part way down stroke.

(c.) Bottom port (intake for pure air required for scavenging) closed by slide valve.



Alexander and Halliday's two-stroke engine. No. 119,390. 20/2/18.

3. Two-thirds of the way down the stroke, the exhaust valve (poppet) opens, and immediately afterwards the scavenge transfer port on the left is uncovered, so that the scavenging blast of pure air is forced up into the combustion chamber, and drives out the burnt gases.
4. During the *ascent* of the piston, the action is as follows:

(d.) Slide valve closes the middle right-hand port.

(e.) Exhaust valve is mechanically shut.

(f.) The scavenge transfer port (on left) is covered by the rising piston.

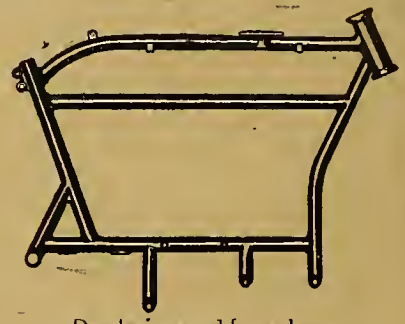
(g.) The slide valve opens the top right-hand port (gas transfer), and the very rich mixture, which is being compressed by the larger diameter of the piston, is driven up to join the less compressed air remaining in the combustion chamber from the scavenging portion of the stroke.

(h.) About halfway up the stroke, the slide valve opens the bottom right-hand port, and a fresh supply of air for scavenging purposes is drawn into the space beneath the piston. (This air is drawn through the hollow centre of the slide valve, and cools it.)

The name of freak two-strokes is legion, and engineers are apt to dismiss them with a sniff. The present example is admittedly very complex, but attains certain eminently desirable features. For example, no fuel enters the crank case: all the gas is burnt: scavenging should be excellent. The inventors hope to get double the power which a four-stroke of similar capacity would furnish, without exceeding its fuel consumption, *e.g.*, in a 3½ h.p. type to obtain double figure horse-power on 100 m.p.g., or thereabouts. These are tall claims. Would the engine keep cool? I would risk singeing my new Burberry leggings to find out.

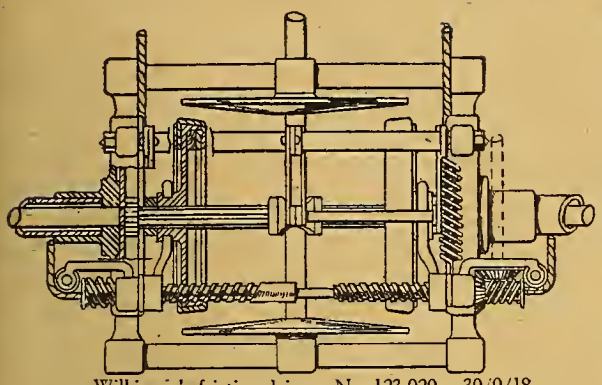
A Frame without Lugs

Messrs. W. W. Douglas and S. L. Bailey are associated in the invention of the new Douglas motor cycle frame, which differs from the conventional pattern in that it is devoid of the usual lugs and brazed joints. The fork ends of



Douglas improved frame dessgn No. 126,161. 13/5/18.

the rear chain stays are the only lugs used in the frame. All the other joints, including the attachments of the tank brackets, foot-rests, and brake pivots are acetylene welded, the ends of the horizontal tubes being mitred for the purpose. If preferred, the rear triangle of the frame



Wilkinson's friction drive. No. 123,929. 30/9/18.

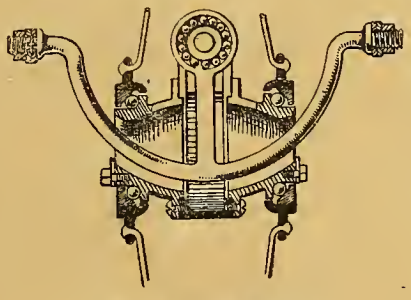
may be attached by bolts. The nett result of this method of construction is that the frame is lighter and cheaper than the standard pattern. It is further claimed that acetylene welding provides greater strength than lugs and brazing. Webs, fillets, and radius pieces may be added to confer additional strength or to improve the appearance.

Friction Drive.

An engineer resident in India, Mr. H. E. Wilkinson, has patented a most ingenious friction drive for cycle cars. It is not unlike the drive originally planned for the A.B.C. light car, seeing that it employs four friction discs to give the forward and reverse speeds, a clutch effect, and a differential. It may interest Mr. Wilkinson to know that the far simpler arrangement once contemplated for the A.B.C. was abandoned because it showed a very little saving in cost over a normal transmission of the positive type; and all his ingenious little control gadgets would render his system peculiarly expensive. To give a brief description, two discs are mounted on the driving-shaft, and a couple of driven discs are slidably mounted on half axles between the driving discs. Change of gear ratio is obtained by sliding the driven discs across the face of the driving discs; change of direction of drive—*i.e.*, from forward to reverse—is afforded by transferring each driven disc into contact with the other driving disc. A clever arrangement of a coarse pitch screwed rod with right and left hand threads, acting in conjunction with levers, is utilised to control the discs. The driver changes gears by operating a featherweight chain and sprocket gear, to which a lever may be fitted if preferred. The differential is not entrusted to enforced slip of the discs driving the inside half axle round a corner, after the brutal fashion accepted by certain other inventors. The control of the driven discs is linked up by a cable and bobbin arrangement to the steering column of the cycle car, so that the inside road wheel is geared down automatically in proportion to the abruptness of the curve or corner.

Wheel Steering.

Mr. W. G. Moore, of Indianapolis, is dissatisfied with the standard steering of motor bicycles, and has patented the somewhat complex device shown in the accompanying drawings. It is impossible to elucidate this system fully in the space at my command, and the task must chiefly be entrusted to the sketches. On ordinary machines the steering head is too short, and too far behind the wheel axle, whilst road shocks are transmitted to the steering head with considerable leverage as the result of the construction. Under Mr. Moore's system the distance between the upper and lower steering head bearings is about 18in. in the case of a 28in. wheel, and the axis of the steering head is only an inch or two behind the wheel spindle. For readers who do not easily follow mechanical drawings, I may explain that the wheel is carried in an inverted U-shaped "yoke," of which the side members slide in guides formed in the motor cycle frame. The up and down motion of the U shaped yoke is restricted by

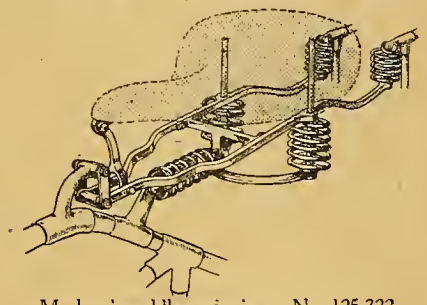


W. G. Moore's steering adjustment. No. 125,780. 30/4/18.

strong coiled springs, anchored at their top ends to the yoke, and at their lower ends to the guides in the frame. The tips at the base of the U are connected together by a bowshaped bridgepiece. Turning to the steering head, a stub stem projects above the crown of the steering fork, and is provided with an upper ball bearing housed in the top centre of the U shaped yoke. The fork possesses the usual pair of side blades, which are connected by a bolt and nuts to the axle on which the wheel hub revolves. The axle is in the form of a hollow barrel. The lower ball bearing of the steering head is mounted in line with the upper bearing, but inside the wheel and an inch or or two behind the hub axis. Further reference to the small sketch shows how this bearing is arranged. For steering purposes two arms project to the rear from the crown of the steering fork. A steering wheel is utilised in lieu of the usual handle-bar, and it is claimed that the steering is easy and sensitive.

Saddle Springing.

I am never quite sure whether the merchants who patent spring mountings for saddles hold cynical opinions of spring frames, or wish to propound a cheap substitute for the more complete type of insulation. Mr. J. P. Maclean's

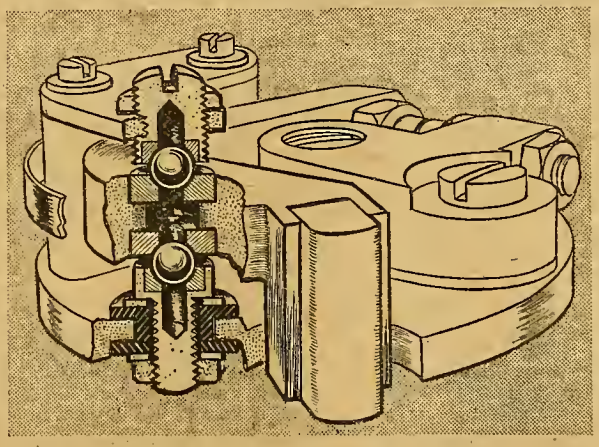


Maclean's saddle springing. No. 125,322. 11/9/18.

design is self-explanatory. He mounts his saddle on a frame which is sprung against both vertical and horizontal shocks. The rear ends of the frame are suspended vertically on coil springs from the side bars of the carrier. The front end of the frame is hinged to swing horizontally from a davit, and this motion is restrained by the lower spring shown in the sketch.

No More Sticking Rocker Arms.

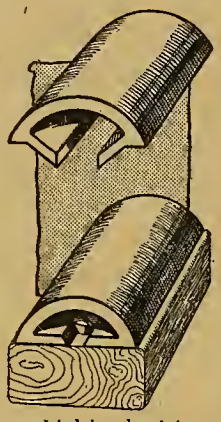
Much ingenuity has been lavished of late on magneto contact breakers, partly with a view to the prevention of stuck rocker arms in damp weather, partly to withstand the colossal rate of oscillation required by modern aero engines with nine or more cylinders. Mr. Finch's design appears sound from both points of view. He provides a compact and simple ball bearing on each side of the rocker arm, for which two small balls suffice. Each ball is housed in a pair of half cups, one of which is formed in the rocker arm itself, and the other in an adjustable steel screw. The screws are drilled out axially to contain lubricant. I am informed that the bearings withstood a seven-hour test at the rate of 12,600 oscillations per minute. To prove that no grease could escape from the bearing and oxidise the platinum points, a sample contact bearing was immersed in sal ammoniac for several hours, after which period no rust was present in the bearing.



The Finch ball-bearing contact-breaker rocker.

SIDECAR BEADING WITH INVISIBLE FIXING.

ALUMINIUM beading is used quite extensively in car body building, and of late there has been a tendency for makers of high-class sidecars to finish their cars in this way. The one disadvantage of this beading has been the number of small screws required which, after a little use, become rusty and also collect dirt. Mr. C. R. Little, of 14, Butcher Row, Coventry, has patented a beading section and a method of fixing by which the latter is invisible.



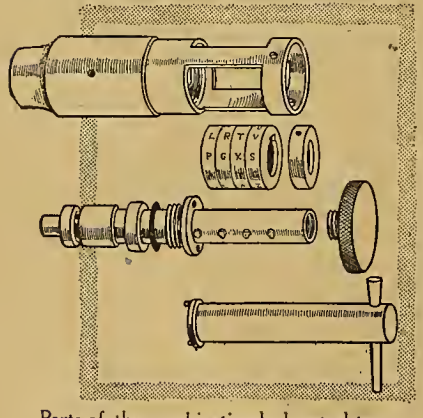
Little's aluminium beading for sidecar bodies. The method of fixing is concealed.

Screws are fixed to the wooden "rail" at intervals, and the bead is so sectioned that it slips over the heads of the screws, the slot being closed when the head is "hammered" down by means of a mallet and a special tool similar to that used by blacksmiths for "swaging."

AN INGENIOUS ANTI-THIEF DEVICE.

BY utilising the principle of the letter lock in an invention for preventing the theft of a motor cycle, Mr. H. Birch, of 109, Lansdowne Road, Tottenham, London, N.17, has prodnced a lock which will baffle the motor cycle thief.

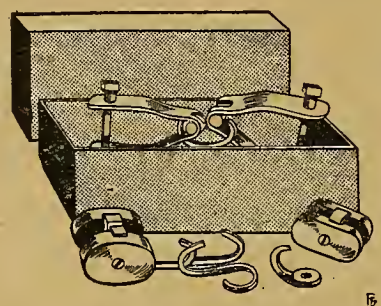
The idea is to place the petrol unions in position at a small hole in the body of the device. When a certain combination of letters has been brought into line it also brings into line four slots in the rings upon which the letters are engraved. These engage with four tiny spring bolts in the spindle attached to the petrol tap. When the correct combination has been found to open the petrol tap it is only necessary to pull up the milled nut on the head of the central tube. It is quite easy to take the device to pieces. When the correct combination has been lost it is impossible to turn on the petrol.



Parts of the combination lock petrol tap.

STANLEY SPARES.

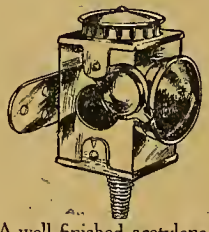
A USEFUL item for the toolbag of belt-driven machines is a box of Stanley spares, which the Stanley Belt and Fastener Co. are now marketing. It contains a belt fastener, spare link, a belt shield, and a set of hooks.



Box of Stanley belt-fastener spares.

THE RADMILL REAR LAMP.

THE Mohawk Cycle Co., Hornsey, N., have recently placed on the market a neat sheet metal rear lamp of sturdy construction, which we illustrate herewith.



A well-finished acetylene rear lamp.

THE SENSITIVE CONTROL.

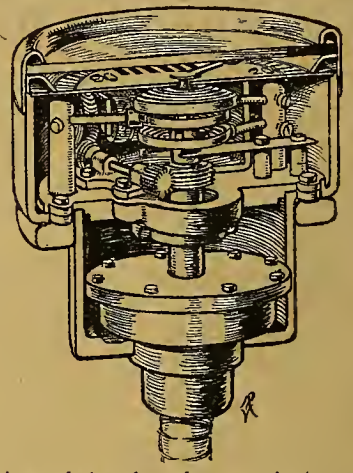
A NEW form of control, devised to enable a motor cyclist to open the throttle suddenly independently of the air control levers, has been invented by Mr. J. Gordon-Hall, 5, Albany Court, Piccadilly, London, W.1.

The Sensitive control lever, it will be noticed, is fitted underneath the handle-bar and adjacent to the handle-bar grip. It works on the pulley block principle, and, while the ordinary throttle lever may be set just a shade open, the Sensitive control lever can be opened independently of it, and when released will only allow the throttle to close to the degree controlled by the throttle lever. Also it allows the throttle to be opened suddenly, and as it is conveniently placed on the handle-bar it will enable the air to be opened at the same time, so that the mixture is not upset. The control is enclosed in a neat case, not shown in the illustration.

A SPEEDOMETER ON A NEW PRINCIPLE.

A NEW speedometer, which created a great deal of interest at Olympia, and which is known as the Atmo, is being marketed by Stanley J. Watson, 37, Sheen Road, Richmond.

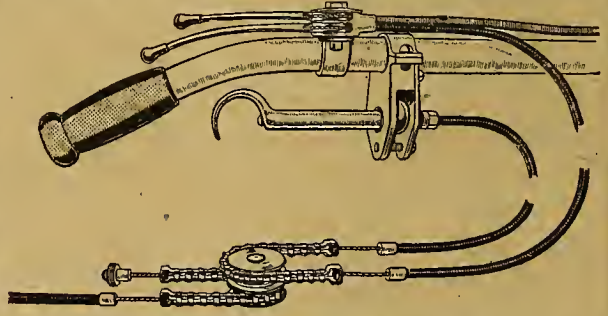
Its operation is governed by the friction set up between a revolving film of mercury and a stationary metal disc. The flexible shaft, by which the instrument is driven, is connected to a closed drum containing mercury, through which passes the spindle connected to the finger pointer, which is seated upon a jewel bearing at its lower end. Two discs are attached to the spindle inside the drum, one of which, the lower, is in contact with the mercury.



A new design of speedometer—the Atmo.

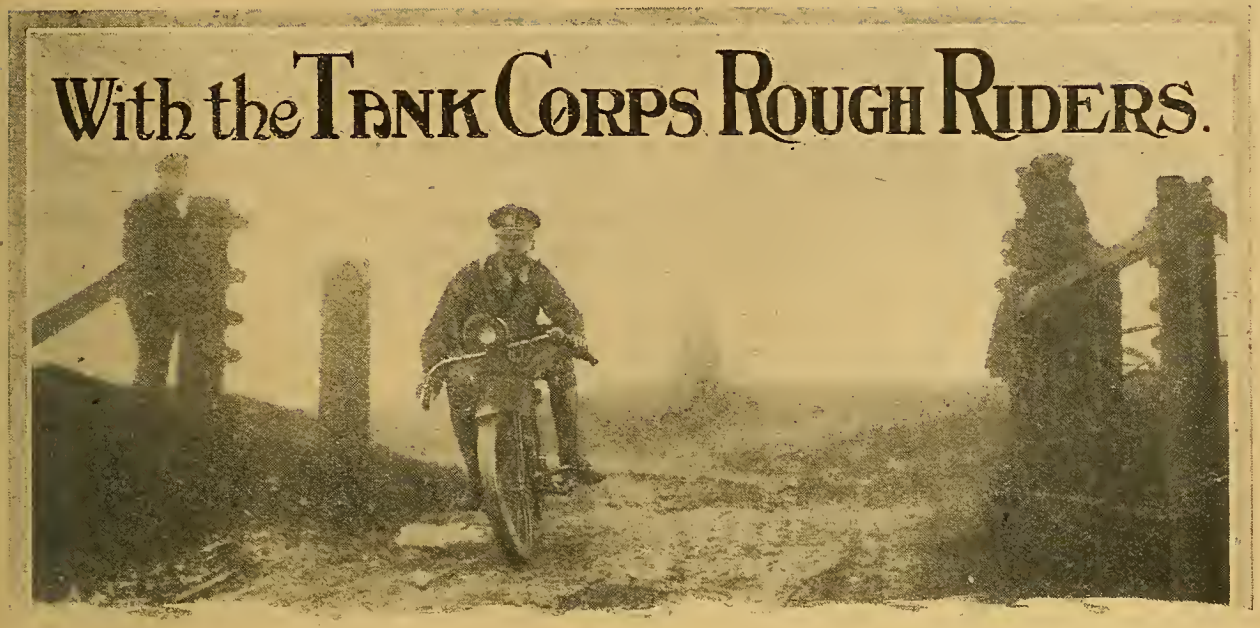
As the drum is caused to revolve, the drag between the mercury and the disc tends to turn the spindle, but is prevented from doing so by three spiral springs of different strengths, which come into action successively. A little consideration will show that as the speed of the drum increases, the drag becomes greater, and the tension on the springs is overcome, which forces the pointer round the index dial. At high speeds the mercury is thrown by centrifugal force against the walls of the drum, bringing the second disc into operation, and so increasing the friction.

During a close examination of the instrument in operation we were surprised at its steady registration.



A "sensitive" finger throttle control mounted on the handle-bar and connected with chain and pulley actuating device. (This is shown detached from casing to indicate chains and pulleys.)

With the Tank Corps Rough Riders.



Capt. Miller (5-6 h.p. Zenith), winner of *The Motor Cycle* Cup, negotiating a bend on Whiteway's Hill. This hill was climbed in a thick mist and rain.

MOTOR cyclists of the Tank Corps have formed a club of their own. The opening event took place over the Purbeck Hills on Wednesday last week. A well planned course, over a distance of about fifty miles, had been arranged with a view of providing the usual tests of reliability; but the severity of the trial was considerably enhanced by the weather encountered, which consisted of a most unsavoury mixture of fog and rain.

The starting point for Wednesday's run was at Wool, and from there the Dorchester Road was followed to Owermoigne. Here the competitors left the main road, and encountered some very bad surface on the way to Bere Regis *via* Puddletown. Through the training area and into Wool again proved easy riding, as the road was familiar to all, but the long climb through Coombe Regis to East Lulworth made a bad preface to Creech Barrow Hill, which was under observation.

The going was extremely rough in places, but the men who man the tanks are used to rough riding, and it speaks for their enthusiasm as motor cyclists that they did for pleasure and sport what they are often called upon to do when aboard their tanks.

Unfortunately, only twelve of the seventeen entrants faced the starter, and of these six finished. There would have been more no doubt, but since the trial was first mooted many supporters of the club have been demobilised.

Individual Performances.

Capt. Frost (3¾ Scott) made very good performances on all hills, but he lost marks at each check, and had the misfortune to break his magneto chain. He finished, however. Sgt. Sharp (3½ Rudge) suffered from no fewer than three burst tyres, and was forced to retire.

Lt. Lever (4¼ B.S.A.) made good ascents of all hills but Kingston, on which he was only moderately good. In the acceleration test his performance was good, and his loss of marks on time was only four. Capt. Perry was less fortunate in this connection, and lost twelve marks on time, but made a better showing on hill-climbing. Capt. Bradley (3½ Premier sc.) lost his way, and Lt. Male (3½ Rudge) retired through lubrication defects.

Capt. Fairbank, who made the best performance in the trial, lost one mark only, and this was in the acceleration test. His machine was a J.A.P.-engined mount assembled by himself, and had a Chater-Lea frame.

The most plucky performance was made by Capt. Miller (5-6 Zenith), to whom the judges have awarded *The Motor Cycle* cup for the best performance in face of adversity. Capt. Miller had not ridden the machine prior to the trial; moreover, it was an antiquated model, badly shod, and in a generally bad condition. He rode without coat or macintosh, and, in spite of breaking the throttle wire, he cheerfully finished the course with the bare wire in his hand with a loss of only nine marks.

Awards.

Best performance of the day.—Capt. Fairbank (8 J.A.P. sc.).

First Class B.—Sgt. Smith (3½ Rover).

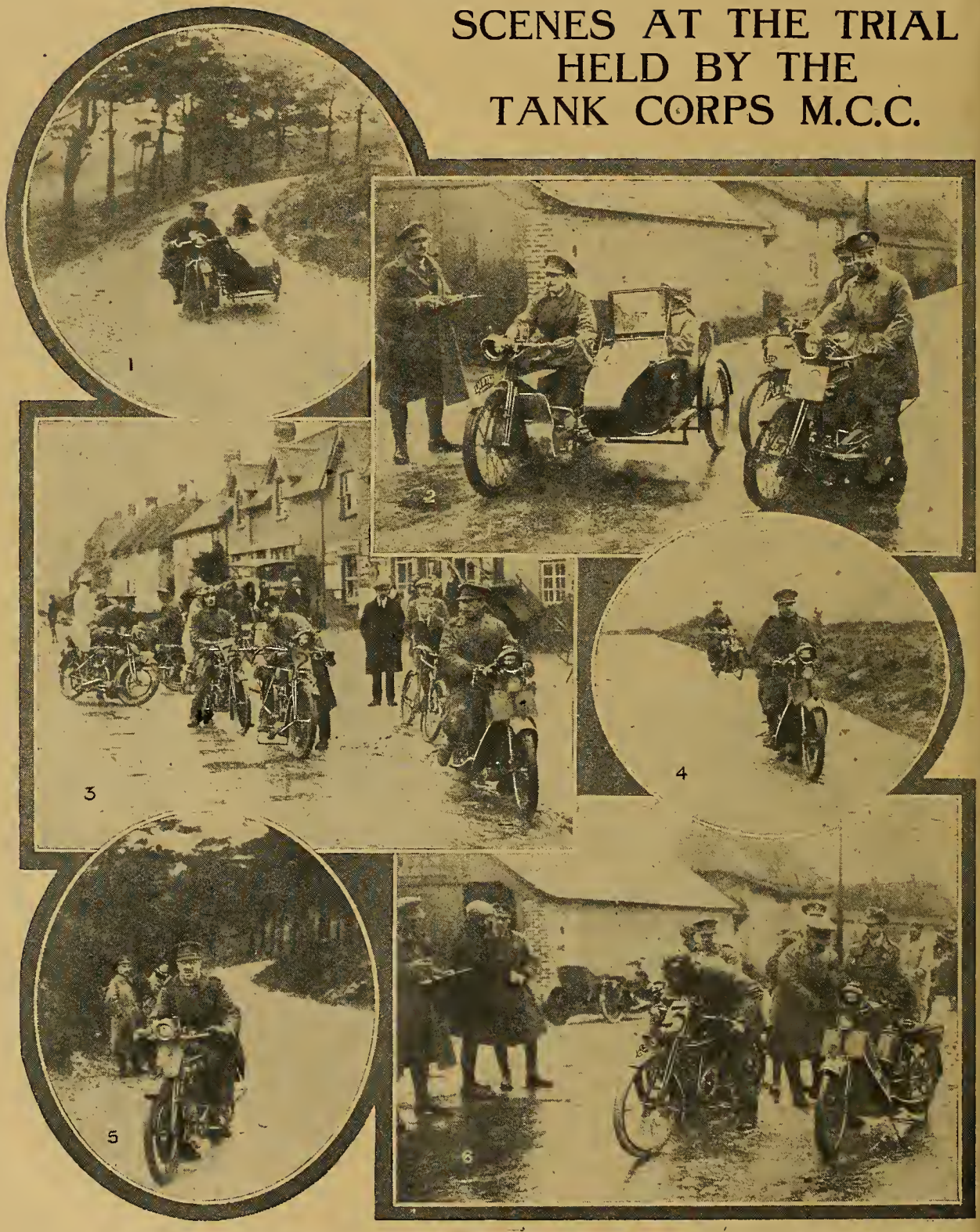
Second Class B.—Lt. Lever (4¼ B.S.A.).

Third Class B.—Capt. Perry (4 Triumph).

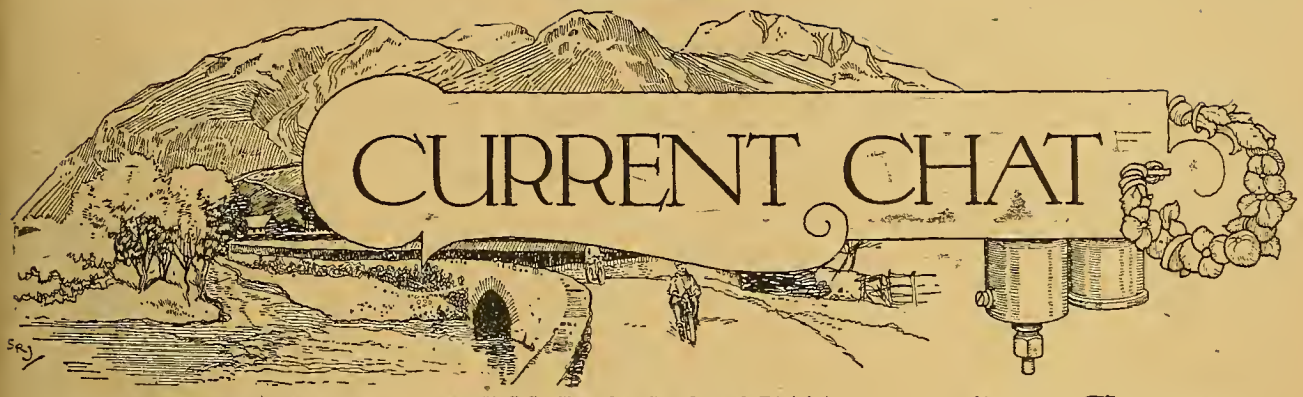
The Motor Cycle cup for the best performance in face of adversity.—Capt. Miller (5-6 h.p. Zenith).

AT THE START OF THE TANK CORPS TRIAL. Among the makes of machines represented were the Premier, Triumph, Scott, B.S.A., and Rover.

SCENES AT THE TRIAL HELD BY THE TANK CORPS M.C.C.



(1) Capt. Fairbank on Gallows Hill. (2) Col. Sacks starting the men from Wool. (3) Capt. Frost (Scott), Sgt. Sharpe (Rudge), and Lt. Head (Douglas) at the commencement of the trial. (4) Capt. Frost on the way from Bere Regis. (5) Lt. A. W. Lever (B.S.A.) on Gallows Hill. (6) Lt. Head (Douglas) starting away.



Times to Light Lamps.

GREENWICH TIME.

Dec. 11th	...	...	4.20 p.m.
,, 13th	..	...	4.19 ,,
,, 15th	...	...	4.19 ,,
,, 17th	...	...	4.20 ,,

A.C.U. Competition Expert.

The name of Mr. G. E. Kuhn has been added to the "competition experts'" list of the Auto Cycle Union.

Observers for London-Exeter.

A few motor cyclists who would act as observers on Trow Hill, near Sidmouth, are required for the M.C.C. London-Exeter run on December 26th and 27th. Those willing to give their services on this occasion are requested to communicate, as soon as possible, with Mr. Frank Hansford, Ilminster.

Motor Cycle Records.

A new edition of "British Motor Cycle Records" has been issued by the A.C.U., and existing records for all powers and recognised distances are clearly tabulated. Copies, price 6d. post free, may be obtained from the Secretary, A.C.U., 83, Pall Mall, London, S.W.1.

A Warning to Motorists.

Many complaints of inconsiderate driving of cars and motor cycles have of late been received by the R.A.C. and A.C.U., notably on the Great North Road and on the London-Hastings road through Dunton Green, Riverhead, and Sevenoaks, where the police have received instructions to enforce the legal limit. It is believed that most of the offenders have acquired their machines since the Armistice, and are not acquainted with the ordinary courtesies of the road.

The A.A. Benzole Test.

The report of the A.A. 10,000 mile benzole test carried out on the Sunbeam car is now out of the printer's hands, and copies may be obtained from the offices of the Automobile Association, Fanum House, Whitcomb Street, W.C.2, the price being 3s. 6d. post free. Despite the fact that the mean weight of the car on the road was 1.8 tons and that the average speed over the total distance was in the region of 23 m.p.h., the average consumption was 24.57 m.p.g. The report of the motor cycle test of 5,000 miles on Triumph machines is expected in the near future.

An M.C.C. Club for Crook and District.

A club has been formed by motor cyclists in the Crook district, Co. Durham, and others who are interested are advised to communicate with the hon. sec., Mr. A. F. Chandler, 10, Alexander Terrace, Crook, Co. Durham.

The Blaenavon M.C.C. Dinner.

The first annual dinner of the above club will be held at 6 p.m. on Wednesday, December 31st. All local motor cyclists are invited to attend. Tickets, price 5s. each, may be obtained from the hon. sec. at the Prince of Wales Hotel.

Cardiff M.C.C. Reliability Trial.

The Cardiff Motor Cycle Club (late Cardiff City and District Motor Cycle and Light Car Club) recently held a very successful consistent driving and reliability trial. The course was forty-two miles, mostly over country lanes and third-class roads. The winner was the competitor who lost the least number of marks on observed hills, etc., and who maintained the average speed—16 m.p.h. Result: First, D. McKenzie (4 Douglas sc.), 3m. 48s. late; second, P. White (5-6 Brough), 3m. 50s. early; third, J. E. Cleverley (B.S.A.), 5m. 30s. early; fourth, A. Thom (7-9 Harley-Davidson).

IN THE CORNISH BY-LANES.
The Royal Ruby is negotiating Black Hill near Trebarwith Strand Beach.

Special Features.

THE YEAR'S COMPETITIONS.
WHAT THE LADIES THINK.
FOUR-WHEELED RUNABOUTS.

Provincial Government Sales.

The Ministry of Munitions is arranging a further provincial sale of motor cycles at Edinburgh on the 22nd inst. The auctioneers are J. Croall and Sons, Castle Terrace, Edinburgh. The last sale was held at Halifax on Tuesday, the 9th inst.

Government Sale of Motor Cycles To-day.

A further sale by the Ministry of Munitions of a large number of motor cycles is advertised to take place to-day (the 11th) at Earl's Court. The lots include Douglas, P. and M., Clyno, Indian, B.S.A., and Scott machines, many with sidecars; also 140 cases of spares and accessories for Douglas and Enfield machines. The first item will be offered at 2.30 p.m.

Silver Cup and Bowl for Plymouth M.C.C.

The prospects of the sporting side of the Plymouth and District M.C.C. for next year are very good. A silver bowl has already been offered by Mrs. Snell, of Plymouth, for a reliability trial, while a silver cup has been presented by Mr. Clarence Spooner, of Plymouth, for a hill-climb. The yearly subscription of the club is 10s. per annum, but it has been reduced to 5s. for the rest of the year. The hon. secretary, Mr. Lionel B. Jackson, The Old Grammar School, Plympton, will be glad to receive names of prospective members.

United R.A.S.C. Club.

At a recent conference at the War Office it was decided that the new Royal Army Service Corps Club, in course of formation, should be named the United R.A.S.C. Club. Membership is to be open to officers of all branches of the corps, namely, to officers of the Regular Army, Special Reserve, Territorial Force, temporary officers of the R.A.S.C. who served during the war, Motor Volunteer Transport Corps, officers of the corps in Overseas Dominions, also to the Indian Supply and Transport Corps. All officers who have served in any branch of the corps, whether on the active lists, retired, or demobilised, will be eligible for election.

Four Hundred Miles Non-engine Stop.

Late on Thursday night last the G.N. cycle car, driven by Rex Mundy, arrived in Edinburgh, after completing the long journey from London without an engine stop. The run was accomplished under R.A.C. observation, and a 20 m.p.h. average was maintained. This is the first time that an air-cooled engine has propelled a vehicle over this course under official observation with the engine running continuously. Apart from testing the 10 h.p. G.N. itself, National benzole, Cooke plugs, Sthenos carburetter, and an Easting windscreen of a new pattern were fitted to the small car. Other equipment carried included Smith's speedometer and dynamo lighting set. Palmer cord tyres were fitted, and Coolie oil was used for lubrication. A test of this description is almost equally one of the driver's skill as of the reliability of the machine.

The Price of Petrol.

The price of petrol in this country is twice the amount charged in New York. It is delivered to the tankers for shipment to England at less than a shilling per gallon, yet motorists on this side of the Atlantic are called upon to pay three times this amount. Until Britain produces fuel at a reasonable price, motorists will always be at the mercy of the Trusts.

Petrol Profiteering?

The committee formed to inquire into petrol prices under the Profiteering Act will consist of Mr. P. G. L. Webb (Board of Trade), Mr. W. H. L. Paterson (Petrol Control Board), Mr. A. Smith (Vehicle Workers' Union), representatives of the A.A., the Commercial Motor Users' Association, Sir Wilfred Stokes, K.B.E., Mr. Frank Chitham (director of Harrods, Ltd.), and Baillie P. Gillespie (Secretary Horse and Motormen's Union). This committee will inquire into the reasons for the difference between the landing price of petrol, 1s. 9½d. per gallon (including tax), and the retail price, 3s. 0½d. per gallon.

A Boxing Day Social Run.

The Birmingham Branch of the N.M.C.F.U. are holding a social run on the 26th inst. to the Red Lion Hotel, Knowle, starting from the Swan Hotel, Yardley, at 10.30 a.m.

Obstruction by a Char-a-banc.

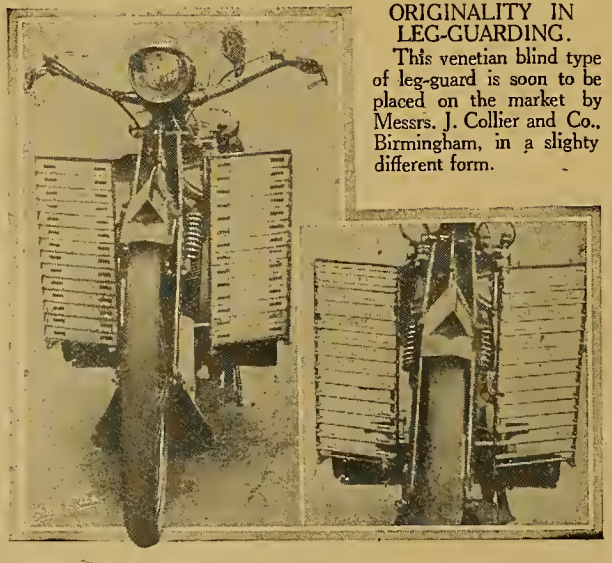
The Automobile Association recently prosecuted the driver of a char-à-banc who was alleged to have wilfully obstructed a member's car for a considerable distance.

Having regard to the fact that the driver had been discharged from his employment, the case was not pressed, but it was stated that the case had been brought forward as a warning to others.

The Bench dismissed the case with a caution, warned owners of other chars-à-bancs of the consequences of further obstructions of this kind, and expressed the opinion that every char-à-banc should be provided with a conductor, who would have the means of communicating with the driver. The Bench thanked the A.A. member for bringing the case forward.

The Genuine Lightweight.

There are several designers of scooters who are seriously thinking of the possibilities of a genuine lightweight which will be almost as light as a scooter, but have greater scope. We have welcomed the advent of the scooter because in it we see the nucleus of the real lightweight.



ORIGINALITY IN LEG-GUARDING.

This venetian blind type of leg-guard is soon to be placed on the market by Messrs. J. Collier and Co., Birmingham, in a slighty different form.

Extra Capital.

It is proposed to increase the £200,000 capital of J. B. Brooks and Co., Ltd., to £300,000 by the creation of 100,000 additional shares of £1 each. An extraordinary general meeting is being held on Monday next at the Chamber of Commerce Buildings, Birmingham.

Wooler Developments.

The manufacturers of the Wooler motor cycle and three-wheel runabout are floating a company with £200,000 capital. We understand that the prospectus will be issued to-day, the 11th, and that the title of the company will be the Wooler Motor Cycle Company (1919), Ltd.

Criticising New Designs.

An instructive address by Mr. Douglas Leechman was given to members of the Essex Motor Club and others at the Royal Automobile Club, Pall Mall, during the Olympia Show. The lecture constituted a severe criticism of the new features incorporated in the design of new models exhibited at Olympia. Spring frames were enthusiastically discussed.

M.C.C. London-Exeter Run.

Up to the 5th inst., the following additional entries have been received for the above trial, bringing the total up to 103. The event is to be held on Dec. 26th.

SOLOS.
K. V. Chidley (2¾ Wooler)
L. Pulham (3½ Ariel)
A. J. Sproston (3½ M.A.G.-Lea-Francis)
Carl Heiberg (4 Triumph)
R. C. Staunton (4 Triumph)
C. K. Robinson (3 A.B.C.)
L. W. G. Potley (2½ Omega)
F. E. Salter (2¾ Zenith)
P. Pike (2¼ Levis)

SIDECARS.
R. B. Clark (8 Jap-Matchless)
R. C. Davis (8 Chater-Lea)
R. C. Charlesworth (8 Jap-Zenith)
F. J. Watson (3½ Ariel)
C. Crostwaite (8 Excelsior)
S. E. Longman (8 Matchless)
G. S. Wright (7-9 Excelsior)
G. W. Wilkin (3½ Wilkin)
E. Chidley (3½ P. and M.)
W. P. Tippett (4 Rex)
W. E. Line (10 Reading-Standard)
G. G. C. Pigott (3½ A.B.C.)

CARS AND RUNABOUTS.
B. Alan Hill (8 Morgan)
S. C. Westall (12 A.C.)
H. L. Bing (20 Scripps-Booth)
K. Don (10 A.C.)
C. A. Hardy Mason (11.9 Morris-Cowley)
H. Claude Maybury (45 Oakland)
G. Petty (11.9 Bean)
C. Dickinson (10 Eric-Campbell)
S. E. H. Davis (11 McKenzie)
Lt. L. J. Martin (27 Buick)
C. J. Mebes (10 Crouch Carette)
L. C. L. Frisby (10 M.E.C.)
W. G. Brownsort (12 6-cyl. A.C.)
P. C. Stead (10 A.C.)

BRISTOL LAND'S END TRIAL ON BOXING DAY.

IN pre-war days the Bristol Club's Christmas trial to Land's End and back was one of the most strenuous of the year. Many riders have vivid recollections of the all-night journey over the coast roads of North Devon. To climb Porlock and Lynton hills in the wee small hours in pouring rain and a gale of wind furnished sufficient excitement for the most hardened of trial riders.

The objects of the trial are commendable. They are to demonstrate that modern motor cycles can be driven over 400 miles at an average speed of 20 m.p.h. in mid-winter over what is perhaps the most difficult main road route in the country. It will prove also the efficiency or otherwise of modern lighting arrangements, as competitors are compelled to ride in at least fifteen hours of complete darkness.

The outward route will be Bristol, Bridgwater, Porlock (control), Lynmouth Barnstaple, Bideford, Holsworthy, Launceston, Truro, Penzance, Land's End (control).

The return journey will be *via* Penzance, Truro, St. Austell, Tavistock, Liskeard, Two Bridges (control), Ashburton (control), Exeter, Taunton, Bridgwater, Bristol. No secret checks will be taken, nor will any observed hill be included.

Gold medals will be awarded to all who do not exceed five minutes variation at each check, silver medals up to ten minutes error, and bronze medals up to fifteen minutes error, with the exception of Lynton check, where the error allowed will be fifteen minutes, twenty-five minutes, and fifty minutes respectively.

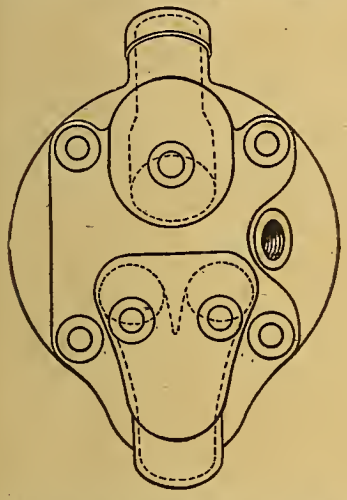
Those intending to compete should communicate with the secretary, Mr. Allan King-Smith, near Bristol. Entries will close on the 18th inst., late entries at double fees first post on the 22nd. The fees are £1 10s. for trade entrants, 15s. non-trade; club members 25s. and 10s. 6d. respectively.

Motor Cycle Engines with Overhead Cams.

The Metric Range of Engine Units which follow Advanced Lines.

FOR some time car engine designers have shown a tendency to consider overhead valves operated by camshafts over the cylinder heads, and at the Paris Salon the Louis Clement motor cycle created a great deal of interest, chiefly on account of its overhead valve gear.

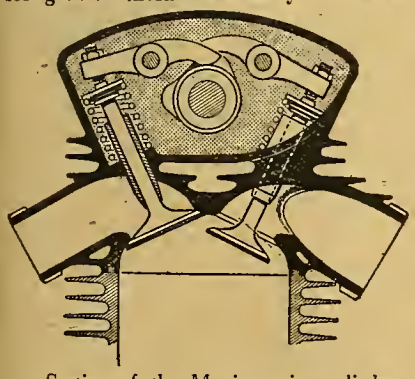
There is nothing really new in this principle; in fact, an experimental Norton of about 1912 had an overhead camshaft driven by a chain, and a little four-cylinder V air-cooled engine prodnced in



Plan view of cylinder head of the racing model, showing location of the twin exhanst valves, inlet pocket, and sparking plng hole.

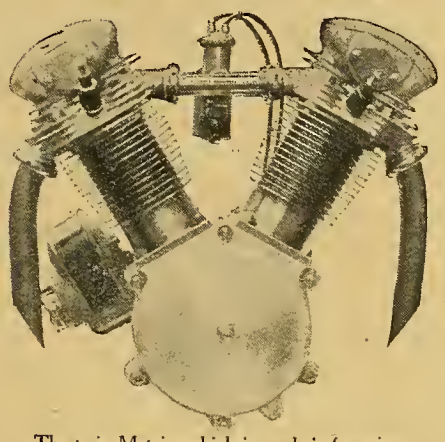
America some time ago for cycle cars also had a chain-driven camshaft located overhead.

It is generally conceded, however, that the overhead valve engine is more efficient than the side-by-side type, partly on acconnt of the fact that a hemispherical combustion head is possible, which makes for greater thermal efficiency. Whether



Section of the Metric engine cylinder head. The valves are operated by rockers, and an overhead camshaft contained in a casing cast in one with the cylinder head.

overhead valves are operated by push rods from a cam chamber on the side of the crank case, or by cams immediately adjacent to the valves, is not a matter affecting thermal efficiency, but rather



The twin Metric, which is made in four sizes.

one of refinement in design. Nevertheless it is interesting that a new firm of engine unit manufactnrers has decided to market a range of engines embodying overhead camshafts. This firm is the Metric Co., of 55, Victoria Street, London, S.W.1, and the engines of its manufacture which we have inspected show distinct promise.

Consistent h.p. Rating.

The range of engines is rather more extensive than one expects from a new firm entering the field, hut many use the same cylinders and other important component parts, so that the production of the eight sizes does not necessarily mean eight different designs. The sizes are as follow:

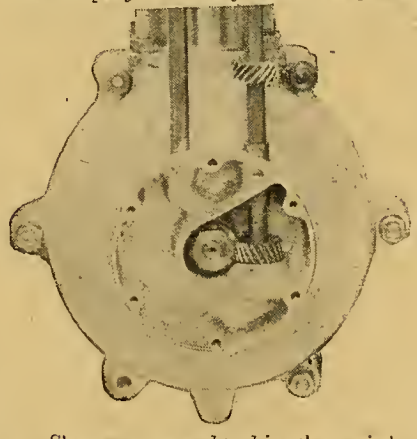
SINGLE CYLINDER.

2.5 h.p., 64×80 mm. (255 c.c.).
3.2 h.p., 64×100 mm. (320 c.c.).
4 h.p., 80×80 mm. (400 c.c.).
5 h.p., 80×100 mm. (500 c.c.).

TWIN CYLINDERS.

5 h.p., 64×80 mm. (510 c.c.).
6.4 h.p., 64×100 mm. (640 c.c.).
8 h.p., 80×80 mm. (800 c.c.).
10 h.p. 80×100 mm. (1,000 c.c.).

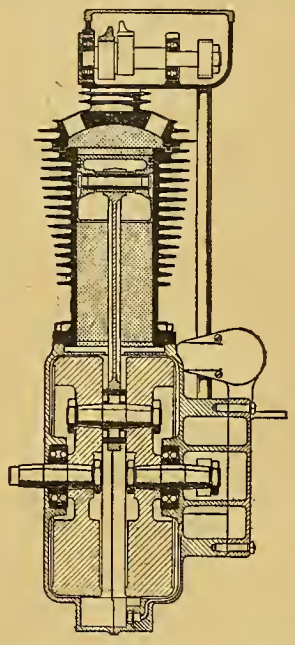
Incidentally, we are glad to see that this company nominally rates the power



Skew gears are used to drive the vertical shaft of the valve mechanism. The gear wheel above drives the magneto.

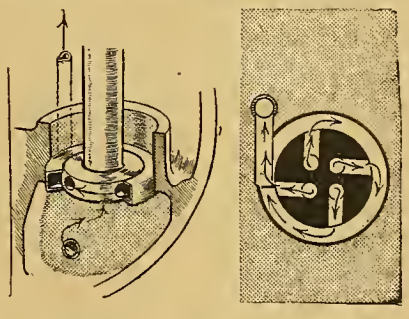
of its engines by a definite rule founded upon the cubical capacity of the cylinder, and that, as suggested several times in *The Motor Cycle*, 100 c.c. is regarded as representing 1 h.p.

Having a hemispherically-shaped combustion space, the cylinder heads are detachable, and have integral with them a casing containing the camshaft, which runs on a double row of hall bearings.



Cross section of the single-cylinder engine, showing the overhead camshaft.

The camshafts are driven by skew gears in the timing case, and by similar gearing in the cases on the cylinder heads. The vertical shafts carrying these gears are



The oil pump shown in part section and in diagrammatic form. The rotating member, driven from the camshaft skew gear, throws oil by centrifugal force into an annular chamber and thence through a pipe to the crankshaft, and to the overhead valve gear on each cylinder head.

enclosed in long tnbes, but on one shaft, about midway, there is a third gear wheel which drives the magneto.

Off the timing gear there is also driven a centrifugal pump, drawing oil from

Motor Cycle Engines with Overhead Cams.—the base of the timing case up a separate pipe to the camshaft casing, and preserving therein a constant level of oil about a quarter of an inch in depth, while the oil pipe is enclosed within another so designed that any excess of oil runs through the outer pipe back again into the timing gear, thus maintaining constant circulation. Provision is made so that oil cannot leak from the camshaft casing into the combustion chamber, as the oil level is well below that of the top of the valve guides, the stems of which are always working in an oil vapour.

The whole of the design has been carefully thought out, and one of its principal features is the interchangeability of parts. The main-shaft runs on ball bearings, and the big end is provided with roller bearings. In the racing engine there are two exhaust and one inlet valve, but there are only single valves in the ordinary touring engine.

The radiating fins, as are also the inlet and exhaust passages, are of generous size, and the valves are large. Externally the engine is of clean design, and the crank case halves are fastened by six bolts of equal size, and equally spaced. The timing gear case is circular in shape, and is concentric with the crank case. Owing to the absence of outside bosses, it is smooth and neat in appearance. The makers hope to be in a position to deliver engines in quantities early in February, and we learn that they are being rapidly booked up.

The Motor Cycling Club's Dinner.

A Revival of an Important Pre-war Club Meeting.

THE Motor Cycling Club's annual dinner was held at Gatti's Restaurant on Saturday evening last under the chairmanship of Lt.-Col. Chas. Jarrott, O.B.E., the president of the club.

After proposing the health of the King, the Chairman rose to propose the Motor Cycling Club. It was, he said, difficult to realise that the last dinner that the Club had held was in 1913, so much had happened in between. Many members then present were no longer in their places. Many had joined up at the outbreak of hostilities. Efficiency was the tradition of the Motor Cycling Club, and, owing to the training they had received in the Club competitions, they had done extraordinarily good work as despatch riders. The war had helped enormously to develop the motor cycle; it had increased production, and many present riders of motor cycles would never have been motor cyclists had it not been for the war. When the country was short of men, women motor cyclists had stepped into the breach, and had done their duty nobly. He believed that the R.A.F. was first to employ ladies as motor cyclists to any extent.

A Tribute.

He had already referred to absent friends. Among these he would like to mention that splendid sportsman and gallant officer, the late Rear Admiral Sir R. K. Arbuthnot, who had always taken such an interest in the Club. One had only to read the books recently written by Lords Jellicoe and Fisher to learn how much his services were appreciated in the Navy, and he thought it a great compliment to the Club that Sir Robert had taken such a keen interest in it.

The Club was fortunate in having a very efficient secretary, and he had pleasure in presenting, on behalf of the members, a small token of appreciation to Mr. Southcomb May for his valuable work (this took the form of a fitted luncheon basket). Mr. May, in response, gave a few figures concerning the Club's competitions, and mentioned that the Exeter Run had already received over 100 entries.

The next item on the programme was the distribution of prizes, which was carried out by the president. After distributing medals won in the London-Edinburgh and other competitions, the President handed to Mr. Victor Holroyd (representing the Coventry and Warwickshire Motor Club) *The Motor Cycle* challenge cup for the M.C.C. Team Trial. On being called upon for a speech, Mr. Holroyd said that it was nine years ago since he had performed a similar pleasant duty in London at the occasion of the M.C.C. dinner. Next year he considered that the competition should be held in the district in which the winning club was situated.

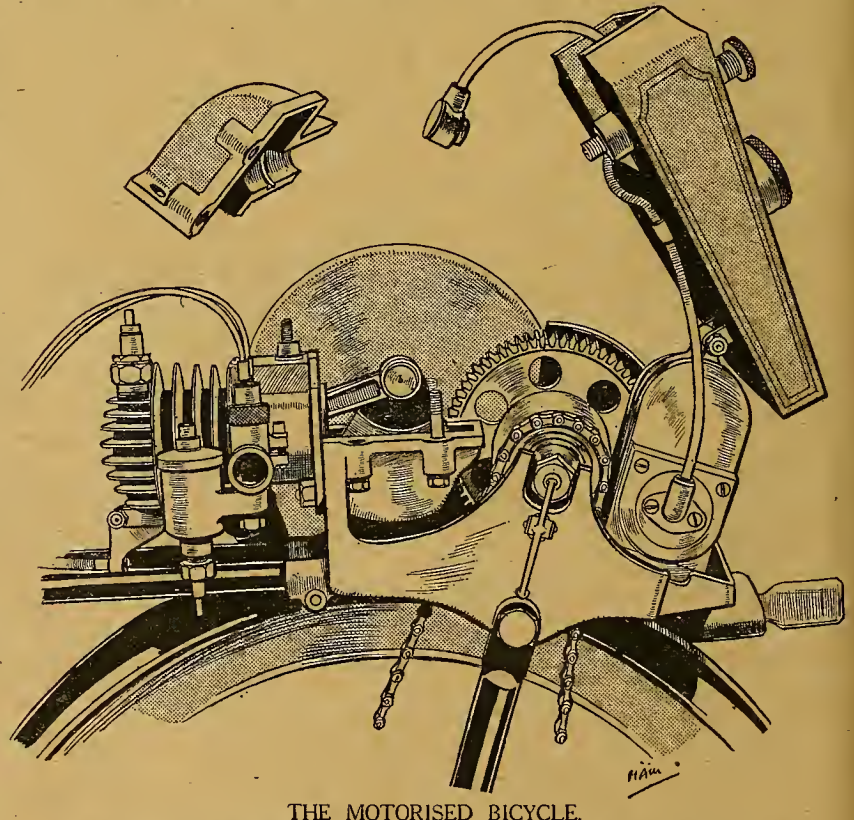
A 1914 Prize.

Silver medals were then presented to Capt. Norman Longfield, representing the Ilkley and District M.C.C., which was second in the competition.

The next prize to be presented was the Jarrott Cup, competed for in 1914, and won by Mr. E. A. Colliver, who, being called upon, made a brief and suitable speech.

The toast of "The Visitors and Press" was by Mr. Arthur Candler, mentioning Mr. Rutter in connection with the press, and Mr. Holroyd in connection with the visitors, to which both these gentlemen suitably replied.

The last toast of the evening was that of "The Chairman of the Committee," Mr. Robert Head, proposed by Mr. E. M. P. Boileau *(The Motor Cycle)*. Mr. Head, in the course of his reply, said that his friend, Mr. Arthur Mescheni had stated that the Lugano Cup was still open. This, it may be remembered, was to have been competed for in 1914, and was in the nature of a trial from London to Lugano, Switzerland, and should prove an interesting event.



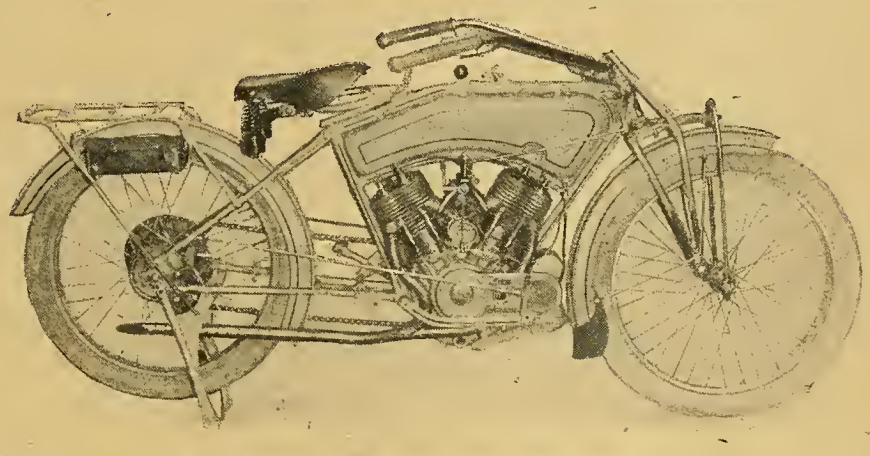
THE MOTORISED BICYCLE.

Accessibility of the Simplex motor attachment is one of its striking features. On swinging back the petrol tank the top half of the crank chamber can be removed.

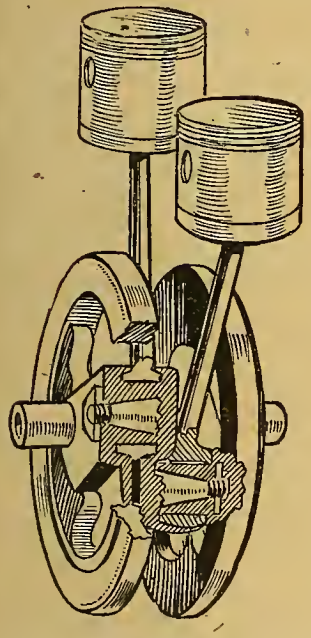
The 7-8 h.p. Twin-cylinder Iver-Johnson.

Side-by-side Valve Even Firing V Twin Engine, with Two-throw Crankshaft.

FEW English motor cyclists have heard of the Iver-Johnson motor cycle, which hails from the United States, and it was the original intention of a British firm to place it on the English market. However, the manufacturers are unable to deliver, and the one example in this country is to be sold, so the make will not be on the market here for some considerable time. It presents, however, several interesting features, for which reason it cannot fail to interest our readers, and we propose to give a brief description of it.



A powerful American machine little known in this country.



Two-throw crankshaft of the 7-8 h.p. Iver-Johnson V-twin, which permits even firing.

In general, the machine leaves much to be desired by the English rider. The handle-bars are narrow, while the transmission is by long single chain. The engine, however, possesses several good points. It has a bore and stroke of $3\frac{1}{4} \times 3\frac{3}{4}$in. ($82\frac{1}{2} \times 95\frac{1}{4}$ mm.) respectively, and is provided with particularly wide plain bearings. The crank is made from a drop forging telescoped in sections, which are keyed, locked, and double riveted. The crank sections are recessed to allow of wide efficient main and connecting rod bearings. The double crank is contrary to usual motor cycle practice, and its construction allows one piston to finish the exhaust stroke at the exact moment when the other piston is completing its compression stroke, consequently the firing is even.

It may be recalled that a V twin engine manufactured by Messrs. Alldays and Onions embodied a similar double throw crank pin to obtain even firing.

The timing gear is also a distinct departure from the ordinary. The small timing wheel rotates inside an internally toothed ring, on the outside of which are the cams which actuate rollers on the base of the valve tappets. The method of driving the oil pump is also ingenious. The pump is a plunger with a cone rotated in the socket by a ratchet operated from the inlet tappet of the front cylinder. The spring-actuated plunger within the cone is withdrawn by a cam surrounding the plunger, and when it slides off the cam the spring drives the plunger down and discharges the oil directly into the crank case. The amount of oil delivered is also capable of adjustment.

Under-geared Transmission.

An epicyclic reduction gear on the engine-shaft embodies a clutch, and a two-speed hub can be fitted at an extra charge. A kick-starter is provided, but this, as in many other American machines, is on the near side.

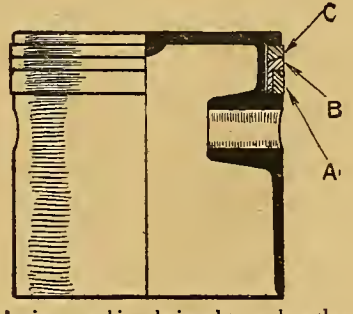
The American manufacturers are the Iver-Johnson Arms and Cycle Works, Massachusetts.

Piston Packing.

A Substitute for Conventional Piston Rings.

THE piston packing shown herewith has been devised by Mr. F. Shutler, 98, Northfield Road, Coventry, to take the place of the usual piston rings. He describes it as follows:

The packing consists of three split spring rings, which assemble in a single groove. The ring A is a plain piston ring, but is carried on a sleeve ring B, so that their joints when broken are sealed to gas; then, if an axial pressure is maintained in the groove, so that gas is prevented from escaping from the bottom of the groove up the front side, a perfect gas joint is obtained. This axial pressure is obtained by means of a bevel on ring B engaging with bevel face on ring C. This ring C is also so arranged that a proportion of the pressure behind the piston is admitted under the ring B, and also under itself (C). This results



A piston packing designed to replace the usual rings.

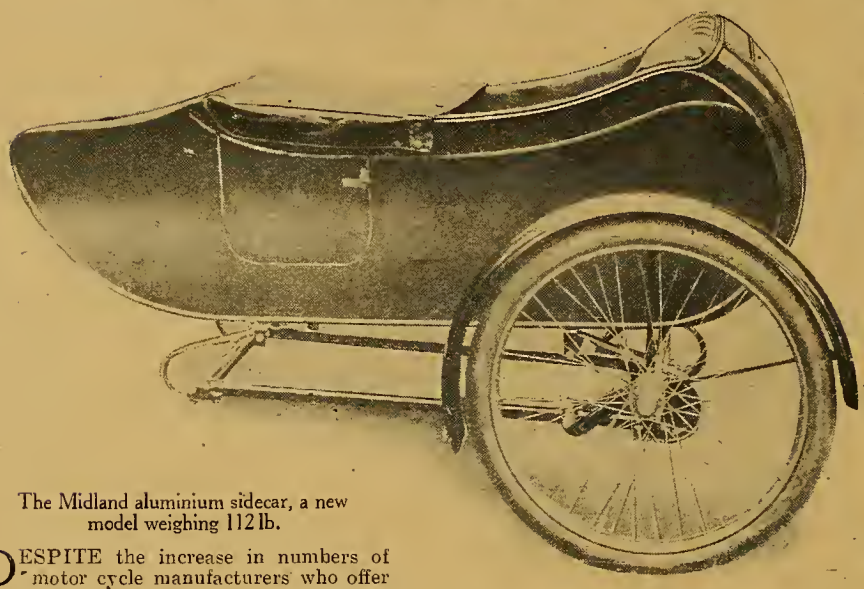
in an added radial pressure when compressing and firing, and also an added axial pressure, both being necessary when the pressure behind the piston is increased.

We are informed that it has been fitted to a number of engines, and is giving excellent results. On test, it is claimed, it gives constant compression, and, of course, all that this implies. The inventor tells us that experiments have shown that with the engine choked with oil it is impossible to get a smoke trail, even when additional oil is then forced into the crank case. Nothing more than a film of oil, sufficient for lubrication, is allowed to get on to the cylinder walls. Thus a whole list of defects, due to the present system of packings, is said to be eliminated. Further, a saving of quite 33% is claimed on fuel consumption.

These are the principal features of a simple device, which is easily fitted, and which should be quite reliable.

An Aluminium Sidecar Body.

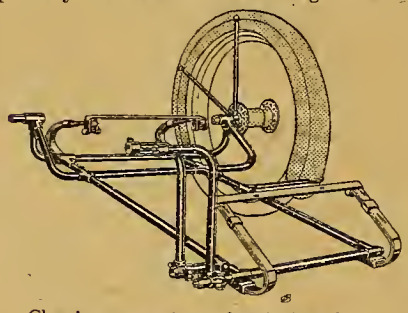
The Midland Sidecar. A New Attachment with Novel Springing.



The Midland aluminium sidecar, a new model weighing 112 lb.

DESPITE the increase in numbers of motor cycle manufacturers who offer their machines complete with sidecar, passenger attachments as a separate proposition are attracting a large number of new firms who have suitable facilities.

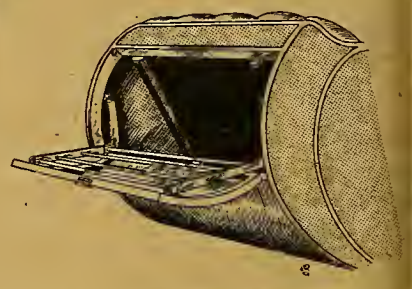
One of the latest additions to the "proprietary" sidecar manufacturing firms is the Midland Sidecar and Light Body Co., of Stratford Street, Upper Stoke, Coventry, who for some time have built a large number of bodies for motor cycle manufacturers. In deciding to introduce a model of their own, however, those responsible had the good sense to realise that the production of a complete sidecar was a matter more serious than a mere question of placing their body upon standard type chassis. They are body specialists, and they decided to work in conjunction with another firm specialising in sidecar chassis. This firm is the Ball Pedal Co., of Byron Street, Coventry, a concern which has produced chassis of special design for the trade for several years, and the combined effort is a splendidly made, well-designed, and comparatively light attachment.



Chassis construction and springing of the Midland sidecar.

The "chassis" is rectangular, and is dropped below the wheel centre in a manner which is made quite clear in the illustration. From each end of the two longitudinal members the four laminated springs are extended. At the far end these springs fit into a box formed integral with the T lugs of the frame, and are secured by a single bolt at their rear end. The springs approximate to a U shape, doubling back to support the front end of the body. Of similar design, the rear springs are shackled to the body. Four-point attachment, a detachable wheel, and a well-stayed guard, form part of the specification.

Turning to the body, we were struck by the particularly good quality of the workmanship and finish. The panelling is of aluminium on laminated corner pillars; the majority of the beads are swaged in the metal. The upholstery is of Crochett's first quality American cloth very closely resembling leather, and the seat and back cushions are deep and well sprung. At the rear of the body there is a fair sized locker, the lid of which is fitted with a small grid enabling it to be used for the carriage of a suit case.



The grid of the Midland sidecar forms the locker lid.

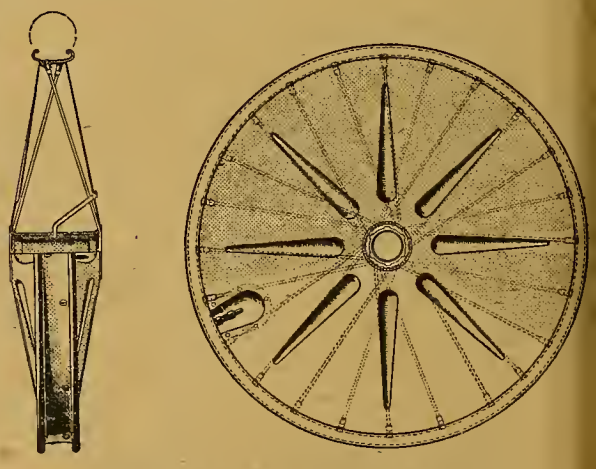
The standard colour is a rich dark blue, but an all-aluminium finish may be obtained if desired at the same price, *i.e.*, 32 guineas, which includes an apron, but the grid and quick detachable fittings are extras.

A COMPOSITE DISC AND WIRE WHEEL.

WITH the idea of producing a type of wheel which would be relatively inexpensive to manufacture, and embody the advantages of both disc and wire wheel, Mr. Norman Ryecroft, of Coventry, recently designed and patented the composite wheel illustrated below. It will be seen that the wheel has a rim of the voiturette type, against which are fitted two light pressed steel discs with inwardly flanged edges at their peripheries, and which abut against each other at this point, forming a seating for the rim.

The hub consists of a shell, having six splines milled upon the outside, which carries two flanged sleeves with corresponding splines fitting friction-tight on each end of the hub. By this construction the flanged lower edges of the discs are placed inside the hub flanges. A minimum number of spokes are used, and these extend from the flanges of the hub sleeves through holes around the central hole of the adjacent disc across the middle plane of the wheel and through the peripheral flange of the other disc. In this way the spoke tension tends to draw the discs together, so that they can share the driving strain with the spokes.

It will be observed that, while the spokes hold the rim in compression, all road shocks are absorbed by the discs, which are also held in compression. Thus this construction provides a certain amount of resilience which is present in a wire wheel, but which is absent in the disc type.



Details of the Ryecroft disc wheel construction.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

MUDGUARDING.

Sir,—We have read with interest your leading article on passenger machines in the issue of *The Motor Cycle* for November 13th.

Your last paragraph says: "Mudguarding, especially with regard to the front wheel, is still capable of improvement." We might say that our latest sidecar, in which the front portion has been raised in order to give a more streamline effect, shields the passenger admirably—more so than any improvement to the mudguard could have done.

RUDGE-WHITWORTH, LTD.

JET SIZES.

Sir,—May I be permitted, through the medium of your paper, to thank those of your readers who so kindly gave me advice in reply to my query of October 9th as to jet sizes for a 3½ h.p. Sunbeam combination with Amac carburetter?

I am glad to say I have found the solution of my troubles in N.B.A. benzole, which has enabled me to fit a jet three sizes smaller, reduce my running costs, lowered my consumption by about 25%, and at the same time gives me an extraordinary increase of power on hills. I am now an N.B.A. benzole enthusiast. C.T.

Shalford.

A MAGNETO TIP.

Sir,—Maybe the following may be of use to users of Thomson-Bennett magnetos. Recently I had the misfortune to have the carbon brush removed from my Triumph motor bicycle by some meddlesome person while I was away on holiday in the country.

Being some fifteen miles from the nearest repair shop or town, something had to be devised on the spot. On examination I found that in the brush holder there is a brass sleeve to contain the brush spring. By removing the rubber washer the brush holder will fit "home," and enable the brass sleeve just to bear on the armature. I was thus able not only to ride home, but also to complete 300 miles before fitting a new brush, and during the whole time I never had a misfire. By the way, a local repairer charged me 3s. for a new brush, which strikes me as distinctly like profiteering. A. RIDER.

Dublin.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—As many motor cyclists seem doubtful of the advantages offered by joining the A.A., may I relate the following incident? When stationed at Portsmouth I ordered a well-known make of motor cycle in May, paying a deposit on the understanding that delivery would be late in June. Demobilised and settled in Glasgow, I wasted a glorious summer waiting for my mount. Reply prepaid telegrams and letters were sent and not replied to. Finally, in October, I obtained another make and joined the A.A. I brought the matter before the secretary, and, to my surprise and gratification, *within a week* I received deposit in full with letter of apology. EX R.N.O.

Liscard.

Sir,—I have read lately in the cycle press various comments on the A.C.U. scouts and get-you-home scheme.

I met with an accident on Saturday, August 30th, while travelling, with my wife in the sidecar. I overturned in avoiding collision with a car which came unexpectedly out of a narrow side road at Hoo Green, Knutsford. My wife and I were badly knocked about—my injuries consist of a broken collar bone, and two ribs. I was almost too much hurt to bother about any sort of scout, but an A.A. man quickly turned up and rendered what help he could, although I am a member of the A.C.U. However, after being attended to—I must say very kindly indeed by everyone at the "Hoo Green Hotel" (proprietor Mr. Power)—we proceeded to return to my home, nearly twenty miles away, by taxi.

Last week I wrote to the Secretary of the A.C.U. giving particulars of above, and, although the cost of the taxi was £2, I received a cheque for this amount almost by return of post. This action speaks for itself, and although I think that, perhaps, it would be an economical advantage for the scouts of both A.A. and A.C.U. to be amalgamated it is without doubt to the advantage of all motorists to be a member of both the A.C.U. and the A.A. K 1147.

St. Helens.

APPRECIATION.

Sir,—As a reader of *The Motor Cycle* from its initiation, I would like to congratulate you on the issues for November 13th and 20th. Those readers who cannot get to Olympia will appreciate the splendid descriptions of machines, and the many items of interest connected with the Show. Although I intend visiting the Show I would forego this pleasure rather than miss what *must* be the crowning success of your journal.

Motor cyclists cannot afford to be without *The Motor Cycle*. May I make one suggestion? Instead of the word "pastime" on your heading, would not "movement" be better? It is more than "pastime" to-day, and I am sure that many motor cyclists will agree that a motor cycle is an absolute necessity, for business and pleasure alike.

I was about to suggest the word "sport" instead of "pastime," but fear this would be inadequate. Perhaps some reader will suggest a word better than "movement."

S. BARKER.

[We are grateful to our correspondent for his suggestion and remarks. The former shall have our consideration. The word "movement" is already used on the cover.—ED.]

WATERPROOF CAPS.

Sir,—I see in your issue of October 23rd that "Ixion" complains of the inadequacy of the cap as a motor cycling head gear.

I suggest that he tries what is known as a "fishing hat," that is, if he has not already done so. This consists of a circular high-crowned hat with a brim about 2½in. wide all round it. The material should be Harris tweed or some heavy material of that kind. There is also a lining, of cloth in my case, but I would suggest that this could be made of ordinary macintosh if required. There is no stiffening material used, such as the cardboard in a cap brim.

I first tried this hat in 1911, and have always used it since. It is amazing how much wet it will turn before becoming sodden—in fact, with a water-proof lining it should never get wet through. The brim can be pulled down over the eyes to protect the goggles, and, while projecting far enough to prevent water running down the neck, it does not catch the wind and cause that tilting over the eyes that one experiences with a south-wester. Owing to the fact that the crown is dome-shaped, and therefore has a slight taper, the harder one pulls the hat on the harder it is to get it blown off, I do not think that this has happened to me more than once or twice.

This hat has been well tested, for I used to ride throughout the year in all kinds of weather on powerful machines,

and, though perhaps my description makes it sound somewhat unsightly, it is by no means as bad as some of the headgear one may observe almost any day on the road.

I have been out here since August, but have not got a machine, as the season is so nearly over and the roads are impassable in winter, and are bad even in summer.

While on the subject of clothes for motor cyclists, it may interest you to hear that the appearance of the average motor cyclist over here is infinitely worse than in England. It appears to be the fashion to wear rough clothes which are liberally smeared with oil; since no overalls are worn, one can see people come into hotels looking more like mechanics, and dirty ones at that, than anything else. This applies both to men and women. One continually hears remarks about the dirtiness of motor cycles, conveying the hint that those who ride them are not fit for decent society, not unlike it used to be in the good (or bad) old days. R. T. LEATHER.

Quebec, Canada.

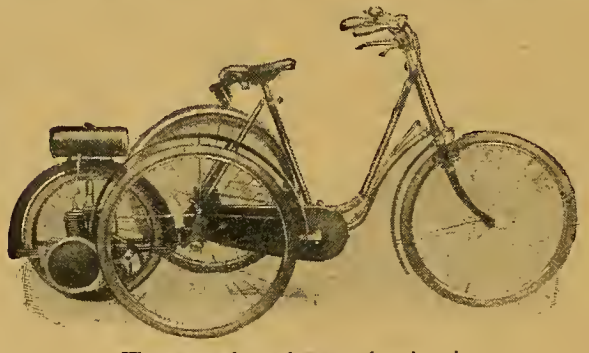
STRENUOUS RIDES.

Sir,—I notice that Captain Pike's ride from John-o'-Groat's to Land's End in five days seems to be considered a strenuous test for man and machine. I should like you to recall the fact that years ago G. P. Mills did the same journey in less time on a push tricycle. Surely the modern lightweight is a faster machine on a long journey than the old tricycle? H. WAYWELL.

[Lieut.-Colonel G. P. Mills's fine ride was not done in November or amid ice and snow.—ED.]

ATTACHMENTS FOR THE AUTO-WHEEL.

Sir,—My attention has been called to a statement in a recent number of *The Motor Cycle* that Messrs. Auto Wheels, Limited, were the inventors of an attachment for



The patented attachment referred to by Mr. Frank Hucklebridge.

fitting an Auto-wheel to a tricycle. This, however, is an error on your part. The attachment used by Messrs. Auto Wheels, Limited, is designed, patented, and made by myself, and I have pleasure in sending you a photograph showing the attachment.

FRANK HUCKLEBRIDGE.

KICK-STARTERS.

Sir,—I think the impression given by "'Ixion's" comments that there are no efficient kick-starters should be corrected. Personally, I have experience of two efficient types, *i.e.*, the Scott and the Triumph. Pre-war I had a Scott in constant use, winter and summer, using petrol or benzole, and I never had any difficulty in starting with the kick-starter. During fifty-three months as a D.R., the greater portion of which I used a countershaft Triumph, I could always start when, and how, I wanted to. I have been in four different countries and climates, and the spirit we used to get resembled paraffin, but if the machine did not start in two or three kicks I knew that the kick-starter was not the thing to be blamed.

The whole point is this, the average rider expects a mechanical fitting to do work which he himself would gibe at when the machine is not in tune. Keep the machine as fit as if you had to push, treat it in the proper manner when preparing to start, learn the knack, and you will always be able to start easily. It is not always a case of dropping the valve-lifter, a Triumph can be started in one kick without using this on the decompressor.

G. HAROLD DUNSTON.

TAPPET CLEARANCES.

Sir,—With reference to "B.S.A.'s" letter (November 20th) on the subject of tappet clearances, it has occurred to me that the following may be the correct explanation. When the engine is warmed up to the average running temperature, both the cylinder barrel and valves lengthen slightly owing to expansion, but as the former is considerably longer than the latter, it necessarily follows that the valve is, so to speak, lifted away from the tappet, owing to the lengthening of the cylinder barrel. When, however, the engine is run "all out," the temperature of the cylinder barrel does not increase to anything like the same extent as that of the—practically uncooled—exhaust valve, owing to the radiation of heat *via* the cooling fins, so the valve stem then lengthens to a greater extent than the cylinder barrel, and the tappet clearance diminishes. R. F. MANN.

TRAMS.

Sir,—As a keen motor cyclist, I feel I must say a few words of regret that the London County Council are proposing to extend their tramway service in various districts. Surely we motorists ought to have something to say against this. Every motorist who rides about the larger towns of this country has experienced great inconvenience caused by the tramcars in traffic. One more often than not cannot pass them, and they cannot make way for any other vehicle owing to the fact that they are tied by their lines.

If the L.C.C. must have trams, why cannot they use the system whereby overhead wires are used and the trams, modified of course, run on four wheels without lines, the same as an ordinary omnibus.

Cannot the A.C.U. or the A.A. take up this matter for us, and put forward objections when the time comes for the hearing of the proposals? J. L. JEFFREE.

Smethwick.

OVERHEAD V. SIDE-BY-SIDE VALVES.

Sir,—Undoubtedly the reason given by your correspondent Albert A. Graham for the present decline of the overhead valve arrangement is quite feasible, but does he carry his conclusions far enough? Continuing on the line of reasoning adopted by him, the following question obviously arises. Does the increased efficiency obtained from the improved shape of the overhead-valved combustion chamber effectively compensate for the greater strain in the timing gear induced by stronger valve springs and increased friction developed by the use of extra bearings? (Incidentally, it is quite obvious that extra strain on the timing gear can be compensated for in construction.) If it does *not* do so, why adopt this arrangement, even in racing models? If it *does* do so, why not adopt it in the touring model? The only reason, as far as I can make out, is that "the tourist wants to increase his reliability as much as possible." Certainly he does. Yet I can see no reason for the overhead arrangement being less reliable than the other. Surely it is only a matter of suitably constructing the parts, and securing the right quality of material. And I venture to suggest that the unreliability, if any, of the overhead arrangement is due to insufficient development, which perhaps, in its turn, is due simply to prejudice on the part of the buying public.

In this connection it is interesting to note the letter in your columns from the makers of the Duzmo engine, who, I think, should be commended for their attempt to prove the claims of the overhead arrangement in the best possible way, by incorporating it in a standard model. Incidentally, it would be interesting to know if the Duzmo combustion chamber is shaped as perfectly as regards thermal efficiency as is that of the new A.B.C. I have not seen a section of the Duzmo engine, but, judging by the position of the valve stems, as seen in the photographs of this engine, I doubt if it can be.

Albert A. Graham, incidentally, raises another interesting query: When will some enterprising designer produce a sleeve or cuff valve motor cycle engine? In the days when the single and V twin held the market, difficulties of balance killed any possibilities of using this type of valve. With the modern developments in design, surely these difficulties are no longer insurmountable. S. LATOUR HORDLE.

RISK OF FIRE.

Sir,—Lately I have suffered the painful experience of witnessing and hearing about a number of motor cycles which caught fire and have thus been materially spoilt before they could be extinguished.

Surely some enterprising firm will make a fire extinguisher or supply a carrier for one. Maybe someone else has views on this subject. RUDGE MULTIST.

MOTOR SCOOTERS.

Sir,—Just a word about motor scooters. Being a woman, I fail to see the use of such machines if they are for women to go shopping with. How are we to carry our parcels and packets? It strikes me it would take us all our time to hold on to the machine if the roads were at all rough. Can there not be something more suitable—say, an Auto-wheel fixed to a sidecar, or the works underneath, or just a small car to carry one lady. I think this would prove a great boon to middle-aged ladies.

J. C. PATRICK.

PETROL PRICES.

Sir,—It may interest those readers who grumble from time to time about the high prices of petrol prevalent at the present time to hear that we humble persons in this colony have to pay Rs. 38 a case of eight gallons, deducting a loss of one gallon in transport to Mbarara, which is undertaken on petrol lorries. The price per gallon at the present time works out at the colossal figure of over 7s. per gallon, and yet we are only too pleased to get the liquid at the price. C. C. FREEINE.

Mbarara, Uganda.

CHAIN CASES.

Sir,—I have noticed while reading the descriptions of new models appearing from time to time in your excellent paper that in the case of all-chain-driven machines there is a tendency to leave the rear chain open or else to provide it with a meagre guard. I suppose the reason for this is accessibility. But surely a totally enclosed chain will last much longer without attention than one running in mud and wet? The Sunbeam oil bath transmission is as near perfect as one could wish for. There is not a sign of rattle from the chain cases, and the chain itself is kept adequately lubricated and in beautiful condition. I fully realise that chain cases are hard to perfect, but it is surely rather cowardly to omit them altogether. The case of the new Premier Runabout seems neat and accessible. The sidecar, of course, makes the average chain case hard to get at, but the Sunbeam people have solved the problem by taking the chain down the right-hand side of the machine.

These remarks apply only to the rear chain in the case of heavyweights, though I think the front chain in many lightweights might be provided with a case. The 1920 New Hudson sets a good example here. I consider this non-enclosing of the chain one of the few weak points in the design of the A.B.C. A.H.S.

Enfield.

THE PASSENGER OUTLOOK FOR 1920.

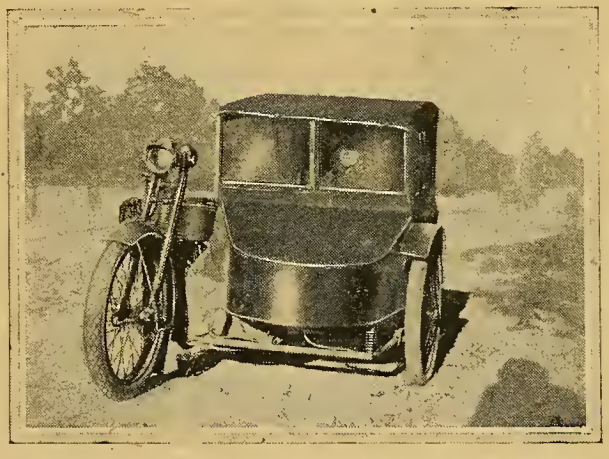
Sir,—Mr. Davies's article in your number of November 13th is of exceptional interest, both to the manufacturer and to the public. His final recommendation—"massed production of runabouts"—concerns us very closely. Perhaps we may be allowed to say something on this point, for we entirely agree with the article in question. Mr. H. Ford (who ought to know) is reported to have said that an output of 10,000 cars per annum secures the utmost economy of production. The "correct counterblast," therefore, to the threat of the competition of the cheap light car is a production of at least 10,000 runabouts. Now it is scarcely doubtful that more than that number of orders could be secured at the Show alone for a popular machine. Yet we must admit that we are booking only a limited number of orders, much to the discontent of our agents, who are promised tens where they are asking hundreds. What is the reason? Simply the impossibility of, largely increased production under present circumstances. We cannot secure the necessary parts. If we gave an order, let us say, for 10,000 engines, it is very unlikely that they would be delivered. If we could get twenty a week from one well-known English manufacturer at the present time we should be delighted. Why not then make our own engines? Is it likely that within the next twelve months we could accomplish what old-established firms are unable to promise? It is the same in regard to other things. Given the materials, and we have the means of mass production, but they are not given and cannot be obtained. There are therefore two courses open to us, either to make promises which it is very unlikely that we should be able to fulfil, or to limit our acceptance of orders and trust to increase our output under better conditions, even though we know that this limit increases the cost of production.

But the strength of the light car competition depends on whether the producers are more fortunate in this respect than ourselves. Light cars, some of which have never yet been on the road, and most of which at present exist in twos and threes, *may* be able to secure what we have found unprocurable. But unless they can do this, and do it before the older firms are in a better position, the competition will be negligible. We fancy that before that time the "correct counterblast," of which your contributor speaks, will be in full operation. MORGAN MOTOR CO., LTD.

THE "WHAT IS IT."

Sir,—The inventor sometimes thinks that he knows, and sometimes the spectator has a say. "Oh! what is it?"

It has no particular shape. It is absolutely weatherproof. Seats two with comfort. The seat back is detachable, and forms part of a mattress for sleeping on. The space behind the seat holds 60 lb. of luggage. The space in front beyond our feet holds another 40 lb. We have travelled 800 miles and slept in it ten times. It can be driven hands off on a level road. The body has no side next the machine. The box for the driver's feet is unsprung and has flexible canvas sides, the rest of the body being sprung. The hood is detachable, but we always leave it up on account of the dense clouds of dust on our Sydney bush tracks.



PROTECTION FROM THE ELEMENTS AT A COST.

A two-seater sidecar, with interior steering and controls, referred to by our correspondent, Mr. Louis Russell.

Ingredients? Yes! One Harley-Davidson, £115; chassis and alteration, £38; body material, etc., £15 (body home-made). Take the Harley-Davidson, strip handles, footrests, front stand, clutch, foot mechanism, carrier, seat, and seat-pillar. Change the foot brake to the opposite side and well forward, work the ignition control by a small lever near the magneto. Connect the chassis, put the body on, fill in spaces with canvas, allowing for springing motion, fill the tank, put in fishing rod, bait lines, enough food for four meals, pillows, blanket and sundries, leave home at 1.30 p.m. on Saturday, over the hills to the favourite spot, back again Sunday evening or Monday morning. Petrol, 35 m.p.g.

Hills? Climb anything up to 1 in 3 so far.

If any manufacturer cares for the design let him wire in, as it is fully unpatented. We cannot manufacture here on account of high wages.

In conclusion, let me say that the outfit is satisfactory in every respect, and has been tested on the roughest tracks imaginable. We have solved the problem.

Sydney. LOUIS RUSSELL.

SPARE PARTS.

Sir,—I should be very pleased if you could find space to publish this letter in your most interesting paper.

I have a motor cycle fitted with a Jardine four-speed gear box, and was unlucky enough to break the belt pulley. After failing to obtain a new one locally, I sent an express letter to the makers, asking the price of the pulley. One can guess my surprise when I received a new pulley two days later by express post.

I have no connection with this firm except as a satisfied owner of one of its gear boxes. SATISFIED.

Southampton.

Sir,—I have been much interested in the letters appearing in *The Motor Cycle*, giving examples of good treatment from certain firms in supplying spares. I am afraid I am one of the customers whom "Lieutenant, R.N.," in your issue of November 13th, describes as those treated indifferently. Two months ago I bought a new lightweight from the local agent. I had not run the machine 100 miles before the magneto gave out. I returned the machine to the agent, who dismantled the magneto and found it faulty, and immediately despatched it to the makers of the machine. This firm acknowledged receipt of it, and said they had sent it to the manufacturers. After three weeks, having no news of the magneto, the agent wrote to the magneto manufacturers. In reply, they stated that from the description the magneto was evidently faulty, and that they would replace it as soon as it was received. Apparently it had never been sent on to them. Repeated letters and a telegram have brought forth no reply from the makers of the motor cycle, and I am still without my machine.

As you publish, and quite rightly, appreciations, I should be very much obliged if you will publish this, as such a display of negligence should be shown up.

B. W. ROBINSON.

Sir,—After all the laudatory epistles from readers regarding the fair dealing, etc., of various firms, I should like to point out that the other side of the picture should be given equal prominence.

I own a 2¾ h.p. twin, and have ridden it four times. The first time the chain broke. Second time: Bolts holding the magneto to the crank case stripped the thread in aluminium. To cure this fault, I had to put a steel band right over the magneto, the ends of the steel band fixed under the plugs each side of the case. Third time: The magneto timing wheel stripped its teeth, the flywheel became slack, and the engine loose in the frame. Fourth time: The main timing wheel teeth all came off, causing the following: Intermediate wheel stud and wheel useless, magneto pinion again stripped its teeth, and, worse than all, bent the armature-shaft. Lower down the cam wheel was absolutely spoilt by the damage to the main pinion. Inside the engine both connecting rods were bent.

All this trouble is directly traceable to faulty material and bad case hardening.

The mere replacement of parts by this firm (or any firm for that matter) can never compensate for the trouble and inconvenience caused by faulty parts. Good steel can be obtained, proper hardening of parts can be done, and there is no excuse except that of "getting rich quickly," for the sake of inferior material or slackness in examination of parts. Firms who carry on in this manner with the general public will get a very rude shock in the near future when conditions become more normal. ALBERT V. HUGHES.

THE LIGHTING REGULATIONS.

Sir,—There is, I am afraid, an entire absence of logic in both the letters written by "Sivel." In the "deliberate misquotations" imputed to "Iorwarth," the difference is in *words* only; the sense is in no way changed, nor does a suggestion that one class has some sense necessarily impute lack of sense to another class, although it may do so. For suggestions that cyclists have no sense I would refer "Sivel" to the cycling press, where he will find it stated that the lighting regulations are too complicated for them to understand, and also to the fact that they often display red lights in front and white lights behind. It is a poor cause that necessitates such bolstering.

"Sivel" says (I must be careful to get the quotation exact): "I have, myself, on numerous occasions escaped by a hair's-breadth being smashed up by passing motorists at night—in spite of my rear lamp!" How does he know that his escapes have not been entirely due to the presence of his light? It is absurd to suppose that because accidents have unfortunately happened when rear lights have been carried that they are of no use. Running down cases have happened in daylight, but does anyone suggest that daylight is insufficient to give satisfactory vision? I have myself had a few narrow escapes from running down cyclists, in each case because of the unexpected antics of the cyclists themselves.

"Sivel's" letters make me wonder whether he has done much night riding away from North London. In the country it is largely the bright lights of cars that make it so difficult to see unlighted cycles, and it is the presence of unlighted cycles that makes these blinding lights necessary. Here we meet with a vicious circle. In meeting these blinding lights one seems to ride into pitch darkness, but a red light is quite visible. Therefore I entirely agree with the statement of "M 5229" that "there can be no doubt of the advantages of the rear lamp." Many rear lamps are perfectly reliable.

I hold no brief for the road hog, and do not approve of his methods, being myself a careful rider, but I have to do more night riding than I like. JOHN HOLLAND.

Sir,—With reference to the letters of Isaac Bartu and "Sivel" in your issue of November 6th, 1919, may I be permitted to disagree entirely with them as regards the rear light for cyclists?

I ride a 3½ h.p. combination home every night from Whitehall to Richmond, and as I go *via* Kensington High Street, Hammersmith, Barnes Common, and Sheen, I get a "little of all sorts," as far as traffic and road lighting are concerned. I am not a "speed merchant," and my experiences are not due to "hogging it." Further, my eyesight is perfectly normal, and my head lamp an exceedingly good one.

I have been astonished at the difficulty I find in seeing cyclists on these dark nights, unless they carry a rear light, especially if they are riding astern of some well-lit vehicle (such as a motor 'bus), which seems to accentuate the gloom behind it, and on several occasions I have found myself nearly on top of a pedal cyclist before my lamp chanced to show him up. The huge glare from some cars, whose owners insist on using head lamps of the searchlight variety, increases the difficulty, as for some few seconds after they have passed nothing unlit can possibly be seen.

Of course, if the cyclist happens to come within the direct ray of my head light, that is another matter, but I, for one, am convinced of my own experience that, near London at any rate, rear lamps for cyclists conduce greatly to their safety. Even the red glass astern by itself is useful, as one's light picks it up at a distance when the cycle itself is not visible.

I find pedestrians equally hard to see, but the sensible pedestrian faces the oncoming traffic, and looks after himself when crossing the road. The cyclist, on the other hand, has his back to overtaking traffic, and, to my mind, the two cases are not analogous, any more than are the other "impedimenta" mentioned by "Sivel." C. TYERS.

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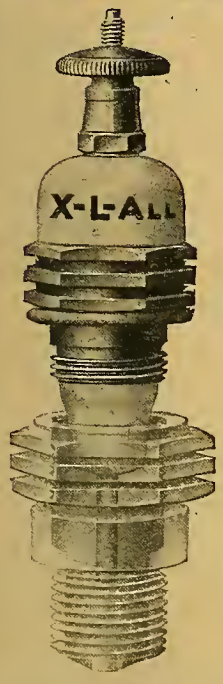

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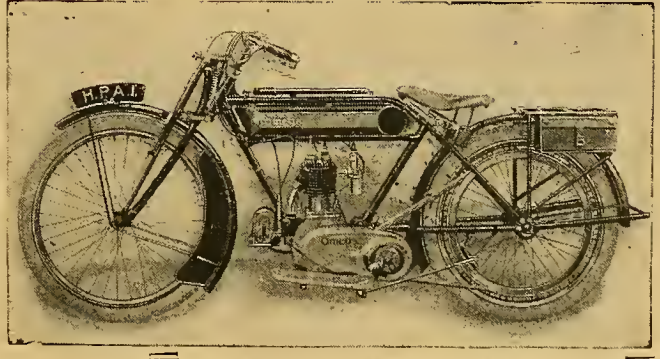

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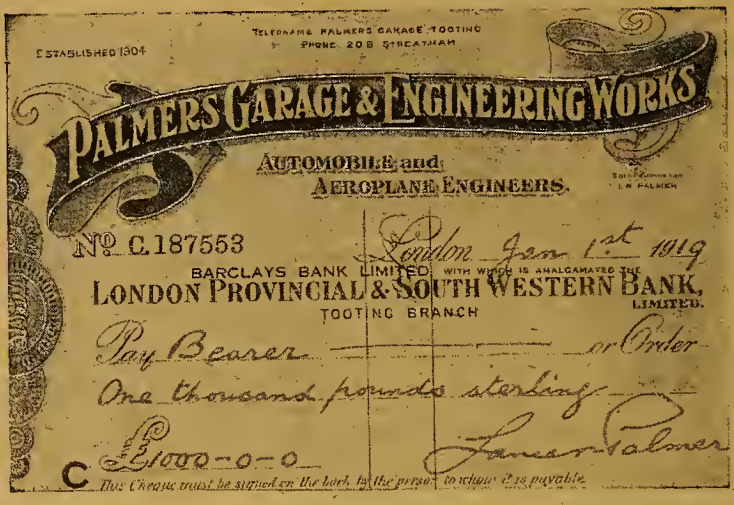
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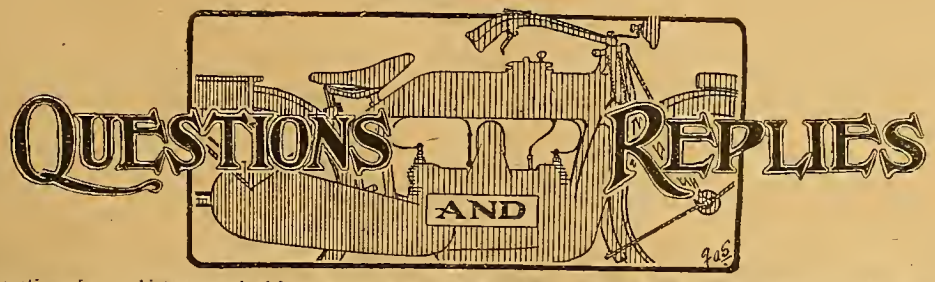


A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Timing with Fixed Ignition.

Could you let me know the correct ignition timing (in millimetres, of stroke—also degrees) for a 1914 or 1915 Precision Junior 2 h.p. engine, with fixed ignition?—D.H.M.S.

The spark should occur 6 mm. from the top of the compression stroke, or 20° in advance of top dead centre.

Misfiring on One Cylinder.

Will you kindly tell me if the W.S.R. variable jet adapter would give me the improvement the makers state. My machine is a 1914 6 h.p. Enfield fitted with an Amac carburetter, and I find in throttling down to run slowly that it only runs on one cylinder.—J.W.S.

The W.S.R. jet adapter is quite a satisfactory article and fully meets the object for which it was designed. It is doubtful whether its use would eliminate the particular fault to which you refer. It would appear that either there is an air leak in the induction system of the offending cylinder or else that the plug is unsatisfactory.

A Dynamo Lighting Arrangement.

I have one of the C.A.V. hand-starting magnetos. By removing the contact breaker and connecting a small four-volt bulb to the primary winding I can light it brightly by turning the magneto by the handle. I intend to replace the handle by a pulley, which will be geared 5 to 1, to the armature. (1.) About what speed should the armature be run to obtain the maximum primary current? (2.) I want to light one head lamp and a rear lamp. (3.) My machine is a standard 3½ h.p. Rudge-Multi. Can you suggest a means of fitting a pulley to the engine to run the magneto as a dynamo? All rotating parts of the Rudge engine are well enclosed, which adds to the difficulty of fitting a pulley.—A.U.

(1 and 2.) Possibly you can use the C.A.V. magneto as a light generator, as you suggest. We should think, however, that you will find some difficulty in keeping the bulbs in order owing to the continual variations of voltage. The maximum primary current will be obtained at about 1,500 r.p.m., and will probably amount to about twenty-four volts. It will be necessary to include a choking coil in the circuit, so that you can use four-volt bulbs. (3.) We do not think that the 3½ h.p. Rudge engine lends itself to the incorporation of a dynamo drive, as there are no convenient rotating parts exposed.

Fitting a Kick Starter.

I wish to fix a "kick start" to the off side of a 1912 Triumph engine, and shall be obliged if you will kindly advise me if it is possible to utilise the rear pinion of the timing gear?—H.K.L.

We should not recommend the fitting of a kick starter on the lines you suggest. The Triumph timing gear is not designed for this purpose, and would, in all probability, develop trouble.

Cattle on the Road.

I should be glad if you would inform me on the following: I was travelling between 12 and 14 m.p.h. up a long hill, all lamps alight, on the correct side of the road, when I crashed into a drove of horses. There were seven altogether. The first thing I saw was three or four of them—some on the grass and some on the (my) left side of the road. I wrenched the machine across the road to avoid those I saw, but crashed into the remainder. We completely overturned, but, luckily, were not badly hurt. The sidecar body is beyond repair. I have an estimate for a new one (£23), and more expense straightening the chassis. The cycle is undamaged. I had sold the turnout the same afternoon the accident occurred, intending to deliver it on my return from this journey. Of course, I could not complete my contract. I am also out of pocket by the expense in getting the machine home again. It appears that one employee of the owner of the horses had released them from the stable and was following on behind, while another was waiting at the gate of the field to turn them in when they arrived. The distance between would be about 300 yards. I have a witness who was standing about fifty yards ahead of where we crashed, who says the horses were trotting when they passed him, and he remarked to his friend at the time, "There would be a smash." The horses were loose, not roped. The road is about 20ft. wide. It was a misty night, and I could see absolutely nothing until they were on top of me. Is it lawful to drive loose horses along a main highway at night? Are horses classed as cattle under the Lighting Act? Is the owner liable for the damage and other losses? There was quite a lot of motor traffic on the road, owing to the railway strike.—J.A.B.

It seems to us that you have a good claim for damages against the owner of the horses on account of his employee neglecting properly to control the horses while on the highway, under circumstances which could not excuse him from such liability. It is laid down that if anybody by his own act, or that of someone for whom he is responsible, causes any animal, though not of a savage disposition, to go on to the highway unattended, under circumstances which result in damage being done, he is liable for the damage. A recent case confirming this is that of Turner *v.* Coates decided in 1917. A boy was leading an old mare who was followed by a colt which was accustomed to the mare, the owner coming behind driving a cart to prevent the colt from running back. A cyclist approached, and the colt, startled by the lamp, knocked the cycle over and injured the plaintiff, and it was held that the owner of the colt must pay damages. You would not succeed if the court was of opinion that you yourself were going too fast having regard to the fact that it was after dark. We are not aware that the owner is guilty of an offence with regard to not having any light. There was such a regulation in force during the war, but it was revoked early this year.

Cast Iron Valves.

I should be pleased if you could settle a little dispute between a friend and myself on the question of steel and cast iron valves. He maintains that a cast iron valve is far superior to a steel valve. On the other hand, I hold that such is not the case, and maintain that a steel valve is better suited on account of the seating not pitting so easily and the stem not so prone to break. Further, I claim that my case is proved by the fact that cast iron valves have been tried, have failed, and been discarded.—NOVICE.

Your friend is correct in maintaining that cast iron is superior to ordinary steel as a valve material. The chief trouble in the employment of cast iron, however, is that it is impossible to make the stem of the same material, and when a steel stem is screwed into a cast iron head there is always considerable danger of its breaking away at the end of the threaded part. You will get conclusive proof that cast iron valve seatings do not burn as rapidly as steel ones when you consider the fact that the seating in the cylinder is usually far less affected by prolonged use than the seating of the valve itself, which in almost all cases is made of steel, but, of course, it is far less hot than the valve. The best valves are made of tungsten steel.

Various Questions.

(1.) What principle is employed in the J.A.P. system of lubrication? (2.) Are any firms likely to market a 3½ h.p. or 4 h.p. four-stroke water-cooled motor cycle? —F.K.P. (India).

(1.) The J.A.P. system of lubrication depends upon the effect of the partial vacuum created in the crank case. Advantage is taken of the existence of this vacuum to induce a continual drip of oil from the tank through an adjustable sight feed lubricator. Oil is drawn into a box on the side of the crank case, whence it passes to the main shaft (timing side) bearing, and it is then led along suitably drilled oilways by centrifugal force to the big end. (2.) We do not know of any firms who are contemplating the regular manufacture of four-stroke water-cooled 3½ h.p. motor cycles, or who are likely to do so, since air cooling is now so efficient that water-cooling is unnecessary.

Completing a Purchase.

Will you kindly inform me on the following points? I sold a second-hand machine, and just before the purchaser left he noticed a scratch in the enamel on the head lug. I scraped away the enamel, and found the frame had been repaired. He seemed satisfied, however, and took it away. After ten miles the bad roads caused the repair to break, and, consequently, I offered to fit, free of charge, another frame which is quite sound. The purchaser said that if the machine (fitted with the sound frame) ran all right he would accept it. Instead of coming to test the machine he now asks for his money back. I maintain that I cannot refund the money, especially as I have gone to the trouble of fitting him a sound frame. I believe I was not liable even to do this, as he was shown the repair in the first instance, and was satisfied. I consider I acted generously, and think he has no claim for the return of the money. Am I correct in this opinion? —H.L.M.

In the case of the motor cycle you describe, we think that you treated your customer quite fairly with regard to the replacement of the frame, and, in consequence, you are justified in holding him to his agreement.

Broken Spokes.

I have a 1916 A.J.S. 6 h.p. motor cycle and sidecar, which has been giving a lot of trouble in that it is continually breaking the spokes in the rear wheel; but the curious thing is that it seldom breaks the outer ring of spokes, but smashes the inner ring by the dozen. Why is this? Can it be that the transmission is too rigid? I think the slipping device on the sprocket is working quite properly. I should be very much obliged if you could help me by suggesting any reason. The previous owner had a lot of trouble with the sidecar spokes which often pulled through.—J.S.C.

Spoke breakages in the driving wheel of the A.J.S. motor cycle are not particularly common, and we think the cause is most probably due to your method of driving. You should guard against running the engine on top gear at extremely low speeds, as this puts a great strain on both transmission and wheels. Sudden gear changes and violent braking also have the same effect. Maybe the spring drive could be slacked off somewhat, and this would soften the drive considerably.

READERS' REPLIES.

Blacking Cylinders.

On October 30th, one of your readers asked if anyone could tell him of a good cylinder black, as he had tried several so-called cylinder blacks which were not satisfactory. I was in the same fix until I saw Rosco cylinder black, supplied by Owen Bros., Hull, advertised in *The Motor Cycle*. I sent for a 1s. 6d. tin and was delighted with the results. It made my cylinders like new, and it thoroughly withstands heat. It can also be used to give an oxidised appearance to hubs, lamps, etc., as it is also rust-proof. I hope this experience will prove useful to other readers, who have not been able to get a satisfactory cylinder black.—JACK HENSON.

With reference to "R.N.B.'s" enquiry regarding blacking cylinders. I have found a paint composed of boiled linseed oil and graphite to answer excellently for my single-cylinder B.S.A. It remains perfect from one decarbonising to another, except round the exhaust port, and even this can be kept free from rust by giving two or three coats and allowing plenty of time for drying between each.—E. E. OLDERSHAW.

Irregular Firing of Two-stroke.

In reference to the question in the November 20th issue of *The Motor Cycle* by "S.A.J.S.," who has trouble with the firing of his two-stroke. I have had the same trouble on my own machine, and suggest that he should inspect the sprocket wheel screw of his magneto to make certain that the timing does not slip, thus causing the engine to fire irregularly.—D.E.

Starting Difficulties.

Probably the following tips for starting a B.S.A. 4½ h.p. may be useful to some of your readers, particularly "J.J.H.B.," Sierra Leone. Open the throttle about half way, and almost close the air. If everything is in order the engine should fire with the ignition lever in any position. In order to avoid back-firing, I usually start with the ignition well retarded. Open the adjustable jet to its fullest extent for a second or so, then close it down to normal position (about three-quarters or one turn open); this floods the carburetter. Give the engine one or two turns round with the exhaust valve lifted, and the gear lever in the low speed position. Now work the kick-starter until compression is felt, lift the exhaust valve, give the kick-starter a vigorous push, and immediately release the exhaust valve, when the engine will fire. By this method I can always start with the second kick without priming, on frosty mornings after the engine has been standing several days.—CHESHIRE CAT.

RECOMMENDED ROUTES.

WEYMOUTH TO LEICESTER.—I.M.

Weymouth, Dorchester, Blandford, Salisbury, Amesbury, Pewsey, Marlborough, Hungerford, Wantage, Abingdon, Oxford, Banbury, Daventry, Rugby, Lutterworth, Leicester.

SOUTHAMPTON TO CANTERBURY. — R.S. (I.W.).

Southampton, Fareham, Havant, Chichester, Petworth, Billingshurst, Horsham, Crawley, East Grinstead, Tunbridge Wells, Pembury, Maidstone, Charing, Canterbury. Approximately 140 miles

LIVERPOOL TO WEST HARTLEPOOL (DURHAM).—E.G.D.

Liverpool, Ormskirk, Preston, Garstang, Lancaster, Kirkby Lonsdale, Sedbergh, Kirkby Stephen, Bowes, Barnard Castle, Darlington, Stockton, West Hartlepool.

WATFORD TO RISBOROUGH.

Watford, Scott's Hill, Rickmansworth, Chenies, Chalfont Road Station, Amersham, Little Missenden, Great Missenden, Hampden Glade, Whiteleaf Cross, Monk Risborough, Princes Risborough. Distance (approximately), 35 miles.

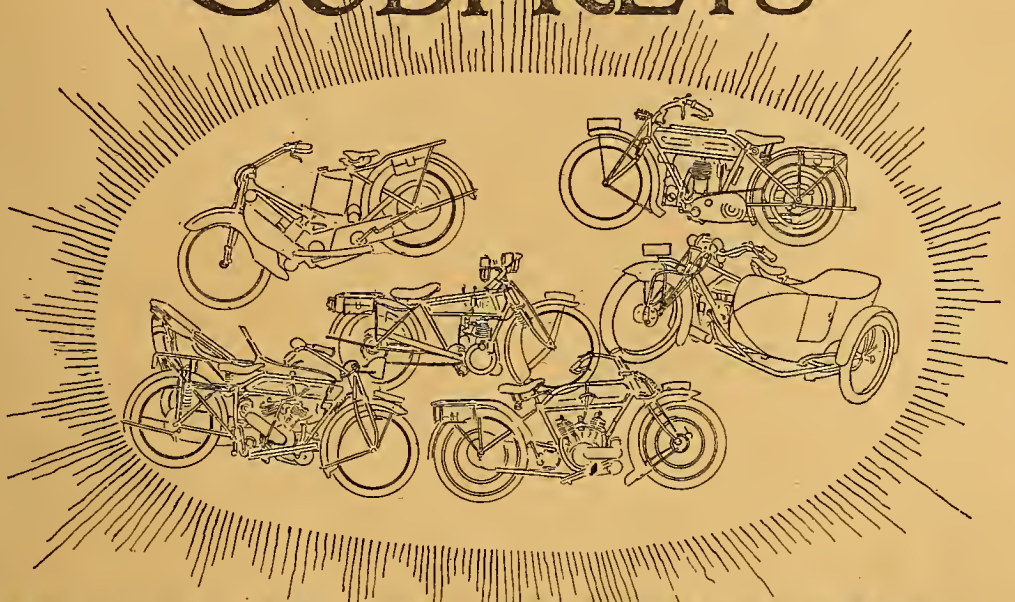
COVENTRY TO ABERDEEN VIA BLACKPOOL AND GLASGOW.—A.

(1.) Coventry, Coleshill, Lichfield, Rugeley, Stone, Newcastle-under-Lyme, Holmes Chapel, Knutsford, Warrington, Wigan, Preston, Kirkham, Blackpool, Poulton, Garstang, Lancaster, Carnforth, Kendal, Shap, Penrith, Carlisle, Lockerbie, Beattock, Abington, Douglas Castle, Hamilton, Glasgow, Cumbernauld, Denny, Stirling, Dunblane, Blackford, Perth, Montrose, Stonehaven, Aberdeen. (2.) *Via Edinburgh.* Coventry, Leicester, Nottingham, Worksop, Doncaster, Ferrybridge, Aberford, Wetherby, Boroughbridge, Northallerton, Darlington, Morpeth, Alnwick, Belford, Berwick, Ayton, Dunbar, Haddington, Edinburgh, Granton, ferry across to Burntisland, then Kinross, Bridge of Earn, and join No. 1 at Perth. (3.) As regards the best route, we recommend you to follow No. 1 to Abington, and then *via* Lanark, Carluke, Airdrie, and then join No. 1 again at Stirling for Aberdeen.

CIRCULAR ROUTE FROM LONDON TO PENZANCE.—D.W.

London, Kingston, Esher, Ripley, Guildford, Farnham, Alton, Winchester, Totton, Lyndhurst, Christchurch, Bournemouth, Poole, Wareham, Dorchester, Bridport, Lyme Regis, Colyford, Ottery St. Mary, Exeter, Moretonhampstead, Two Bridges, Tavistock, Gunnislake, Callington, Liskeard, Bodmin Road Station, Lostwithiel, St. Austell, Probus, Truro, Perranwell, Polgreen, Helston, Marazion, Penzance, Hayle, Redruth, Zelah, Mitchell, Fraddon, St. Dennis, Goss Moor, Lanivet, Bodmin, Launceston, Lifton, Bridestowe, Okehampton, Bow, Crediton, Tiverton, Wellington, Taunton, Durston, Othery, Glastonbury, Wells, Frome, Trowbridge, Devizes, Marlborough, Hungerford, Newbury, Reading, Maidenhead, Slough, Colnbrook, Hounslow, Shepherd's Bush, London. If you wish for a longer round return by the north coast of Cornwall, Devon, and Somerset.

GODFREY'S



IS ONE BLAZE OF NEW MODELS

GODFREY'S SHOW CONTINUES

to be the centre of attraction, and presents a unique opportunity for those who were unable to visit Olympia to call and inspect what is admitted to be the finest exhibition of motor cycles in London.

NEW MODELS ON VIEW (Solo and Combinations):

A.B.C.	B.S.A.	INDIAN	LEVIS
ARIEL	CLYNO Lightweight	MATCHLESS	SCOTT
ALLON	COVENTRY EAGLE	NEW IMPERIAL	TRIUMPH
BLACKBURNE	DIAMOND	ROVER	

SIDECARS (various models): MILLFORD, HENDERSON, CANOELET

Immediate Deliveries can be given of the following new machines:

ALLON CLYNO LIGHTWEIGHT COVENTRY EAGLE
BLACKBURNE DIAMOND ROVER T.T. 5-6 H.P. ROVER

Write for full lists of Second-hand Guaranteed Machines.

'Phone: 7091 Mayfair (2 lines).

GODFREY'S Ltd.,

208, Gt. Portland St., London, W.1.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable & Co. to ILIFFE & SONS Ltd., and crossed Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box ooo, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. ooo, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the machine offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½ %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

WHAT Offers for option on A.B.C. motor cycle? £5 deposit paid February.—Grant, Woodlands, Epsom. [4609

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0026

A.B.C.—Deliveries commencing after the Show. Have you ordered?—Prompt deliveries from Victor Horsman, Ltd., 7, Mount Pleasant, Liverpool. [0021

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [0056

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London. EC4.

For square deals and Values....

Our Stock includes the following Machines.

NEW.

No.	H.P.	Machine.	Year.	Price.
12154.	2½	**CLYNO**	1920	£63 0
12163.	4	**BLACKBURNE** and Sidecar	1920	£135 5
12161.	8	**NEW IMPERIAL** and Sidecar	1919	—
12183.	4	**DOUGLAS**	1919	£105 0
12209.	4½	**QUADRANT** Combination	1920	£122 10
12212.	4½	**QUADRANT**, solo	1920	£95 0
12197.	2¾	**DOUGLAS**	1919	£80 0

SECOND-HAND SOLO MACHINES.

12074.	6	**ZENITH**, Gradua gear	1914	£84 0
12059.	8	**MATCHLESS**, single gear	1915	£72 10
12012.	3½	**CORAH-J.A.P.**	1912	£48 0
12193.	4	**DOUGLAS**	1919	£116 0
12186.	2¾	**O.K.-JUNIOR**	1917	£55 0
11762.	3½	**RUDGE**	1913	£45 0
12152.	4	**TRIUMPH**	1916	£87 10
12156.	3½	**RUDGE-MULTI**	1915	£75 0
12079.	2½	**TRIUMPH JUNIOR**	1914	£52 10
12169.	3½	**N.S.U.**	—	£22 10
12187.	3½	**TRIUMPH**	1914	£57 10
12205.	2¾	**CHATER-LEA**	1914	£45 0
12206.	5-6	**ZENITH**	1914	£57 10

SECOND-HAND COMBINATIONS.

12166.	8	**ROYAL ENFIELD** Combination	1919	£167 15
12010.	7-9	**JAMES-HOWARTH** Comb.	1914	£125 0
12120.	3½	**KERRY-ABINGDON** Comb.	1914	£72 10
12082.	5-6	**INDIAN** Combination	1913	£125 0
12000.	7-9	**INDIAN** Combination	1913	£85 0
12184.	6	**ROYAL ENFIELD** Combination	1917	£155 0
12207.	3½	**DENE** and Sidecar	1912	£45 0
12196.	4	**DOUGLAS** Combination	1919	£125 0
12101.	4	**A.J.S.** and Sidecar	1915	£130 0
11977.	8	**WILLIAMSON** Combination	1914	£110 0
12159.	5-6	**RUDGE-MULTI** and Sidecar	1914	£87 10
12164.	4	(twin) **ZENITH** and Sidecar	1919	£145 0
12134.	4	**TRIUMPH** and Sidecar	1918	£125 0
12104.	7-9	**HARLEY-DAVIDSON** Comb.	1915	£150 0
12188.	6	**ROYAL ENFIELD** Combination	1913	£87 10
12189.	4	**DOUGLAS** Combination	1919	£120 0
12136.	3½	**RUDGE MULTI**	1916	£130 0
12168.	7-9	**INDIAN** Combination	1913	£77 10
11983.	6	**ROYAL ENFIELD** Combination	1913	£82 10
12204.	5-6	**INDIAN** and Sidecar	1914	£80 0
12203.	6	**ROYAL ENFIELD** and Sidecar	1918	£165 0

SECOND-HAND CARS.

12135.	–	**CARDENA** Cycle Car, 7-9 h.p. Harley-Davidson engine	£145 0
12099.	8	**DUO** Car, J.A.P. engine	£150 0

SIDECARS.

Canoelet Minor.	**Royal Ruby.**
Canoelet D4.	**"Wauchope's" No. 1.**
Canoelet K4.	**"Wauchope's" No. 2.**
Canoelet K3.	**Williamsons.**

The Latest 1919
6 h.p. J.A.P. TWIN-CYLINDER ENGINES.

From Stock. Trade supplied. Terms on application; these include extras. 50 engines, for immediate delivery, **£37 10s.** each.

Second-hand Machines taken in Part Payment. **Good price allowed.** Maker's guarantee.

WAUCHOPE'S,
9, SHOE LANE, E.C.4.

'Phone: Holborn 5777
'Grams: Opificer, Fleet, London

MOTOR CYCLES FOR SALE.

A.B.C.

OFFERS wanted for early delivery A.B.C. motor cycle. Second on waiting list of agent receiving very early deliveries. £5 deposit paid.—Box L5,980, c/o *The Motor Cycle.* [4640

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire. [0015

A.B.C.—Highest offer secures 3rd place on list of well-known agent. Delivery this month. Also insurance, £4 premium just paid. Naval officer unable to take delivery.—Box 895, c/o *The Motor Cycle.* [X0326

Abingdon.

ABINGDON K.D., 3½h.p., in perfect order; £40.—44, Fore St., Trowbridge. [X0499

ABINGDON King Dick, 1915, 5-6h.p., Roc 2-speed, Millford Empress sidecar, accessories; £75.—W. Wilson, Barkway, Royston, Herts. [4721

1916 Abingdon King Dick, just overhauled, replated, Philipson variable, lamps, etc.; ride away; £60, or nearest offer.—29, Alexandra St., Southend. [4600

ABINGDON 3½h.p., Grado gear, coachbuilt sidecar, luggage grid, tyres good, ready for road; £45, or nearest.—25, Elderfield Rd., Clapton. [5082

1919 6-7h.p. Abingdon King Dick Combination, 3-speed countershaft, fully equipped, spare tyre and tube, new in July last; bargain, £155, or near offer.—Arnold, 35, Oldridge Rd., Balham, London. [4697

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [9574

CROW Bros., High St., Guildford, A.J.S. agents since 1912, accept no premiums. [X7943

CROW Bros., High St., Guildford. A.J.S. agents since 1912.—Deliveries have begun [4083

1916 2¾h.p. A.J.S., 3 speeds, complete lamps, horn, etc.; £72.—Cross, Agent, Rotherham. [X0525

:: DEPOSITS ::

SPECIAL NOTICE.

The attention of Advertisers is called to the fact that Deposits are now dealt with at

20, Tudor St., London, E.C.4,

to which address all communications relating to deposits should be directed

A.J.S. Brand New 6h.p. Combination, screen, spare wheel.—Parker's, Bradshawgate, Bolton. [X0365

A.J.S. Combination, 1920; immediate delivery; offers wanted.—Palmer, 33, Minster Rd., Oxford. [X0498

1920 A.J.S. Combination; will transfer February delivery; what offers?—Capt. Robins, Signals, Cork. [X0488

A.J.S. 6h.p., 1915, Millford family sidecar, screen, and child's seat.—Catley, 8, Brunswick Hill, Reading. [5009

1919 Brand New A.J.S. Combination, just delivered; offers. Spare wheel, wind screen, etc.—Box 904, c/o *The Motor Cycle* [X0441

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton. T.A.: Parts. [2237

A.J.S., 6h.p., 1914, with Millford cane sidecar, lamps, horn, tools, spares, excellent condition; £90.—Dicks, Greenhill, Evesham. [X0363

WAUCHOPE'S, 9, Shoe Lane, London; 1915 A.J.S. 4-5h.p. machine, 3-speed and clutch and kick starter, with coachbuilt sidecar; £130. [4962

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth Sole agents. Now booking for earliest deliveries. [0061

LATE 1914 A.J.S. Combination, 6h.p., stored during war, splendid condition, complete with lamps, speedometer, etc.—Meiklejohn, 159, London Rd., Camberley, Surrey. [X0188

A.J.S. Combination, brand new, never been used, complete with full accessories; cost £200, will take £212; district, the Midlands.—Box L6,037, c/o *The Motor Cycle.* [5269

1916 A.J.S. 6h.p. Combination, 4 detachable wheels, speedometer, lamps, mudshields, wind screen, etc., recently overhauled, appearance as new; £130.—Dowse Motor Cycle Depot, Tidworth. [X0190

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S. 6h.p. Combination, detachable wheels, nearly new, exceptionally fine condition, olive finish; £165, or exchange for single-cyl.—Clifford Wilson Mfg. Co., 70, Royal Hospital Rd., Chelsea, S.W.3. [5031

A.J.S. Combination, 5-6h.p., just overhauled, sidecar new, all tubes and 2 covers new, complete with lamps, generator, mechanical horn, etc., ready to ride away; £90.—W., c/o Ashby's Brewery, Staines. [4675

A.J.S. 1919 (October) Solo, done 700 miles, Ace disc wheels, Lucas equipment, spring seat-pillar, handle-bar muffs, a perfect machine in perfect condition; offers over £140.—Hackelton, Warwick. [X9881

A.J.S. 1916 2¾h.p., with 3-speed gear, band-controlled clutch, and kick starter, little used, in perfect running order, and looks like new; £55, or nearest.—D. M. Twomey, Motor and Cycle Agent, Macroom, Ireland.. [X9780

1918 A.J.S. and Sidecar, guaranteed Aug., 1919, Military Model, D.A. set, Easting screen, spare wheel and 2 spare tyres and tubes, Klaxon, Lucas lamps, dinner silver cup, gold medal, and bronze; quick sale, £150.—Gething, 22, Aquarium St., Rhyl. [X0324

A.J.S. 1919 Combination, under guarantee, any trial, fitted with screen, hood, and side curtains, spare wheel, leaf spring pillion seat, Bowdens air valve and exhaust whistle, Lucas lamps, horn, and mirror; £185, no offers.—Moorhouse, 15, Daimler St., Alms Hill, Manchester. [5017

BRAND New 1919 A.J.S. Combination, detachable wheels, just received from works, complete with best set of Lucas lamps, horn, and all accessories; owner selling on account of ill-health and buying car.—Particulars from G. F. Pineger, Manor House, Rodmarton, near Cirencester. [X0479

Alecto.

ALECTO 2-stroke 3½h.p.—We are sub-agents for these machines, and can supply from stock.—B.M.C., Ltd., 254, Archway Rd., Highgate, N. Tel.: Hornsey 563. [4586

Alldays.

ALLONS at Gourlay's, Fallowfield, Manchester. [2832

ALLON, the world's best 2-stroke, kick and clutch.—Clifford Motories, Eastwood, Notts. [4739

KEMP'S Garage, Louth, Lincs, commence delivery of 1920 Alldays Allons in January. Book now. [X0415

1919 Allon 2-stroke, single speed, condition as new; any trial; £40.—Garner, The Common, Saffron Walden. [4598

ALLDAYS Allon, 1916, 2¾h.p., 2-stroke, 2-speed, all accessories; bargain, £50.—Windsor, Fernhill, Horley, Surrey. [4668

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0027

ALLON 2-stroke, 2-speed countershaft, clutch, kick starter, brand new, at makers' price, £70; in stock.—Wilkins, Simpson and Co., opposite Olympia, London. [4814

ALLDAYS Matchless 3½h.p., 1915, new coachbuilt bulbous back sidecar, good condition, 3-speed, clutch model, Bosch mag., Senspray, usual fittings; 30 gns.—Wright, Woodville Rd., Cinderford. [4995

ALLDAYS Allon Demonstration Machine, delivered last September, complete lamps and horn, 70 gns.; new Canoelet Minor sidecar to fit, complete with apron lamp, generator, and disc wheel, 21 gns.—J. C. Phipp Sherston, Malmesbury Wilts. [5242

ALLDAYS Matchless 4h.p., 2-speed, handle starting, Bosch, Senspray, lamp, horn, and underslung wicker sidecar with child's seat, excellent running order; £47/10; seen by appointment.—Owen, 95, High Rd., East Finchley. [X0409

Ariel.

ARIEL 3½h.p., new 1920 in stock; £100.—Below.

ARIEL 5h.p. Twin, 1916, countershaft, excellent condition; bargain, £70.—Edwards, Exhibition Rd. South Kensington. [4820

ARIELS.—Gourlay, Agent, Fallowfield, Manchester. [2833

CROW Bros., High St., Guildford, Ariel agents, supply at makers' prices. [X7944

CYRIL WILLIAMS, for early delivery of Ariels.—Chapel Ash Depot, Wolverhampton. [X8625

ARIEL.—Immediate delivery 1919 3½h.p. models.—Edward and Gill, 118, Hampstead Rd., N.W.1. [5290

JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade North Finchley. [0028

ARIEL Combinations 6-7h.p., Douglas, Wolf, British Excelsior, Omega, Hoskinson.—Clifford Motories Eastwood, Notts. [4741

ARIEL, 3½-4h.p., 3-speed, clutch, Canoelet sidecar, hood and apron, all lamps, topping machine; bargain, £88.—Longney, Bailey St., Oswestry. [X9727

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare parts stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

Great Reductions

in prices of Second-hand Machines.

In order to make room for 1920 models, we have reduced the prices of our Second-hand Stock.

SOLO MACHINES.

CONNAUGHT, 1914, single gear £30
RUDGE Multi, 1914, 3½ h.p., speedometer £65
JAMES, 1915, 2¾ h.p., 2-stroke, 2-sp. £46
NEW RYDER, 1919, 2¾ h.p. J.A.P., 2-speed £57
TRIUMPH, 1914, 4 h.p., 3-speed ... £65
IVY, 1916, 2¾ h.p., 2-stroke, 2-speed. £50
DOUGLAS, 2¾ h.p., W.D. model, as new £63
RUBY, 8 h.p. J.A.P., W.D. model .. £115

NEW MODELS.

VERUS, 2¾ h.p., 2-stroke, 2-speed, kick start, clutch £75
CLYNO, 2¾ h.p., 2-stroke, 2-speed £63
Millford, Montgomery & Canoelet Sidecars.
Immediate Delivery.

SIDECAR COMBINATIONS.

HARLEY-DAVIDSON, 1919, 7-9 h.p., electric £205
ROVER 1915, 3½ h.p., 3-speed £90
INDIAN, 1916, 7-9 h.p., Powerplus. £138
SUNBEAM, 1918, 3½ h.p., 3-speed, sporting Sidecar £170
REX, 1914, 6 h.p., 2-speed £84
B.S.A., 1915, 4 h.p., chain-cum-belt. £128
ARIEL, 1919, 3½ h.p., 3-speed £125

Maudes' Motor Mart
100, Great Portland St, London W.1.
100, Paris St, Exeter.

Telegrams: "Abdicate, Wesdo, London."
Telephone: Museum 557.
Telegrams: "Combustion, Exeter."
Telephone: Exeter 933

MAUDES MOTOR MART
THE SEAL OF SATISFACTION

MOTOR CYCLES FOR SALE.

Ariel.

ARIEL, late countershaft model, Mills-Fulford sidecar, complete with lamps, all in beautiful condition, engine just returned from Ariel works; £120, or offers.—Brown, South Cottage, Bolney, Sussex. [X0483

1914 Ariel 3½h.p. Combination, 3-speed, kick start, speedometer, large roomy sidecar, decompressor, reliable, all accessories, insurance policy, just overhauled; £80.—120, Battersea Bridge Rd., Battersea, London, S.W.11. [X0307

Auto-Wheels.

WALL Auto-Wheel, good running order; £9/10.—Day, 2, Bond St., Nuneaton. [X0481

AUTO-WHEEL for sale, in perfect order; £9.—Brook, Burnham, Somerset. [4688

AUTO-WHEEL with fittings; £12; good order.—Ratcliffe, Gt. Holland, Essex. [4611

AUTO-WHEEL, new, guarantee; cash or instalment (41/8 month).—30, Hitherfield Rd., Streatham. [5030

WALL Auto-Wheel, perfect condition; £14, or nearest offer.—Peake, 4, Bulkington Rd., Bedworth, Nuneaton. [X0507

B.S.A. Auto-Wheel, Model de Luxe, mileage 300, perfect running order, good condition; £11.—Box 915, c/o *The Motor Cycle.* [X0502

AUTO Wheel, 1919 Model de Luxe, perfect condition, little used, £17/10; also B.S.A. bicycle to suit.—75, Mare St., Hackney. 'Phone: Dalston 1373. [5215

AUTO-WHEEL, perfect condition, bearings, etc., as new, tyre and tube new; cheap, £12/10, packed and carriage paid.—Fitz Hugh, Country Club, Pangbourne, Berks. [X0225

Bat.

BAT.—We can give earliest delivery of solo or sidecar models.—Edwards, 7, Exhibition Rd., South Kensington. [4827

4h.p. Bat Spring Frame M.C., in good condition, less power unit; a bargain, £12.—A. Waite, 18, Wallbridge, Stroud. [4646

1920 Bat, just delivered, extra large sidecar, 700×80 tyres; £160; owner bought car.—Turner, Westbourne House, Richmond Rd., Twickenham. 'Phone: Richmond 217. [4685

1919 Bat-Jap Combination; £170; cheaper combination and cash considered.—81, Blackheath Hill, Greenwich. [4643

BAT-J.A.P.'s.—Immediate delivery all models. Orders accepted in rotation.—W. H. Grimes and Co., 18, Bruton Place, Bond St., W. [4608

BAT-J.A.P. 8h.p., chain drive, countershaft gear, Coronet coach sidecar; £75.—Halifax Motor Exchange, Union St. South, Halifax. [4834

BAT-J.A.P. 8h.p. Combination, magnificent sidecar 2-speed, kick starter, lamps, accessories; £80.—Grimes, 18, Bruton Place, Bond St., W.1. [4841

BAT-J.A.P. 8h.p. Combination, new, just delivered all accessories, Klaxon; price £165.—Allard, Julians, Hempstead Rd., Upper Walthamstow. [5171

BAT-J.A.P. 6h.p., 3-speed countershaft, C.B. sidecar, all accessories, in splendid condition; £95, or offer; any time.—C.S., 14, Swaton Rd., Bow, E.3. [5143

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and invite enquiries. [X7945

EGERTONS, Northgate Street, Ipswich, can give early delivery of Blackburne ordered now. [4630

1920 H.B. Blackburne 2¾h.p., 2-speed, kick starter, brand new.—Box 907, c/o *The Motor Cycle.* [X0470

BLACKBURNE 8h.p. Combination or Solo; delivery promised this month; what offers?—Box L6,036, c/o *The Motor Cycle.* [5268

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0029

1920 4h.p. Blackburne Motor Cycles for immediate delivery, in stock.—Chandler, Reyre, and Williams, Hitchin. 'Phone: 165. [4606

WAUCHOPE S, 9, Shoe Lane, London; 4h.p. new 3-speed countershaft Blackburne, 3-speed countershaft, Sturmey-Archer gear, with sidecar; £135/5; could be sold without sidecar. [4967

Bradbury.

BRADBURY 1920 Models, early deliveries.—Agents, Bright and Hayles, 78, Church St., Camberwell. [5109

BRADBURY, 4h.p., 2-speed, and C.B. sidecar, good and cheap; £48; trial daylight.—85, Church Rd., Willesden. [4776

BRADBURY 1919 4h.p., T.T., brand new, in stock; £82.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0065

4h.p. Bradbury and Sidecar, N.S.U. gear, new rings, gudgeon pin, and big end bush; £70.—J. H. Isaac, 17, Ufford St., S.E.1. [4727

MOTOR CYCLES FOR SALE.

Bradbury.

BRADBURY.—For the earliest possible deliveries of 1919 models.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9575

BRADBURY, Green-Precision 4¼h.p., water-cooled, fast, powerful, semi-T.T., discs, lamps, etc.; £35.—10, Barnsmead Rd., Barnes. [4899

BRADBURY 1920 4h.p., 3-speed countershaft, kick starter, chain drive, Canoelet sidecar, storm apron, brand new, at makers' price, £147/5/6.—Wilkins, Simpson and Co., opposite Olympia, London. [4815

Brough.

1916 3-speed Brough and torpedo sidecar, tip-top condition; £100, or near offer.—Highlands, Penarth, Glamorgan. [X0330

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Brough enquiries.—J. Blake and Co., Official Dealers, Liverpool and Manchester. [7039

BROUGH 1916 3½h.p. Twin, 3-speed countershaft, clutch, kick start, all accessories, any examination; £90. After 6.30 p.m.—6, Coliville Rd., Leytonstone. [X0445

1920 Brough, 5-6h.p., Model C, delivered November, absolutely first-rate mount; owner bought car; first cheque £125 or nearest offer secures.—Le Champion, Crick, Rugby. [5216

1916 Brough, 3½h.p. twin, lamps, horn, etc., excellent tyres, Watsonian sidecar, good condition throughout; £90; Kennington, S.W.—See Kwiksale advertisement, Miscellaneous Sale column. [4875

Brown.

MOTOR Cycle, in good running order, Brown engine, Bosch mag., 3½h.p., also 2 new ribbed Palmer tyres (26×2 and 26×2¼), and 2 new plugs; the lot, £33.—J. A. Wintle, Whitchurch, Oxon. [X0477

B.S.A.

1915 B.S.A. Combination, chain-cum-belt, as good as new.—50, King St., Southbank, Yorkshire. [X0085

B.S.A. 1916 Combination, complete and good order; any trial; £94.—Longney, Bailey St., Oswestry. [X9728

B.S.A. Sole District Agents; book now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9576

1916 4¼h.p. B.S.A., Model H, all chain, 3-speed, countershaft, kick starter; £60.—Tandy, Kano, Crewe. [5196

JONES' Garage, special agents for B.S.A., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0030

B.S.A., 1913-14, 3½h.p., F.E., Philipson pulley, Bosch mag., B.B.; £35.—Wright, Strawberry Cottage, Haworth, near Keighley. [X0370

1914 B.S.A., 3½h.p., 2 speeds, very sound condition; £50; Hampstead, N.W.—See Kwikseale advertisement, Miscellaneous Sale column. [4877

1915 4h.p. B.S.A., clutch model, Thomson B. magneto, Amac carburetter, excellent solo mount; £50.—Walton, Dawson Square, Burnley. [X0311

B.S.A., 1915, 4¼h.p., 3-speed countershaft model; £72/10, or with new coach sidecar, £89/10.—Halifax Motor Exchange, Union St. South, Halifax. [4833

B.S.A. 4½h.p., countershaft 3-speed clutch, in good order, also box carrier, all-chain drive; £58; call any time.—262, Blackhorse Lane, Walthamstow. [5149

B.S.A. 4¼h.p., 1917, with Phœnix sidecar, chain-cum-belt, 2 lamps and horn, perfect condition; £110.—Morgan, Mount Edgecombe, Linkfield St., Redhill. [X0459

B.S.A. 1917 4¼h.p., 3-speed countershaft, kick start, with coachbuilt sidecar, 3 electric lamps, horn; £90, or offer.—Muir, Yellow Wood, Egerton Rd., Weybridge. [4890

B.S.A. 1914 4¼h.p., chain drive, 3-speed countershaft, ivy coachbuilt sidecar, lamps, horn, spares, little used, everything splendid condition; £90.—10, Albion St., Aylesbury. [X0270

1919 (June) B.S.A. 4¼h.p. Combination, 3-speed, clutch, kick starter, luggage carrier, horn, tools, spares; any trial; £120.—Roberts, 13, Preston Rd., Brighton. [5012

FOR Sale, B.S.A., 1919, all chain, lamps, Klaxon, 2 spare tyres, tubes, valves, etc., perfect order; £100; Easting wind screen, £4.—47, Chantry Rd., Woodseats, Sheffield. [5186

B.S.A. Specialists.—All replacements in stock; B.S.A. sidecars in stock.—The County Cycle and Motor Co., Broad St., Birmingham. Tel.: Midland 733. T.A.: Comocyco, Birmingham. [8224

B.S.A. 1913-14 4¼h.p. Combination, free engine, clutch, Bosch, lamps, good reliable outfit, £82/10; exchange 6-9h.p. solo; cash adjustment if combination.—Vince, Builder, George Lane, Woodford, E.18. [5157

1914 B.S.A. Coachbuilt Combination, 3-speed, clutch, P. and H. lamps, Lucas horn, new Dunlops, spare tube, valves, etc., carefully stored 3 years, perfect condition; bargain, 80 gns.; Suffolk.—Box 894, c/o *The Motor Cycle.* [X0308

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B.S.A.

1919 B.S.A. 4¼h.p., new September, and Enfield C.B. sidecar, small mileage, condition equal new; £140; bargain.—Seen and tried at Station Garage, Bridge St., Banbury. [X026

BRAND New B.S.A. 4¼h.p. Model K., 3 speed clutch, kick start, front and rear lamp, horn, generator, etc.; nearest offer £105.—Fowler and Bridges, 130, Euston Rd. Tel.: 4827 Museum. [454

B.S.A. Combination, 1916, 3-speed, countershaft kick starter, chain-cum-belt, 3 lamps, horn, luggage grid, new tyres, stored until July last; nearest £100.—Mallinson, Spring View, Bedlington. [X052

B.S.A., 1915, 4¼h.p., 3-speed countershaft clutch K.S., sporting bars, electric head lamp, speedometer; £75, or offer; owner bought car.—Bignold, 119, Wymering Mansions, Maida Vale, W. 491

Calthorpe.

LATE 1919 2¾h.p. Calthorpe, unscratched, electric lighting Enfield 2-speed and clutch; £60.—Chosen Cottage, Hucclecote, Gloucester. [X036

CALTHORPE-J.A.P. 2¾h.p., Enfield 2-speed, brand new, at makers' price, £65/2.—Wilkins, Simpson and Co., opposite Olympia, London. [481

CALTHORPE 2-stroke 2¼h.p., Enfield 2-speed, brand new, at makers' price, £64/1.—Wilkins, Simpson and Co., opposite Olympia, London. [481

CALTHORPE Junior Precision, 2-speed, overhauled recently, enamel and plating in excellent condition; £40.—H. Grout, Busch Corner, Isleworth. [X025

1916 Calthorpe, 2-stroke, 2-speed, Binks carburetter, P. and H. lamps, etc., good order; £49; without Binks £46.—Robinson, 75, Bolton Brow, Sowerby Bridge. [X033

CALTHORPE-J.A.P. Combination, 5h.p. twin, coach sidecar, Enfield 2-speed, handle start, accessories, smart appearance; £70.—Homewood, Loose, Maidstone. [X037

CALTHORPE-J.A.P. 4-5h.p. Coachbuilt Combination, Enfield gears, engine just been overhauled and re-bushed, and sidecar repainted, complete with lamps, Easting wind screen, hood, speedometer, tools, and spares, in perfect condition; any trial given; price £80.—Willimott, 3, Clare Cottages, Sidcup Hill, Sidcup, Kent. [491

Campion.

CAMPION 2-stroke, 1920, in stock; price £60.—W. Saunders, Ltd., Colchester. [X043

NEW Campion Villiers 2-stroke, Albion 2-speed; list price.—Brown's Garage, Maltby, Rotherham. [519

1919 (September) Campion, 2½h.p. Villiers 2-stroke, 2-speed, best Miller lamp, Klaxon, as new; £60.—Venmore, Bethel, Carnarvon. [499

Centaur.

CENTAUR 3½h.p. Twin, 3 speeds, as new; £50.—Kershaw, Lonsdale Rd., Dorking. [485

3½h.p. Centaur, 2-speed, free engine, handle start, good order, tyres perfect; £35, bargain; after 6.—Hicks, 21, Moreton Place, Victoria. [X045

Chater-Fafnir.

CHATER-FAFNIR, 3h.p., o.h.i.v., Bosch, B. and B.; £17.—Oak Cottage, Court House Rd., Maidenhead. [518

Chater-Lea.

WAUCHOPE'S, 9, Shoe Lane, London; 1915 2½ h.p. 2-stroke 2-speed Chater-Lea; £45. [495

SOUTH Lancashire Only.—Chater-Lea enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7040

CHATER-LEA 3½h.p. Water-cooled Combination, Bosch, B. and B., Grade gear, handsome sporting model, perfect order; £38.—Duckworth, 21, Middleton Rd., Leeds [X031

CHATER-LEA 1911 8h.p. Combination, coachbuilt, 3 speeds, handle starter, acetylene lamps complete, speedometer, new chains, 2 new tyres; price 100 gns.; seen any day before 1 p.m.—F. W. Taylor, All Saints' Vicarage, Upper Norwood, S.E.19. [456

Chater-Lea-Jap.

CHATER-J.A.P. 6½h.p. Combination, 2 speeds, splendid condition; nearest reasonable offer.—20, Effra Rd., Wimbledon. [502

CHATER-LEA 6h.p., J.A.P., countershaft gear box, hand clutch, all-chain drive, C.B. sidecar, wind screen, lamps, horn, etc., very fast, and powerful; £70, or offer; any time.—C.S., 14, Swatoo Rd., Bow, E.3. Tel.: E 3155. [514

Chater-Lea-White and Poppe.

3½h.p. Chater-Lea, White and Poppe free engine, Mabon gear, C.B. sidecar, Bosch, Druids, low; fine condition; bargain, £45; appointment.—Thomas' Nurseries, Upper Halliford, Shepperton. [479

Clyno.

CLYNO 1920 2½h.p. 2-stroke, 2-speed, hand clutch; in stock; list price.—Moss, Wem. [X053

CLYNO New 1920 2-stroke in stock; £63.—Edwards, 7, Exhibition Rd., South Kensington. [482

MOTOR CYCLES FOR SALE.

Clyno.

1918 6h.p. Clyno Combination, 3-speed, K.S., spare wheel; £105.—9, Church Rd., Willesden, N.W. [5014

CROW Bros., High St., Guildford, West Surrey agents for the new Clyno.—Order now for early delivery. [4084

BROOK Bros., Burnham-on-Sea, are now booking orders for early Clyno delivery in 1920. Write for particulars. [4566

WAUCHOPE'S, 9, Shoe Lane, London, supply new Clyno 2½h.p. 2-strokes, 2-speed and clutch, 1920 models; 60 gns. [4952

BRAND New Clyno 2½h.p., 2-speed and clutch, in stock; list price.—Walbro Motor Cycle Works, High st., Saffron Walden, Essex. 'Phone: 45. [X0345

5-6h.p. Clyno Combination, 1916, 3-speed, kick start, interchangeable wheels, good tyres; £110.—150, Camberwell Grove, Camberwell, S.E.5. [4583

1916-17 Clyno Combination, 3 speeds, clutch, kick starter, 2 new tyres, in splendid conditon throughout; bargain, 95 gns.—65, Ethelred St., Kennington, S.E.11. [4887

1915 Clyno Combination, 3-speed, kick start, lamp, speedometer, condition as new, guaranteed perfect, not used since 1916; £80.—Hood, 45, Bow Common Lane, Bow. [5061

1920 Clyno Lightweights in stock for immediate delivery; combination 8h.p. orders booked for earliest delivery in rotation, commencing February or March.—Grover, Smith, and Willis, Basingstoke. [4438

1916 Clyno Combination, 6h.p., detachable wheels, splendid tyres, just overhauled and enamelled; £80 for quick sale; seen by appointment.—J. Dooley, 33, Killyon Rd., Wandsworth Rd. Station, S.W.8. [5166

1919 2¾h.p. Clyno, 2-stroke, 2-speed gear, hand clutch, complete with lamps and accessories, as new, bought November; 65 gns.—C. C. Bate, 1, Queen's Rd., Reading; or The Mount, Tarporley, Cheshire. [5208

CLYNO 6h.p. Combination, late model, 3-speed, countershaft, clutch, K.S., enclosed chains, Brampton forks, oversize tyres, spare wheel, magnificent order and appearance; 95 gns., bargain.—21, Newton Av., Acton W.3. [5117

1918 8h.p. Clyno-Jap, 3-speed, countershaft, detachable wheels, W.D. model, brand new 6 weeks ago, P. and H. lamp sets and horn, studded Dunlops (not touched); £110.—Wallis, 49, High St., Saffron Walden, Essex. 'Phone: 45. [X0349

CLYNO Combination, 1917, thoroughly overhauled, re-enamelled and plated, detachable wheels and spare wheel, Brampton bi-flex spring forks, spring seat-pillar, lamps, horn, and tools; 110 gns.—Stanley, 74, St. George's Square Mews, Pulford St., off Lupus St., Westminster. [4991

CLYNO-J.A.P. 1919 8h.p. Combination, extra large luxurious sidecar, not done 50 miles, perfect in every way, 3 speeds, clutch, and kick start, enclosed transmission, 28×3 Dunlops, interchangeable wheels, spring pillion seat, but no accessories, too powerful for owner; best offer over 125 gns.; London district.—Apply, Box L6,040, c/o *The Motor Cycle*. [5272

Connaught.

KEMP'S Garage, Louth, Lincs, commence delivery of 1920 Connaughts in January. Book now. [X0416

CONNAUGHT 2¾h.p., 2-speed, 1915, just overhauled, lamps, etc., tyres excellent condition; £45.—Gibbons, 7, Albany Rd., Doncaster. [4700

1919 Connaught 2-stroke, 2-speed, complete with lamps, mechanical horn, brass mascot, disc wheels; £62/10.—Scholefield, Middlewich. [X0511

CONNAUGHT 1917 2¾h.p., 2-stroke, ready to ride away, in perfect condition, lamps, etc., 112 m.p.g.; £35.—150, Camberwell Grove, Camberwell, S.E.5. [4584

Coulson

NEW Coulson B for Sale.—Greyshott, Cresthill Av., Grays, Essex. [5080

COULSON B 1920 model in stock, list price.—W. Saunders, Ltd., Colchester. [X0434

EGERTONS, Northgate Street, Ipswich, can give early delivery of Coulson-B. ordered now. [4639

COULSON B 2¾h.p., 2-speed model, in stock.—Malvern Agents, Woodyatt, Ltd., Malvern. [3865

SOUTH Lancashire, North Cheshire, and Isle of Man Only.—Coulson B. enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7041

COULSON B Machines, 1920, 2¾h.p., in stock; can supply you at once; no waiting lists; 85 gns.—W. Saunders, Ltd., Red Garage, Colchester. [4658

COULSON B, 1919, 2¾h.p. Blackburne engine, 2-speed, spring frame, lamp, horn, tools, perfect condition; £90; delivered September.—Grubb, 50, All Saints Rd., Peterborough. [5152

COULSON-B., 2¾h.p., 1919, standard model, one month old, tools, lamps, Klaxon horn and speedometer; cost £103, what offers?—Z., 24, Epperstone Rd., West Bridgford, Nottingham. [X0321

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MOTOR CYCLES FOR SALE.

Coulson.

BRAND New 2¾h.p. Coulson-B. motor cycles actually in stock, just delivered from works; list price 85 gns.—Jno. Hall and Co., The Garage, Warminster. [4607

1919 Coulson B, 2¾h.p. Blackburne engine, 2-speed, patent spring frame, brand new, for immediate delivery from stock; £89/5.—Cambridge agents, Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995. T.A.: Bicycles. [5246

De Dion.

DE DION 3½h.p., Bosch, B. and B., new tyres, perfect running order; £35.—26, Howard Rd., Bromley, Kent. [X0200

Diamond.

CYRIL WILLIAMS, for early delivery of all model Diamonds.—Chapel Ash, Wolverhampton. [X8622

1920 Diamond Lightweights in stock; immediate delivery; £50 each.—Jones' Garage, Lichfield. [X9567

1916 Diamond-Jap, Enfield 2-speed gear, just been overhauled; £57/10.—4, Woodside Parade, N. Finchley, N.12. [4576

Douglas.

2¾h.p. Douglas, 1915, just overhauled; £46.—Below.

4h.p. Douglas, 1917, just overhauled, fine condition; £70, or near offer; seen any time.—J. Dooley, 33, Killyon Rd., Wandsworth Rd Station. [5165

DOUGLAS at Conrlay's, Fallowfield, Manchester. [2830

DOUGLAS, 1915, like new; a bargain, £53.—55, Wiltshire Rd., Brixton. [4993

4h.p. Douglas, 1915, solo; 60 gns.—Adeney, St. John's College, Cambridge. [5008

DOUGLAS 4h.p., K.S., new condition; £82.—262, Blackhorse Lane, Walthamstow. [3848

DOUGLAS 2¾h.p., 1916; £52; first to see will buy.—517, Wandsworth Rd., S.W.8. [4922

DOUGLAS 2¾h.p., 1915, 2-speed; £57.—Central Garage, Lord St., Southport. [X0578

DOUGLAS (Oct., 1919) 4h.p. Combination, new, clutch, Canoe, lamps; £145.—Below.

DOUGLAS 2¾h.p., 1915, overhauled; £50.—Edwards, 7, Exhibition Rd., South Kensington. [4825

DOUGLAS 4h.p., 1918, overhauled, new condition; 75 gns.—17, Tamworth Park, Mitcham. [4904

DOUGLAS, 2¾h.p., 1911, splendid condition, fast, smart; £27.—17, Heaton Rd., Mitcham. [4703

DOUGLAS Motor Cycle for sale, cheap, 2-speed.—155, Uxbridge St., Burton-on-Trent. [X0528

DOUGLAS 1915 2¾h.p., 2-speed, perfect; £55.—Ellis and Pettitt, High Rd., Whetstone. [4553

2¾h.p. W.D. Douglas, uncrated June, good condition; £60.—Newton, Buncleaves, Westerham. [3882

DOUGLAS 4h.p., late model, requires a little attention; £55.—Hole, 129, Park Lane, Carshalton. [4710

DOUGLAS 2¾h.p., 1915 model, 2 speeds; £50; just overhauled.—199, King's Cross Rd., London, W.C.1. [5257

2¾h.p. Douglas; £24, or good push bike and cash adjustment.—R.J., 23, Moring Rd., Tooting, S.W.17. [4736

DOUGLAS 2¾h.p., 2-speed model, excellent condition, lamps, spares.—Parker's, Bradshawgate, Bolton. [X0364

DOUGLAS, W.D., 2¾h.p., 2-speed, new Aug., fully equipped; £65.—5, Lansdowne Rd., Wimbledon. [4552

DOUGLAS 1917, almost new, 2¾h.p., full equipment; £65.—Grimes, 18, Bruton Place, Bond St., W. [4842

1919 2¾h.p. Douglas, as new. Write or call after 6.30 evenings.—Veal, 92, Highlever Rd., W.10. [5068

DOUGLAS 2¾h.p., W.D., like new, 2-speed, lamps; £69.—Central Garage, Lord St., Southport. [X0577

1915 Douglas 2¾h.p., 2-speed, very fast machine; £60.—4, Woodside Parade, N. Finchley, N.12. [4577

DOUGLAS 2¾h.p., W.D., 1919, unused; £72.—Write, or call after 5.30 p.m., 705, Finchley Rd., London. [4623

DOUGLAS 2¾h.p., 1910, requires attention; what offers.—Mattock Motor Co., Mattock Lane, Ealing, W.5. [5162

1916 4h.p. Douglas Combination, 3 speeds; C.B. sidecar; bargain, £95.—49, St. Leonard's Rd., Mortlake. [X0392

WAUCHOPE'S, 9, Shoe Lane, London, are city agents for Douglas machines; book for quick delivery. [4964

2¾h.p. Douglas, purchased new Aug., aluminium disc wheels and chain cover; £65.—37, Arlington Rd., Surbiton. [4929

DOUGLAS, 1915, 2-speed, recently overhauled, perfect; £52.—Gron, Vedrines, Alma Rd., New Southgate. [X0410

DOUGLAS, 1915, 2-speed, equal to new; £50; seen by appointment.—Owen, 95, High Rd., East Finchley. [X0411

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS 2¾h.p., 2-speed, used once, two weeks' old, electric lamps; £68.—Foulds, 49, Medway Rd., Bow. [5062

DOUGLAS, 1916, perfect machine in good conditon; cheap; £55.—51, Maplethorpe Rd., Thornton Heath, S.E. [5051

DOUGLAS Combination, 1919, new, fully equipped; £135.—Deutist, 216, Portobello Rd., North Kensington, W. [X0376

DOUGLAS, 1916, 2¾h.p., 2-speed, fully equipped, perfect throughout; £55.—Windsor, Fernhill, Horley, Surrey. [4669

DOUGLAS, 2¾h.p., 1915, 2-speed, Bosch, Amac, good order, discs if required; £55.—19, Jerningham Rd., S.E.14. [4679

DOUGLAS 4h.p. and fine box sidecar, 3-speed, K.S., clutch, 1916 model; £85.—199, King's Cross Rd., London, W.C.1. [5256

1920 Douglas, 3-speed, kick start, Show model, handle-bar clutch control; what offers.—Ney, Carberry, Rye. [5156

DOUGLAS, 1915, 2¾h.p., 2-speed, overhauled and renovated; £45.—Franklin, 357a, North End Rd., Fulham, S.W.6. [4798

DOUGLAS, 2¾h.p., single speed, just overhauled, good tyres; seen in London; £35.—Box L6,001, c/o *The Motor Cycle*. [4758

1919 (August) 2¾h.p. Douglas, P.H. lamps, horn, spare belt, etc., new condition.—268, High Holborn. Holborn 6499. [4895

DOUGLAS, 2¾h.p., 2-speed, 1916; £60.—Newnham Motor Co., 223, Hammersmith Rd., W.6. 'Phone: Hammersmith 80. [4168

DOUGLAS Solo and Combination; regular monthly deliveries from November.—Lloyd and Soo, 29, Station St., Lewes. [9583

DOUGLAS 4h.p. C.B. Combination, 1918, lamps, horn, etc., a fast lot; £120.—Temple, 3, Broadway, Ludgate Hill, London. [4868

DOUGLAS, 2¾h.p., late, special T.T., W.D., as new, little wear, Klaxon, accessories; £60, offers.—29, Capstone Rd., Bournemouth. [4707

A Number of Douglas 2¾h.p. 2-speed Models; none earlier than 1915; from £50.—Edward and Gill, 118, Hampstead Rd., N.W.1. [5289

DOUGLASES.—Call at Smith's for your next Douglas.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [0093

1919 (June) 4h.p. Douglas Combination, electric lights, discs, spares, excellent condition; what offers? —E. Pool, 56, Abel St., Burnley. [X0333

DOUGLAS 4h.p. Combination; list price £135.—Newnham Motor Co., 223, Hammersmith Rd., W.6. 'Phone: Hammersmith 80. [4167

1920 Douglas Models. Now delivering 2¾h.p. 3-speed, £90; 4h.p. combination, £145.—Moffat, Douglas agent, Yeovil. 'Phone: 50. [1103

DOUGLAS, 2¾h.p., 1916, 2 speeds, Lucas horn, lamp, new tyre, good running condition; £60.—Tilley's, The Esplanade, Weymouth. [5045

SMITH'S have in stock new W.D. 2¾h.p. Douglases at 70 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [0083

1919 Douglas 4h.p. 3-speed Combination, Lucas lamps, horn, etc., new last March; £115.—Write Moses Blewett, Merchant, Penzance. [4714

DOUGLAS 2¾h.p., 2-speed, £45; lamps, spare tube, condition perfect.—Apply any time, Haskius, 204, Ladbroke Grove Notting Hill, W.10. [4612

DOUGLAS 2¾h.p., W.D., horn, spares, uncrated August, ridden 800 miles, perfect 60 gns.—6, St. Margaret's Rd., Plumstead, S.E.18. [X0586

1919 Douglas, 2¾h.p., W.D. model, not done 500 miles, splendid condition, lamps, horn, etc.; £70.—Jones, 30, Mona St., Amlwch. [X0523

1916 Douglas 2¾h.p., W.D. model, 2-speed, T.T. bars, good condition; 57 gns., or near offer.—25, Townshend Rd., Richmond, Surrey. [5005

1918 Douglas Combination, 3-speed, K.S., less magneto and front guard; £48; call any time. —262, Black Horse Lane, Walthamstow. [4793

1915 Douglas, fitted with P. and H. lamp and horn, machine in very nice order; £56.—King and Harper, 6 and 7, Bridge St., Cambridge. [4690

SMITH'S for Second-hand 1916 2¾h.p. Douglases, overhauled, from 50 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [0092

DOUGLAS, 2¾h.p., 2-speed, K.S., clutch, new Dunlop, new tube, lamps, nice condition; 42 gns., no offers.—Davison, Singer Shop, Gainsborough. [X0529

1920 Douglases.—By one who knows; delay is dangerous.—Order yours now from the Douglas Specialist, Gibb, Gloucester. 'Phone: 852. [6340

1916 Douglas, 2¾h.p., 2-speed, in perfect condition, fast, and smart appearance, just overhauled; £50, bargain.—9, Stoneleigh St., Notting Hill, W.11. [4897

LATE 1913 2¾h.p. Douglas, recently re-enamelled and thoroughly overhauled, splendid running order; £45.—Harlow, Orchard St., Bournemouth. [X0501

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O.H.V. **ZENITH**, 90 bore, J.A.P., 1915 ..	£120 0
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1919 **TRIUMPH**, 4 h.p., 3-speed, lamps; run 50 miles	£110 0
1919 **ZENITH**, 4-5 h.p., c/shaft, coach-built Sidecar	£140 0
1919 **L.M.C.**, 4¼ h.p., 3-speed, Millford Sidecar; run about 500 miles	£115 0
1917 **HARLEY-DAVIDSON**, de luxe Sidecar, electric model	£160 0
1916 **NORTON**, 3½ h.p., 3-speed, c/shaft, lamps, speedometer	£90 0
1917 **RUDGE-MULTI**, I.O.M., and Flying Middleton Sidecar	£100 0
1916 **ENFIELD**, 3 h.p., 2-speed, Canoelet Sidecar	£85 0
1918 **TRIUMPH**, 4 h.p., 3-speed c/shaft, T.T. or touring bars	£85 0
1915 **INDIAN**, 7-9 h.p., clutch model, as new throughout	£72 10
1914-5 **ZENITH**, 6-8 h.p., and sporting Phœnix Sidecar	£125 0
1919 **JAMES**, 5-6 h.p., and sporting Sidecar, unscratched	£145 0
1916 **CLYNO** Combination, spare wheel .	£105 0
1916 **JAMES** 4¼ h.p. Combination, 3-speed	£110 0
1919 **DOUGLAS** 4 h.p. Combination, lamp, horn, etc.	£140 0
1915 **DOUGLAS**, 2¾ h.p., 2-speed, T.T. ..	£50 0
1919 **A.V.** Monocar, 4-5 h.p. twin	£120 0
1914 **BROUGH**, 6 h.p., T.T.; very fast .	£50 0
1915 **NEW IMPERIAL**, 2¾ h.p., T.T., gold medal winner	£49 10
1914 **TRIUMPH**, 4 h.p., 3-speed, re-enamelled	£65 0
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MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS 2¾h.p., 2-speed, uncrated in July, absolutely perfect, fully equipped, low mileage, smart and fast; £62.—60, Wallingford Av., N. Kensington. [5839

2¾h.p. Douglas, 1915, 2-speed, just been overhauled, excellent condition; £50 for quick sale.—Seen at Bound's Garage, 223, High Rd., Kilburn, N.W. [3946

4h.p. Douglas Combination, Oct., 1916, 3 speeds, kick starter, just overhauled and renovated; £95. —Franklin, 357a, North End Rd., Fulham, S.W.6. [4137

1919 2¾h.p. Douglas, new August, perfect condition, makers' colours, Klaxon, new lamp set, pump, tools; £76.—Stainer's Dairy, Ryde, I.O.W. [5106

2¾h.p. Douglas, T.T., lighting set, tool kit, accessories, new tyres and tubes, little used, appearance as new; £53.—Seen The Haven, Portsmouth Rd., Esher, Surrey. [4829

DOUGLAS 2¾h.p., 2-speed, late 1915, has had very little use, and is in perfect condition throughout; price £52.—A. J. Luce, Hamilton Rd. Garage, Reading. 'Phone: 967. [4602

1915 2¾h.p. Douglas, 2-speed, Dunlops, good appearance and mechanical condition; £45; no offers.—7, Gibson Sq., Islington, N.1. (nr. Agricultural Hall). [4850

£42; T.T. Douglas, 1912, 2¾h.p., 2-speed, clutch, appearance good, knee grips, footboards, just overhauled.—Barrett, 19, Furness Rd., Fallowfield, Manchester. [X0432

DOUGLAS 4h.p. Combination, 1918, lamps, horn, valuable spares; reasonable offers invited, splendid condition.—Lewis, Stanley Terrace, Castlefields, Shrewsbury. [5134

W.D. 2¾h.p. Douglas, perfect order, any trial, bought new machine; £58, bargain. 'Phone: Victoria 8240, Extension 7.—Williams, Five Wents House, Swanley, Kent. [4782

DOUGLAS (late 1916) 2¾h.p., 2-speed, very smart, enamel and plating in splendid condition, horn, pump, etc., £60; 1915 ditto, £52.—67, Little Heath, Charlton, S.E.7. [5057

1915 2¾h.p. Douglas, 2-speed, lamps, horn, etc., guaranteed appearance, date, and mechanically sound; trial any time; £45; exchange.—44, Sun St., Waltham Abbey [4999

1919 Douglas 2¾h.p., makers' colours, long exhaust, Klaxon, lamps, spare tube and valve, little used; bargain, 70 gns., no offers.—10, Parsifal Rd., Hampstead, N.W.6. [5200

SIX 1915 Douglas Motor Cycles, in good condition; £50 each, must be sold; would consider exchange for modern 6in. lathe.—141, Merton Rd., Wimbledon, S.W.19. [5003

WAUCHOPE'S, 9, Shoe Lane, London; 4h.p. Douglas 1919 combination, not done more than 1,500 miles, £125; also Army model, 2¾h.p., 2-speed, all black; £75; new. [4947

1918 4h.p. Douglas, with Swan sporting sidecar, bought March, 1919, low mileage, lamps, tools, spares, insured; £110.—10, Souldern Rd., Brook Green, Hammersmith, W.14. [5214

2¾h.p. Douglas, 1916, W.D. model, 2-speed, only done 100 miles, fitted with every accessory, in perfect mechanical conditon; any trial; price 65 gns.—Sharp, Underhill Farm, Barnet, Herts. [4570

NEW 2¾h.p. Dongloses.—One 1919 2-speed model, £80; one 1920 3-speed, kick starter, clutch model, £90; delivery charges extra.—J. C. Phipp, Sherston, Malmesbury, Wilts. [5245

A 2¾h.p. Douglas, bought new last August, mileage 450, very fast, all accessories, owner bought Douglas Combination; a bargain for £70.—Sleep, 149, High St., Nottiug Hill Gate, W. [5072

4h.p. Douglas 1915 Combination, 3-speed, engine overhauled by makers, with 1919 renewals, new clutch, new tyres, speedometer, Binks carburetter; 95 gns.—Chaplain, College, Worksop. [4808

1919 Douglas 4h.p. Combination (new), latest model, 4 volt accumulator, electric lights throughout, hooter; sought higher power; £145.—Owen, 52, Fontarabia Rd., N. Clapham Common. [4618

DOUGLAS 1917 4h.p. Combination, 3-speed and clutch, enamel and plating good, new tyres, nice sidecar, just renovated; £92/10.—Edwardes, 277, Camberwell Rd., S.E.5 (near Green). [5118

1919 Douglas Combination, coachbuilt, magnificent outfit, kick starter, 3-speed, wind screen, Tan-Sad, warranted, done about 1,000 miles; £130, or nearest.—Weston, Butcher, Chipping Norton. [5063

4h.p. Douglas Combination, brand new, complete with storm apron; prices and terms on application.—Harrods Motor Showrooms, 116-118, Brompton Rd., opposite Main Building, London, S.W.1. [4595

4h.p. Douglas Combination, 3-speed, countershaft, clutch, kick start, 1916 model, but has had very little use, perfect condition; £90 for quick sale.—Seen at Bound's Garage, 223, High Rd., Kilburn, N.W. [3945

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol. [0016

MOTOR CYCLES FOR SALE.

Douglas.

LATE 1918 4h.p. Douglas Touring Combination, coachbuilt sidecar, countershaft 3-speed gear, clutch, kick start, fully equipped, electric lighting, spare tyre, etc., perfect condition; £130.—174, Vicarage Rd., Leyton. [4713

1919 4h.p. Douglas with Sidecars, brand new, with latest type clutch; one or two only for immediate delivery at the old price, £135.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995. T.A.: Bicycles. [5245

DOUGLAS 1919 (October) 4h.p. Combination, new type clutch, mileage 1,000, carefully run in and owned by experienced owner, variable jet, lamps, Klaxon, tools, spares; £140.—Bickmore, 2, Seymour Rd., South Fields, S.W.18. [X0375

1919 4h.p. Douglas Combination, delivered September, latest clutch, Premier horn, perfect condition, ridden about 500 miles; owner leaving England; £130. — Courtial, French Consulate, Southampton. [5124

1919 4h.p. Douglas Combination, latest sidecar with side door, P. and H. lamp sets and horn, been little used, and in quite new condition, runs perfectly; £138.—Wallis, 49, High St., Saffron Walden, Essex. 'Phone: 45. [X0348

4h.p. Douglas, 1915, T.T., 3-speed, with Swan sporting sidecar, complete with accessories, lamps, electric and bulb horns, etc., new condition, stored during war; bargain, £120.—Bell, 38, Cromwell Rd., Kingston, Surrey. [X0425

1915 Douglas 2¾h.p., C.A.V. magneto, Amac carburetter, new tyres, tubes, and belt, thoroughly overhauled, £55; another same condition, 1916, £60. Remember condition guaranteed.—Walton Bros., Dawson Square, Burnley. [X0312

1919 4h.p. Douglas Combination, 3-speed, kick start, brand new, unscratched, only used few times, Lucas lamp set, trip speedometer, outfit delivered Aug.; bargain, £135, no offers.—31, Claremont Rd., Alexandra Park, Manchester. [X0494

DOUGLAS 4h.p. W.D. 1919 Combination, in perfect condition, complete with lamps, horn, new speedometer, storm apron, tools, etc., only ridden 300 miles; 140 gns.—Lieut. H. West, The Orchard, Boathland, Yorkshire. [X9408

DOUGLAS, 2¾h.p. single speed engine and Bosch mag., just overhauled, brand new Palmer rear tyre and inner, front good condition, new belt, B. and B. carburetter, lamps complete; £28.—Jones, St. Kilda, Buckhurst Hill. [5258

4h.p. Douglas, about 1916, and sidecar, in first-class order, 90 gns.; 2¾h.p., 1914, in absolutely perfect order and as new, not scratched, £70; going in for small car; genuine, and any trial.—Gaydon, Jeweller, Norwood, S.E.19. Sydenham 182. [4695

DOUGLAS 2¾h.p. T.T. model, 2 speeds, 1914, stored during war, Lucas lamps, horn, Cowey speedometer, knee-grips, long copper exhaust, polished aluminium discs, W.S.R. Pilot jet, perfect condition; £60, or offer.—J. D. King, Broom, Biggleswade. [X0354

1920 2¾h.p. Douglas, with latest type of carburetter, hand clutch, 3-speed gear; orders now being accepted for delivery in strict rotation; nett price, £90, plus carriage.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995. T.A.: Bicycles. [5247

2¾h.p. T.T. Douglas, W.D., uncrated July, makers' colours, buffer spring fork, long exhaust pipe, knee-grips, horn, tools, tail lamp, enamel and tyres unscratched, 800 miles only; 68 gns.—'Phone: Battersea 499. [5035

2¾h.p. Douglas, W.D., 1916 and 1917.—A number, all thoroughly overhauled, and in fine mechanical condition, some with new tanks, handles, and mudguards appear new; on view Bristol and Yeovil.—Stanford, Midland Bank Chambers, Yeovil. [3765

2¾h.p. W.D. 1916 Douglas (engine 38239), uncrated October, 1919, Miller head light, rear lamp, 2 generators, mechanical horn, hot-jacketed Amac, long exhaust, complete tool kit, spares; £70; new machine delivered; after 6.—Charles Dixon, 9, The Crescent, Surbiton. [5224

1920 4h.p. Douglas with Improved Sidecar, latest type of carburetter, many improvements; orders now being booked for delivery in strict rotation; nett price, £145, plus crate and carriage.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995. T.A.: Bicycles. [5248

VIVIAN HARDIE and Lane, Ltd., Douglas specialists.—4h.p. combination, £135; 2¾h.p. solo, £80; we stock everything you require for your Douglas.—Vivian Hardie and Lane, Ltd., 24, Wood Stock St (off Oxford St), Bond St., London, W.1. 'Phone: Mayfair 6559. [0012

DOUGLAS 2¾h.p., 1919, delivered October, and hardly been used, complete kit tools in case, P. and H. lamps and generator (unused), Tan Sad pillion seat and cushion, a perfect machine, fully insured; seen by appointment; what offers.—Apply to D.S., 34, Adelaide Sq., Windsor. [X0264

Edmund.

EDMUNDS, spring frame, you simply float. — Sole agent, Gourlay, Fallowfield, Manchester. [2831

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MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD 2-stroke, 2-speed, perfect; £47.—Ellis and Pettitt, High Rd., Whetstone. [4557

2¾h.p. Enfield, countershaft, excellent condition, fast; £37, bargain.—39, South Parade, Oxford. [5211

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0031

ROYAL ENFIELD 6h.p. Combination, new April, 1919, perfect mechanical condition.—Robinson, 48, Lambert Rd., Grimsby. [X0486

ENFIELD 2-stroke 2¼h.p., Enfield 2-speed, brand new, at makers' price, £63.—Wilkins, Simpson and Co., opposite Olympia, London. [4818

ENFIELD 2¾h.p. Lightweight Twin, 2 speeds, all chain drive, Bosch, Amac; £35.—Mylam, 197, London Rd., Croydon. 'Phone: 2379. [4683

ENFIELD, fitted 3h.p. twin J.A.P., Grado pulley; £35; after 12 o'clock Saturday or appointment.—Ashleigh, Shrewsbury Lane, S.E.18. [4882

ROYAL ENFIELD Combination, 1912, J.A.P. engine, Bosch mag., splendid condition; £90.—Barraclough, Denby Dale, Huddersfield. [X0504

BRAND New 6h.p. Enfield Combination, just ridden from works, Lucas horn; seen by appointment; best offer.—Box 888, c/o *The Motor Cycle*. [X0223

ENFIELD 1915 3h.p. Twin, 2-speed, clutch, kick start, lamps, horn, pump, etc., excellent order; 50 gns.—14, Kildoran Rd., Acre Lane, Brixton. [5197

1919 (Oct.) Enfield 6h.p. Combination, complete with lamps, tools, etc., spare tube and valve, not done 250 miles; £150.—Hawley, Goodall St., Walsall. [X0447

WAUCHOPE'S, 9, Shoe Lane, London, has for sale 1919 8h.p. Royal Enfield combination, £165; 1917 combination, £155; 1913 or 1914, £87/10. [4961

1913 Enfield Combination, excellent running condition, new gears, engine overhauled, electric lighting; £80.—Halliday, 19, The Avenue, Andover, Hants. [5201

ROYAL ENFIELD 6h.p., 1917, C.B. sidecar, lamps, hood, screen, tyres as new, excellent condition; £120.—Gilbert, 4, St. Helen's Gardens, N. Kensington. [5071

1919 8h.p. Enfield Combination, mileage 2,000, hood, screen, lamps, condition guaranteed; £140.—Watson, Forester's Arms, Brady St., Whitechapel. [5000

1916 6h.p. Enfield Combination, with lamps, generator, and horn, engine, gears, plating and enamel good; £95.—J. C. Phipp, Sherston, Malmesbury, Wilts. [5264

ENFIELD Motor Cycle Combination, 6h.p. J.A.P. engine, speedometer, watch, mirror, all accessories, all in good condition, reliable outfit; room wanted; £120, or near offer.—Apply, 17, Bevan St., Lowestoft. [X0316

1913 Enfield Combination, 6h.p., electric lamps, wind screen, spare tyre and tube, in excellent condition, engine perfect; expert examination welcomed; price £75, bargain.—Tompsett, The Moors, Marden, Kent. [3877

6h.p. Enfield Coach Combination, 1914, unused 3 years, perfect condition, lamps, Klaxon, speedometer, luggage grids, Tan-Sad, all spares, new rear tyre and tube; must sell; any trial; first £90 secures.—Pearson, 135, Newland Av., Hull. [X0452

ENFIELD Coach Combination, 8h.p. De Luxe model, Lucas dynamo lighting throughout, fully equipped, speedometer, tools, etc., heavy Palmer cord tyres, guaranteed 1,600 only; £135, or exchange solo machine.—51, Church St., Wolverton. [5221

1914 (late guaranteed) Royal Enfield, 6h.p., engine No. 7959, all chain, 3 acetylene lamps as new, horn, etc., coachbuilt sidecar, stored 2½ years, excellent condition; £115; Plaistow, E.13.—See Kwiksale advertisement, Miscellaneous Sale column. [4876

ENFIELD 6h.p. Combination, late 1916, only 500 miles since overhaul (engine at J.A.P. works), worn parts replaced, Lucas lamps, Eadie screen, Klaxon, luggage grid, Kempshall (500 miles), Dunlop (900 miles), spares; £125.—93, Binley Rd., Coventry. [X0583

Excelsior.

EXCELSIOR New 2-stroke, 2-speed, in stock; £58 16.—Edwards, 7, Exhibition Rd., South Kensington. [4823

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [7033

1917 7-9h.p. American Excelsior, 3-speed, clutch, kick starter, as new, not done 1,000 miles, fitted with large coachbuilt torpedo sidecar, aluminium discs, lamp, mechanical horn and tools, tyres hardly soiled. This machine is as good as new, must sell; £135, or good offer.—Drew, 1, Station Rd., Upminster, Essex. [4952

Fafnir

4h.p. Fafnir, E.I.C. mag., B. and B. carburetter, good running order and tyres; £22.—150, Camberwell Grove, Camberwell; S.E.5. [4505

MOTOR CYCLES FOR SALE.

Flanders.

4h.p. (American) Flandere, believe 1914, take sidecar, Indian red, B.B., mag., Palmer cords, new wheels, sporty and powerful; £25, or exchange for 2-stroke.—Box L6,046, c/o *The Motor Cycle*. [5280

F.N.

£25.—5-6h.p. F.N., perfect condition; new leather jacket, 15/-.—Hamlyn, Darley Abbey, Derby. [X0426

F.N., 4-cyl., 2 speeds, cut-down frame, just overhauled; £40.—Earl, Athenæum Works, The Vale, Hampstead, N.W. [4795

F.N. Latest Model 5-6h.p. 4-cyl. Combination, 2-speed, hand clutch, Bosch, low mileage, plating and enamel as new, original front tyre on, heavy Dunlop on back, new Palmer tubes, lamps, tools, accessories, privately owned; £75.—Anderson, 125, High St., Merton, S.W.19. [5020

Harley-Davidson.

WAUCHOPE'S, 9, Shoe Lane, London; Harley-Davidson 8h.p. 1916 combination; £155. [4965

KEMP'S Garage, Louth, Lincs, commence delivery of 1920 Harley-Davidsons this month. Book now. [X0417

HARLEY-DAVIDSON New 1920 Model F. solo in stock; list price.—Edwards, 7, Exhibiton Rd., South Kensington. [4824

1919 7-9h.p. Harley-Davidson Standard Model, just delivered; £154, first cheque secures.—F.E.W., 55, High St., Oxford. [X9550

BROOK Bros., Burnham-on-Sea, are now booking orders for early Harley-Davidson delivery in 1920. Write for particulars. [4565

HARLEY, 1916, beautiful combination; fetch £150 in the season, now £125.—51, Maplethorpe Rd., Thornton Heath, S.E. [5050

7-9h.p. Harley-Davidson, 1915, electric model, and 2-seater sidecar; reasonable offer accepted.—15, Weymouth Mews, Portland Place, London, W. [4597

1915 Harley-Davidson 7-9h.p. Combination, speedometer, lamps, 2 new tyres, little used 2 years, good condition; £105, offers.—80, Kingshill, Swindon. [4894

HARLEY-DAVIDSON, late 1918, Swan sidecar, polished aluminium disc wheels, lamps, Klaxon, fine turnout; £175.—H. D., 45, Venner Rd., Sydenham. [5169

LEICESTER Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 62, High St., Leicester. [3893

LIVERPOOL Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 24, Paradise St. Liverpool. [3894

1915 Harley Combination, been stored 3 years, recently overhauled and enamelled olive brown by the Harley people; £110.—W. Stobo, Maesydre Rd., Wrexham. [4790

BIRMINGHAM Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 31, Colmore Row, Birmingham. [3895

MANCHESTER Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 200, Deansgate, Manchester. [3896

1919 Harley-Davidson 7-9h.p. Combination, luxurious sidecar, electric lighting, hood, wind screen, speedometer, disc wheels; £215; appointment.—H., 142, King Henry's Rd., Hampstead. [4735

BROOK Bros., Burnham-on-Sea, are sole agents for the new Harley-Davidson models, and specialise in service to the owner; book your order now for early delivery. Write for our new catalogue. [0051

HARLEY-DAVIDSON 1915 Twin, and sidecar, hood, screen, special luggage carrier, all accessories, grand mechanical condition, fast and powerful; any trial invited; £130.—Debenham, Richmond, Yorks. [5238

HARLEY-DAVIDSON Khaki Combination, mag. model, electric lights, bulbous back sidecar, hood and screen, fully equipped, best cambination on the road; 175 gns.—Smith's, 10-16 Haverstock Hill, opposite Chalk Farm Tube Station. [0091

1917 (late) 7-9h.p. Harley-Davidson Combination, electric model, new tyres and tubes just fitted, Tan-Sad and fittings, screen, everything in really nice order, and is property of private owner giving up; bargain at £150.—Apply, Top Flat Door, 13, Mayow Rd., Forest Hill, S.E.23. [4704

HARLEY-DAVIDSON Combination, late 1916, Swan sidecar, with luggage grid, stand, apron, and Klaxon, lamps, pillion, mudshield, spares, just thoroughly overhauled, replated, enamelled, perfect condition, ridden carefully and infrequently; £135.—Robinson, 39, Catherine St., Salisbury. [5140

1916 Harley-Davidson, magneto model, with special coachbuilt sidecar, hood and screen, 3 electric lamps, tyres as new, enamel and plating unscratched, guaranteed in good condition throughout; this machine has been kept up regardless of cost; photo willingly; price £130, or very near offer.—2, Meyrick St., Pembroke Dock. [4270

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HARLEY 1919 Electric Model, smartest outfit on the road (absolutely), mileage 2,200, guarantee with special built sidecar with detachable child's seat hood, wind screen, and footrest (cost 50 gns.), pillion seat, speedometer, separate accumulator for sidecar, spare chains and inner tube, a most gorgeous turnout bought car; £200, no offers considered.—Jones Bros. Dairy, Santley St., Brixton, S.W. [481

Hazlewood.

HAZLEWOOD, 2¾h.p., 3-speed solo, J.A.P. engine guaranteed mechanical condition, speedometer reasonable price.—Winchester, 35, Clarendon Rd., Hove [467

5-6h.p. Twin Hazlewood-Jap Combination, coach, 3 speed countershaft, kick start clutch, chain-cum belt drive, very powerful, guarantee and trial given lamps, etc.; £80.—97, Mount Grove Rd., Highbury, N [X008

Henderson.

4-CYL. Henderson Combination, in first-class order speedometer, horn, and lamps; £85.—Grimes, 11 Bruton Place, Bond St., W. [484

1920 4-cyl. Henderson Combination, mileage under 200; £195; seen at Marston's, 31, Bridge St. Chester.—Graham, Spring Rd., Wrexham. [478

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co., Official Dealers, Liverpool-Manchester. [703

H.B.

H.B., 1920, 2¾h.p. Blackburne engine, 2-speed, kick starter; 85 gns.—Early delivery from sole district agents, Joseph Devey and Co., 50, Darlington St. Wolverhampton. Tel.: 606. [X035

Hobart.

HOBART 4¼h.p., good running order, tyres sound £15.—Ruddock, 3, Forest Lane, E.15. [485

1919 Hobart, 2½h.p. 2-stroke Villiers engine, as new, accessories; £59/10.—Hayllar, Newport Pagnell. [462

SEVERAL Hobart Machines of our first batch still unallotted. Early delivery assured. Send stamp for descriptive leaflet from sole agents for Brighton and Hove, The Goldstone Motor Cycle Depot, 32, Goldstone Villas, Hove. [X996

Humber.

HUMBER 6h.p. Water-cooled 3-speed Twin, Combination; £93.—Halifax Motor Exchange, Union St. South, Halifax. [483

3½h.p. Humber, 2-speeds, with Canoelet sidecar, good running order; £60, or near offer.—Apply, 4, Mary Abbotts Place, Kensington. [5202

HUMBER Lightweight, just overhauled, Bosch, B. and B., Lucas lamps, new cover and tube, spares; ride away; £35.—15, Angel Lane, Hayes End, Middlesex. [4732

1919 Humber, twin horizontal engine, fitted with Canoelet sidecar, P. and H. lamps and horn; £145.—King and Harper, 6 and 7, Bridge St., Cambridge. [4692

1914 Humber, 3½h.p., engine No. E4657, good running order, Sturmey-Archer 3-speed hub, P. and H. lamps, horn, coachbuilt sidecar; £68; London, N.—See Kwiksale advertisement, Miscellaneous Sale column. [4874

HUMBER 1915 4h.p. and Coachbuilt Sidecar, recently thoroughly overhauled, 3-speed hub gear, kick start, complete with lamps, horn, etc., perfectly reliable outfit; £70.—Apply, Gas Distribution, Ltd., Nuneaton. [X0400

HUMBER 6h.p. Water-cooled Horizontal Twin, Lucas dynamo lighting set with car lamps, specially coachbuilt sidecar, aluminium panelled, with hood, screen, side curtains, etc., upholstery leather, speedometer, and horn, full set tools and spares, photo, any trial.—Apply, Box L6,034, c/o *The Motor Cycle*. [5266

1919 (June) Humber Twin and Montgomery Sidecar, apron, mat, horn, 3 unused Lucas acetylene lamps, tools, spare links and plugs, 2 pairs goggles, used 4 months only, just overhauled, looks splendid and mechanically perfect; seen Coventry; first offer £130 secures.— Apply, Box 903, c/o *The Motor Cycle*. [X0399

Indian.

EGERTONS, Northgate Street, Ipswich, can give early delivery of Indian ordered now. [4634

INDIAN 1914 7-9h.p. Combination, in good order; £87.—Longney, Bailey St., Oswestry. 'Phone: 128. [X9726

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport, Mon. [0041

1920 Indians; prompt deliveries.—E. Brown, Indian Specialist, 3 and 7a, Parker Lane, Burnley. Tel.: 194. [X0334

WAUCHOPE'S; Indian 7-9h.p., 1914, 2-speed spring frame and sidecar, £87/10; also another, also 1914, £85. [4966

1915 Indian, 7-9h.p., 3-speeds, clutch, spring frame, all accessories; best offer over £65.—8, Station Parade, Balham, S.W. [5047

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Advertising and Publishing Offices: 20, Tudor St., London, E.C.4. *Editorial Offices:* Hertford St., Coventry.
Telegrams: "Cyclist, Fleet, London" *Telephone:* 2818 City (9 lines). *Telegrams:* "Motorcycle, Coventry," *Telephone:* 10 Coventry (5 lines).
Northern Offices: 199, Deansgate, Manchester. *Mid. and Branch Offices:* Guildhall Bldgs., Navigation St., B'ham.
Telegrams: "Iliffe, Manchester." *Telephone:* 8970 and 8971 City. *Telegrams:* "Autopress, Birmingham." *Telephone:* 2273 Midland.

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Sidecars for Trade Purposes.

FOR many years the motor cycle movement in France was apparently moribund, and, in appreciation of the commercial value of the sidecar outfit as a means of transportation, England and America undoubtedly took the lead. During the war, however, the practical worth of the sidecar was demonstrated to our French neighbours in no uncertain manner, and we now find that they are in a fair way to commence the teaching of their masters.

Almost the first news item concerning civilian motor cycling which we received after the Armistice was that, in order to relieve the taxi-cab shortage, motor cycles with comfortable sidecars attached would ply for hire on the streets of Paris. That this venture failed (although in no way was it due to the motor cycle not performing its duties efficiently) is rather outside the sphere of these remarks: the essential point being that in our own country similar efforts were frustrated in their conception by the refusal of the authorities approached to grant hackney carriage licences to motor cycle outfits, the reason being shrouded in obscurity.

While the small private trader has for some time demonstrated his faith in the sidecar as a light delivery vehicle, surprisingly few large bodies or firms have seriously considered this handy form of transport.

In France, however, a move in the right direction has again been made by a company which proposes to use at first a number of British machines, and later will adapt a French product, which may be counted amongst the latest and most advanced types of motor cycle. This firm has equipped a fleet of large sidecar delivery vans, and purposes to hire them out by the day at a fixed fee, based on a certain maximum mileage, the charge covering the services of an expert and trustworthy driver.

Besides performing a useful public service, no finer propaganda scheme for the general benefit of the movement could have been evolved. Those who have been attracted by the obvious merits of the sidecar for the rapid transport of miscellaneous goods will be enabled to test its capabilities without the expenditure of capital in the purchase of an outfit. Furthermore, it is almost certain that those who at first avail themselves of this service, even without any serious thought of themselves owning machines, will turn their ideas in that direction after having its efficacy demonstrated to them in the ordinary course of the work performed.

Aero Engine Practice.

LIGHT weight and a wide weight-power ratio are absolute essentials in the designs of two types of machines, *i.e.*, the motor cycle and the aeroplane. Therefore, aero engine design is likely to have great effect upon the future motor cycle engine.

No doubt much was learned during the war which will be of inestimable value to motor cycle engine designers and all who are connected with the production of such engines.

Probably the three greatest points where aero engine practice will influence the motor cycle are: (1) The reduction of weight, (2) the use of aluminium cylinders, and (3) overhead valves. Regarding the last-mentioned, there appears some doubt in the minds of many that considerable risks attend the adoption of overhead valves, and that there appears to be a tendency for makers to "leave well alone." Leaving well alone is synonymous with stagnation. The recent successful flight from England to Australia has demonstrated the reliability of overhead valves, for the two twelve-cylinder Rolls-Royce Eagle engines, with which the flight was accomplished, were fitted with such valves, and the fact that forty-eight overhead valves continued to function for a flight of eleven thousand miles should be sufficient proof that, properly designed, the overhead valve is as reliable as the side-by-side type.

An index to the advertisements in this issue will be found on the page facing the back cover.

Automatic Carburetters.

THE vogue of the automatic carburetter is increasing by leaps and bounds. Every carburetter maker has one on offer, and many motor cycle makers now give us the option. We are still waiting for the one-lever device which will give us the efficiency of the two-lever with no sacrifice of economy. The trouble, of course, is that if an automatic affords an easy start from cold and will take the road without a lot of warming up, it is usually extravagant in fuel. But designers are optimistic, even about this. I should not be surprised if we find standard 500 c.c. engines doing their 100 m.p.g. on one-lever carburetters before long.

Flowmetered Jets.

IN the old days we all placed a childish trust in the numbered jets which we bought to experiment with on our carburetters. A "32" jet, we fancied, was the dead spit of every other "32" jet, so long as we did not gouge it out with a knitting needle. Then the war came along, and science was enlisted to help the Government in trying to get good results quickly from its millions of carburetters; and science found that, out of a dozen jets stamped with the same figure, no two gave the same fuel delivery. Finally, the flowmeter solved the problem, and jets became genuinely interchangeable, so that differences in individual engines remained as the chief variant in providing good carburation for a big batch of engines. I was under the impression that all motor cycle jets were now flowmetered. It is not so. In many instances the jet size numbers are still only a vague and approximate indication of the fuel which a jet will deliver. By the next Show, most jets will be accurately flowmetered: but for the present testers, whether professional or amateur, must continue to take jet sizes with the usual pinch of salt in the absence of definite information to the contrary.

Four-wheeled Competition with Sidecars.

A GENERAL rise in prices at or before the car Olympia has distinctly weakened the threatened competition between sidecars and four-wheelers, for the prices of the latter are now well above current sidecar figures. Thus, the A.B.C. sports car is now listed at £295. The Rover stands at £230, the Palladium two-seater at 275 gns., and the Cosmos at £210 (the latter will not be available for nine months or so). The redesigned G.W.K. is now catalogued at £275, and the Grahame-White Buckboard at 95 gns.; since the latter only boasts 3 h.p. and two speeds, it cannot compete with a high-powered combination. Of course, we do not know that the bigger sidecar outfits will keep below the Cosmos and Rover price levels; but it is doubtfu whether cycle cars will have any serious effect on th sidecar market for some time to come. Our ol friends, the G.N., L.M., and Carden are still th sole high-performance four-wheelers at a motor cycl price, unless one or two newcomers should prove t be livelier than their specification suggests. On th other hand, there are at least half a dozen differen makes of three-wheeled runabouts on offer.

Watching the Wheels Go Round.

YOU cannot identify the best exhibits at Olympi by spotting the points at which the crowd i thickest. Novelty usually draws a crush, bu a sound technical novelty does not necessarily attrac unless it has great publicity or extreme cheapness a an extra draw. But when all is said and done, th best possible draw is to set some bit of mechanism in motion with the aid of an electrical motor—rathe noisily, for preference. I thermometered the en thusiasm at Olympia on several occasions, and th result was always as follows, the crush being tabulate in order of thickness:

(1.) Rudge stand (multi gear in motion).
(2.) A.B.C. machines (novelty, plus publicity).
(3.) Sundry scooters (novelty, plus cheapness).

By comparison, some of our staunch old roadster or such unboomed but excellent novelties as th Beardmore-Precision did not magnetise the crowd: but they got the business all the same. When I stag a motor cycle of my own invention, I shall saw fou complete machines in half from end to end and ru them off the electrical main from 10 a.m. to 10 p.m daily. It will cost a lot in current, but my stand wil be simply impassable.

All Belt.

I SEE an Overseas correspondent is still hankering after belt drive. No man could have been more conservative in that respect than I was, and I am still distinctly fussy when I select a chain drive: there are several patterns on the market which I will not touch with a bargepole. Nevertheless, I proclaim my general conversion. If most of my riding were done in ordinary British undulating country, I should still be faithful to the belt for solo work: under such conditions, I know nothing to equal a Rudge or Zenith. I have recanted simply and solely as the result of freak hills. Annually, or twice a year since 1910 or thereabouts, it was my fate to tackle a Six Days in the assorted weather which usually accompanies those jaunts. The combination of a fierce hill, a small pulley, and pouring rain, occasioned me worlds of trouble. I switched over to the chain-cum-belt, and was perfectly satisfied with it. I should still use it if

Occasional Comments.—

the sidecars had not driven the trade off it to a very large degree; and, as a solo man, I ask for nothing better. I now use a lot of all-chain drives because they figure on machines which are otherwise desirable, and because they have lost their old harshness, whilst constructional details, though seldom perfect, are at least free from the old crudities. It must be admitted that the proper sphere of the all-belt drive is now identified in the solo 'bus, and by emphasis in the solo 'bus designed for fast work in easy districts. The chain, with such faults as it retains, is unquestionably the best drive for exacting duties with a sidecar.

Air-cooling at the Car Show.

THE many motor cyclists who visited the Car Show at Olympia naturally made tracks for the stands on which air-cooled cars were exhibited. Those of us who still dare to yearn for hoseable machines were specially interested in the cowled engines. It was obvious that the designers of air-cooled engines for cars fall into clearly defined schools. On the one hand, there are audacious people who drill countless holes in the front of the bonnet, and leave the engine as a whole to cool in the vague draught which filters through these orifices. On the other hand, a rival school boxes the engine in with metal plates till it looks as if it were water-jacketed, cut a single air intake in the box over the cylinder head, mount an air scoop handily in the side of the bonnet, and employ an enormous fan to suck air through the cowling. If we take both schools at their own valuation, the deductions—so far as cars are concerned—are that a naked engine will keep decently cool in an aimless kind of draught, which slops itself at random over the whole exterior of the engine; but that even better cooling is obtained by boxing the engine in and using forced draught over the hotter parts of the cylinder. (One suspects *en passant* that a perfectly designed engine requires no cowling.) Applying these presumptions to motor cycles, one draws the moral that our engines require no cowling or fans, but that if anybody should take it into his head to design a smooth-sided motor cycle, encased in aluminium covers, capable of being cleaned in five minutes with a hose and sponge or a wet cloth, the job would be quite simple, and the cooling would be—if anything—better with the covers on than with the covers off. It follows, incidentally, as the Car Show proved, that accessibility would be slightly impaired, and that manufacturing cost would be fractionally increased. But if any revolutionary produces a motor cycle which conveys no suggestion of a porcupine, and has no objection to a hot bath, he will find customers galore.

THE GREAT NIGHT RIDE.

Already the problems of lighting are being faced by entrants in the M.C.C. London-Exeter trial, the start of which takes place on Boxing night from Staines. The photograph depicts a scene at the start of the last trial held in 1913

Shocks in Gear Changing.

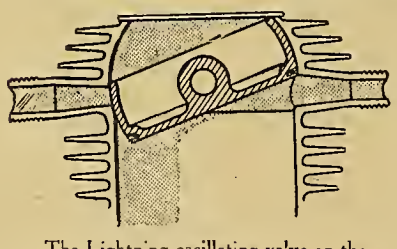
SOME of our correspondents have not fully grasped one of the points which I desired to emphasise anent gear changing. With many machines a gear change entails a physical shock reminiscent of stubbing one's toe against an unseen doorstep. The gear goes in with certainty, there is no mechanical noise, but the machine pauses, shakes itself, and goes on again. Such an experience is not unknown on a bad car handled by a clumsy driver, but on most cars the gear change is sufficiently simple to be mastered by the average driver. On bicycles it is not. An expert can effect a shockless change with almost any bicycle, but some of the best bicycles baffle a rider of ordinary skill. The problem is, of course, much thornier than that which a car presents. The steering and the clutch account for the contrast. One hand at least, and very possibly both, are really absorbed in steering, and a lightning removal of one hand from the bar is all that can be spared at speed or on rough going. Secondly, the clutch is usually very small, and neither the foot nor the hand is sufficiently composed to operate controls delicately, unless the frame is sprung; with a spring frame, gear changing becomes similar to car driving, but not when a rigid frame subjects wrist and ankle to jerks and jolts and vibrations. For all these reasons changing on the valve lifter is approved by many designers, and such a change usually necessitates a shock; the shock in turn normally promotes a momentary wobble. Perhaps the chief exceptions to these common faults are the infinitely variable gears, *e.g.*, the Rudge and Zenith. With such designs there is no break in the drive during gear changing, and it follows that there is no shock. There may still be a wobble, but if so it is exclusively due to loose steering while one hand visits the gear lever: and such a wobble will be less pronounced than a shock-wobble, and can only occur at very high speeds or on very rough roads.

This matter is admittedly not of prime importance, but our trade should note that it forms part of the modern idea of comfort, and the Americans are taking it into account.

NEW IDEAS IN 1920 MODEL ENGINES.

By CAPT. W. GORDON ASTON, A.F.Ae.S., A.M.I.A.E.

TO the speculative technical mind, and in regard to new features of engine construction especially, the Motor Cycle Show is habitually more interesting than the Motor Car Show which precedes it. The reason is not at all far to seek. Designers of motor cars are on the average considerably more progressive, and yet at the same time more "much-of-a-muchness," than those who scheme out new motor cycles. Also, it may as well be frankly admitted, they are decidedly better engineers. Thus between the worst car and the best there may be no very wide gap, whereas between the best and worst motor cycles there is a great gulf fixed. This is because the majority of motor cycle manufacturers are highly conservative: they have found themselves in grooves which are safe and profitable, and they show no inclination to leave them (and with things as they are, why should they?); whilst others, full of enterprise—and in some cases more full of enterprise than sound engineering knowledge—are positively venturesome. I am not for the moment referring to the accepted and established maker for whom progress has got into a regular sort of swing, but to the numerous newcomers who, here and there, make an Olympian *début* before the critical public. Instructed to dig out any new ideas in engine design which caught my eye, I found that most of them bore unfamiliar names. It is as though the motor cycle movement were being gingered up from the outside because its internal springs of energy had shown signs of drying up. This I take to be a good augury for the future; it is, at all events, some warranty against possible stagnation, which, in the motor cycle industry, the same as in any other, is invariably the by-product of progress. In present circumstances, it is more than any established maker can do to keep pace with the insistent demand, and, therefore, for him to have left the sound path for the experimental track would have been utterly foolish. For my own part, I think, however, he might, as a type, have shown a little more enterprise and a little less conservatism. Probably, however, he has plenty of plans for the future, although he would appear to be keeping them under his hat. If the figures as to output, commonly given in response to enquiry by the various makers, are to be trusted, these new ideas will be called for in a year or two's time for certain, for by that time, with supply catching up demand, hand-over-fist competition will have put a premium upon progress, and that which is merely conventional, and materialises the "playing-for-safety" policy, may have to take a back seat.



The Lightning oscillating valve on the Coulson B.

In dealing with such a subject as new features in engine design, it is very difficult to treat the matter on a logical basis and endeavour to bring novelty into definite relation with standard practice. I believe, however, that motor cyclists are, as a rule, extraordinarily well informed as to what is going forward in technical directions, and I shall, therefore, make no excuse for striking out on a purely haphazard course—much as one does at Olympia, however logically and systematically one may have planned the circuit.

A Rocking Valve.

A curious type of valve was to be seen, on the Coulson B stand, adapted to a single-cylinder engine. I understand that the name of it is the Lightning. In view of its curvilinear character, this name may possibly be a side reference to Mr. Einstein. The character of the valve is made clear in the sketch. It consists practically of a rocking cylinder head working within a spherical sided chamber, and oscillating so as to open and close the exhaust and inlet ports, which are at opposite ends of a diameter. The valve, which is neatly placed in position through a vertical slot in its housing, is furnished with a couple of rings at its base, which share a common groove. It is worked through a crank from a "tramway" cut in the face of the flywheel, in the manner of the old Motosacoche, or by any other convenient reduction gear. Since it has varying intervals of rest and motion, it is worked in a series of jerks. This appears to be its worst feature, as the inertia of the valve is considerable, although this, I was informed, has been reduced to the minimum by making it of an alloy of steel and aluminium, the composition of which I am ignorant. The other objection is bad cooling, owing to the dishing of the head and the impossibility of maintaining molecular contact between the valve and its casing through the necessary film of lubrication. Undoubtedly, however, the Lightning valve gives a quick cut-off and a big port, and I am not surprised to be told that on the test bench it has led to some very high revolutions being obtained.

The piston used in the 5 h.p. two-stroke Stanger.

A V Twin Two-stroke.

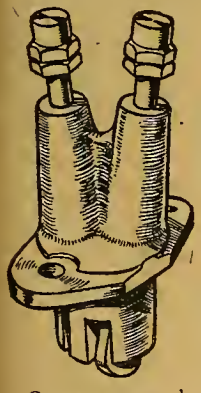
The Stanger 5 h.p. twin two-stroke is an interesting and well-made engine, and of a type that appears to have a considerable

New Ideas in 1920 Model Engines.—

future, although, in a sense, its design is subservient to the requirements of the ordinary type of motor cycle frame. It is, in fact, intended to supplant the ordinary V twin four-stroke. It has double the torque of the latter, but the firing intervals are not regular, as each interval is alternately 180° plus or minus the angle between the cylinders. In this regard, the Stanger engine is not so good as the Scott type. The crank chamber is divided by a wall, and split horizontally. The centre bearing is provided with gas-tight washers, and is lubricated independently of the rest of the engine by a grease cup underneath the crank chamber. The big ends are fitted with roller bearings, the rollers being chamfered at each side, and thus allowing a distinct radius to be retained on the crank pin. The engine is of the three-port type, the inlets being arranged on the thrust side of the pistons, and the transfer ports and exhaust ports are on the non-thrust side. This is certainly bold practice, as it is directly opposed to accepted two-stroke principles. But I understand that the motor has given good results. I give a sketch of the piston, which illustrates the peculiar arrangement of the deflector, the gudgeon pin (partially withdrawn), and the bottom ring with its locating peg.

Designed for Ease of Production.

Several instances of originality are to be found in the single-cylinder Corona engine, which is principally notable for having its cylinder and crank chamber in one piece, on top of which was placed a detachable aluminium cylinder head. The crank chamber is open-ended after the fashion of the old Clement-Garrard. This is a form of construction that has many advantages, and ought especially to be economical. The whole design of this unit is directed towards simplification and low production cost, and the solution of the various problems appears to be very practical. In order to use a single cam, or, rather, two cams on one body, the valves are arranged at an angle to one another, the disposition of the tappets being as shown in the sketch. These tappets have flat shoes which bear directly on the cams. This is more or less common motor cycle practice, but it is difficult to understand why rollers should not be more frequently adopted. Another interesting feature of the Corona engine is that the lubricating oil pump is driven by the magneto chain which rides over its sprocket.

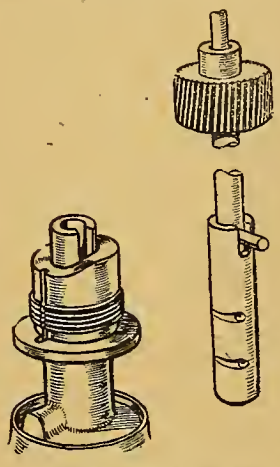


Corona tappets and valve guide.

The Dunelt 500 c.c. two-stroke is a formidable single-cylinder motor, which, however, is of pleasing appearance, and has many commendable points. In this engine the exhaust port is dead in front of the cylinder, whilst the inlet and transfer ports are each threequarter rear, so that they are at least partially under the thrust of the piston. This last has two diameters, the lower having the effect of promoting the crank case compression. On its down stroke it draws in a charge round the small diameter of the piston, so cooling it, and the up stroke passes this charge through a subsidiary transfer port back into the crank chamber. Double-diameter two-stroke cylinders have often been proposed, but this seems to be about the best materialisation of the idea that one has seen.

Reducing Crank Case Space.

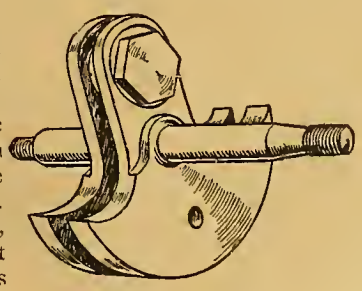
I am greatly impressed with the neatness and generally admirable design of the Velocette, which I think calls for the highest praise. As far as the main layout of the engine is concerned, conventional lines are followed as to the motion and the arrangement of ports, etc. The open-ended crank chamber is furnished with a screwed aluminium end plate, which holds in position a solid aluminium block that serves to reduce the gas content of the crank chamber to a minimum. The plate gives a desirably smooth external finish, and is easily removed for the purpose of giving access to the connecting rod and big end, etc. It also makes for great simplicity in machining. The Velocette engine is particularly distinguished by its mechanical lubricating system—decidedly unusual in so modest a unit—for which purpose the oil is carried in a sump in the base chamber, filled through a hinged aluminium lid just beside the cylinder foot. The oil pump is of the plunger variety, and its principal details are shown in the sketch. A vertical rod is rotated by a low gear worm on the magneto drive. As well as rotating, the rod, which is in fact the plunger, is reciprocated up and down by a face cam against which a right-angle pin upon it is held by an adjustable spring. By means of the latter, the feed of oil can be regulated through a graduated thumb nut. Outside the plunger is a sleeve which fits inside the cylinder, which last is bolted and flanged to the crank chamber bottom. The sleeve is provided with ports which, in accordance with the movements of the plunger, provide an inlet and outlet for the oil.



Components of the Velocette oil pump.

A Novel Exhaust Pipe.

Another two-stroke of remarkable interest is the Cedos, which is full of good points and redolent of experienced cleverness. The piston, for instance, complete with its deflector, is so designed as to be easily machined all over, the radii being struck so that, where a face plate cannot be employed, a form miller can be brought into action. The exhaust port, which is on the front of the cylinder, is very wide and is in



The Cedos crankshaft

New Ideas in 1920 Model Engines.—

duplicate, both opening into a bulb-shaped arrangement on the exhaust pipe. This is shown in the sketch. It might be suggested that this formation is not productive of the best streamline shape, but, as the exhaust flow is irregular, it is more than probable that any disadvantage in this direction is more than outweighed by the free and immediate expansion which the bulb allows.

Exhaust box and silencer of the Cedos lightweight.

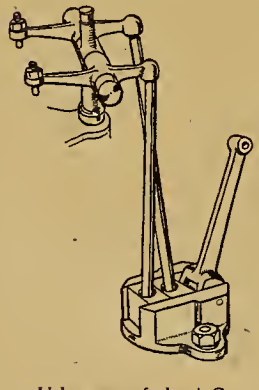
Great care has been taken in this engine to keep the crank chamber as small as possible. It is, in fact, only 1¼in. wide. The crankshaft, of the shape shown in the illustration, is built up. The narrow crank pin fitted with roller bearings for the big end, is tubular, and is integral with the main crank cheek. One noticed on the Cedos engine that the top radiating fin was a disc of copper held in position by the compression release valve. This is an eminently sensible idea, as it is always the top fin which gets most easily damaged.

With a view to enhancing cooling effect, many engines, including Douglas, J.A.P., and Blackburne, are furnished with finned exhaust valve caps. Such unanimity of opinion points to this notion being thoroughly practical and of unquestioned advantage.

Valves.

One is glad to see that more makers have adopted detachable cylinder heads, as, for instance, Raleigh, Clyno, and Precision. The two-stroke of the last make is an exceptionally interesting design, with its chain-elevator lubricating system, but need not be described here as it has already been fully dealt with.

Amongst new valve ideas one noticed the telescopic spring covers of the Indian, the exhaust placed over the inlet on the Martinsyde (this is in accordance with the pre-war A.B.C. and aircraft engine practice, but the direct opposite of the Rudge-Whitworth system), and the arrangement of the flat twin Humber engine, in which the valves are in seats which are separate and clamped down on to the L cylinder head. This last system is not found on any other engine, and is a modern and apparently excellent adaptation of an old principle.



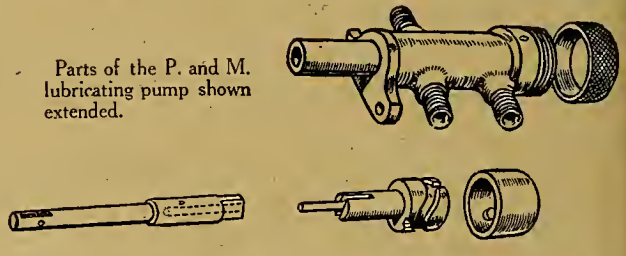
Valve gear of the A.C. Junior.

The A.C. Junior is a peculiar machine, into the pros and cons of which I do not propose to enter. The valve design is, however, strikingly novel. Both valves are overhead, and are worked by rods and rockers. As in the case of the Corona, simplification is sought by using a single cam body and inclining the tappet rods, as shown in the sketch. This occasions a slight side thrust on the rockers, but this is probably of very small consequence. The exhaust valve lifter is, as will be seen, very neatly devised.

Several notable points are to be found on the new Brough, in which, first of all, we remarked that, although the cylinders are horizontally opposed, the fins are at right angles to the cylinder axis. It is hard to see why this should have been done, but no doubt it works all right. The disposition of the motor in the frame is unusual, the crank chamber being made to act as a frame component. The front down-tube is taken to the timing case so as to leave the front cylinder overhanging and entirely unobstructed. The foot-rest bar, which is carried by an aluminium bracket in the crank chamber, struck me as being a somewhat dangerous piece of design. I should have thought that so vulnerable a part had better be attached to the frame rather than to an aluminium casting. On this engine the valve springs were let deeply into the valve chests.

Mechanical Lubrication.

In regard to cooling, the horizontal fins on the sloping P. and M. cylinder are notable, and will undoubtedly lead to higher efficiency. This engine is now fitted with a mechanical oiling system of a very complete character. The various parts of the pump



Parts of the P. and M. lubricating pump shown extended.

are illustrated in the accompanying sketch. One of the valve cams carries a worm gear which rotates a rod with a flattened lower end. This rod is drilled to form a very small cylinder, into which fits a plunger carried in an extension of the rod, which also has a groove fitting the flattened tongue already mentioned. This enables the two parts of the rod to revolve as one piece, but to move axially relatively to each other. Reciprocation of the plunger is effected by a "wobbly" cam engaging with a peg on the inner wall of a collar. The whole fits inside a small barrel casting attached to the crank chamber. In its rotation the rod uncovers inlet and outlet valves, and, drawing oil from the tank, discharges it through two pipes to the cylinder and to the big end respectively. In the latter case the feed is to an undercut annulus in the flywheel, whence centrifugal force drives the oil to the crank pin. Needless to say the workmanship on the P. and M. oil pump was of the very finest.

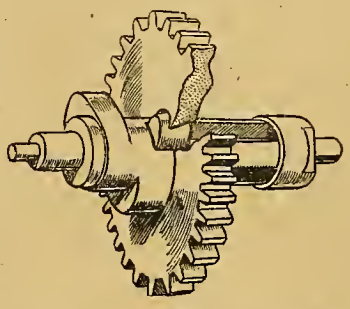
An Unusual Combustion Chamber.

One of the most unusual engines in the Show was the Black Prince horizontally-opposed two-stroke. This is of 480 c.c., with a bore of 73 mm. and a stroke of 60 mm. In this, contrary to usual practice, the pistons have flat heads. A single inlet port admits gas to the common crank chamber through a ring of holes, whilst each cylinder has its separate exhaust at the bottom of the stroke. The two cylinder heads

New Ideas in 1920 Model Engines.—

are united by a finned cast iron pipe containing the single sparking plug and a decompressor valve. The latter acts as a cut-off valve also, and I understand that it is intended that ultimately this valve shall be mechanically operated. On the out stroke the pistons induce gas from the carburetter, on the following in stroke they compress it in the crank chamber until the valve aforementioned opens and the charge is expelled to the cylinders, so accelerating the outlet of the exhaust. The single explosion applies to both pistons equally, and it remains to be seen whether the idea of igniting the gas in a long pipe instead of inflaming the cylinder-full is a good one. Off-hand one would think it was bad for several reasons, the principal being that the combustion chamber is very ill-shaped and not at all what the interests of efficiency would dictate. A common silencer for both cylinders is placed underneath the engine, and it is undeniable that the whole forms a neat unit.

The power plant of the Whippet scooter has many points of interest, with its aluminium piston, aluminium cylinder with steel liner pressed in position, and detachable cylinder head. It is, in fact, a very remarkable little miniature. I found that an unusual type of decompressor is fitted, the same being diagrammatically shown in the sketch. A single half-time wheel is integral with the inlet and exhaust cams. The latter is arranged so that a secondary and rudimentary cam can be slid into operation along the hollow spindle of the cam body, this small cam being normally held by a spring in a cavity in the exhaust cam. This device certainly has the merit of simplicity, and, so far as one could tell by turning the flywheel of the engine whilst actuating the decompressor, the secondary cam is easily brought into action.



Cam gear of the Whippet scooter.

A Diatribe on the Discomfort of Saddles.

The Opinion of a Motorist on Motor Cycle Seats.

ONCE upon a time my friend "Ixion" criticised a few cursory remarks of mine in *The Autocar* on the extraordinarily conservative use of the push-cycle saddle long after its original *raison dêtre* has departed. I forget all that I wrote about it—it would be a horrible thing to be able to remember all one's weekly outpourings: my brain would become absolutely clogged—but I am not convinced in the least by his argument that that eternal triangle is incapable of improvement. I *hate* a bicycle saddle. Very often my present one has hurt me very much indeed, although I must confess that, as a rule, this has been because I have omitted to remove my trouser-clips, which I keep, as a rule, stuck into the ventilating hole in its middle for convenience sake. Mine is a Brooks, and marked for a man of fourteen stone, so evidently I cannot better the best.

I have tried others. In 1896 I had a pneumatic one warranted to make cycling a pure joy. That burst one Sunday afternoon, and thenceforward I was resolved that there is nothing like leather. A friend of mine has a push-cycle made like an attenuated Forth Bridge, with a saddle resembling a string bag, but I know of no other variation. All cycle saddles are perforce the very last things in uncomfortableness, and I grieve for the future of motor cycling if its experts and inventors cannot find in all the resources of civilisation some form of seating accommodation other than a direct copy of the primitive kind, only constructed originally for a purpose entirely different from its present use.

How the Cycle Type Saddle Fails.

Go to, "Ixion." Your arguments remind me of the bear that lost its tail tobogganing, and went round to all his friends telling them that no tails were the only wear. Truly, just as there are more ways of killing a dog than by hanging him, there must be many more comfortable forms of seating accommodation for motor cyclists than perching on a narrow hard shiny leather strip, simply because it used to be the only way to reach both pedals in the days when one's feet were one's only horse-power.

Consider a cycle saddle. Just as the earliest motor cars were copies of ordinary horse vehicles, and as the earliest railway carriages were exact cribs of stage coaches, so the cycle saddle of to-day is nothing but a reduced type of horse saddle, even to the flaps. I almost wonder who was the bold reformer who did away with stirrups. Now that recognised flapper brackets have taken the place of pillions, I should have thought that someone would have had the courage to bring saddles up to date. But, no, they persist, just as do turned-back cuffs, the slits aft our evening dress, and the two lost little, lone little, buttons that live in sheer uselessness at the middle of our tail-coats, in the spot that is euphemistically called the small of our backs.

The Ultimate Test.

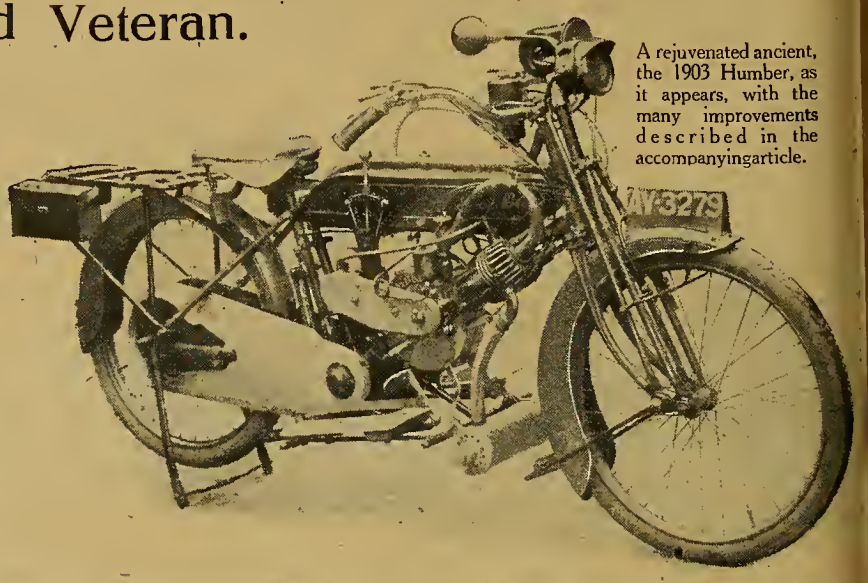
"Ixion" said my words betrayed me and showed that I was not a motor cyclist myself. I was, many years ago, but, not knowing how to stop my first mount, the owner would never let me try again. Then I married and, of course, I wanted a car; a "bicycle built for two" did not tempt me and, far less, her. Since which time a motor proper has furnished all I need to ask. But I must confess that—so fascinating must motor cycling be to make over a hundred thousand motor cyclists so interested in *The Motor Cycle*—I am to-day attracted by the notion, although I feel I am getting on towards the sere and yellow, as they say. Perhaps—who knows?

If I am wrong in my notions as to the effeteness of the modern motor cycle saddle, I want to feel I am wrong. If I am right—well, I do not want to feel it at all.

I trust I have made myself clear. OWEN JOHN.

A Modernised Veteran.

Some Up-to-date Features incorporated in a 1903 Humber, which Still Continues to Give Satisfaction.

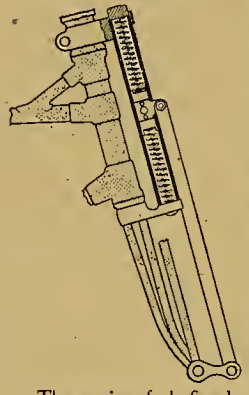


A rejuvenated ancient, the 1903 Humber, as it appears, with the many improvements described in the accompanyingarticle.

DESPITE the fact that it is one of the earliest machines made, the chain-driven Humber which forms the subject of this article is still giving great satisfaction, while thanks to the skill and ingenuity of its owner many up-to-date improvements have been made from time to time.

Mr. J. A. Mills, a motor engineer of Mansfield, who is responsible for these alterations, tells us that the parts still remaining of the original machine are the engine, the main blades of the front forks, the chain stays and bracket shell, and the hubs, which, with their cups and cones, are still in perfect condition.

The specification of the machine is now as follows: Spring forks, adjustable handle-bars, magneto ignition, large silencer, sprung saddle interconnected with aluminium footboards, clutch, and two-speed chain transmission, aluminium chain cases, internal expanding brake, and improved carrier.



The spring fork fitted by Mr. J. A. Mills to a 1903 Humber.

Engine fixing is arranged on the same lines as those made familiar by the P. and M., *i.e.*, long bolts pass through the crank case to the cylinder head. The engine, of course, is of the automatic inlet valve type, and it has been improved by the fitting of a B. and B. carburetter and a weatherproof magneto. A long head is incorporated in the frame, which is otherwise conventional in appearance.

A Spring Seat-pillar.

Suspension of the Brooks saddle is effected by a seat-pillar hinged on the frame and supported by a plunger working in a tube against the resistance of two compression springs. This tube is hinged near the bottom bracket, and midway down its length between the springs is a sliding block connected to an arm, which, in turn, carries the rear cross-bar of the footboards.

Front springing rather follows American practice and the device consists of short links pivoted at the ends of the rigid forks. These carry the hub spindle, and they are connected by a fork to a sliding block working in a large tube in front of the steering head. The movement of this block is controlled by coil springs, one above and one below, in the same way as the footboards are sprung.

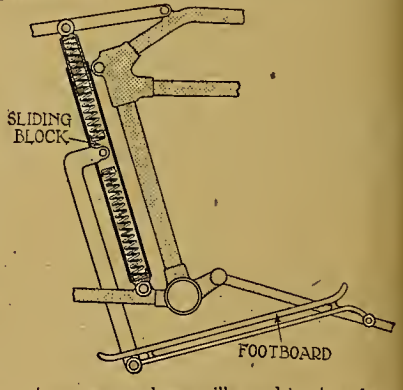
A large and sturdy carrier has been fitted, and this, together with the mudguard, can be swung out of the way on removing four bolts.

Two-speed Gear.

Transmission is by a chain to the countershaft, through a metal cone clutch on the engine-shaft. This clutch was turned out with the engine, and is still in perfect order, but a ball thrust has been added to take the pressure when disengaged. From the countershaft two chains convey the drive to the rear wheel, sprockets of different size being used on either side to secure the high and low ratios. The countershaft sprockets are engaged by a double sliding dog, operated from a neat control beside the tank.

It is interesting to note that the high gear Renold chain has been in use for the last eleven years—surely a record! An internal expanding brake is fitted in the right-hand rear sprocket.

Other features worthy of note are the quickly detachable aluminium chain cases and the reversible and adjustable handle-bars.



Interconnected seat-pillar and footboards, showing springing system.

Altogether the detail work, as can be seen in the photograph, is exceedingly well carried out, and it reflects great credit on the practical abilities of the owner.

LIGHTS ON VEHICLES.

WE give below the evidence to be submitted by the Auto Cycle Union to the Lights on Vehicles Committee appointed by the Ministry of Transport:

The Auto Cycle Union recommends that Part I. of the Lights (Vehicles Order) of December 16th, 1918, touching the carrying of rear red lights, be permanently adopted subject to slight amendment as to the position of the lamps as follows: Section (I.) (a) The lamps should be placed as near as reasonably practicable to the extreme off and near side of the vehicle respectively; (b) Lamp should be placed at the rear, or, in case of vehicles carrying loads projecting more than 6ft. to the rear, at the rear of the load; or, instead of red rear lamps the A.C.U. suggests reflex lights properly designed and approved by the Home Office for solo motor bicycles or pedal cycles.

As regards lighting-up time, the permanent enactment of "summer time" would be heartily welcomed by motor cyclists.

The Auto Cycle Union recommends that no vehicle be allowed to display more than two head lamps as distinct from or as incorporating the two side lamps which indicate the width of the vehicle.

That it should be an offence for any vehicle to remain stationary during the period in which lamps must be lit unless on the near or left-hand side of the highway relatively to direction in which it is facing.

The Auto Cycle Union recommends that the Lights (Driving of Animal Order) October 11th, 1916, be permanently adopted, but amended by the substitution of a red light for the white light prescribed in the said Order.

EFFECT OF WHEEL SIZE ON ROAD SHOCKS.

Some Advantages of Large Wheels Simply Explained.

By H. George Harley.

THE subject of wheel sizes in connection with shocks is bound to be of exceptional interest in these days of bad roads and startling developments in design. So much attention is now being given to springing and shock absorbing devices that motorists are beginning to look a little deeper into all matters connected with road shock, and, in fact, a little controversy springs up now and again about the size of wheels. These little discussions are not entirely novel, as there has always been, in the motor cycle field, for instance, difference of opinion regarding the merits of 28in. wheels, such as supplied upon many American machines, and the more usual 26in. wheels.

The object of the present article is to discuss, with the aid of a few diagrams, the effect of various wheel sizes when running over rough roads.

At the beginning it will be well to analyse the action of the wheels when a motor cycle is travelling over a "humpy" road.

There is more advantage in large wheels than first meets the eye of the casual observer, who is apt to conclude that the distance a wheel will drop into a pot-hole is the only test of wheel size which can be applied. The effect that wheels of different sizes have upon the force required to drive a motor cycle over a rough surface is, however, still more important.

Road Effects with Standard Wheels.

Fig. 1 is a diagram showing the road surface *a* containing a medium sized hole *b* in which the wheel *w* is able to run a short distance, with contact between the bottom of the hole and the lowermost part of the wheel existing all the time. Now, in this case, any point *p* on the wheel, supposing it is in contact with the road, tends to describe a cycloidal curve, shown dotted, provided that the wheel is running on a surface which keeps the wheel continually revolving, and this action, when the wheel runs into a slight hollow, is only varied to an extent depending upon the dimensions and shape of the hollow.

The case is a little different, however, when the hole has a sharply defined edge as at *q*, the wheel in this case rotating as above described until the centre is over the edge of the hole on the line *l*, assuming that the road is perfectly flat and level in front of the hole. When the wheel reaches this position, however, the point *p*, which is now considered as being resting upon the edge of the hole, ceases to describe the curve as previously described, but remains motionless while the centre of the wheel *c* describes an arc *s* which connects the line *l* with the line *m*, and this is normal to the first stretch of effective surface encountered by the wheel inside the hole. The wheel centre having reached the line *m*, the point *p* leaves the point *q* and describes a curve depending in shape upon the dimensions and shape of the hole as previously stated. Now these actions of the wheel are important as they determine the shape of the line *d* described by the centre of the wheel, and it is the shape of this line between the points *l* and *n* that determines the kind and intensity of the shock received by the vehicle through the springs.

Fig. 2 shows a little worse case, which is applicable to a discussion on the effects of "pot-holes." In this case the hole is deep and small in diameter, and the wheel is not able to bear effectively upon the bottom of the hole. The wheel runs along until its centre *c* reaches the line *l*, when the point *p* remains stationary upon the point *q*, and the wheel centre *c* describes the arc *s*. The important difference between this case and the previous case is that the hole is so narrow that the rim of the wheel touches the opposite side at *c* before the wheel centre *c* is able to reach the line *m*, the arc *s* thus stopping short at the line *o*.

It will be obvious that the rim the moment it touches at the point *e* ceases to bear at the point *q* and the wheel instantly commences to lift out of the hole, the wheel centre describing the arc s_1; the difference between the case in fig. 1 and the case in fig. 2, as regards the shock at *x*, is very obvious. In fig. 1 the point *x* is approached on a gradually reducing curve, while in fig. 2 the curve is rapidly increasing and changes instantly at *x* to a path which is in a totally different direction. The jerk that would result when the wheel centre reached *x* in fig. 2 may easily be imagined.

We may now commence to examine the effects of increasing the wheel size by means of the diagram, fig. 3, which shows a hole *b* exactly identical with the one

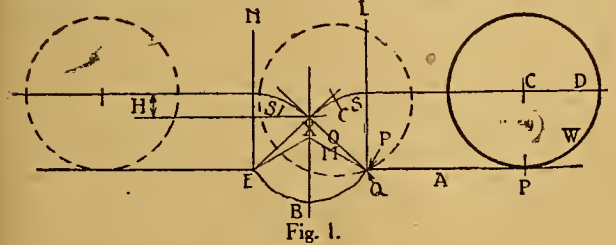


Fig. 1.

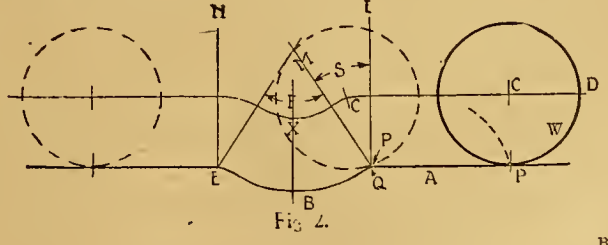


Fig. 2.

Effect of Wheel Size on Road Shocks.—

in fig. 2: while the wheel is approximately twice the size, the enormous difference in wheel size is, of course, only used for the sake of making the effects clearer. The big wheel will be seen to have the effect of reducing the distance *h*. that is, the distance which the wheel drops into the hole, by a considerable amount. The improvement does not stop at that, however, for not only does the wheel lift through a smaller distance, but it is spread over the same period of horizontal distance and, therefore, time, and, in addition to this, the parts of the arcs *s* and s_1, which are taken away, are taken away from the arc at the end which has the greatest shocking effect.

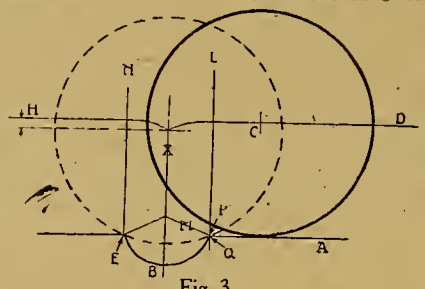


Fig. 3.

Fig. 4 shows a still smaller wheel travelling over the same sized hole. The curve may at first glance seem to be much better shaped at *x*, but a closer examination will show that, for all practical purposes, the defects previously encountered at the point *x* have now to be encountered at the point *y*.

Relations between Wheel Sizes and Forces Applied.

It is now desirable to discuss the effect of wheel size in proportioning the forces which are brought into play when a wheel is running over an irregular surface. These forces comprise the force caused by the vehicle trying to travel in a horizontal direction and the force caused by the obstruction trying to lift the wheel. It will be clear that as the wheel must travel over the obstruction, it must be lifted over by the force that is being applied in a horizontal direction. Having got so far, we can now turn to fig. 5. It will be clear from the foregoing that the wheel centre *c* will try to describe an arc *s* about the point *q*, and, as the pivot is thus at *q* and the weight of the vehicle is applied in a downward direction at *c*, the weight of the vehicle must be applying a force in pound-feet which is equal to the weight on the wheel multiplied by the length of *j* in feet. It seems necessary to explain here, for the benefit of non-technical readers, that one pound-foot is the unit of force for forces acting upon a lever or similar mechanism, and equals a force of one pound acting at the end of a lever one foot long. Therefore, if the weight *w*, fig. 5, was two hundred pounds and the length *j* was one foot, then the force tending to rotate the centre *c* about the point *q* would be two hundred pound-feet. Now it will be easily understood that this force must be overcome in order to lift the wheel centre through the arc *s*, and the intensity of the horizontal force *v* required to do this may be found by a similar method of treatment. The length of arm *k* of the horizontal force is measured as shown in the figure, that is, from the height of the line *j* to the wheel centre *c*. Now, if the length of *k* were equal to the length of *j*, the horizontal force *v* required at *c* would be equal to the weight *w*: if the length of *k* be longer than *j*, then the force *v* required at *c* would be less in proportion to the increased length.

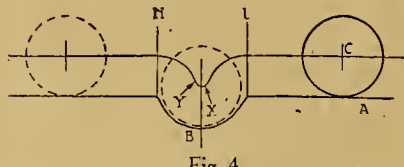


Fig. 4

To come back to the example previously explained; assuming that *w* is two hundred pounds and *j* is one foot, then the vertical force required to lift the centre *c* would be two hundred foot-pounds. If the length of *k* were also one foot the force *v* would also have to be, neglecting mechanical efficiency, two hundred pounds; if the length of *k* were, say, two feet, the force *v* required would only be one hundred pounds, while if the length of *k* were only six inches the force required would be four hundred pounds. It is necessary to understand these points clearly in order properly to follow the next points to be explained; and it may now be safely stated that, in the case of a wheel travelling over an obstruction such as shown in fig. 5 having a sharp edge, the force *v* required to lift the wheel against the weight of the vehicle and load is inversely proportional to the length of the arm *k*. The portion of fig. 5 which shows the smaller wheel will illustrate the effect of reduced wheel size if examined with regard to the points previously outlined.

Owing to the geometrical properties of the circle, however, points such as those previously explained are difficult to discover to the non-technical student on account of the difficulty of isolating any one point of research from the others. For these reasons it is necessary to examine fig. 6 carefully at this stage in order to discover just by what amount the length of *k* is greater in the case of *b* than in the case of *a*; the length of *j* is also greater, and, if the increase of *j* were directly proportional to the increase of *k*, there would be no advantage in the increased size of the wheel in *b*. As it happens, however, the increase of *k* with the larger wheel is very much greater proportionately than the increase of *j*—for instance, with the sizes drawn with wheel *a*, the proportion of *k* to *j* is as .75 is to 1, while with steel *b* the proportion of *k* to *j* is as 1.4 to 1.

It is now to be assumed that the weight *w* in both cases equals two hundred pounds, and if, for the sake of the comparison, we neglect the fact that the centre *c* travels up a kind of inclined plane instead of in a purely vertical direction (neglecting this point in no way affects the truth of the principle nor the proportion of the figures, but only their numerical value), we now know that with wheel *a* the force *v* required to lift the weight *w* over the obstruction is 266 lb., while in the case of wheel *b* the force *v* required is approximately only 140 lb.

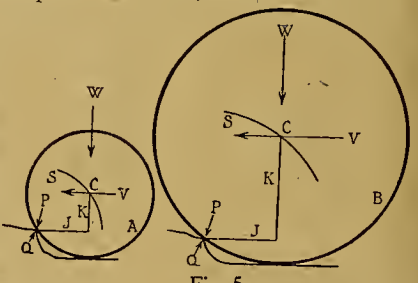


Fig. 5.

Action of Tractive Force when Meeting Bad Surfaces.

The effect of the obstruction upon a motor cycle is briefly as follows: The machine has a certain hori-

Effect of Wheel Size on Road Shocks.—

zontal or tractive force caused by the engine and the stored up energy due to the weight of the moving vehicle, and when it reaches an obstruction such as above described, this tractive force is suddenly reduced by an amount equal to the force required to overcome the obstruction; the cycle is also to all intents and purposes struck from beneath by a force equal to the force that would be given out by the weight falling a distance equal to the height of the obstruction and at the same rate as the cycle is travelling up the obstruction.

Obviously, then, if the length of *j* be greater as it certainly is with a larger wheel, then the rate at which the obstruction throws the cycle upwards is proportionately slower, and also if the length of *k* be greater, which is also the case with a larger wheel, then the reduction in tractive effort, due to the obstruction, is proportionately smaller.

The disparity of wheel sizes, however, such as shown in the accompanying figures, could not, of course, be allowed in actual practice, as it is obviously impractical at the present time to double the size of motor vehicle wheels. Enough has been said, however, to allow the motor cyclist who is interested in the problem of wheel size to study the matter with an intelligent appreciation of the results to be expected from small increases in wheel size and to allow him to consider whether it is possible to gain still a little more appreciable increase in shock-absorbing efficiency by increasing wheel sizes as much as the apparently everlasting problem of compromise will admit.

On the Road with a 1920 T.T. Norton.

A Fast and Flexible Solo Mount. Smooth Transmission with All-chain Drive.

FOR the past three months I have done most of my riding on a post-war model of the T.T. Norton, which is to be retained without further alteration for 1920. This famous machine has long been at the top of the tree in its class, and though it has yet to win the T.T., its Brooklands record is probably unsurpassed, and it enjoys a unique vogue amongst speed-loving roadmen.

The principal impression which it has made upon me is one of power. If there is a heftier 3½ h.p. on the roads of any country, I should like to meet it. On the level it accelerates from a crawl to the sort of pace which is often talked of but seldom experienced outside Brooklands: it is a mount which a sensible rider will very seldom dare to open out to the full on the road. Uphill its second gear is more than sufficient for any hill at which a run is obtainable; indeed, it should be handled with caution even on single-figure gradients, which it can devour at the most ferocious gait on full throttle. Bottom gear is never necessary except when a very rough surface or a very sharp corner suggests extreme caution in the matter of pace. On the other hand, the machine is as docile as a lightweight. The arc of the throttle opening is long, and the acceleration is smooth and gradual; if a firm forefinger is kept on the throttle lever, the machine will burble along like a sucking dove, and a raw novice will find it controllable in thick city traffic.

A Smooth Chain Drive.

The second merit of the design is the quite extraordinary smoothness of the chain drive. Many experienced riders still hold that chain drive is necessarily harsh behind a single-cylinder engine, and especially behind a power unit of the T.T. type with a high compression ratio and big ignition advance. Half an hour on the new Norton would disabuse them. It is no exaggeration to say that the 1920 Norton chain drive is as smooth as any belt has ever been, and—until the chains and sprockets show signs of appreciable wear—quite as silent; the only perceptible noise is the faint hum of the gear box. It shows an immense advance over the chain drives of pre-war days, an advance which I believe to be characteristic of most high-class modern productions. Nobody could yearn to revive the belt after a taste of this quality, and I do not wonder that Mr. Norton has scrapped the belt on all but his track models.

Criticisms.

During prolonged hard work of a ruthless character, combined with the negligent upkeep to which most journalists' machines are foredoomed, the machine has shown great reliability. No misfires, engine stoppages, or transmission troubles of any kind have been experienced. Two nuts have evinced a disinclination to remain in position, namely, the nut on the off side of the brake pedal spindle, and the nut securing the off side struts of the carrier to the rear fork lug: the former is rather a serious mishap, if unobserved. One part may be regarded as weak either in design or material, according to one's standpoint. The exhaust valve tappet is lifted for control purposes by a lever pivoted to a crank case bolt; the eye at the end of this arm is slotted to facilitate fitting the Bowden wire. The lever is apt to crack across the slotted eye; and a new lever cannot be fitted without dismantling the exhaust valve.

ROAD RIDER.

The first lady member of the Cardiff Motor Cycle Club, Mrs. R. B. Williams, on her Levis two-stroke. The Cardiff M.C.C. intend catering especially for lady motor cyclists, and a special section is being formed for them.

A New Engine for Runabouts.

The Novelette Cycle Car Engine of 1,100 c.c. made by a Well-known Aircraft Engine Firm.

IT is fairly well known that there is a shortage of engines suitable for runabouts and cycle cars. Motor cycle engines of a large capacity are being employed with success; the question of supply, however, necessitates an increased output, and the British Anzani Engine Co., Ltd., realising this, have made preparations to produce both water and air-cooled power units which will be designed expressly for cycle cars. Although the general design of the engine follows standard practice, a suggestion of aircraft construction can be clearly seen in some of the principal features.

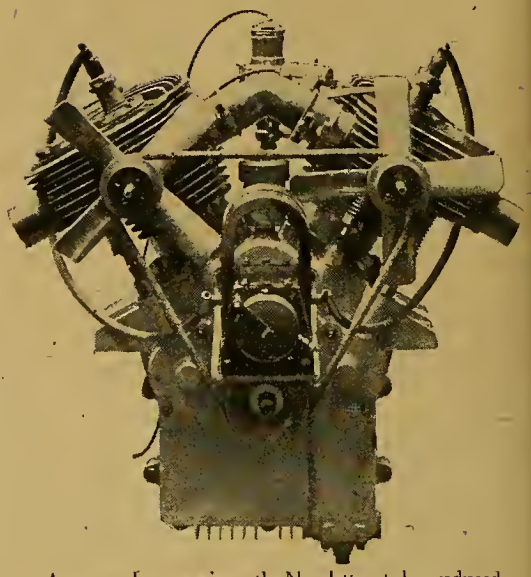
The flywheel is located at the rear of the crank case in the Novelette engine of 1,100 c.c.

Two cylinders, having a bore and stroke of 85×95 mm., 1,100 c.c., set at an angle of 57°, are bolted to an exceptionally large crank case. The flywheel is located at the rear of the crank case in order that it may be used for accommodating the clutch. An efficient system of lubrication embodies a mechanical plunger pump, driven from an eccentric disc on the half-time camshaft, the oil being circulated to the main engine bearings. The hollow balanced crankshaft is drilled in order that the oil may flow to the big end, the residue from which lubricates the cylinder walls, piston, and gudgeon pin by splash. Sufficient oil for 300 miles is carried in the sump.

Aero engine practice is employed in the construction of the cast iron piston, which, although fitted with two rings, is of very shallow depth. Considerable attention has been paid to the efficient heat distribution, and the cylinder casting on the air-cooled model has been designed to permit a cool draught of air being circulated completely round the exhaust valve pockets. To assist in the cooling of the cylinders two fans are mounted on lugs cast integral with the cylinders, and driven from an external pulley fixed to the front end of the crankshaft. The draught-producing end of the blades passes directly across the exhaust valve pocket of each cylinder and so forces cool air between both inlet and exhaust pockets.

The valve gear is of the conventional type, the four valves, which are fitted with adjustable tappets, being driven through the media of rockers from a single cam wheel mounted directly above and driven from the crankshaft. An M-L magneto is bolted to a platform cast integral with the crank case, and is driven directly from the camshaft, and protruding from the fan pulley is a fitment provided for the accommodation of the starting handle.

Quantity production is under consideration by the makers, and it is hoped that a number exceeding 20,000 engines will be the product of next year's programme. These engines will be handled in London by Mr. J. W. Smith, 29, Red Lion Square, Holborn, London, W.C.1., to whom enquiries should be addressed.



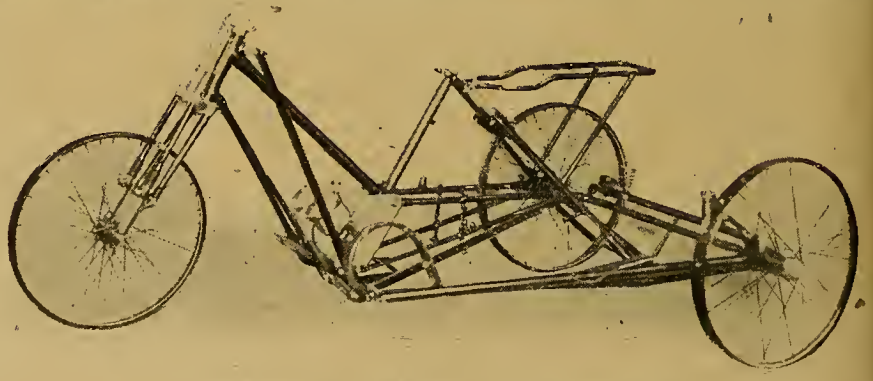
A new cycle car engine—the Novelette—to be produced on a quantity basis. Mechanical lubrication is adopted, the sump holding sufficient oil for a 300 miles journey.

Triangulated Construction.

Straight Tubes and a Complete System of Triangulation used throughout the Frame and Chassis of the Scott Outfit.

AN interesting item in the exhibit of the Scott Motor Cycle Co., Ltd., at the recent Olympia Show was a complete motor cycle frame and sidecar chassis stripped to enable the lines of the general construction to be readily appreciated. It will be noted that the design is such that the motor cycle frame itself, as also the chassis, consists of a series of triangles. Furthermore, the frame and chassis, considered in relation to each other, also form a triangulated system. All the triangles are perfect except those having their apices at the steering head, which truncates the main vertical triangle of the frame. It will be observed that the engine gives rigidity to the central portion of the frame, forming as it does the base of the main members; at the same time it does not form a link between any entirely separate parts of the frame.

Another point of interest is the fact that the oil supply is carried in the two large frame tubes.



Stripped frame and chassis of the 1920 Scott sidecar outfit.

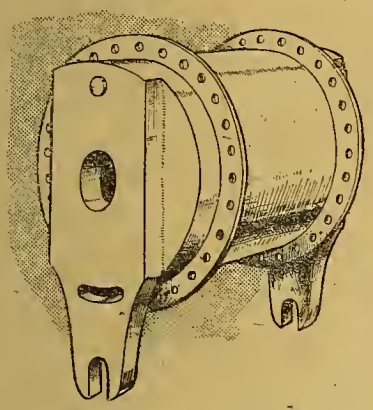
The sidecar springing is effected by an inverted laminated C spring at the front and a rocking link at the rear controlled by two coil springs in tension. Small shock-absorbing springs in compression support the body on the cross bar.

RECENT PATENTS.

REVIEWED BY B. H. DAVIES.

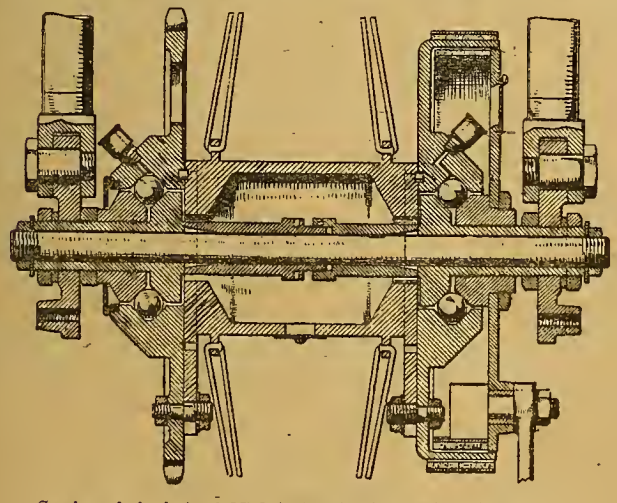
A Detachable Wheel.

MR. D. L. HICKS, of Long Island, has hit upon quite a nice dodge for detachable wheels of the knock-out spindle type. The driving sprocket and brake drum are carried on ball bearings upon sleeves secured to the frame. The



Hub exterior of Hicks's detachable wheel.

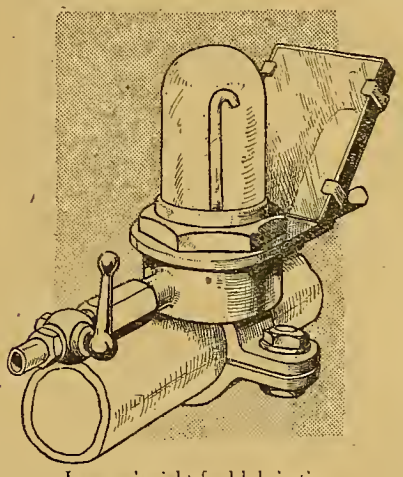
sketch shows how the wheel hub attached to these two members is centred by small dowel pins and locked in position by bolts passed through the forked extensions. An ingenious detail is the adjustment of the ball bearings on which the sprocket and brake drum rotate. The outer cone in each case is fixed. The inner cones are pushed outwards by the double sleeve "spreader" shown in the middle of the sectional drawing. This spreader is adjustable by means of a tool inserted through a slide in the hub barrel.



Section of the hub of Hicks's detachable wheel. No. 126,211. 11/7/18. (Fig. 2.)

A Sight-feed Improvement.

The late Mr. R. J. Isaacson had noticed that it is often rather difficult for a motor cyclist to get a satisfactory view of the oil dripping through the sight feed glasses fitted to motor cycles. He proposed to fit a small tilted mirror behind the glass dome, so that the rider could watch the drip without getting a stiff neck. Unfortunately, this landable object may often be checkmated by oil clinging to the surface of the



Isaacson's sight feed lubrication. No. 126,203. 27/6/18.

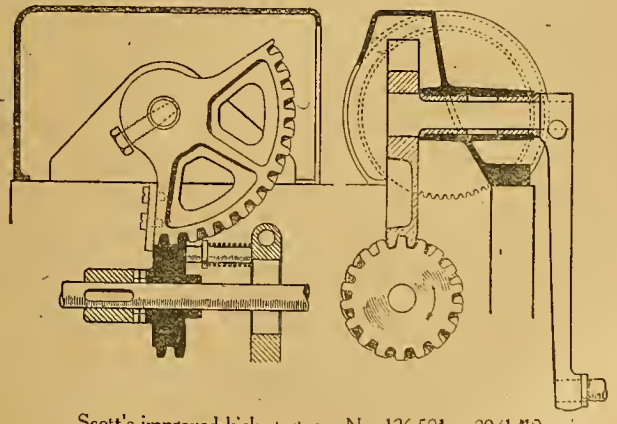
dome. Possibly, this would be less likely to occur if the patentee had adopted a circuit in which the mechanical pump sucked oil out of the glass, in lieu of pumping oil into the glass; as the mirror is the heart of the patent, such a modification is quite permissible.

"Roll Top" Sidecar Locker.

As a haughty motor cyclist, I am bound to resent the preamble to Mr. H. J. W. Dunn's patent, "Improvements in the Bodies of Sidecars, Perambulators, or the like"; perhaps my indignation is pedantic, since many modern owners treat their sidecars as perambulators. Anyhow, Mr. Dunn proposes to extend the sides of the car to the rear of the seat in a graceful semi-circular sweep, and to close the roomy locker thus provided by means of the wooden blinds familiar on rolltop desks. If desired, a pull-out drawer is fitted in the base of the locker; and this drawer may be arranged for use as a grid to carry extra luggage. Sidecar weddings are already common; the next step will be furniture removal by sidecar. An ingenious and convenient body, despite my jests.

Positive Kick-starter Engagement.

There is a certain amount of difficulty in providing a foot-starter on engines, notably four cylinder motors, which have their crankshafts in line with the frame. In most kick-starters the pedal swings in a plane at right angles to the axis of the shaft which has to be rotated. Mr. A. A. Scott has protected the device illustrated herewith for imparting motion to a crankshaft set in line with the wheelbase. When the pedal is kicked, the toothed quadrant immediately forces a ratchet cut on one face of a loose worm on to another secured to the shaft, and the further motion of the pedal consequently spins the shaft. A small coiled spring assists the meshing of the ratchet, and a plate bolted to the farther end of the toothed quadrant ensures the disengagement of the ratchet. The device is plainly both strong and simple. I wonder if it is to figure on the Scott Sociable?



Scott's improved kick-starter. No. 126,591. 29/1/19.

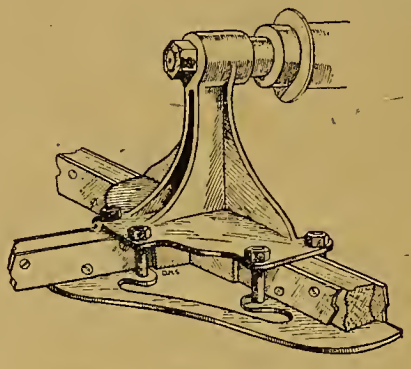
A Strong and Light Chassis Construction.

The R.V. Sidecar. Wooden Members, Stiffened with Steel Flitch-plates, Readily Assembled without Brazing or Welding.

WE have frequently urged, and trials and the experience of war service have given weight to our contention, that the secret of successful sidecar design lay rather in the embodiment of inherent flexibility than in the manufacture of an ultra-rigid structure, with a multiplicity of connections between it and the motor cycle.

Only to refer back to so recent an event as the Six Days Trials, we find that a sidecar with only two points of attachment came through with flying colours, while others, more rigidly fitted, collapsed under the vibration and bumping experienced on the rough and mountainous roads.

The same lessons were learned during the war in the heavy lorry industry, and those trucks which possessed chassis built of materials naturally resilient were found to give much longer service than those having stiff and rigid framework.



One of the lugs in which the wooden chassis members are secured by bolts and plates in the box-like junctions. This one supports the wheel hub

size, anyone can erect the chassis, which is a great consideration when export trade has to be considered.

Suspension of the body is effected by the usual C springs at the rear and a double-shackled transverse spring in front. The chassis is extremely light, despite its great strength, and can easily be lifted with one hand.

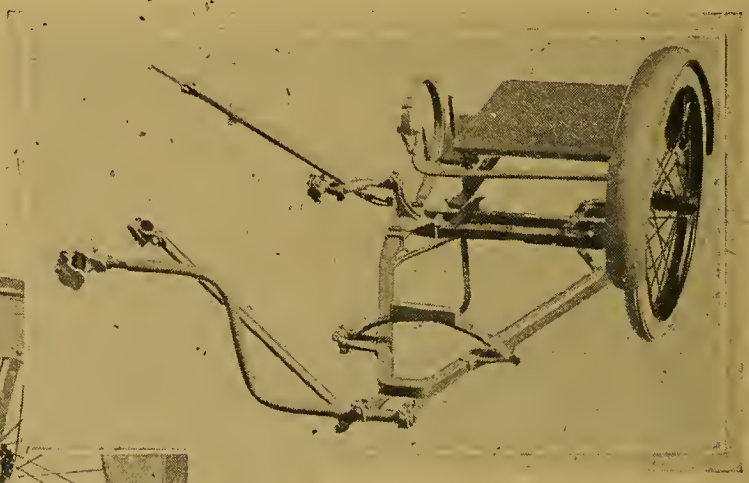
As an extra fitting a commodious spring luggage platform and petrol tin carrier is fitted at the rear on detachable cantilever extensions which are fixed parallel to the chassis side members. This luggage grid can also be supplied to fit most standard makes of sidecar chassis.

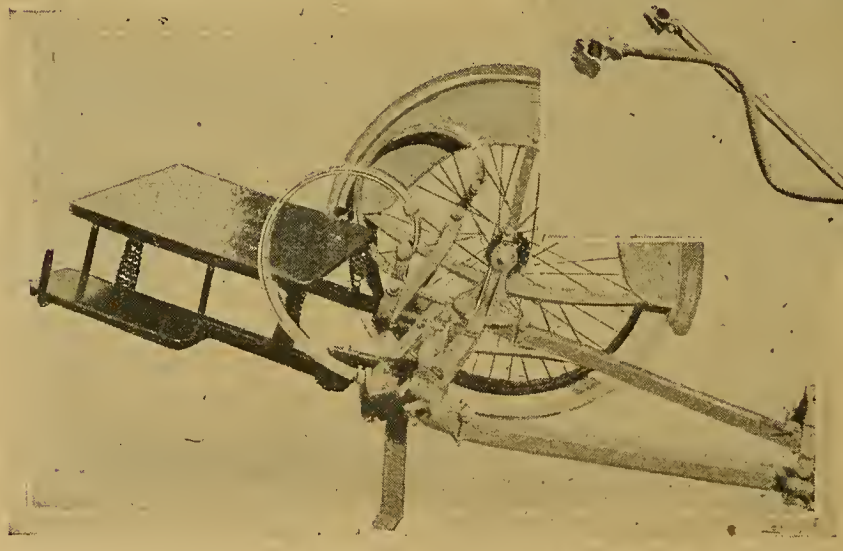
The price of the R.V. chassis will be in the neighbourhood of £12, or, as a complete coachbuilt sidecar, £22; the luggage grid will cost £2 5s. extra. Arrangements are being made for the production of the sidecars in large quantities.

A NON-TUBULAR SIDECAR CHASSIS.

(Left) A spring luggage and petrol can carrier fitted to the R.V. sidecar, and adaptable to any standard make of chassis.

(Right) The R.V. sidecar chassis. No brazing or tubes are employed, the main members being constructed of ash, between light steel flitch plates, bolted into interchangeable junction lugs.





We have now under review a chassis which will accommodate any type of sidecar body and which may yet claim to be unique. Its design is the work of Mr. H. S. Harvey, of the R.V. Sidecar Co., 92, Humber Avenue, Coventry, and it is so arranged that a practically unbreakable framework is secured. The main chassis members are of rectangular section ash, strengthened on each side by continuous strips of thin steel. In plan, the chassis presents the view of a truncated triangle, with the apex forward, and the connections at this point and also the cross-members at the rear are bolted together in stiff malleable-cast lugs.

The lugs at the rear support the wheel stub axle and the chain stay connection, and have box-like junctions, into which the side and cross-members fit snugly. Stiffening plates also are fitted across the angles. It will be seen that as no brazing is employed, all the main defects of tubular chassis construction are eliminated; moreover, as the whole of the parts are interchangeable and assembled with bolts and nuts of uniform

PRE-IGNITION.

ON a recent occasion we were trying a 4 h.p. single-cylinder sidecar outfit, which ran quite satisfactorily with the sidecar empty, but as soon as a passenger was carried and the load increased, pre-ignition set in, and the machine refused to climb quite a slight hill. The usual symptoms were experienced; persistent knocking, followed by the engine immediately "konking out." After a few minutes' rest the engine would start again, until the symptoms recurred. At the very next opportunity we removed the plug, which appeared to be sound except for some minute cracks round the base of the insulating material, and replaced it with an orange-coloured K.L.G. plug, of the type recently discarded by its makers. As soon as the new plug was inserted a very marked improvement was noticeable, and all signs of pre-ignition ceased. This is very curious, as the original plug was of such a design that pre-ignition would not be thought possible.

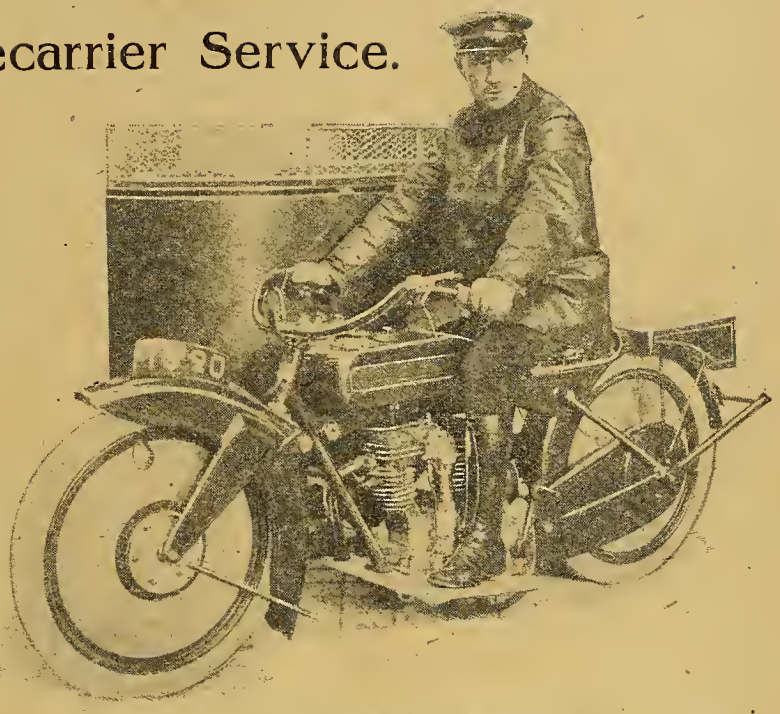
A French Sidecarrier Service.

Scheme to Employ 150 Motor Cycles for Parcel Delivery in Paris.

WITHIN a few days Paris will have a motor cycle parcels van delivery service. The idea originated among a group of French Flying Corps officers, who realised that there was need in Paris for quick motor delivery vehicles which would be as fast as the motor van whilst being considerably lower in cost.

According to the officials of the company which is inaugurating the service, a contract has been secured to undertake the delivery of all the Paris newspapers from the printing offices to the railroad stations and to the kiosks scattered about the city. In addition to this, it is intended to let the motor cycle delivery vans out on hire to the big departmental stores.

For a fixed charge of fifty francs a day the company will supply the vehicles, complete with driver, petrol, oil, etc., and will assume all responsibility as regards accidents, theft, etc. The mileage is fixed at fifty kilometres (thirty-one miles) per day, an extra charge being made for each kilometre above the fiftieth. At nominal rates of exchange, this would be equivalent to rather less than £2 per day for a maximum mileage of thirty-one. With the rate of exchange as it stands at present, the charge is only equal to 25s. per day. The company states that it not only will provide motor drivers, but responsible men who will deliver parcels and collect payment on them, according to the practice very commonly adopted in Paris. In all cases where horse vans are employed, two men have to be engaged, one driving the horse and the other delivering parcels and collecting accounts. In making a comparison, therefore, this extra cost of a delivery man should be taken into consideration. Whenever a business house engages ten or more machines, a skilled mechanic will be sent for each ten machines to remain entirely at the disposal of the company.



One of the types of sidecarriers which will be used by the Paris parcel delivery service. A pressed steel-framed Louis Clement with overhead camshaft—a most advanced design

British Machines Selected.

Various makes of machines have been selected for this work. The first to be used will be fifty B.S.A.'s. These will be augmented by sixty Louis Clement twin-cylinder machines, and by fifty French-built A.B.C.'s. All the machines will be fitted with the detachable disc wheel as used on the standard Louis Clement motor cycle. These wheels are interchangeable throughout. The delivery van is placed on the right-hand side, and is designed to carry a load of about 1⅖ cwt.

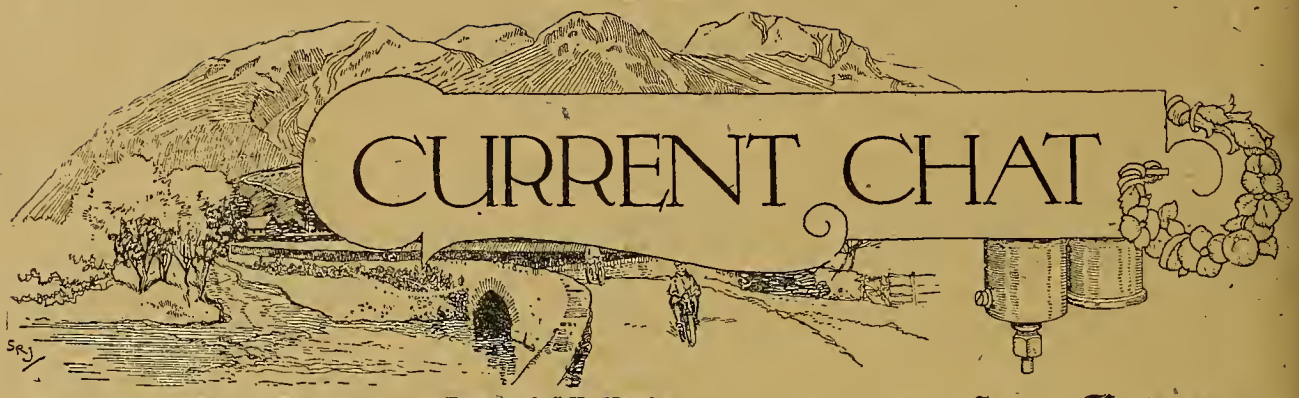
Opportunity for Ex-army Drivers.

It is not expected that there will be any difficulty in securing suitable drivers for these machines. Already there is a big waiting list, among them being many men who served as despatch riders in the French Army. The drivers will be paid twenty francs per day, plus a bonus of two francs for each day without accident or mechanical breakdown.

It is worth noting that the attempt to put motor cycle taxis on the streets of Paris seems to have been a failure. One of these machines made its appearance and then disappeared to be followed by no others. The French public did not appear to be attracted by the idea of travelling in a sidecar, even though the price was considerably below the charges for an ordinary taxi. This delivery scheme, however, looks more promising, and no doubt such a service would meet with a certain measure of success in this country.

Mr. J. L. Norton, the designer of the "Big Four" bearing his name, in giving his impressions of the recent Show to our trade contemporary *The Motor Cycle and Cycle Trader*, stated that he regretted the general trend of design was not more in the direction of simplicity. Apart from the little two-strokes, Mr. Norton considers that there appeared to be a tendency to over-develop and over-elaborate the motor cycle and sidecar outfit. "I should have liked to have seen," he said, "a real lightweight motor cycle, but did not."

Mr. Norton evidently had in mind a little two-stroke-engined lightweight, which he made experimentally some ten years ago, and which weighed just under 56 lb. We also should like to see a revival of this type of machine on up-to-date lines.



CURRENT CHAT

Times to Light Lamps.

GREENWICH TIME.

Dec.	18th	... ...	4.20 p.m.
,,	20th	... ...	4.21 ,,
,,	22nd	.. ...	4.21 ,,
,,	24th	... ...	4.23 ,,

Christmas.

Next week's issue will be dated December 25th, and the principal features will be of a seasonable character.

Cable Suspension.

A most ingenious system of springing is described in *The Autocar* of December 13th. All four wheels are sprung by means of a single coil spring acting through cables. The springing is instantly variable to suit the load, and automatically incorporates an anti-rolling device. A modification of the design might be made applicable to motor cycle suspension.

Smuggling a Motor Cycle.

The chief electrician of the White Star liner *Celtic* was recently fined £100 for smuggling into the country and selling a foreign motor cycle. This is the first case on record of an attempt to avoid the payment of the 33⅓% import duty on motor cycles. It was stated that £60 was paid for the machine in America, and £135 the price obtained for it in this country.

Imports and Exports.

Imports of motor cycles and accessories show nearly a 10% increase over last month's figures, the value of machines alone, apart from accessories, being £9,259.

IMPORTS.—NOVEMBER.

	1917	1918	1919
Number of motor cycles	—	—	134
Value of motor cycles, parts and accessories	£2,907	£491	£17,840

EXPORTS.

November figures show an increase over the previous month of £12,000. It is satisfactory to note an improvement, but the amount is comparatively trifling. The total export figures, which include tyres, accessories, parts, are £115,035, actually £38,572 less than the figures for the corresponding month of 1917, when we were in the thick of the war. Many factors exist which mitigate against big exports, but even so there is room for a considerable improvement.

	1917	1918	1919
Number of motor cycles	1,594	493	838
Value of motor cycles, parts and accessories	£155,607	£49,601	£115,035

Free to A.C.U. Members.

The Auto-Cycle Union has designed an artistic addition to the badge supplied to members for fitting to their machines. This takes the form of a tab bearing the figures "1920/21," and will be supplied free to all members. The tab will, of course, be replaced each year when members renew their subscription, and its colour will be altered on each occasion so as readily to proclaim the currency of the badge. The Union is now also issuing a unique universal clip by means of which the badge may be easily fitted to a mudguard, number plate, lamp, or to the sidecar. Those members desiring to fit the badge to their handlebars are supplied with a special form of clip for that purpose.

World's Records.

The Automobile Club of Switzerland has asked the Fédération Internationale des Clubs Motocyclistes to accept the following as world's records. It will be noted that the greater part of the times are not equal to the British record times for the same distance, but those which the A.C. of Switzerland want accepting were made under a rule of the F.I.C.M. for world's speed records, where the aggregate of the outward and homeward journeys is taken, the one being against the wind and the other with it, whereas the comparative British records were made on a straightaway course, or a circular track. The following are the Swiss flying kilometre records that the F.I.C.M. are asked to accept:

The first time is the outward, and the second the return journey.

MOTOR BICYCLES.

250 c.c.—Alfter (Condor), 39s., 34s.; average 36.5s. = 98.6 kilometres an hour.

350 c.c.—Progin (Motosacoche), 33s., 32⅘s.; average 32.8s. = 109.75 kilometres an hour.

500 c.c.—Lavanchy (Motosacoche), 30⅘s., 27⅗s; average 28.9s. = 124.57 kilometres an hour.

SIDECARS.

500 c.c.—Gex (Motosacoche), 42⅖s., 39⅖s.; average 48.8s. = 88.225 kilometres an hour.

Special Features.

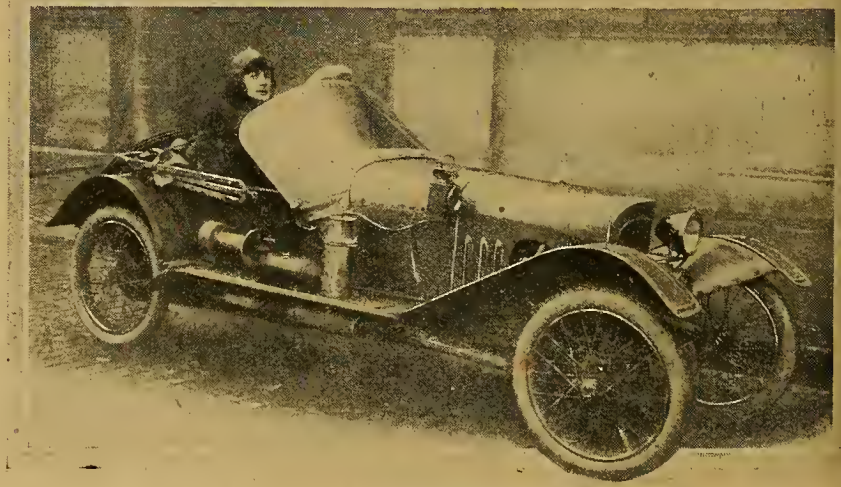
EFFECT OF WHEEL SIZE IN ROAD SHOCKS.
A MODERNISED VETERAN.
NEW IDEAS IN 1920 ENGINES.

The Circuit de la Sarthe.

There is some doubt if the Grand Prix of the Automobile Club de France will be run over the Circuit de la Sarthe. If, however, it is not possible to get support for the car event, it is likely that a motor cycle and cycle car race will be run over this course, such an event having been projected in 1914.

Rudge-Multi Prices.

The revised prices of Rudge Multis and sidecars from January 1st, 1920, will be as follows: 3½ h.p. Rudge Multi (roadster and T.T. model), £100; 5-6 h.p. Rudge Multi, £110; 7-9 h.p. Rudge Multwin, £130; and Rudge sidecar, £37 10s.



Rex G. Mundy on the G.N. cycle car at Edinburgh after driving from London to Edinburgh without stopping the engine, which was air-cooled

A Satisfactory First Year.

The first annual dinner of the Blaenavon M.C.C. was held on the 3rd inst., when 80 were present.

A French Reliability Trial.

The Touring Motor Club of France has decided to hold a Reliability Touring Trial on June 20th, from Paris to Cabourg. The secretary of this organisation is Monsieur Poulain, 4, Avenue de Villiers, Paris, and the annual subscription is 30 francs.

Vacuum Flasks and the London-Exeter.

Competitors will be glad to learn that in addition to the usual provision at the Bridge Hotel, Staines, Miss Dixon, of the Mikado Restaurant, near the hotel, is arranging to fill vacuum flasks with tea, coffee, cocoa, etc., and also for suppers.

Amalgamation of East Lancs. Clubs.

At the dinner of the Blackburn M.C.C. last week, Mr. S. W. Phillpott, of Liverpool, referred to a conference that had been held the same evening between officials of the Blackburn, Burnley, and Preston clubs with a view to amalgamating these clubs. This fusion of interests, we understand, is to take place immediately, when the North East Lancashire M.C.C., as it then will be called, should be in a very strong position to organise competitions.

Petrol Profiteering Committee.

Capt. R. H. Montgomery, head of the Fuel Department of the Automobile Association, also secretary of the Joint Fuels Committee, has been appointed to represent the Automobile Association on the Petrol Profiteering Committee.

Rochester Club's Successful Year.

The Rochester, Chatham and District M.C., which was revived at the early part of the year, have had a very successful season, and concluded the year's programme with a whist drive and dance last week.

Bristol-Land's End and Back Open Twenty-four Hours Trial.

Motor cyclists who wish to enter for the above trial should telegraph at once to Mr. Alan King Smith, Bitton, near Bristol.

We hear the Bridgwater-Porlock and Launceston section is in really good condition with the exception of a few loose stones on Woodstock Hill. One or two patches near Canterbury Gate will require careful negotiation, especially by the solo competitors.

The Launceston check is cancelled, but there will be one at Bodmin.

Refreshments free of charge are being provided at Porlock and Bodmin. Those desiring a meal before the start at 5 p.m. on the 26th should telegraph Full Moon Hotel, North Street, Bristol.

The London-Exeter Run.

This run was inaugurated in 1910, when seventy-eight entries were received, and consisted mainly of motor cycles. In 1911 the entries increased to 119, and the number of sidecars was greater than in the previous event. The 1912 event attracted 163 entries, and in 1913 no fewer than 231 numbers were issued. This year the total entry numbers forty solo riders, sixty-seven sidecars, and one car and one scooter.

The Surrey M.C.C. Crow Cup Trial Results.

A list of awards made in the above trial, which was run off on December 6th, is now to hand. Owing to the weather conditions, several of the hills were eliminated, the route markers finding them impassable. The course was somewhat arduous, but few failures were recorded on the hills, of which several were included in the day's run of 101 miles.

A flexibility trial was introduced in order to find a winner, and the following awards were made:

C. Charlesworth (5 Zenith), Crow challenge cup and silver medal.

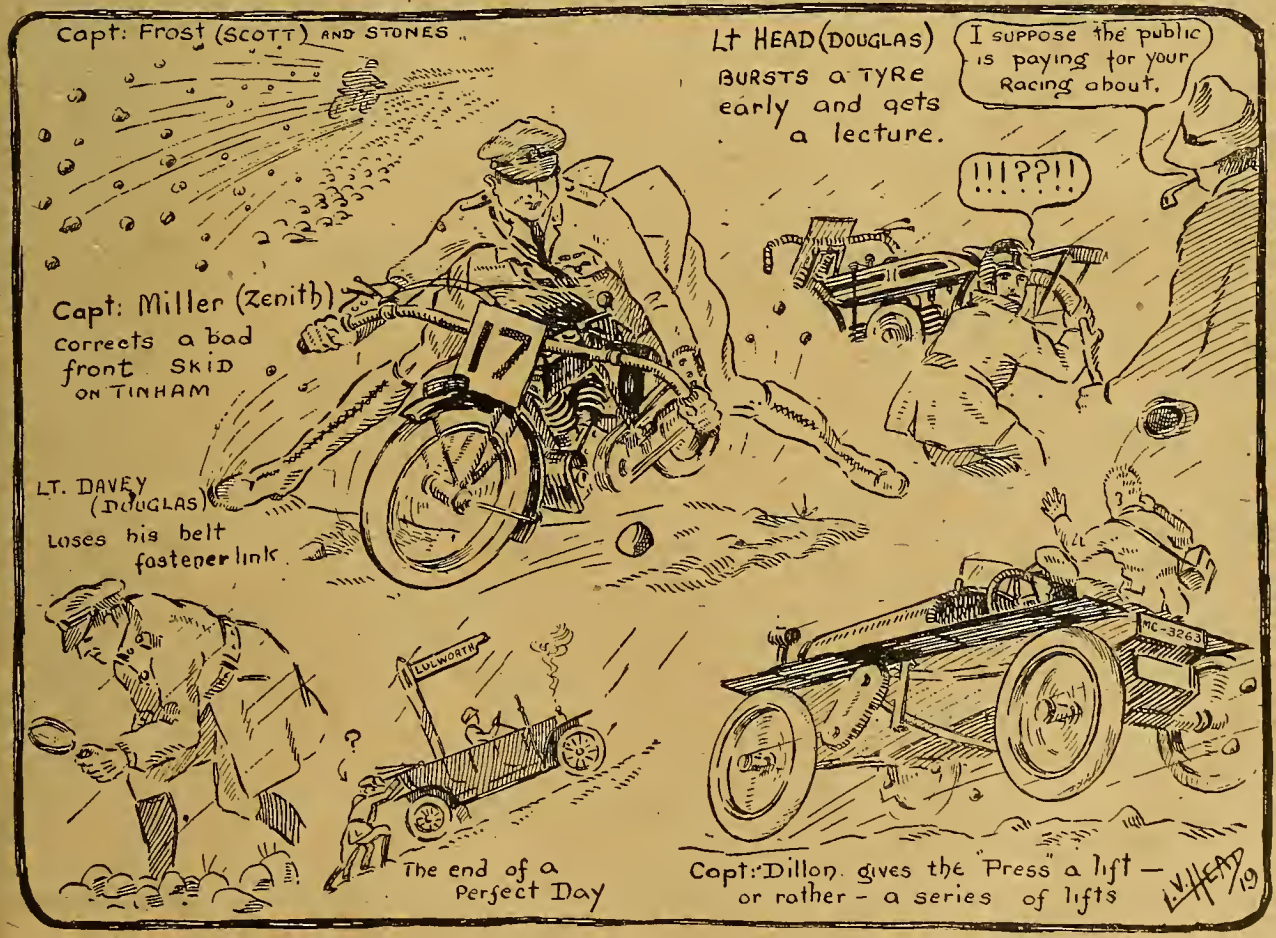
F. P. Verney (4 Zenith), second, silver medal.

F. J. P. Disney (4 Zenith), third, bronze medal.

F. G. Meeten (4 Blackburne), bronze medal (non-stop).

— Gibson (— Zenith), bronze medal.

IMPRESSIONS AT THE TANK CORPS TRIAL.


Capt: Frost (SCOTT) AND STONES
Lt HEAD (DOUGLAS) BURSTS A TYRE early and gets a lecture.
I suppose the public is paying for your Racing about.
!!!??!!
Capt: Miller (Zenith) corrects a bad front SKID ON TINHAM
LT. DAVEY (DOUGLAS) loses his belt fastener link
LULWORTH
MC-3263
The end of a Perfect Day
Capt: Dillon gives the "Press" a lift — or rather — a series of lifts

5,000 MILES OBSERVED TEST ON BENZOLE.

Summary of the Report on 4 h.p. Triumph, issued by the Automobile Association and Motor Union.

SOME interesting information is contained in the report of the 5,000 mile benzole test with a chain-driven Triumph, which was organised by the A.A. and M.U. to demonstrate that benzole had no deleterious effects on the engine and tank. In every way the test may be regarded as being highly successful, and removes once and for all the false impression which had existed in many minds that benzole caused corrosion and undue wear and tear.

Prior to the test being made, the engine, tank, carburetter, and fuel feed pipe were examined by Mr. R. S. Fox, appointed by the Institution of Automobile Engineers, and Capt. A. D. Allen, O.B.E., of the A.A. Engineering Department, and at 2,137 miles the engine was decarbonised by Mr. Fox, when the amount of carbon was found to be about 50% less than the average amount deposited when petrol is used.

On the completion of the 5,029 miles, a further examination was made by Mr. Fox and Capt. Allen, when it was found that the condition of the internal parts of the engine was excellent, the effects of wear and tear being in most cases almost negligible and in no case excessive, with the sole exception of the first of the four exhaust valves used.

The fuel tank was clean and bright inside, and in excellent condition. No signs of corrosion were discernible, and the presumption that the enamel round the filler cap on the outside of the tank would have been removed by the action of benzole did not materialise. The condition of the enamel was exceptionally good.

The carburetter used was the Triumph standard instrument, the only alteration being the fitting of an extension pipe, about 4in. long, on the air intake. The machine was driven throughout the whole of the trial by H. Finch, of the Triumph Co., the official observers being representatives of the various motor cycle clubs in the districts visited and the press, including *The Motor Cycle*. From the start of the test to 2,428 miles Mr. H. W. Bartlet represented the A.A., and from that point to the finish Mr. H. B. L. Smith officiated.

Throughout the entire test the same Lodge plug was used, and no record appears in the log book of the run of its ever having been cleaned. At 271 miles trouble was experienced with the magneto, due to a piece of insulating tape having caught the water and let some into the magneto. The tape was removed, and no further trouble was experienced.

When decarbonised at 2,200 miles the deposit was carefully collected and weighed, the carbon weighing 3.3 grammes, or 51 grains. At the conclusion of the test the amount of deposit was 4.4 grammes (68.2 grains). The total oil burnt during the test was 4 gallons 1 quart ½ pint.

Altogether the test has been most interesting, and the A.A. deserve the thanks of motor cyclists for giving such a conclusive proof of the merits of benzole. The Triumph Co., too, are to be congratulated upon the good performance put up by the machine.

THE TRIAL SUMMARISED.

The mean weight of the 4 h.p. Triumph and sidecar outfit complete was 7 cwt. 1 qr. 26 lb.

Total number of gallons used during the test, 59 gals. 7 pts.

Average mileage per gallon, 84.

Average ton mileage per gallon, 31·34.

Consumption of lubricating oil 4 gals. 2½ pts.

Average oil consumption, 1·166 m.p.g.

Average speed throughout the run, approximately 19·88 m.p.h.

Highest consumption, 67 m.p.g. over 105 miles.

Lowest consumption, 109·6 m.p.g. over 137·1 miles.

M.C.C. London-Exeter-London Christmas Run.

THE last "London-Exeter" attracted no fewer than 231 entrants, and while this figure has not been reached for the 1919 event, the entry of 110 may be regarded as very satisfactory. The start is from the Bridge Hotel, Staines, at 8 p.m., on Boxing Night, and the route outward will be *via* Bagshot, Basingstoke, Andover, Salisbury, Shaftesbury, Chard, and Honiton. The return journey will be *via* Trow Hill, Lyme Regis, Bridport, Dorchester, Salisbury, Basingstoke, etc., to Staines.

There will be a stop of one hour at Salisbury, both in the outward and homeward journeys. The two test hills, Chard and Trow, have to be ascended non-stop.

List of Competitors:

W. H. Wells (2 5 Overland)
W. C. Heny (2¼ Metro-Tyler)
A. J. Sproston (3½ Lea-Francis)
Vivian Olsson (8 New Imperial)
C. Heiberg (4 Triumph)
J. Harrison (2¼ New Imperial)
W. J. Fleetwood (3 A.B.C.)
Thompson Tudor (2¾ Douglas)
W. S. Jameson (3½ Rudge-Multi)
S. Brown (7-9 American Excelsior)
C. Innes-Browne (3¾ Scott)
P. T. C. Body (3½ Sunbeam)
P. Pike (2¼ Levis)
F. C. Townshend (3½ Sunbeam)
A. Wooding (4 Sunbeam)
F. Notari (4 Triumph)
C. W. Rowe (3½ B.S.A.)
B. M. Sims (2¼ Radco)
H. J. Seale (3½ Scale)
W. G. Bayer (4 Triumph)
H. J. White (4 Triumph)
F. E. Salter (2¾ Zenith)
L. W. G. Gotley (2¼ Omega).
W. Ford (2¾ Coulson-B.)
F. Thorpe (2¾ Douglas)
G. P. G. Kidston (3½ Sunbeam)
J. Armour (3½ Indian)
G. Richardson (4¼ James)
R. C. Staunton (4 Triumph).
T. T. Gibson (4-5 Zenith)
C. K. Robinson (3 A.B.C.)
D. W. Bonham-Carter (2¾ Coulson-B.
K. V. Chidley (2¾ Wooler).
L. Pulham (2¾ Ariel).
D. H. Noble
J. F. Hull (2¾ Wooler)
J. Emerson (3 A.B.C.)
H. Le Vack (4 Harley-Davidson)
F. S. Spouse (2¾ Verus)
E. Liverett (1¾ Whippet Scooter)
R. R. Coes (4 Indian Scout).

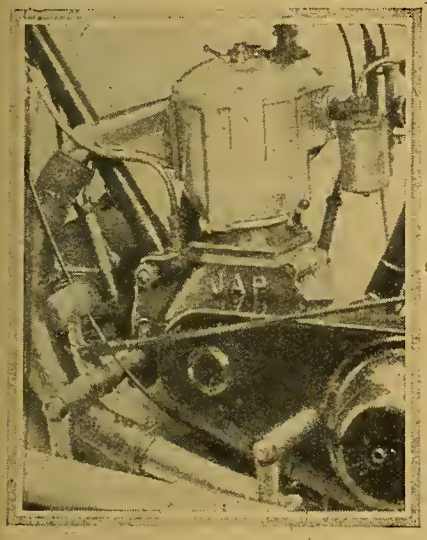
SIDECARS.

B. Alan Hill (3¾ Scott)
E. A. Bridgeman (7 Indian)
R. B. Clark (8 Matchless)
J. A. Hilger (3½ Rover)
E. S. Powell (6 A.J.S.)
P. W. White (3½ Sunbeam)
F. W. Baker (8 Matchless)
H. T. Whitty (4 Triumph)
J. A. Watson-Bourne (10 Reading Standard)
G. W. M. Henderson (7-9 American Excelsior)
J. A. Masters (7-9 Harley-Davidson)
H. W. Glendining (8 Blackburne)
W. A. Fell-Smith (7-9 Harley-Davidson)
C. A. McKeard (7-9 Harley-Davidson)
Thompson-Thompson (4 Douglas)
Capt. A. E. French (8 Sunbeam).
Capt. B. Charlesworth (8 Zenith).
L. S. Pinder (8 Zenith)
R. Creak-Davis (8 Chater-Lea)
E. W. Choldcroft (6 A.J.S.)
L. J. Pittock (5-6 James)
C. D. Wright (7-9 Harley-Davidson)
W. P. Tippett (4 Rex)
H. A. Reyre (5-6 James)
T. H. Willey (6-7 Abingdon)
L. Arnold (8 Chater-Lea)
C. Wilkinson (4 Douglas)
F. E. Jones (3½ Ariel)
G. Packman (8 Matchless)
L. R. Richardson (4¼ B.S.A.)
J. B. Blakemarsh (4 Triumph)
E. H. Newnham (8 New Imperial).
F. J. Watson (3½ Ariel)
L. A. Apsey (8 Royal Ruby).
H. Dale (8 Royal Ruby).
C. Crosthwaite (8 British Excelsior)
S. E. Longman (8 Matchless)
A. L. Huggins (8 Zenith)
G. S. Wright (7-9 Indian)
S. W. Wilkin (3½ Wilkio)
H. Haydon Robinson (5-6 James)
A. Milward (4 Douglas)
H. V. Colver (8 Matchless).
E. Atkins (3½ Ariel)
F. J. Ellis (8 Matchless)
T. J. Ross (8 Matchless)
R. Boxer (8 Matchless)
J. A. Hoult (8 Matchless)
E. F. Chidley (3½ P. & M.)
G. G. C. Pigott (3 A.B.C.)
W. E. Line (10 Reading Standard)
K. de B. Smart (8 Zenith)
A. F. Pulling (6 Royal Enfield)
Capt. R. Hay-Wills (6 A.J.S.)
J. Simpson (8 Rex)
J. P. Le Grand (6 Rex)
W. A. Jacobs (6 Rex)
L. E. Frost (8 Matchless
B. S. Allen (8 Matchless)
C. E. Bennett (7-9 Harley-Davidson)
F. White (8 Rex)
W. H. Bashall (6 Martinsyde Newman
J. T. Bashall (6 Martinsyde Newman)
S. H. Dawson (8 Monarch)
C. Pearson (4 Douglas)
A. E. Carr-Stone (4 Triumph)
Capt. C. R. E. Pope.
Kaye Don (8 Tamplin)
S. Julian (8 Matchless)

An Improvement in Air-cooling.

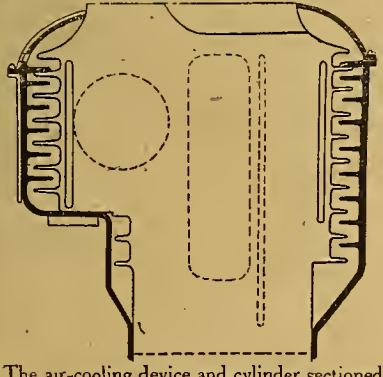
Completely Enclosed Air-cooled Engine, permitting Thorough Mud-guarding and Protection for the Rider.

ENGINEERS have at last begun to realise that there are other means of cooling by air than casting cylinders with fins thereon, and leaving the rest to chance. Air-cooling has been rendered more suitable for internal combustion engines by methods of constructing the engine; for instance, by the use of steel cylinders and aluminium pistons, and also by extraneous means, as in the case of the system we are about to describe.



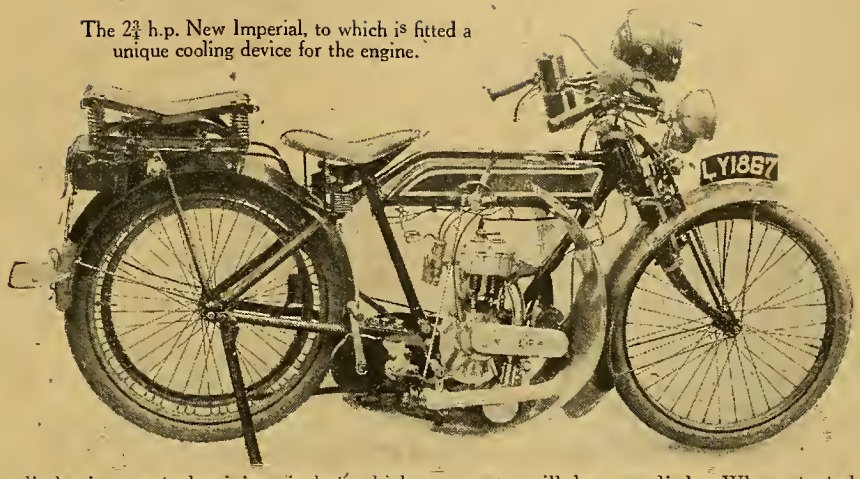
Showing the cast aluminium jacket, which totally encases the cylinder, but leaves the valve springs and caps accessible.

This ingenious idea has been brought out by Mr. Hawley Morgan, formerly a member of the staff of this journal. He has left nothing to chance, and has worked out the whole system most thoroughly. He entirely encloses the



The air-cooling device and cylinder sectioned to show air passages.

The 2¾ h.p. New Imperial, to which is fitted a unique cooling device for the engine.



cylinder in a cast aluminium jacket, which in no way interferes with the general design of the engine, as the same valve caps are retained, the valve springs are outside it, and everything is just as accessible as it was before. It is fitted to a 2¾ h.p. J.A.P. on a New Imperial machine.

With this system in use it is possible to enclose the front of the engine entirely by means of an aluminium mudshield, which would not be possible, of course, unless a special cooling device were incorporated. The jacket is made in two halves clamped together, while the head forms a separate portion. The existing silencer is retained, but it is provided with a small cone-shaped exit pipe. Connected to this there is an additional silencer or chamber in which there is a special ejector (giving about 6½in. vacuum) connected by a rubber hose pipe to the suction pipe on the aluminium casing. On the right of the slot to which the suction pipe is attached is a barrier of a diatherminous substance. In addition to the cylinder being provided with fins, there are also aluminium fins on the casing. Cool air is drawn in a continuous stream through the slots arranged round the casing, causing a current of air to pass through the fins not only on the sides of the cylinder, but also directly over the head, and this portion has been most carefully thought ont, as 75% of the heat in the cylinder is to be found in this portion.

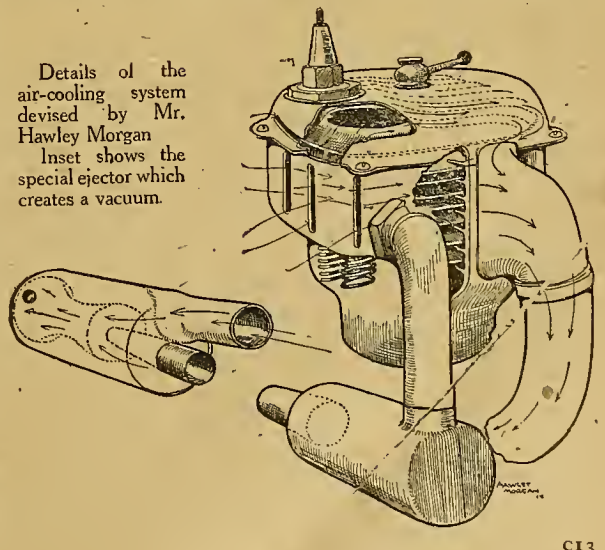
Detachable head showing ease of accessibility to valve caps.

This system has been beautifully installed on the experimental machine. It is well finished and attractive in appearance. The only fault developed so far is the ground clearance, which the shield has reduced to too great an extent, and this, of course, will be remedied. When started it is easy to see that a strong suction is developed, as it will even suck the ash off the end of a cigarette and draw it in. When the pipe is coupled up the flame from a match held near one of the slots is visibly drawn towards it.

We have not yet tried the machine on the road, but hope to do so shortly. With this cooling system, as we said before, it is quite possible to shield the engine entirely, with the result that the rider can travel through any road conditions without getting a speck of mud thrown up either on the engine or on himself.

IN GOOD COMPANY.

We learn that of the team of six machines entered by one firm in the forthcoming French Scooter Trial, three will be ridden by well-known actresses, and the others by a champion pugilist, a famous golfer, and a French "Ace." Since a correspondent recently complained that so far scooters appear to have been manufactured solely for the benefit of such notabilities as actresses, golfers, and journalists, and as the above list rather bears out his statement, we feel that at any rate we have been in good company.



Details of the air-cooling system devised by Mr. Hawley Morgan. Inset shows the special ejector which creates a vacuum.

Triumph of the Petrol Engine Made Manifest.

Half-way Round the World by Aeroplane in 27 Days 21 Hours.

IT is not many years ago that in motor cycle trials it was necessary for officials to be posted every mile, because it was doubtful whether an internal combustion engine could be relied upon to function for a definite period, but now, the same type of engine, improved and developed by one generation of engineers, drives a giant aeroplane from London to Freemantle, a journey of 11,294 miles. Truly, the triumph of the petrol engine is made manifest, and those who have had doubts regarding the overhead valve engine should at last be convinced that it can be made as reliable as the side-by-side type, for the Rolls-Royce engines fitted in the Vickers-Vimy aeroplane which accomplished the journey had overhead valves. Each engine has twelve cylinders, therefore there were no fewer than forty-eight overhead-operated valves to go wrong—yet the Rolls Eagle is considered perhaps the most reliable aero engine in the world. The paramount value of quality is obvious in such a flight, and in this connection it is noteworthy that the Rolls-Royce car, so often quoted as a synonym of perfection in road vehicles, has built up its great reputation solely on quality of design, material, and workmanship. By that quality the Atlantic flight, and now the Australian flight, have been made possible, and in eulogising the engines we are apt to overlook the man to whose genius the outstanding quality of their performance is mainly due. Mr. F. H. Royce was born in 1863, and is the son of a Rutlandshire farmer. He served his apprenticeship at the G.N.R. Locomotive Works at Peterborough. In 1903 he turned his attention to the motor car industry at the instigation of the late Hon. C. S. Rolls, the outcome of which was the first Rolls-Royce car, a 10 h.p. vehicle, which has gradually been developed into the 40-50 h.p. six-cylinder Rolls as we now know it.

During the war the firm's attention naturally turned to aero engines, and the original 250 h.p. Rolls developed into the 360 h.p. Eagle, Mark VIII., which occupies a similar position amongst aero engines to that of the Rolls car in the automobile world.

F. H. Royce, who was responsible for the Rolls-Royce 360 h.p. Eagle engine.

eroplane, engined by two Rolls-Royce twelve-cylinder Eagle engines is the identical machine that accomplished the journey from

Capt. Ross Smith, M.C., D.F.C., A.F.C. (pilot), Lt. K. M. Smith, R.A.F. (observer), Sgt. W. H Shiers, A.F.M (mechanic), who, with Sgt. Bennett A.F.M., formed the crew

The Vickers-Vimy aeroplane is also the production of a firm of world-wide repute, and though it was originally designed as a long-distance bomber, it remained for peace to demonstrate its true utility as a weight carrier of proved reliability.

Having made the great flight mechanically possible, there remained the human element to bring it about. The pilot and observer were two South Australian brothers, who were born and educated in Adelaide—Capt. Ross Smith and Lt. Keith Smith—while the mechanics were Sgts. Shiers and Bennett. These mechanics have served under the Smith brothers during the greater part of their flying career, and after the signing of the Armistice volunteered together and served in the Afghan campaign.

That this great flight was not without incident is shown in the following cablegrams sent by Capt. Ross Smith during the journey:

"ROME.—Start sensational. Bennet held tail down until machine was moving, then made running jump at rear cockpit. Hauled aboard by Shiers as machine was leaving ground.

"AKYAB.—Left Calcutta at 8.30; landed at Akyab at 1. Large distinguished gathering to see us off, including Lady Ronaldshay. Racecourse at Calcutta is small, but when taking off many hawks circled round close to the ground. Very frightened hawk would hit propeller, smashing it.

"Just off the ground the machine struck two hawks, one hitting the propeller. Nasty moment as machine almost hit trees in avoiding more birds. No damage to propeller, but pieces of hawk hanging on machine whole journey."

The record of the flight is given below.

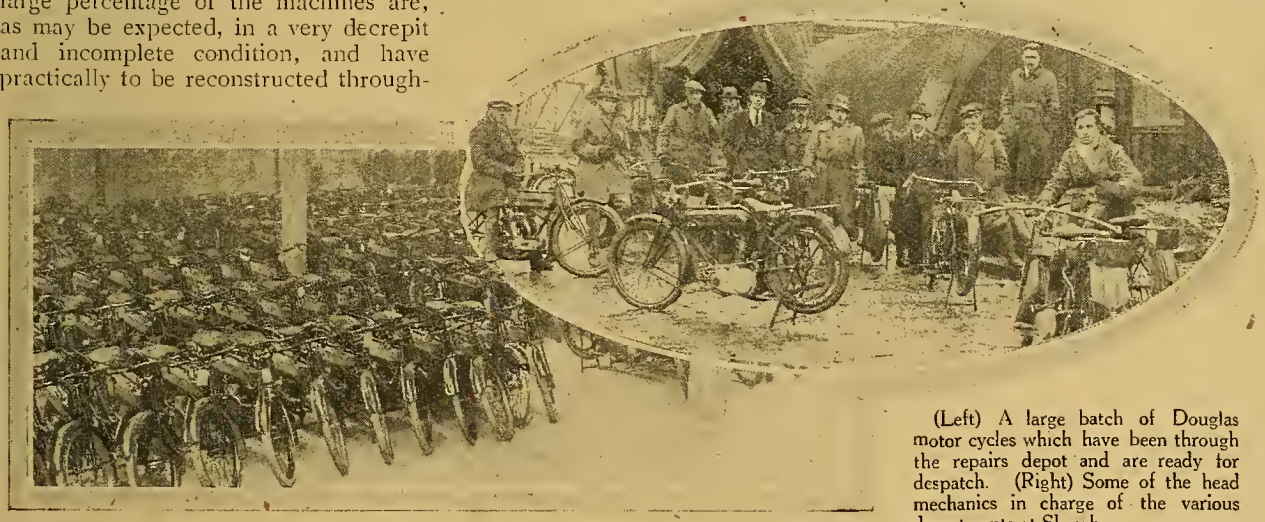
Place.	Miles.	Dates.
Hounslow	— ..	Nov. 12.
Lyons	603 ..	„ 12.
Rome	1,225 ..	„ 14.
Cairo	2,845 ..	„ 18.
Damascus	3,259 ..	„ 19.
Basra	4,047 ..	„ 20.
Calcutta	6,895 ..	„ 28.
Rangoon	7,688 ..	„ 30.
Bangkok	8,038 ..	Dec. 1.
Singapore	8,900 ..	„ 4.
West Java	9,551 ..	„ 6
Port Darwin	11,294 ..	„ 10.

Repair of Government Motor Cycles.

How the Work of Recovery and Reconstruction goes on at Slough.

Sidecar chassis and bodies awaiting entrance to the Repair Department

ON Monday, December 8th last, we formed one of a party of technical journalists who, by permission of Lord Inverforth and the Ministry of Munitions, paid a visit to the Government Motor Vehicle Repair Depot at Slough. In addition to the very large number of motor lorries and tractors which were there undergoing repair, we noticed that practically the whole of one shop was devoted to overhauling and reconstructing motor cycles of the various makes employed during the war. Upon arrival at Slough, a large percentage of the machines are, as may be expected, in a very decrepit and incomplete condition, and have practically to be reconstructed throughout. This work keeps a large staff of mechanics continually employed, and at the present time we were told that about fifty cycles leave the shop as "runners" every day. Apparently, no attempt is made to put them in first-class running order, but, after assembling, each machine is subjected to a short road test, and should be fit for hard work on the road after a little tuning up. After all mechanical defects have been attended to, the machines are painted, though a high standard of finish in this connection is not considered necessary.



(Left) A large batch of Douglas motor cycles which have been through the repairs depot and are ready for despatch. (Right) Some of the head mechanics in charge of the various departments at Slough.

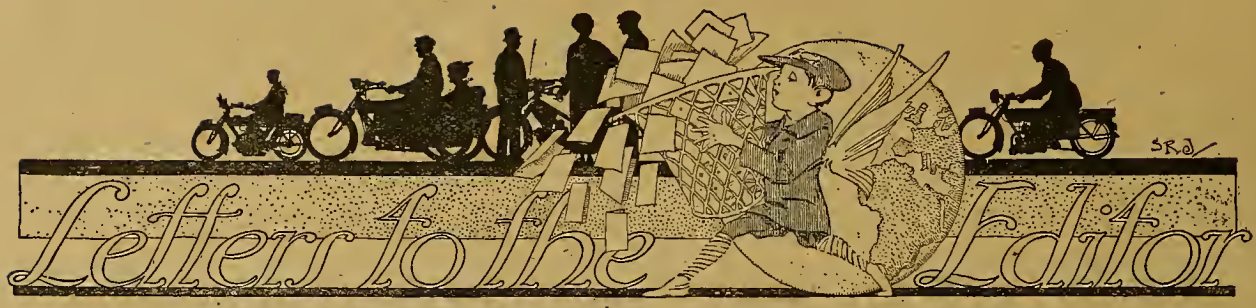
THE ANGLO-DUTCH TRIALS.

THOSE of our readers who are keenly interested in competition matters, and especially those who supported the event in pre-war days, will be glad to learn that there is every propect of a resumption of the reliability trials between teams of Dutch and English motor cyclists.

Correspondence has already passed between the secretaries of the A.C.U. and the K.N.M.V., the organising bodies in the respective countries, and the English Competitions Committee will favourably consider the event for 1920; it will be run in Holland, since the last one held took place in England.

Great enthusiasm has been displayed in Holland at the prospect of this renewal of the sporting and amicable relations which were engendered by the holding of these international reliability trials in the past, and we have full assurance that the motor cyclists of Holland will do their utmost to ensure the comfort of the English competitors who go over.

It is hoped that the date will be fixed in the near future, since the English competition programme is being rapidly filled for the 1920 season, and it would be regrettable if our best riders should be unavailable owing to their engagements in other events.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

THE VALUE OF THE AUTOMOBILE ASSOCIATIONS.

Sir,—I should like to testify to the value of the Engineering Department of the A.A. Recently I asked for their assistance concerning the purchase of a second-hand motor cycle. They spared no efforts on my behalf, with the result that I obtained a refund of £30. Surely a good return for one year's subscription! E. E. KIRBY.

A.C.U. SIX DAYS TRIALS.

Sir,—On reading the letter of Mr. Stanley Wells, in your issue of December 4th, we noticed a slight error in the table of averages, which we are taking the liberty of pointing out.

In Class "D" Mr. Wells states that five Scotts entered, scoring an average of 146 marks. On looking through the final schedule of results of the six days, as published in *The Motor Cycle* of November 6th, we find that the average figure for the five machines entered was 181.8.

Doubtless this error was created owing to the original report that Mr. Jesse Baker had retired, whereas in the final report he was granted a silver medal. This naturally makes the last column of Mr. Wells's table quite wrong. Furthermore, the Scott average is higher than any other make of machine entering more than one machine in any class. THE SCOTT MOTOR CYCLE CO., LTD.

MOTOR CYCLING IN INDIA.

Sir,—"Two-stroke" would probably find that a 5½ h.p. machine would answer his requirements better than a lightweight. It should preferably be of a well-known make, so that spares might be the more readily available. He should certainly purchase in this country, as prices in India at present are very much in excess of what they are even here. 1915 Triumphs often fetch well over £100.

He would do well to take the following tip to heart: Never send your machine for repairs to a firm where it will not be under European supervision. H.J.

Punjabis, L.I.

Sir,—"Two-stroke" writes in your issue of December 4th to ask about the capabilities of a two-stroke for India.

Let me assure him that this class of machine is excellent for India, and that if his has proved satisfactory here it probably will there. In the planting districts I know the roads are bad, and there are often weeks of continuous rain.

I ran a new two-stroke on the medium quality roads of the Poona district for over a year, and found it invaluable, and nothing ever went wrong with it.

In India new motor bicycles are now difficult to get, and the "second"-hand ones are only so labelled by courtesy. They have usually descended through many short generations of unmechanical subalterns.

Tyres are obtainable, but a reasonable selection of other spares is desirable.

Almost anywhere, "Two-stroke" may be interested to hear, a motor bicycle which will go is a readily realisable asset. RIKI.

Corstorphine.

Sir,—With reference to "Two-stroke's" letter in *The Motor Cycle* on motor cycling in India.

I spent some years in India during the war, and was continually using a motor cycle. My experiences were with Douglas, Triumph, Ariel, Harley-Davidson, and Indian. Any of the above machines will stand up to the rough Indian roads. Personally, I found a Powerplus Indian the best, notably for springing, clearance, cooling, and electric lighting.

I should not advise "Two-stroke" to take out his present machine, unless he is going to live in towns like Bombay, Calcutta, or Poona.

For up-country stations, good springing, large size tyres, good clearance, and electric lighting are most essential. Also plenty of power: a fast machine is more than a delight out there, as there are no speed limits.

Spares for American machines are more easily obtainable in India than for British.

I should strongly advise "Two-stroke" to purchase a machine here and take it out (after using it) as personal luggage. I found Dunlops best for hot roads.

Coventry. ACHCHHI-BAT.

COMBINED CYLINDER AND CRANK CASE.

Sir,—In "Ixion's" Occasional Comments, in your issue of December 11th, he refers to a certain make of motor cycle engine in which the cylinder is cast in one with the top half of the crank case, and states his opinion that this is the first motor cycle engine constructed on these lines.

Will you allow us to say that this method of construction was introduced on the Allon 2¾ h.p. two-stroke engine in 1914, and has been in practice ever since?

ALLDAYS AND ONIONS, LTD.

Matchless Works (Cycle Department).

THE BLACK PRINCE ENGINE

Sir,—In your issue of December 4th you describe the Black Prince engine as a new type. Now in 1908 the Jowett Motor Co., of Bradford, Yorks., designed and built a horizontally-opposed two-stroke engine having one combustion chamber connecting the two cylinders, and, of course, one sparking plug.

The balance was excellent, and naturally the engine could run at a high rate of speed almost free from vibration.

The design was clever, and much in advance of the times, though now, I understand, the firm market a light car fitted with an up-to-date flat twin engine.

Coventry. E.A.

THE LIGHTING REGULATIONS.

Sir,—Before the new Lighting Regulations are issued, may I appeal to you to use all your influence to have regularised the fitting of a tail light and number on the off side of the sidecar body itself. With gas there is much less draught, and with electric lighting bulbs last four times longer, and in both cases the plate and lamps can easily be kept clean. Even our Chief Constable admits this, though he thinks they are at present illegal.

Newton Ferrers. T 6409.

Sir,—I, as both a cyclist and a motor cyclist, have read with interest the letters appearing in *The Motor Cycle* on the question of rear lights.

Your correspondent "Sivel" is surely in error in some of his views. He says (I hope I quote correctly), "What, in the name of sense, do we carry a head light for? Surely to show us what is in front, etc." Now, a ship carries lights, not to light her on her way, or to show what is in front, but in order that other ships may be made aware of her presence, and of the direction in which she is moving. A vehicle is ordered by law to carry lights—one or two white lights in front and a red light in the rear. Why? In order that other

vehicles may know of its presence and direction of travel. The law is not concerned with the question as to whether the lights are strong enough to illumine objects in front. The question of the strength of the lights rests with the driver of the vehicle. Arguing on this line it is clear that a vehicle of any kind that carries head lights only is only half illuminated, as it makes other vehicles aware of its presence from one direction only.

The question of lights on pedestrians, dogs, stray brickbats, etc., is beside the argument, for pedestrians and dogs are expected, in view of their own safety, to travel principally on the side walk or the side of the road, while brickbats are accidents pure and simple. H. W. BEAUMONT.

Sir,—Your correspondent, "Sivel," seems to be under the impression that the lighting regulations are a plot designed to throw the onus of avoiding accidents on the unfortunate cyclist. A more natural view is that the object of the regulations is simply to prevent accidents from occurring.

Again, in the unfortunate event of a cyclist, with a properly burning tail lamp, being run into from behind, surely all the blame would attach to the other party.

"Sivel," however, denies that rear lamps prevent accidents. It is evident that no lamps can absolutely prevent all accidents; but they afford a decent chance of avoiding them. Even if such lights cause only one accident to be avoided in twenty possible cases, their use is justified.

Of course, if "Sivel" denies that a cyclist with a rear lamp is more easily seen than one without, on a pitch-black night, there is no more to be said.

Efficient head lamps are good Tail lamps on all vehicles make assurance doubly sure.

Personally, I would rather do my best to avoid being run into in the first place than be bowled over in the mud, and then console myself with the thought that I was not to blame, and that the onus was upon the other fellow.

Twyford. PUSH-CYCLIST.

Sir,—My letter appears to have had the excellent effect of making "Sivel" lose his temper. He now comes out with the "unalterable view" (surely this is is not a "deliberate misquotation"?) that the onus of avoiding accidents should lie with the overtaking vehicle. As he is not open to conviction on this matter, I may as well state that I entirely agree with him. But why should he wish to make it more difficult for the overtaking vehicle to carry out its duty (difficult enough at any time) by removing the only part of the vehicle in front that is easily seen?

I entirely agree with "Toleration's" very sensible letter. Laziness is at the root of the matter, and if cyclists cannot be induced to "mess about with another lamp" I suppose we must all take the consequences.

"Sivel" evidently reads the papers from the point of view of seeing how many accidents have occurred. Does he ever consider how many have *not* occurred, and, therefore, do not get into the papers at all, simply because people have been sensible enough to see the value in a rear lamp?

Finally, "Sivel" is right in supposing that I cannot match his bloodthirsty tale of the West End and the unscrupulous motorist; but, then, motorists do not make a habit of doing things of that kind; and "road-hogging" in the heart of the West End is a vice that is new to me. IORWARTH.

Cambridge.

Sir,—As a regular reader of your interesting paper, I have been following your readers' views on the above subject. Often views are one-sided and inclined to be selfish, and in some cases it is evident that your readers ride chiefly in well-lighted London district roads, whilst with riders in this part of the country it is quite a different proposition.

We in this district are very glad all vehicles have to use rear lights, and this is the only safe way of travelling, especially in the winter.

A number of my friends agree with me that very strong head lights (which one of your correspondents advocate) are a distinct danger to the public in general. Moderate strength lamps and rear red light are the safest for everybody concerned, whether a motorist or not.

Even solo riders, with rear lights, feel a great security on slippery roads when hearing large cars overtaking them. I hope the present regulations will be permanent for the general welfare of the road-using community. W.H.T.

Plymouth.

THE A.C.U. REPORT.

Sir,—I was interested to see in your issue of December 4th a letter from Mr. Jas. L. Norton on the judges' report in the A.C.U. Trials.

There has, I believe, been a rather ominous silence on this report as far as the motor cycle world is concerned; in other words, the report was such a crushing criticism of the present-day motor cycle that probably few people have cared to refer to it.

I see Mr. Norton was "disappointed to read" the section of the report which dealt with engines.

One can quite imagine many motor cycle designers being considerably more than "disappointed; they have had what might be termed "a nasty jar."

I do not wish to single Mr. Norton out in particular for criticism, but I should like to remind him and others that the A.C.U. judges also dealt with other points—for instance, lubrication and transmission.

Now for a very long time some of the leading firms in the motor cycle industry have been exploiting to their utmost a type of machine which, to any true lover of a motor vehicle, cannot approach the ideal. That is the single-cylinder, belt-driven motor cycle with no adequate form of lubrication and often a single speed. We all know that simplicity is a great asset and conducive to cheapness, but when it sacrifices efficiency and comfort and general utility there is not much to be said for it.

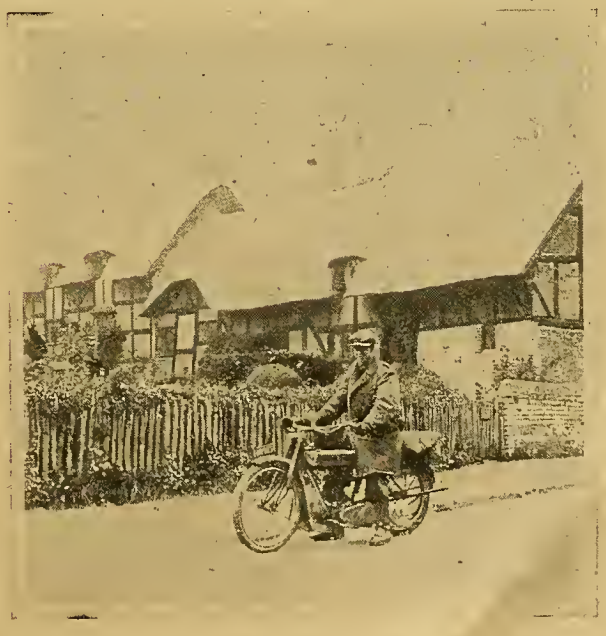
Now I imagine that the great test of utility is that a machine shall be able to do a long and possibly non-stop run over any road and under any conditions of abnormal heat or cold—or wet—and turn up at the end ready to do the same thing over again at once.

Most people will admit that almost any car is capable of this provided it is not grossly out of tune; but I think very few motor cycles are, and I believe the main reason is that the car water-cooled engine is properly cooled and the air-cooled cycle engine is not.

The air-cooled engine is all right so long as it is in perfect tune and in expect hands, but not under other conditions.

I see Mr. Norton says water-cooling is a concession to imperfect design. I should be inclined to reply that air-cooling was an obsession of imperfect design; and is Mr. Norton intending in this remark to refer to a Scott, or a Lanchester, or a Rolls-Royce—all water-cooled by the way?

I believe that the words of the A.C.U. judges were, on this point, something to the effect that "many of the machines arrived in a deplorable state of overheating, knock-



Probably the most famous historical cottage in the country—Anne Hathaway's home at Shotley, near Stratford-on-Avon, Warwickshire.

ing, and oiliness." This exactly describes the state of the average motor cycle at the end of a long and trying run, whilst any old and indifferent 10 to 15 h.p. car would arrive at the end of the same run probably quite reasonably cool and clean.

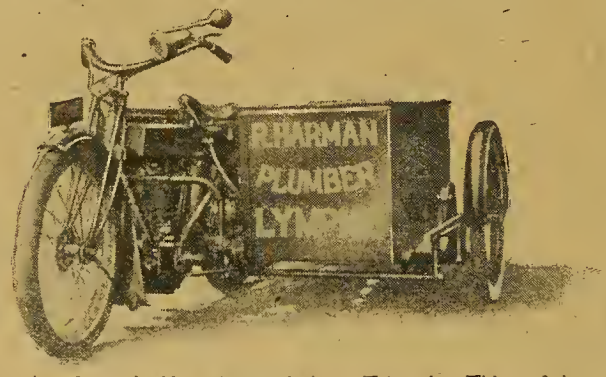
Old fallacies die hard. That is quite clear from this year's Show, but let Mr. Norton and others remember that this year the Triumph Co. have produced a chain-driven model and the B.S.A. Co. a twin—two rather notable events. Some day perhaps we shall see water-cooling, shaft-drive, automatic lubrication, and automatic carburetters just as effectively standardised for cycles as cars.

Motor cycle designers would do well to remember also that many motor cyclists have driven cars; but one is sometimes driven to think that motor cycle designers never have.

Barnes, S.W. LIGHTWEIGHT.

THE VALUE OF SIDECARRIERS.

Sir,—I am sending you a photograph of a Triumph motor cycle and trade carrier, which possibly may interest trade users, also a few details as to the adaptability of the box. The chassis is an underslung Duco, with extra strong four-point attachment, the box being framed in ash, 2×1¼in., and covered with three-ply wood. The lids are halved on top, opening from outside; this enables ladders, planks, etc., to be carried on top, the lids being folded to the front and securely tied, whilst space in the back is available for paints, etc. I can take easily the whole plant of material for painting the outside of a house, and ladders up to thirty-five rungs. The box is mounted on the chassis by screwing into the two crossbars from C



A tradesman's sidecarrier attached to a Triumph. This outfit has given the owner, Mr. R. Harman, great satisfaction.

springs four 3×⅜in. bolts, which are tapped and screwed into the bars firmly. The box is dropped on to the four bolts and secured by a washer and thumbscrew inside. When carrying heavy goods, such as cement, sand, etc., too heavy to lift out of the box, I leave the two front thumbscrews off, and I then lift up the box towards the back, which is arranged to come exactly on the ground, and heavy articles can then be pulled out. Also, any adjustment to the engine, etc., can easily be made by tilting the box, usually difficult when the sidecar is a fixture. For pleasure riding I have arranged a coachbuilt sidecar to drop on in the same manner, and I can change either box or sidecar in less than five minutes. The machine has done thousands of miles in a country district, saving much time and labour. A regular reader of your paper for years, I have gained much from its useful columns.

R. HARMAN.

RIDING AT NIGHT.

Sir,—A recent article in *The Motor Cycle* noticed and illustrated a Magdyno set by a well-known maker. Thinking the set to be generally good, but having certain serious shortcomings, I wrote the manufacturers, setting out my ideas substantially as in this letter to you. They replied they were very "interested," but "at present we do not consider the demand for a set of the type suggested would be sufficient to warrant its manufacture." After a perusal of the following, perhaps other night riders will give their opinion on the manufacturers' verdict.

The average motor cyclist, apparently, being afraid of troubles on the road after dark, appears to arrange to arrive home by dusk; only carrying lamps so as to get home if held up for a few minutes after lighting-up time. For such the Magdyno set in question is no doubt O.K. There are, however, a minority of riders who, like myself, expect to ride almost anywhere at any hour of the day or night. I leave points over one hundred miles from home either very late in the evening or very early in the morning to drive through exactly as if it were day time. Such runs need powerful lamps if speed is to be safely maintained, and I find a head lamp plus small sidecar lamp to be insufficient on an outfit. (I do very little solo riding.) A second head lamp (as Lucas "King's Own" No. 454), used as a sidecar lamp, enables one to drive, using the near side kerb or hedge bottom as a guide, causes a flash off the bright pedal cranks of push bicycle riders, enabling one to pick them out when they attempt suicide by riding without a rear light, and greatly helps the head light (say, a Lucas "King of the Road" No. 462) to show up cattle, country carts approaching unlighted on the wrong side, etc.

My experience, therefore, causes me to believe that the makers of the Magdyno set should market an alternative set, the sidecar lamp being the same size and power as the head lamp, and embodying the following features:

This lamp should not be carried over the sidecar mudguard, but well forward, on a bracket screwed to the near side of the sidecar body, say, well in front of the door, as nearly as possible in line with the head lamp. It should have a fitting quickly detachable from this bracket, little legs so that it would stand on the ground, and a separate three yards or so of easily detachable flex, so that it could be removed from the bracket and moved around to get a good light for repairs. The sidecar lamp should be the removable one, as the head lamp and rear lamp should always be left in place, as if the machine is drawn up close to the near side of the road with these lamps burning, the machine facing the direction one should be travelling, there is little chance of being run down.

A most essential additional fitting is a torch, carried in a clip (say, on the handle-bar), from which it could be instantly lifted, to switch on and off as desired, powerful enough to throw a beam the width of the road, thus enabling one to read signposts from the saddle when standing with the clutch out and engine running. This torch could have 3ft. or 4ft. of flex, self-rewinding into a small box, like a "Chesterman" steel tape, and thus arranged would be invaluable for the purpose cited; also as an inspection lamp and on repairs in conjunction with the powerful movable sidecar lamp already referred to. If clipped near the right handle-bar grip, glass facing forward, one could switch it on for a few moments to show an approaching car the exact width of the combination when approaching each other on a dark narrow country road.

As both the head and sidecar lamps should be fitted with both dim and full light bulbs (lamps), there would be no need to use more than sufficient light on any occasion, or dazzle the sight of those approaching. One switch to control the dim and full light on both these lamps simultaneously would be preferable.

I know from the powerful set of carbide lamps I use, movable by connecting up with a long spare piece of rubber tube, that, much as I desire electric lighting, the convenience of the carbide set, to one who really rides at night on deserted and unlighted country roads, must at present appeal more strongly to me. Properly fitted and kept clean I find Lucas carbide lamps seldom give trouble, not even the rear lamp run off the head lamp generator *via* large bore metal tube. (Carry a spare burner for each lamp, and throw away the used one occasionally.)

I am afraid I have made an uncomplimentary remark regarding push cyclists. Perhaps they will take it in good part when I mention I purchased my first bicycle—a broken-down solid-tyred affair—for about six shillings before the Boer War, and have ridden many push and motor bicycles since.

Why does not Lucas make push cyclists a rear lamp similar to the No. 344?

Why do not Bowdens make a tube, similar to their outer cable, that is carbide gastight, to take the place of rubber and metal tube for connecting up. Ordinary Bowden outer cable will only retain carbide gas for a few weeks, then it gets slightly porous all over, and one gets a bad light. Otherwise, it would be a neat, flexible connection that could not get nipped.

J.M.

Sheffield.

QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Reboring Cylinder.

(1.) I have a 3½ h.p. water-cooled engine and the cylinder has become scored; how much should I bore it out? (2.) What working clearance should there be between cylinder and the new piston? (3.) Are step-cut piston rings better than those with plain sloping cuts?—C.J.H.

(1.) We should not advise you to grind the cylinder bore more than 8/1000. (2.) The piston clearance should be approximately 2/1000 at the skirt, and five to seven thousandths at the piston top. (3.) Step-cut piston rings retain the compression more effectively than those with plain slots, but should be fairly wide.

Double-acting Two-stroke.

Will you kindly tell me if an internal combustion engine, firing at both ends of the stroke and working on the two-stroke principle, so that the piston has propelling force behind it on each stroke, has ever been invented and patented? In your opinion how would such an engine compare in respect of efficiency, economy, vibration, "revving," with the ordinary four or two-stroke engine?—O.B.M.

Several double acting two-stroke engines have been designed, but we cannot recollect one being manufactured commercially. It does not appear that such an engine will have very great advantages over existing types, largely owing to the weight of the reciprocating parts and piston cooling difficulties.

Oil Pump Trouble.

I am troubled by the oil pump (semi-automatic type) on a B.S.A. On pushing the plunger to the bottom of its stroke, the oil will drip at first, then gradually stop. I have put new packing in the gland (ordinary string), and left it so slack that the oil leaked a little; but it was of no use. I then got a new spring from the makers with no better result. Is the packing wrong? It seemed to be string which was used in the first case.—L.C.D.

Possibly the trouble with the semi-automatic oil pump on your B.S.A. is due to the non-return ball-valve being choked with dirt. It is situated immediately to the right of the oil-pump plunger on the connection between the pump barrel and the sight feed lubricator, and is covered by a small set screw. It is usual in packing the pump plunger gland to use asbestos string.

Belt Trouble.

My machine, a 3½ h.p. Rudge Multi, has run 3,750 miles, about half of which has been done with my wife as pillion passenger. The motor cycle has given every satisfaction, but I want your help in choosing a suitable belt, as I have used four already in the above distance. One of these was a 1in. belt, which I found was not flexible, and would not bend round the pulley on low gear. Consequently, I have konked out on hills through not being able to get down to the bottom of the pulley. This belt has lost some of the rubber from its sides after a few miles only. There is another item which has caused me a little trouble. The heads of the right-hand spokes on the back wheel keep breaking occasionally, always in the same place.—W.H.

Excessive belt wear in connection with the Rudge Multi transmission is usually the result of incorrect methods of driving. You certainly appear to have been unfortunate, and we suggest that you take special care when manipulating the gear to effect the changes gradually, working the gear lever notch by notch. Under no circumstances should you move it suddenly from one extreme to the other. You will understand that a 1in. belt used on the multi gear does not permit so low a ratio as a ⅞in. belt. The spoke breakages in the rear wheel may also be the result of violent gear changing and harsh use of the clutch.

Fitting a Gear.

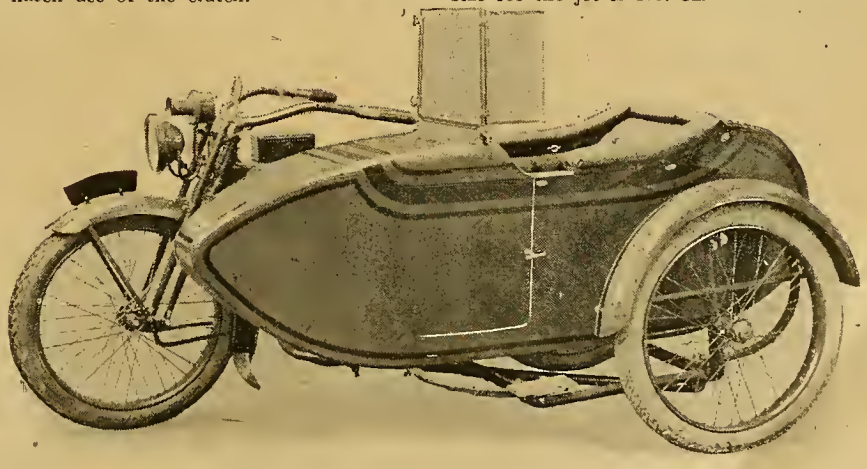
Can a three-speed Sturmey-Archer countershaft gear be fitted to a single-speed standard 3½ h.p. 1914 Rudge?—W.E.H.

A Sturmey-Archer three-speed countershaft gear might be fitted to the single-speed 1914 Rudge motor cycle, provided you could obtain a special bottom bracket to carry the gear. The fitting of this would necessitate rebuilding of the rear part of the frame. Consult the makers.

Overheating.

I have a 1911 3½ h.p. motor cycle which gives a lot of trouble through overheating; could you give me some advice how to keep it cool? Also could you let me know the exact valve timing for this engine, and the best size jet for solo work? The engine has just been overhauled.—N.E.S.

Since your engine has just been overhauled, the overheating is most likely the result of late ignition timing. The best setting for the ignition is as follows: Retard the magneto control two-thirds, rotate the engine until piston is at the top of the compression stroke, and then connect the magneto drive when the contact breaker points are just separating. Valve timing as follows: The exhaust valve should close as the piston reaches the top of the exhaust stroke, and the inlet valve at this point should be just commencing to open. The most suitable size for the jet is No. 32.



Glancing at this sidecar one would not suspect that it is equipped with a hood, yet by opening lockers for which the arm rests form the lids, a hood can be raised instantly. The sidecar was one of the attractions on the Harley-Davidson stand at the recent Olympia Show

Life of Machine.

I have recently purchased a good, sound 1915 Douglas, which I use for taking me into business every day. The distance is eleven miles, making a total run of twenty-two per day. The machine is in sound condition, and the roads are splendid. Now, do you consider this daily run, for an indefinite time, too hard on the machine?—V.B.

A daily run of twenty-two miles will not overtax your machine, provided it has a certain amount of attention. Given reasonably good fortune, you should easily achieve a mileage of 5,000 without serious repairs or renewals being necessitated. The machine should then be thoroughly examined, after which it should be good for the same, or even a greater, distance.

A Complicated Accident.

I should be much obliged for your opinion on the following matter. Recently I was driving my 8 h.p. and sidecar outfit from Barnet towards London, and just before reaching Whetstone a pedal cyclist, who was evidently riding outside the range of my two head lights on the left of the road, and whom neither I nor my wife saw, suddenly shot in front about 10ft. away. I applied my brakes and brought my machine to a standstill, but not before colliding with the cyclist in the rear. The impact was sufficient to turn my handle-bars in the head, and just to send my machine on to the tramlines on the other side. A Ford car, coming in the opposite direction, ran into me, and caused considerable damage to my outfit. I was driving on the tramlines on the left of the road; the Ford on the lines on its side of the road. My wife was injured on the head and arm, and while I was attending to her the cyclist disappeared, so I did not get his address. The Ford owner has now sent on a claim for £30 damage to his car, which I shall dispute. When the car hit me I was stationary. My speed when I hit the cyclist was 18 m.p.h. I estimate the speed of the car at approximately 25 to 30 m.p.h. The Ford owner told me he was fully insured. Unfortunately, I am not. The Ford's front axle was pushed back about 6in., and other minor damages. My sidecar body was smashed, chassis bent, and front forks badly buckled. Will you please inform me if, under the circumstances; the car owner can hold me liable? This accident would not have happened if the cyclist had carried a rear light.—A.G.C.

The evidence which you place before us is somewhat confused, and, in certain senses, contradictory. The accident appears to have been one of those occurrences in which neither of the parties involved could legally be blamed. We think your best course will be to submit the whole matter for the arbitration of the Automobile Association, since you are both members. Although, of course, the lack of the rear light on the pedal cycle was the initial cause of the accident, the law at the time did not compel the carrying of a rear light on cycles, and, consequently, you could not proceed against the cyclist on that account.

Sprocket Sizes.

My present top gear on a 3½ h.p. motor cycle and sidecar (fitted with Bowden gear) is 5 to 1. I am anxious to lower the top gear to about 6 to 1, and should esteem your assistance. At present the sprocket on the engine-shaft is 13T., countershaft sprocket 28T., with 8in. pulley and 19in. belt rim. I propose changing the countershaft sprocket from 28T. to 30T. Would this have the desired effect?—J.P.

With the sprockets and pulleys at present fitted to your machine the gear is 5.1 to 1. A thirty-tooth sprocket on a countershaft would give you 5.5 to 1. The best way of reducing the gear to 6 to 1 would be to retain the present countershaft sprocket, and fit one with eleven teeth on the engine-shaft, if this is possible.

READERS' REPLIES.

Oil Slinging from Gear Box.

Referring to "G.N.'s" query on page 617 of your issue of November 20th, I experienced the same trouble of oil slinging on my 3½ h.p. Rover about six months ago, causing excessive belt slip, and covering everything in oil. After endless trouble, I got over the difficulty by taking down the gear box and fitting a stout felt washer, and using thicker grease in the box, being careful to fill it only just up to the shaft. At first I thought the oil came from the engine through the chain case to the belt pulley, but in the end I found all the trouble was from the gear box.—H. VINCENT-FEDDEN.

On page 688 of the issue of November 27th there is a reply to a question regarding an Ariel gear box. Apparently this requires a new felt washer, and, if the owner will have this sent along to us, we shall be pleased to do what is necessary. The grease we recommend for our gear box is Price's Belmoline "B," and we use this ourselves. Ordinary engine oil is not satisfactory.—ARIEL WORKS, LTD.

RECOMMENDED ROUTES.

FROME TO HOLYHEAD.—P.L.

Frome, Bath, Swainswick, Stroud, Gloucester, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Shrewsbury, Oswestry, Llangollen, Corwen, Bettws-y-Coed, Bangor, Holyhead. Approximately 210 miles.

HIGHGATE TO MARPLE.—F.G.

Highgate, Finchley, Barnet, St. Albans, Dunstable, Fenny Stratford, Stony Stratford, Towcester, Weedon, Daventry, Ashby, Kilsby, join Watling Street and straight on to Atherstone, Burton, Tutbury, Sudbury, Ashbourne, Mayfield, Leek, Macclesfield, Marple.

LEICESTER TO TOOTING.—R.J.H.

Leicester, Lutterworth, Kilsby, Daventry, Weedon, Towcester, Stony Stratford, Fenny Stratford, Dunstable, St. Albans, Elstree, Edgware, straight on to Marble Arch, Park Lane, Knightsbridge, Brompton Road, Fulham Road, Battersea Bridge, Clapham Common, Balham, Tooting.

SPARKLETS

National Union of Manufacturers

We are informed that the British Rubber Tyre Manufacturers' Association has recently joined the National Union of Manufacturers.

Petrol Taps and Motor Fittings.

Messrs. S. A. Lamplugh, Ltd., King's Road, Tyseley, Birmingham, send us an exceedingly well got up catalogue of petrol taps, compression taps, and other useful fitments. In it is described lucidly and in detail the ingenious throttle-controlled automatic oil pump for motor cyclists marketed by this firm.

Arden Two-stroke Engines.

We learn that these engines, which were recently described in the pages of *The Motor Cycle*, are now being produced in fairly large quantities. The Endurance Cycle Co., Sheepcote Street, Birmingham, who are the sole distributing agents, are now rapidly booking up contracts for 1920 production.

McLean Fork Springs.

For some time we have been testing the McLean spring on a 4 h.p. Triumph. This was described in *The Motor Cycle*, October 16th, page 425. It has proved to be eminently satisfactory, as it greatly improves the appearance of the machine and renders the riding most comfortable. The McLean spring fork is in future to be handled by the Gosport Engineering Co., Gosport, Hants.

Welding Repairs in Ireland.

Messrs. Barimar, Ltd., inform us that they have now opened a branch depot at 185, Great Brunswick Street, Dublin, Ireland, where they will undertake all welding repairs, and thus save unnecessary delay in sending these to the head office in London.

This firm also intends to open branches in France, Australia, New Zealand, Delhi, Calcutta, Bombay, Madras, Karachi, Burma, Ceylon, South and East Africa, Denmark, Norway, and Sweden.

Dissolved Acetylene.

Numerous queries have reached us in the past concerning the lighting of motor cycles by dissolved acetylene. The requirements of our readers are now being carefully studied by Messrs. Allen-Liversidge, Ltd., 106, Victoria Street, London, S.W.1, and this firm will shortly place on the market a cylinder for motor cycles. The dimensions of this will be 10in. × 3in., and the weight will not be excessive on either solo machines or sidecar outfits. The cylinder is of steel, and is fitted with a gauge at its base showing how much gas there is inside. The cylinders will be sold at £3, and refills will be obtainable for 3s. Roughly speaking, one of these cylinders will light a head lamp for the space of twenty-four hours.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable & Co. to ILIFFE & SONS Ltd., and crossed Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box ooo, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. ooo, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the machine offered may be seen and tried.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, ½ %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited. The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

IMPORTANT NOTICE.

Owing to the Christmas Holidays, the issue of "The Motor Cycle" for January 1st will be closed earlier than usual. All copy and instructions for Miscellaneous Advertisements must therefore be in our hands not later than first post on Tuesday, December 23rd.

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London, E.C.4. — *For square deals and Values...*

Our Stock includes the following Machines

NEW.

No.	H.P.	Machine.	Year.	Price.
12154.	2¾	**CLYNO**	1920	£63 0
12163.	4	**BLACKBURNE** and Sidecar	1920	£135 5
12161.	8	**NEW IMPERIAL** and Sidecar	1919	—
12183.	4	**DOUGLAS**	1919	£108 0
12209.	4½	**QUADRANT** Combination	1920	£122 10
12212.	4½	**QUADRANT**, solo	1920	£95 0
12197.	2¾	**DOUGLAS**	1919	£80 0
	2¾	**DOUGLAS**, 3-speed	1920	£90 0
	4	**DOUGLAS** Combination	1920	£145 0

SECOND-HAND SOLO MACHINES.

12074.	6	**ZENITH**, Gradua gear	1914	£84 0
12059.	8	**MATCHLESS**, single gear	1913	£72 10
12012.	3½	**CORAH-J.A.P.**	1912	£48 0
12193.	4	**DOUGLAS**	1919	£116 0
12186.	2¾	**O.K.-JUNIOR**	1917	£55 0
11762.	3½	**RUDGE**	1913	£45 0
12152.	4	**TRIUMPH**	1916	£87 10
12156.	3½	**RUDGE-MULTI**	1915	£75 0
12079.	2½	**TRIUMPH JUNIOR**	1914	£52 10
12169.	3½	**N.S.U.**	—	£22 10
12187.	3½	**TRIUMPH**	1914	£57 10
12205.	2½	**CHATER-LEA**	1914	£45 0
12206.	5-6	**ZENITH**	1914	£57 10

SECOND-HAND COMBINATIONS.

12166.	8	**ROYAL ENFIELD** Combination	1919	£187 15
12010.	7-9	**JAMES-HOWARTH** Comb.	1914	£125 0
12120.	3½	**KERRY-ABINGDON** Comb.	1914	£72 10
12082.	5-6	**INDIAN** Combination	1913	£125 0
12000.	7-9	**INDIAN** Combination	1913	£85 0
12184.	6	**ROYAL ENFIELD** Combination	1917	£155 0
12207.	3½	**DENE** and Sidecar	1912	£48 0
12196.	4	**DOUGLAS** Combination	1919	£125 0
12101.	4	**A.J.S.** and Sidecar	1915	£130 0
11977.	8	**WILLIAMSON** Combination	1914	£110 0
12159.	5-6	**RUDGE-MULTI** and Sidecar	1914	£87 10
12164.	4	(twin) **ZENITH** and Sidecar	1919	£145 0
12134.	4	**TRIUMPH** and Sidecar	1918	£125 0
12104.	7-9	**HARLEY-DAVIDSON** Comb.	1915	£150 0
12188.	6	**ROYAL ENFIELD** Combination	1913	£87 10
12189.	4	**DOUGLAS** Combination	1919	£120 0
12136.	3½	**RUDGE MULTI**	1916	£130 0
12168.	7-9	**INDIAN** Combination	1913	£77 10
11983.	6	**ROYAL ENFIELD** Combination	1913	£82 10
12204.	5-6	**INDIAN** and Sidecar	1914	£80 0
12203.	6	**ROYAL ENFIELD** and Sidecar	1918	£165 0
	4	**TRIUMPH**	1916	£84 0

SECOND-HAND CARS.

12135.	–	**CARDENA** Cycle Car, 7-9 h.p. Harley-Davidson engine	£145 0
12099.	8	**DUO** Car, J.A.P. engine	£150 0

SIDECARS.

Canoelet Minor.	Royal Ruby.
Canoelet D4.	"Wauchope's" No. 1.
Canoelet K4.	"Wauchope's" No. 2.
Canoelet K3.	Williamsons.

The Latest 1919

8 h.p. J.A.P. TWIN-CYLINDER ENGINES.

From Stock. Trade supplied. Terms on application these include extras. 50 engines, for immediate delivery. **£37 10s.** each.

Second-hand Machines taken in Part Payment. **Good price allowed.** Maker's guarantee.

WAUCHOPE'S,

9, SHOE LANE, E.C.4.

'Phone: Holborn 5777
'Grams: Opificer, Fleet, London.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C. Motor Cycle; first delivery option for premium. What offers?—Box L6,148, c/o *The Motor Cycle.* [5429

A.B.C. 1914 3h.p. Twin, fast, sporty model, in excellent condition; £62.—Barker, 13, Victoria St., Clifton, Bristol. [5439

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0026

A.B.C.—Deliveries commencing after the Show. Have you ordered?—Prompt deliveries from Victor Horsman, Ltd., 7, Mount Pleasant, Liverpool. [0021

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [0056

A.B.C. — Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire [0015

Abingdon.

3½h.p. Abingdon King Dick, brand new T.T. show model.—Harrods Motor Showrooms, 116-118, Brompton Rd., opposite Main Building, S.W.1. [5332

1919 6-7h.p. Abingdon King Dick Combination, 3-speed, countershaft, fully equipped, spare tyre and tube, new July; £155, or nearest offer.—Arnold, 35, Oldridge Rd., Balham, S.W. [5793

ABINGDON King Dick 3½h.p. T.T. Model, with Mabon clutch, Binks carburetter, T.T. bars, Moseley tyres as new, lamps, horn, in excellent condition throughout; £45; exchanges.—R. D. Varty, Thundersley, Essex. [5996

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [9574

1920 A.J.S. Combination in stock; list price.—Cross, Agent, Rotherham. [X1037

CROW Bros., High St., Guildford, A.J.S agents since 1912, accept no premiums. [X7943

CROW Bros., High St., Guildford, A.J.S agents since 1912. Deliveries have begun 4083

A.J.S. 2¾h.p. 3-speed T.T. model, all on, very fast; £55.—2b, St. Mary St., Woolwich. [X1069

1914 A.J.S. Combination, in perfect running order, all tyres new; £98.—26, Castlebar Mews, Ealing. [5602

A.J.S. Brand New 6h.p. Combination, screen, spare wheel, tyre.—Parker's, Bradshawgate, Bolton. [X1115

A.J.S. 1914-15 Combination, as new, spares and accessories; £110.—S., 6, Neville Court, St. John's Wood. [5394

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton T.A.: Parts. [2237

A.J.S. 6h.p. Combination, 3-speed, clutch, kick start; £97, or exchange for lightweight and cash.—35, Rosemary Rd., Clacton-on-Sea. [5376

WAUCHOPE'S, 9, Shoe Lane, London; 1915 A.J.S. 4-5h.p machine, 3-speed and clutch and kick starter, with coachbuilt sidecar; £130. [5991

2¾h.p. A.J.S., 3-speed, kick starter, splendid condition; £60; seen in Derby by appointment.—Sayer, Hill Bank, Quarndon, near Derby. [5383

A.J.S. Combination, just delivered, brand new, spare wheel, spring seat-pillar, wind screen, tools; £200 cash, or offer.—Box 955, c/o *The Motor Cycle.* [X1019

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth Sole agents. Now booking for earliest deliveries. [0061

1915 6h.p. A.J.S. Combination, 3-speed, countershaft, kick start, screen, 3 lamps, new Watford speedometer, sound condition; £110.—18, Cecil Av., Wembley. [X1091

1916 6h.p. A.J.S. and Sidecar, 3-speed, countershaft, hand-controlled clutch, complete with lamps and horn; £110; in very good running order.—Box L6,201, c/o *The Motor Cycle.* [6003

A.J.S. 1915 6h.p. Combination, complete lamps, horn, spare wheel and tyre, hood, screen, luggage grid, etc., excellent condition; £125.—Rev. Copleston, Widworthy Rectory, Honiton, Devon. [5869

1919½ A.J.S. Combination, 3 Lucas lamps, hood, screen, horn, speedometer, spare wheel, spring seat-pillar, tools, excellent condition; owner buying car; £180.—Naylor, Lea Haven, Oldnall Rd., Kidderminster. [X0921

1919 A.J.S., delivered Nov. 16th, wind screen, spare wheel, apron, 4 brass lamps, big head lamp cost £14, 2 sidecar lamps, fitted like a car, electric lighting, 2 accumulators; best over £200.—Gee, 65, Ablewell St., Walsall. [X0675

A.J.S., 1919, military model, 6h.p., ridden 70 miles, condition new, Lucas horns, lighting set, tools, —3-speed, Tan-Sad; first offer over £130 secures; private.—Apply, Harry Perry, 98, Grange Park Rd., Leyton, E.10. [5695

MOTOR CYCLES FOR SALE.

A.J.S.

1919 A.J.S. Combination, hood, apron, curtains, lamps, Klaxon, Watford trip speedometer, special Triplex wind screen, spare wheel, plugs, tools, knee-grips, insurance £250. This excellent turnout to be sold complete with 8ft.×6ft. portable garage, ⅝in. matchboarding, felt roof, bolts; £225; no offers. Seen in London by appointment.—Box L6,076, c/o *The Motor Cycle.* [5301

1919 A.J.S. Combination (mid-Sept.), spare wheel, luggage carrier, apron, screen, mat, tools, pump, mileage under 900, all tyres practically as new, Lucas King of Road head, T.W.R. side, P. and H. rear, Watford speedometer, foot Klaxon, Lucas horn, Clayrite mirror, handle-bar muffs; £195; would exchange 1920 Morgan, cash adjustment; Friday, after 6.—64, Gladsmuir Rd., Highgate, N.19. [5674

A.J.S. 1916 5-6h.p., 3-speed countershaft, interchangeable wheels, kick starter, hand clutch, spare wheel nearly new, wicker sidecar, special carriers, apron, skin mat, engine lately overhauled (£20), new enamelled tank, combination lamps, best horn, spare chains, new valves, etc., perfect order, negotiating 2-seater; best offer over £110; also light cane sidecar for 3½h.p. engine, £7.—Sedgwick, Kirkby Lonsdale, Westmorland. [5698

Alldays.

ALLONS at Gourlay's, Fallowfield, Manchester. [2832

ALLON, 1919 (July), 2-speed, clutch, spare belt, splendid condition, tyres unpunctured; £65.—26, Hurst Rd., Horsham. [5398

ALLON 1916 2-stroke, 2-speed, Doulops, head lamp, horn, etc.—Wilkins, Simpson and Co., opposite Olympia, London. [5443

ALLDAYS, Allon, 1917, excellent condition throughout, ridden only week-ends; £45.—49, St. Leonard's Rd., Mortlake, S.W. [X0810

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0027

ALLON, September, 2-speed, clutch, kick, accessories, mileage 200, faultless; bargain, £65.—55, Watling St., Wellington, Salop. [X1092

ALLON 1920 Model de Luxe, delivered Dec. 8, 2 speeds, handle-bar, F.E., clutch, kick-starter; listed £70. Streatham 2384, or after 7.—63, Foxbourne Rd., Balham. [5626

1919 Allon 2-stroke, 2-speed, clutch and kick starter, recent delivery, little used, together with lamps, horn, and Tan-Sad; £75.—Phillips, 57, Plumstead Common Rd., Plumstead, S.E.18. [X0678

ALLDAYS 2¾h.p., July, 1919, perfect condition, unpunctured, not ridden 400 miles, stored last two months, horn, and lamps; £60, or nearest; Shropshire. —Box 947, c/o *The Motor Cycle.* [X0949

ALLON, 1916, accessories, has run under 300 miles, since fitted with new type engine, saddle tank, leg shields, Renolds chains, excellent condition; £50, no offers.—Wykes, Rothley, Leicester. [X0951

8h.p. Twin Alldays Combination, 3-speed, clutch, kick starter, enclosed chain drive, hood, screen, speedometer, lamps, under 5,000 miles, 1915; £105.—191, Shernhall St., Walthamstow, E.17. [5355

ALLON, 1917, 2-speed, recently overhauled, excellent condition, brake and chain guards fitted, lamps, horn, owner-driven; 52 gns., near offer.—Moverven, Canonbie Rd., Forest Hill, S.E. [5677

ALLDAYS Allon, 1917, 2¾h.p., 2-speed, speedometer, Klaxon, lamps, tools, band brakes, perfect condition, recently overhauled; £55.—68, Primrose Mansions, Battersea Park. (After 5, Saturday 2.) [5594

ALLEN-BENNETT Motor Co.—Allon. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5922

1919 2¾h.p. Allon De Luxe, 2-speed, kick starter, hand control clutch, electric lights, leg shields, and accessories, absolutely new, only been 200 miles, perfect; bargain, £72/10; Cambridge.—Box L6,175, c/o *The Motor Cycle.* [5954

Ariel.

ARIELS.—Gourlay, Agent, Fallowfield, Manchester. [2833

CROW Bros., High St., Guildford, Ariel agents, supply at makers' prices. [X7944

CYRIL WILLIAMS, for early delivery of Ariels.—Chapel Ash Depot, Wolverhampton. [X8625

ARIEL, brand new 3½h.p., 3-speed countershaft model, just arrived; list price.—Moss, Wem. [X1146

ARIEL 1919 3½h.p., 3 speeds, F.E., K.S., countershaft, lamps, and horn; 86 gns.—K. Swobey, Ashtead, Surrey. [5316

JONES' Garage, special agents for Ariels, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0028

ARIEL Combination, 3½h.p., 3-speed, clutch, wicker sidecar; cash £50, cheap.—Fair View, Cranham Park, Upminster. [5514

ARIEL 1920 3½h.p. Combination, Millford sidecar in stock; £130.—Edwards, 7, Exhibition Rd., South Kensington. [5757

XMAS PRESENTS

Ready for Immediate Delivery.

In order to make room for 1920 models, we have reduced the prices of our Second-hand Stock.

SOLO MACHINES.

CONNAUGHT, 1914, single gear £30
RUDGE Multi, 1914, 3½ h.p., speedometer £65
JAMES, 1915, 2¾ h.p., 2-stroke, 2-sp. £46
NEW RYDER, 1919, 2¾ h.p. J.A.P., 2-speed £57
TRIUMPH, 1914, 4 h.p., 3-speed ... £65
IVY, 1916, 2¾ h.p., 2-stroke, 2-speed. £60
DOUGLAS, 2¾ h.p., W.D. model, as new £63
RUBY, 8 h.p. J.A.P., W.D. model .. £115

NEW MODELS.

VERUS, 2¾ h.p., 2-stroke, 2-speed, kick start, clutch £75
CLYNO, 2¾ h.p., 2-stroke, 2-speed £63
Millford, Montgomery & Canoelet Sidecars.
Immediate Delivery.

SIDECAR COMBINATIONS.

HARLEY-DAVIDSON, 1919, 7-9 h.p., electric £205
ROVER 1915, 3½ h.p., 3-speed £90
INOIAN, 1916, 7-9 h.p., Powerplus. £138
SUNBEAM, 1918, 3½ h.p., 3-speed, sporting Sidecar £170
REX, 1914, 6 h.p., 2-speed £84
B.S.A., 1915, 4 h.p., chain-cum-belt. £128
ARIEL, 1919, 3½ h.p., 3-speed £125

Maudes' Motor Mart
100, Great Portland St, London W.1.
100, Paris St, Exeter.

Telegrams: "Abdicate, Wesdo, London."
Telephone: Museum 557.
Telegrams: "Combustion, Exeter."
Telephone: Exeter 933

MAUDES MOTOR MART

THE SEAL OF SATISFACTION

MOTOR CYCLES FOR SALE.

Ariel.

ARIEL, 3½h.p. and 6h.p.; early deliveries; all spare parts stocked.—F. Speakman, Ariel Expert, 7, Rochdale Rd., Harpurhey, Manchester. [4020

ARIEL 3½h.p., good condition, belt, tyres, tubes, mag., nearly new; bargain, £30.—Bds. 1bjs, Salvation Hut, Tank Corps Depot, Wareham. [5910

1919 Ariel Combination fitted with 3-speed countershaft gear, P. and H. head lamp, Lucas horn, in very good order; £95.—King and Harper, 6 and 7, Bridge St., Cambridge. [5479

ARIEL 3½-4h.p. Combination, Oct., 1917, 2 lamps, horn, luggage carrier, some spares, insurance policy, splendid condition; £110.—Crossclife, First Av., Gillingham, Kent. [5806

ALLEN-BENNETT Motor Co.—Ariel. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5924

Auto-Wheels

WALL Auto-Wheel, perfect; 12 gns.—Watson, St. Peter St., Tiverton. [X1021

AUTO-WHEEL for sale, in perfect order; £9.—Brook, Burnham, Somerset. [4688

AUTO-WHEEL, splendid order; £12.—Hall, next to Green Man Hotel, Whetstone, Middlesex. [5371

WALL Auto-Wheel, perfect running order; £12.—Swame, Red House Farm, Amesbury, Wilts. [X0887

WALL Auto Wheel, Model de Luxe, just delivered, never used; first £23/10 secures.—Swift, Howard St., Ledbury, Herefordshire. [5579

AUTO-WHEEL, fitted to almost new 3-speed B.S.A. cycle, complete lamps; £28; would separate.—Jackson's Garage, Horsham. [5409

AUTO-WHEEL, thoroughly overhauled, and now in perfect condition; 10 gns., or nearest offer.—Jack Pruen, Oxford St., Weston-super-Mare. [5361

AUTO-WHEEL de Luxe, by Wall, 2-speed gear, free engine, fan-cooled, stored during war; 15 gns., or with strong Sunbeam cycle, fitted for same, and with Brooks B130 saddle, 20 gns.—H. B. Pollard, Evesham. (D) [X0962

WALL'S Model de Luxe Auto-Wheel, purchased August last, ridden about 120 miles with cycle, 3-speed gear, strengthened frame, Clincher Vacuum tandem carrier tyres; £26; seen by appointment London.—Box L6,149, c/o *The Motor Cycle.* [5430

Bat.

6h.p. Bat-Jap and sidecar, 2-speed countershaft, clutch, good condition; £75.—43, Morley Rd., Lewisham. [5321

BAT.—Sole Birmingham agents, The Premier Motor Co., Aston Rd., Birmingham. 'Phone: Central 4310. [5553

B.A.T.—We can give earliest delivery of all models; solo in stock.—Edwards, 7, Exhibition Rd., South Kensington. [5758

BAT-J.A.P.'s.—Immediate delivery all models. Orders accepted in rotation.—W. H. Grimes and Co., 18, Bruton Place, Bond St., W. [4648

BAT-J.A.P., K.S., 3 speeds, new Oct., 1919, not ridden 100 miles, perfect condition; £130.—33, Ewhurst Rd., Crofton Park, S.E.4. [5497

BAT-J.A.P., 8h.p., chain drive, countershaft gear, Coronet coach sidecar; £75.—Halifax Motor Exchange, Union St. South, Halifax. [5564

BAT-J.A.P., 6h.p., 2-speed, picked engine, T.T. bars, large tank; evenings; 48 gns.—120, Marlborough Flats, Walton St., Chelsea, S.W.3. [6010

Blackburne.

CROW Bros., High St., Guildford, are old Blackburne agents, and invite enquiries. [X7945

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Blackburne motors; early delivery. [5297

JONES' Garage, special agents for Blackburnes, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0029

2¾h.p. Blackburne, o.h.v., fixed gear, Bosch, Amac, new tubes, belt and tyre, wants few adjustments; must sell; £15.—20, Herberton Rd., Bournemouth. [5449

BLACKBURNE.—New 1920 4h.p. models actually in stock; no premium required.—Chandler, Reyre and Williams, Hitchin, Herts. 'Phone: 165 Hitchin. [0062

WAUCHOPE S, 9, Shoe Lane, London; 4h.p. new 3-speed countershaft Blackburne, 3-speed countershaft, Sturmey-Archer gear, with sidecar; £135/5; could be sold without sidecar. [5987

ALLEN-BENNETT Motor Co.—Blackburne. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5925

Bown.

BOWNS-VILLIERS, 2¾h.p., 2-speed, brand new; in stock at £62/10.—Charles Moxham and Co., 32, Torwood St., Torquay. [5463

BOWN, 1919, 3h.p. Dalm engine, perfect condition, lamps and horn, new; £50.—72, Vernon Rd., Copnor, Portsmouth, Hants. [5374

MOTOR CYCLES FOR SALE.

Douglas.

2¾h.p. Douglas, 2 speeds, late model, renovated; 48 gns.; exchange combination.—81, Dundee Rd., South Norwood. [5670

DOUGLAS, 1915, 2¾h.p., 2-speed, overhauled and renovated; £45.—Franklin, 357a, North End Rd., Fulham, S.W.6. [4798

1919 4h.p. Douglas, indistinguishable from new, lamp sets, black and plated; £100.—Dawson, 13, Regent's Terrace, Cambridge. [X0650

DOUGLAS, 1916, 2¾h.p., 2-speed, T.T., buffer, heavy Dunlops, genuine, smart machine.—50gns. —21, Newton Av., Acton. [5947

TWO 1917 4h.p. 3-speed Douglas Combinations; any trial; £95, £85; stamp, reply; no offers.—Clegg, 1, Shirley Rd., Southampton. [5726

3-SPEED 2¾h.p. Douglas, hand-operated clutch, kick starter, Lucas lighting, as new; £75.—19, Highgate Av., Highgate, N. [5807

DOUGLAS 2¾h.p., late 1914, 2-speed, very fast, perfect condition, stored during war, new valves, rings, chain, tyre and tubes.—Below.

4h.p. Douglas Combination, overhauled, new bearings throughout, valves, rings, tyres, tubes, belt new.—Below.

DISMANTLING 3½h.p. Douglas, all parts except magneto; 3h.p. Kerry engine, with pulley, carburetter, and exhaust lift; offers wanted.—Stannard, Lynn Rd. Bakery, Downham, Norfolk. [5582

DOUGLASES.—Call at Smith's for your next Douglas.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [0093

1920 Douglas Models, Now delivering 2¾h.p. 3-speed, £90; 4h.p. combination, £145.—Moffat, Douglas agent, Yeovil. 'Phone: 50. [1103

2¾h.p. Douglas, 1915, 2-speed, thoroughly overhauled, perfect condition, bargain; £50.—Cooke, 33, Hoveden Rd., Cricklewood, N.W.2. [5855

SMITH'S have in stock new W.D. 2¾h.p. Douglases at 70 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [0083

DOUGLAS 4h.p. Combination, brand new; immediate delivery.—Pearson and Sopwith, Ltd., 60, Mortimer St., W.1. 'Phone: Museum 4169. [5461

DOUGLAS 2¾h.p., W.D. type, mileage 80, legshields, horn; £75; appointment only.—Lieut. Franklyn, King's Arms, Berkhamstead. [5766

DOUGLAS, 2¾h.p., 2 speeds, clutch, kick starter, speedometer, good condition; £45, no offers; stamp.—Darke, North Cheam, Surrey. [5866

DOUGLAS, 2¾h.p., W.D., horn, spares, uncrated Aug., 1919, ridden 800 miles, perfect; 60 gns.—6, St. Margaret's Rd., Plumstead, S.E.18. [X0830

DOUGLAS 2¾h.p., 2-speed, uncrated in October, absolutely perfect, well equipped, beautiful machine; £65.—60, Wallingford Av., N. Kensington. [5616

DOUGLAS 2¾h.p., 2-speed, 1919, splendid condition, accessories; £68.—Clifford Wilson Mfg. Co., 70, Royal Hospital Rd., Chelsea, S.W.3. [5820

FOR Immediate Delivery, two brand new W.D. 2¾ h.p. Douglases; £65 a-piece.—Edwards and Parry, 4, Blenheim St., Bond St., W.1. Mayfair 2666. [5551

SMITH'S for Second-hand 1916 2¾h.p. Douglases, overhauled, from 50 gns.—Smith's, 10-16, Haverstock Hill, opposite Chalk Farm Tube Station. [0092

DOUGLAS 2¾h.p., W.D., new June, lamps, etc., complete, good tyres, excellent condition; by appointment; £64.—R. W., 1, Spring St., Paddington. [5393

1919 Douglas W.D. 2¾h.p., lamps, Klaxon, and spares, little used, ready to ride away; £80.—Blake, Norton House, Midsomer Norton. 'Phone: 38. [X0981

1920 Douglases.—By one who knows; delay is dangerous.—Order yours now from the Douglas Specialist, Gibb, Gloucester. 'Phone; 852. [6340

1916 4h.p. Douglas Combination, complete with all accessories, lamp, horn, etc., in splendid condition; price £95.—Chapman, 42, Duke St., Norwich. [X0818

DOUGLAS 2¾h.p., late 1915, 2-speed, Bosch, Amac, Dunlops (nearly new), semi-T.T., excellent condition; private owner; £55.—10, York Av., Brighton. [5894

DOUGLAS, 2¾h.p., 1915, generators, lamps, and mechanical horn tyres, and everything perfect; bargain, £48.—7 Recreation Rd., Sydenham, S.E. [5755

DOUGLAS 1915 2¾h.p., 2-speed, aluminium and blue, fitted with new Binks carburetter, long exhaust, looks like new; £57/10.—Clarke, Queen St., South [5796

1919 4h.p. Douglas Combination (September), run 500 miles only, complete; owner going abroad; £135, no offers.—Brereton, Hardham Rectory, Pulborough. [5827

DOUGLAS, 1916, very carefully used, overhauled and re-enamelled, in guaranteed mechanical condition tyres and belt good; £52.—87, Station Rd., Finchley. [5706

1919 Douglas 4h.p. Combination, fitted with lamps and Easting wind screen, splendid order; price £130.—Apply, American Studios, 167, Commercial Rd., Portsmouth. [5377

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Douglas.

DOUGLAS 2¾h.p., 1916, uncrated October, 500 miles perfect condition, new lamps, Klaxon, pump, tools, Tan-Sad pillion, very fast; £60.—Hawkins, 14 First Av., Acton, W.3. [X0897

DOUGLAS 2¾h.p., delivered new Aug., 1917, Continental type, 3 speeds, hand clutch, kick starter, Lucas lighting set, excellent condition; £65.—Panckridge, Petersfield. [5878

DOUGLAS 4h.p., 1918, good condition, and mechanically sound; exchange for late model 2¾h.p., or countershaft Triumph; no dealers. 11, Cowper Gardens, Wallington, Surrey. [5519

1919 4h.p. Douglas Combination (Sept.), latest clutch, fully equipped, lamps, horn, Saunders extra air, not done 1,000 miles; price £145.—Vickers, Fotheringhay, Peterborough. [X0829

WAUCHOPES, 9 Shoe Lane, London; 4h.p. Douglas 1919 combination, not done more than 1,500 miles, £125; also Army model, 2¾h.p., 2-speed, all black; £75; new. [5925

1919 2¾h.p. Douglas, 2-speed, brand new, 1 only left in stock; £80 plus carriage.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [5913

DOUGLAS, 2¾h.p., new W.D. 2-speed model, £60; also a second-hand 2¾h.p. 2-speed model, with accessories; £60.—Elce and Co, 15-16, Bishopsgate Av., Camomile St., E.C.3. [0067

1919 4h.p. Douglas Combination, 3 speeds, clutch, kick starter, mechanical horn, and accessories complete, condition as new; £140, no offers.—Box L6,154, *c/o The Motor Cycle.* [5520

ACTUALLY in stock for immediate delivery, no premium, brand new 4h.p. Douglas combination; first cheque secures.—Edwards and Parry, 4, Blenheim St., Bond St., W.1. Mayfair 2666. [5550

1919 Douglas 2¾h.p., 2-speed, T.T. (August), 127 P. and H. lamp set, horn, tools, etc., perfect order, 200 miles; 78 gns.; delivered 50 miles.—Spratt, 10, Hickey's Grove, Richmond, Surrey. [5949

1917 Douglas 4h.p. Combination, 3 speeds, and clutch, enamel and plating good, also tyres, new sidecar body; accept £92/10.—Edwardes, 277, Camberwell Rd., S.E.5 (near Green). [6005

1915 2¾h.p. Douglas, completely equipped in every detail, specially tuned engine, special connecting rods and pistons, guaranteed perfect, and in new condition; £65, or best offer.—Day, Okehampton. [5348

4h.p. Douglas Combination, brand new, complete with storm apron; prices and terms on application.—Harrods Motor Showrooms, 116-118, Brompton Rd., opposite Main Building, London, S.W.1. [5329

DOUGLAS 2¾h.p., November (1919), hardly used complete with best accessories, including Vedmeter and insurance policy, extra mudguard for winter; best offers.—J. Yeomans, Newton Rd., Burton-on-Trent [5523

1914 Douglas, 2-speed, Lucas lighting, horn, tools, spares, special wind shield, large pan saddle, all original, equal new, been stored, only needs seeing; £55.—436, Whitehorse Rd., Thornton Heath, S.E. [5643

1919 4h.p. Douglas, with sidecar, brand new, with latest type clutch, 1 only left in stock; £135 plus carriage.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [5911

IT Appears Ridiculous to Advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery.—Eli Clark, Douglas Agent, 196, Cheltenham Rd., Bristol [0016

4h.p. Douglas Combination, 1916, 3-speed countershaft, clutch, kick-start, had very little use, perfect condition throughout, tyres excellent, take 3 anywhere; bargain, £90.—Cooke, 33, Hoveden Rd., Cricklewood, N.W.2. [5854

DOUGLAS 4h.p. 1918 Combination, 3-speed, clutch, kick start, special sporting aluminum canoe shape sidecar, lamps, mechanical horn, pump, tools, insurance, just rebushed and overhauled, tyres sound; £100; evenings.—33, Windsor Rd., Ealing, W.5. [5745

DOUGLAS W.D., done about 400 miles since uncrated, Binks, P. and H. lamp set (not once used), Cowey, Klaxon, dry battery, rear light, full insurance, very fast machine; £75, or offers.—Major Rostern, 11, Christ Church Rd., Doncaster. 'Phone 527 after 6 p.m. [5523

DOUGLASES, 1920 models.—The noted house in the South for early deliveries. We are specialists and stockists for Douglas machines only for over 11 years.—Sole District Agents, Thompson and Co., 403, Commercial Rd., Portsmouth. 'Phone: 7105. [5891

1916-1917 4h.p. Douglas, with sidecar chassis, engine dismantled, Bosch mag., new Amac carburetter, 3 new tyres, 3 new tubes; bargain, £70.—Call between 10 and 12 o'clock at Garage, 1, Blenheim Terrace, St. John's Wood, or write for appointment. [5776

DOUGLAS, 1911, Bosch, Douglas carburetter, good running order, refitted, re-enamelled and lined, new Dunlop on back, good Avon front, tubes unpunctured, like new, horn, footboards; bargain, £28, or nearest.—Pearson, Railway Bridge House, Collycroft Bedworth. [X1164

MOTOR CYCLES FOR SALE.

Douglas

1920 2¾h.p. Douglas, with latest type of carburetter, hand clutch, 3-speed gear; orders now being accepted for delivery in strict rotation; nett price, £90, plus carriage.—Robinson's Garage, 32-35, Green St., Cambridge. Tel.: 995 (2 lines). T.A.: Bicycles. [5914

1919 4h.p. Douglas Combination, delivered Nov. 26th, latest clutch, storm apron, all lamps, bulb and mechanical horns, spares, done under 100 miles, carefully run in, and indistinguishable from new; any trial; 150 gns., no offers.—Box 1.6,173, c/o *The Motor Cycle*. [5952

1920 4h.p. Douglas with Improved Sidecar, latest type of carburetter, many improvements; orders now being booked for delivery in strict rotation; nett price, £145 plus carriage.—Robinson's Garage, 32-35, Green St., Cambridge. T.A.: Bicycles. Tel.: 995 Cambridge (2 lines). [5915

VIVIAN HARDIE and Lane, Ltd., Douglas specialists.—4h.p. combination, £135; 2¾h.p. solo, £80; we stock everything you require for your Douglas.—Vivian Hardie and Lane, Ltd., 24, Wood stock St. (off Oxford St), Bond St., London, W.1. 'Phone: Mayfair 6559. [0012

1919¾ 4h.p. Douglas T.T. Combination (coachbuilt), mileage 300, recently overhauled by makers, topping condition, all tools, apron, etc., bulbous back sidecar, latest clutch, as new; 120 gns.; might exchange A.V. 1919 2-speed or Morgan.—Camel, 53, Willows Rd., Cannon Hill, Birmingham. [X1090

Edmund.

EDMUNDS, spring frame, you simply float.—Sole agent, Gourlay, Fallowfield, Manchester. [2831

Elswick.

1915 Elswick 2½h.p. Precision. 2-speed, lamps, horn, etc., stored during war; £35.—8, Brandreth Rd., Balham, S.W. [5538

Enfield.

ENFIELD 2-stroke, 2-speed, lamp, horn, etc.; £43.—Sissleys, Chadwell Heath. [5825

ENFIELD 2½h.p. Twin, early model; £20.—C.W.S., 19, Temple Rd., Croydon. [5679

ENFIELD 2¼h.p., 2-stroke, 1920; delivery this week; offers.—Cyclist, 70, Long Acre, W.C.2. [5477

ENFIELD 2-stroke, 2-speed, grand conditon, with lamps; £55.—11, May St., Newport, Mon. [5311

3h.p. Twin Enfield, good running order; £25.—93, Montague Rd., Clarence Park, Leicester. [X1095

ENFIELD 1914 Combination, splendid condition; £110.—Holden, West Wickham, Beckenham, Kent. [5787

ENFIELD 1919 3h.p. Light Twin, not ridden 500 miles; £75.—Davies, Glenthorne, Norton, Stourbridge. [X0977

£65, or offer.—Enfield, 3h.p., 1915, Bosch, accessories, excellent condition.—Pearce, Bryntirion, Berkhamsted. [X1035

1919 3h.p. Enfield, 2-speed, clutch, just delivered, unused; best offer over £81.—55, Ballspond Rd., Islington, N.1. [5399

JONES' Garage, special agents for Enfields, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0031

ENFIELD 2¾h.p. Twin, 2-speed, just overhauled, foot pump, lamps, etc.; £42.—King's Arms, Waltham Abbey. [5687

ENFIELD Combination, 1913, good running order, 3 lamps; £87.—Inwood Motor Co., 96, Upper Richmond Rd., Putney. [5696

LATE 1916 3h.p. Twin Enfield, 2 speeds and kick starter, nice condition, fine machine, complete; £65.—3, Parker Lane, Burnley. [X0869

ENFIELD 1914 6h.p. Combination, wind screen, speedometer, 3 lamps, excellent order; trial; 100 gns.—1, Palmer Rd., Salisbury. [5828

1919 Enfield Combination, 6h.p., Lucas accessories, ridden 700 miles, perfect condition; £137.—Eveson, The Dingle, Stourbridge. [5628

1918 3h.p. Enfield, electric lighting, small mileage, new condition; 70 gns. for quick sale.—Cussard, 19, Abington Grove, Northampton. [5511

WAUCHOPE'S, 9, Shoe Lane, London, 1919 8h.p. Royal Enfield Combination, £165; 1917 combination, £155; 1913 or 1914, £87/10. [5990

1917 Royal Enfield, 2½h.p., 2-stroke, done less than 200 miles; delivered September; 56 gns., or nearest.—C., St. Marie's, Dale Rd., Purley. [5421

2¾h.p. Royal Enfield Twin, Bosch, newly painted, excellent running order; £27.—Apply, C. Schoolmeester, Mais-y-Coed, Abergwili, Carmarthen. [X0886

ROYAL ENFIELD Lightweight Twin, overhauled and enamelled Indian red, Bosch, Amac, long exhaust etc.; £37/10.—36, High St., Old Woking, Surrey. [5413

ENFIELD 8h.p. Combination, Lucas dynamo outfit, whole machine in splendid order; £145; light car wanted.—Bunting's Motor Exchange, Wealdstone. [5775

ENFIELD 3h.p., the ever ready solo mount, handy, sturdy, dependable, this a perfect specimen, equal to new; £70.—Bunting, Motor Exchange, Wealdstone. [5772

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ENFIELD 3h.p. Twin, 1918, 2-speed, kick start, Lucas lamp, Klaxon, tools, etc., perfect condition; £68, no offers.—34, Springfield Rd., King's Heath, Birmingham. [X1048

1916 Enfield 3h.p. Twin, 2-speed, clutch, kick start, new tyres, lamps, mechanical horn, hardly scratched, new condition; £50.—61, New Kent Rd., London. [5747

1914 6h.p. Enfield Motor Cycle with coachbuilt sidecar, just been overhauled; price £100; owner buying car.—Apply, Vancouver, Linden Gardens, Tunbridge Wells. [5474

1920 2-stroke Enfield, last show model, Amac (one lever), mud shields, brand new, not ridden; small premium over £63 secures.—Rogers, 30, Fore St., Callington, Cornwall. [5469

ENFIELD Twin, 2¾h.p., 2-speed, clutch, K.S., forced lubrication, lighting set, recently overhauled, smart machine; £40.—Clarke and Wilkinson, Market Harborough. [X1101

1919 Enfield 6h.p. Combination, hood, screen, electric lighting, speedometer, spare tyre, chain, all tools, mascot, insurance policy, splendid condition; 150 gns.—55, Water Lane, Brixton. [5948

1917 Enfield Combination, hood, screen, Lucas lamps, Tan Sad pillion, in good order and any trial; £135, or exchange for runabout, Morgan preferred.—58, High Rd., Willesden Green, N.W.10. [5865

ENFIELD 6h.p. Combination, 1919, run 1,000 miles only, full lamp set, spares, etc., condition indistinguishable from new; any trial; guaranteed perfect; £125.—Watson, 152, High St., Aldeburgh, Suffolk. [5892

WAUCHOPE'S, 9, Shoe Lane, Fleet St., London.—2 Royal Enfields Combinations, 1919, on offer; 1917 combination, £155; 1913 or 14 combination, £87/10; 2½h.p. 1920 2-stroke 2-speed model, £63; new. [5976

1913 Enfield Combination, 6h.p., electric lamps, wind screen, spare tyre and tube, in excellent condition, engine perfect; expert examination welcomed; price £75, bargain.—Tompsett, The Moors, Marden, Kent. [3877

ROYAL ENFIELD 6h.p. Combination, 1916, fine condition, recently overhauled, hood, wind screen, 3 lamps, horns, and tools, extra new tyre, seat in sidecar for child, stored 2 years; £120.—Woodlands, Manor Rd., Bishop's Stortford. [5468

ENFIELD 2¼h.p., 2-stroke, excellent condition, not done 600 miles, lamps, Klaxon horn, special saddle, fitted with torpedo Watsonian sidecar; 55 gns.; will sell sidecar separate, 10 gns.—Clark, High Cross, Balsall Common, near Coventry. [X0896

6h.p. Enfield Combination, engine No. 3544, Bosch mag., all chain drive, in good running order; can be seen and tried any time; £90, or exchange with cash difference for 1919 4h.p. combination.—Fornham, Ash Tree Rd., Bitterne Park, Southampton. [X0815

£90.—Enfield combination, 6h.p., 2 speeds, etc., coach-built, good tyres, mechanically sound, as just overhauled at a cost of £20, receipt shown; bargain, £90, quick sale, as owner just taking delivery of new combination.—R. G. Nye, Kew Lodge, Hoath, near Canterbury, Kent. [5542

M.A.G. 3½h.p., T.T. model, 2-speed Enfield gears, Bosch shaft drive mag., B. and B. variable jet carburetter, royal blue disc wheels, 2 sets of footrests, Brooks saddle, very sporty model, similar to the machine that won the tour in the Alps in 1914, complete with lighting, carrier, 2 toolbags, and hand Klaxon; bargain, £44/10.—158, Bedford Hill, Balham, S.W. [5593

Excelsior.

LANCASHIRE, Cheshire, North Wales, Isle of Man Only.—American Excelsior; enquiries.—J. Blake Rod Co., Official Dealers, Liverpool-Manchester. [7038

BRITISH Excelsior, 5-6h.p. single, 3 speeds, kick start, chain drive, coachbuilt, not done 1,000 miles, all on, handsome outfit, take 3 anywhere; £140.—12, Erlanger Rd., New Cross. [5748

AMERICAN Excelsior.—Enquiries invited from the counties of Warwicks., Worcs., Staffs., Salop, Leics., Derbys., and Notts. by sole Midland distributers, The Premier Motor Co., Aston Rd., Birmingham. [5555

ALLEN-BENNETT Motor Co.—American Excelsior. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10,11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5923

THE New 1920 American Excelsior represents the best value for money on the market; book now for early delivery; fitted with Swan de luxe sidecars.—Edwards and Parry, 4, Blenheim St., Bond St., W.1 Mayfair 2666. [5552

AMERICAN Excelsior.—We have one of these machines available for delivery in January, Model 19, 7-9h.p. V twin, 3-speed, hand and foot clutch, 28×3 tyres, price £126.—Forfield Motors, 11-13, Forfield Place, Leamington Spa. [X1027

AMERICAN Excelsior 1916 Combination, 7-9h.p., forced mechanical lubrication, with emergency hand pump, Schebler automatic carburetter, electric lights, horn, and and starting switch, speedometer, hood, screen, and mirror, steps to sidecar, and many other refinements, most reliable, powerful, and economical, in splendid condition; owner buying car; £130; principals only.—Manager, Broadway Theatre, New Cross, S.E.14. [5387

MOTOR CYCLES FOR SALE.

Excelsior.

AMERICAN Excelsior, 1916, 7-9h.p., 3-speed clutch, K.S., horn, dynamo lighting set, and Claocelet 4-point sidecar, just overhauled and repainted by Egertons, Ipswich; any trial; best offer over £110.—Olivos, 120, Bollo Bridge Rd., Actoa, W.3. [5838

F.N.

F.N. 2½h.p., just overhauled, new mag., new tyres, condition excellent; £30.—52, Conduit Rd., Stamford. [5901

2¾h.p. F.N., 2 speeds, clutch, Bosch, B.B., electric lighting, Klaxon, easy starter; £35.—Main, 108, Broad St., Bridgeton, Glasgow. [X0674

5-6h.p. 4-cyl. F.N. Coachbuilt Combination, kick start, Bosch 2-speed, clutch; £50. Seen London.—Box L6,159, c/o *The Motor Cycle*. [5635

2¾h.p. F.N., U.H. mag., B.B. carburetter, in splendid running order, very fast; £28.—Sawyer, Tollgate House, Risby, nr. Bury St. Edmunds. [5681

F.N. 1920 Models, 7h.p. 4-cyl and 2½h.p. 2-speed lightweight; orders now booking, Birmingham only.—The Premier Motor Co., Aston Rd., Birmingham. [5557

1913 5-6h.p. 2-speed F.N., good order and tyres, solo or sidecar; best offer.—E. T. Morriss and Co., Ltd., Marmet House, 139, Finchley Rd., Swiss Cottage, N.W.3. [5343

F.N. 5-6h.p., just overhauled and enamelled grey, wants distributer and oil and petrol pipes, tyres good; £32, or near offer.—Barker, 13, Victoria St., Clifton, Bristol. [5438

LATEST F.N., 7-11h.p., 4-cyl., 3-speed, clutch model, combination, kick start, dual clutch control, etc., Bosch mag., Watford speedometer, electric horn, Lucas electric lamps, new tyres, 2 spare tubes, tools, etc., coachbuilt 2-seater sidecar, screen, and apron, low mileage, machine delivered England July, 1914, and laid up during war; nearest offer £200 secures; trial, district Birmingham.—Box 959, c/o *The Motor Cycle*. [X1093

Harley-Davidson.

WAUCHOPE'S, 9, Shoe Lane, Fleet St., London.—Harley-Davidson 1916 combination, £150. [5977

1919 Harley-Davidson, electric equipment, excellent condition; £140.—C. E. Lovick, Crowthorne, Berks. [X0938

HARLEY-DAVIDSON Combination, 1915, electrically equipped, overhauled by makers; £125.—Sisslevs, Chadwell Heath. [5822

BROOK Bros., Burnham-on-Sea, are now booking orders for early Harley-Davidson delivery in 1920. Write for particulars. [4565

1919 Harley-Davidson, brand new Model J., just delivered, only done 200 miles; £160, or nearest offer.—'Phone: Tilbury 522. [5349

HARLEY Combination, 1916, beautiful turnout, Christmas box for some lucky nut; £125.—51, Maplethorpe Rd., Thornton Heath. [5738

1919 Harley-Davidson, brand new, just received, model J, with full electric equipment; under list price, £158.—Box L6,081, c/o *The Motor Cycle*. [5333

1919 Harley-Davidson, brand new, just received, sports model, with full electric equipment; list price £130.—Box L6,082, c/o *The Motor Cycle*. [5334

HARLEY-DAVIDSON, Model F, solo, in stock; list price; earliest delivery of complete combinations.—Edwards, 7, Exhibition Rd., South Kensington. [5760

1915 Harley-Davidson, 7-9h.p. special racing model K engine, single gear, clutch, T.T. bars; £95.—Capt. Williams, R.A.F. Station, Manston, near Ramsgate. [X0682

LEICESTER Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 62, High St., Leicester. [3893

LIVERPOOL Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 24, Paradise St., Liverpool. [3894

HARLEY-DAVIDSON Combination, 1917, tyres and lamps in good condition; £150, or nearest offer.—Geo. Davidson and Co., Teams Glass Works, Gateshead-on-Tyne. [X1053

BIRMINGHAM Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 31, Colmore Row, Birmingham. [3895

1915 7-9h.p. Harley, 3-speed, mag. model, complete with Millford sidecar, lamps, tools, etc., an exceptionally fast one; any trial; sacrifice, £105.—Else, Dimple, Matlock. [X1086

MANCHESTER Motor Cyclists are invited to examine the latest 1920 Harley-Davidson motor cycles now being shown at the Colmore Depot, 200, Deansgate, Manchester. [3896

HARLEY Combination, 1916, electric lamps and horn, speedometer, new tyres and tubes throughout, new chains, spares; any trial; 125 gns.—Atkinson, 14, Denmark Rd., Kingston-on-Thames. [5395

HARLEY-DAVIDSON, 1915 electric 3-speed model, 7-9h.p., and C.B. sidecar, in thorough running order, little used, spares; any reasonable trial; £105.—Calvert, Gas Works, Northallerton. [5488

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HARLEY-DAVIDSON Combination, electric lighting, perfect condition, looks as new; £160; exchange entertained.—Clifford Wilson Mfg. Co., 70, Royal Hospital Rd., Chelsea, S.W.3. [5817

ALLEN-BENNETT Motor Co.—Harley-Davidson. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10,11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5929

HARLEY-DAVIDSON 1916 Combination, electric model, complete with disc wheels and speedometer, little used, in perfect condition; £140, no offers.—'Phone: Park 3184, or apply 6, Holland Park Mews, W.11. [X0864

HARLEY-DAVIDSON Khaki Combination, mag. model, electric lights, bulbous back sidecar, hood and screen, fully equipped, best cambination on the road; 175 gns.—Smith's, 10-16 Haverstock Hill, opposite Chalk Farm Tube Station. [0091

HARLEY-DAVIDSON Combination, 1914, 7-9h.p., mag. model, 2-speed hub gear, clutch and pedal starter, Montgomery sidecar, just overhauled and enamelled, good tyres, lamps, horn, and speedometer; price £85; letters only.—Daly, 5, Hurdwick Place, London, N.W.1. [X1094

1919 Harley-Davidson Combination, Model 19F., mag., only 2 months' use, in absolutely first-class order and condition, fitted with lumps, generator, speedometer, horn, Tan-Sad, clock, with all tools, and Harley-Davidson sidecar, Model 176; 190½ gns.—Skinner, Queen's Court Hotel, Eastbourne. [5400

1919 7-9h.p. Harley-Davidson, electric model, complete with Bonniksea speedometer, dropped handle-bars, disc wheels, Brooks box on carrier, and full set of spares and tools, and new Henderson £42 Elite sidecar; a splendid combination in new condition; price £190.—Chapman, 42, Duke St., Norwich. [X0819

1916 Harley-Davidson 7-9h.p. Combination, electric model, demonstration machine, tyres as new, all usual accessories, including Stewart mechanical horn, petrol tin carrier, new sidecar apron, complete overhaul by makers costing £20, finished November; any examination and trial; owner sailing for America; £150.—Leake, Roseneath, Hale Rd., Altrincham, Cheshire. [5916

H.B.

H.B., 1920, 2¾h.p. Blackburne engine, 2-speed, kick starter; 85 gns.—Early delivery from sole district agents, Joseph Devey and Co., 50, Darlington St., Wolverhampton. Tel.: 606. [X0359

ALLEN-BENNETT Motor Co.—H.B. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5932a

Henderson.

LANCASHIRE, Cheshire, North Wales, and Isle of Man.—Enquiries for Henderson 4-cyl. invited.—J. Blake and Co. Official Dealers. Liverpool-Manchester. [7032

HENDERSON 10h.p. Combination, 1915, apron, wind screen, etc., in perfect mechanical condition, all new tubes; price £98/10, no offers for quick sale.—4, Denman Place, W.1. [X0851

HENDERSON.—Enquiries invited from the counties of Warwicks., Wores., Staffs., Salop, Leics., Derbys., and Notts. by sole Midland distributers, The Premier Motor Co., Aston Rd., Birmingham. [5556

ALLEN-BENNETT Motor Co.—Henderson. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5930

Hobart.

HOBART New 1919 2-stroke, 2-speed model; £63.—Clarke Bros., Louth. [5797

1919 Hobart, 2-speed, makers' list price; delivery from stock.—R. Bamber and Co., Ltd., 2, Eastbank St., Southport. [5365

HOBART-VILLIERS 2½h.p., 1919, 2 speeds, lamps, horn, cyclometer, done 300 miles, as new; £60.—Hart, 142, Goddard Av., Swindon. [X1020

HOBART, 1919 (June) 2½h.p., 2-speed, splendid condition, 2 lamps and generators, horn, fully equipped; £35, or near offer.—Jasper, 42, Lancaster Gate, London, W.2. [5524

Humber.

HUMBER, 2¾h.p., ride away; £18, offer.—10, Boundary Rd., Tooting Tram Terminus. [5870

HUMBER Combination 3½h.p., excellent condition; 100 gns.—Reynolds, Sundridge, Sevenoaks. [5744

HUMBER 6h.p. Water-cooled, 3-speed, Twin Combination; £98.—Halifax Motor Exchange, Union St. South, Halifax. [5565

3½h.p. Humber, 2-speed, free engine, handle start, Bosch, B. and B., all in running order; £25.—Morey, Totland Bay, Isle of Wight. [5603

1914 3½h.p. Humber, 3-speed, kick starter, lamps, wicker sidecar, in good condition; £65, or nearest offer.—Crane, Thornbury, near Bristol. [X1134

1912 Humber Lightweight, just overhauled at Humber works for £9, first-class condition; £34; apply by post to arrange view.—32, Belsize Sq., Hampstead, N.W. [X0831

MOTOR CYCLES FOR SALE.

Humber.

HUMBER (1913) 3½h.p. Combination, 2-speed, free engine, excellent tyres, large sidecar, running order; £39, carriage paid; cheque accepted.—Irwin, Leavesden Rd., Watford. [5526

1919 3½h.p. Humber, 2-speed, free engine, handle start, coachbuilt sidecar, good running order; £60, or near offer; seen by appointment.—63, Portobello Rd., W.11. [5816

3½h.p. Humber-framed Motor Cycle, Bosch water-tight, semi-T.T., Amac, adjustable pulley, petrol economiser, tank dented, fast machine; £30.—Steed, 69, Claremont Rd., Highgate, N.6. [5412

ALLEN-BENNETT Motor Co.—Humber. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5932

3½h.p. Humber, 1914, 3-speed, clutch, kick starter, and adjustable pulley, just overhauled, tyres new, stored during most of war, splendid condition; seen London district; £60, or nearest offer.—Box 960, c/o *The Motor Cycle*. [X1105

HUMBER, 1920, special tuned flat twin engine, 3-speed, hand controlled clutch, F.R.S. electric equipment, horn, tools, etc., delivered Saturday, guaranteed unridden; must sell, bought car; sacrifice best offer over £100.—Williams, Park St., Rugby. (D) [X0968

1912 Humber 3½h.p., 2-speed, handle start, wicker sidecar, recently completely overhauled, very good mechanical order, 3 lamps, speedometer, new Palmer cord, many spares; trial, expert examination invited; owner going abroad; £50.—49, Park Rd., Dartford. [5344

HUMBER Lightweight, engine No. 1185, Bosch mag., B. and B., Grade gears, new Dunlop tyres and belt, 26in. wheels, plated, long exhaust, lighting set, horn, thoroughly overhauled; open to expert examination; £32.—4, Yewtree Rd., Beckenham, Kent. [5849

Indian.

INDIAN 7-9h.p. Combination, 2-speed; £70.—20, Roe St., Macclesfield. [X1056

7-9h.p. Indian Road Racing Model; 58 gns.—2, Tamworth Villas, Mitcham Common. [5768

INDIAN 5-6h.p., 1916, 3 speeds, clutch, K.S., new condition; £86.—Wharton, Wharton, Kirkby Stephen. [X1074

1920 Indians; prompt deliveries.—E. Brown, Indian Specialist, 3 and 7a, Parker Lane, Burnley. Tel.: 194. [X0334

INDIAN.—For earliest deliveries, get in touch with the Indian agents, Newport Motor Co., Ltd., Newport, Mon. [0041

WAUCHOPE'S; Indian 7-9h.p., 1914, 2-speed spring frame and sidecar, £87/10; also another, also 1914, £85. [5986

1915 5-6h.p. Indian Combination, 3 speeds and kick starter, nice condition; big snip, 85 gns.—30, Talbot St., Burnley. [X0870

T.T. Red Indian, 5h.p., 2 speeds, clutch, fast, sporty; £60; lightweight part exchange.—P. Saunders Longwell Green, near Bristol. [X1135

1915 7-9h.p. Indian Combination, 3-speed gear, clutch, etc., electric lighting, condition first-class; price £120.—Chapman, 42, Duke St., Norwich. [X0817

1919 Indian electric model complete, 7h.p., speedometer, aluminium disc wheels, nearly new; £155.—Eveson, The Dingle, Stourbridge. [5629

1919 Indian Combination, brand new Powerplus model, with full electric equipment; under list price £175.—Box L6,085, c/o *The Motor Cycle*. [5338

1914 7-9h.p. Indian Combination, clutch model, new C.B. sidecar, lamps, generator, Klaxon, good order; £68.—35, Salisbury Av., Barking. [X0974

1915 Indian, 7-9h.p., 3 speeds, lamps, horn, very sound, stored 2 years; £70; London.—See Kwik-sale advertisement, Miscellaneous Sale column. [5531

1919 Indian 7-9h.p. Powerplus Combination, fully equipped, done 200 miles, absolutely like new, unscratched; offers over £175.—Ward, Warfield, Radlett. [X0948

INDIAN Combination, C.B., 1914, 7-9h.p., 2 speeds, kick start, lamps, hood, screen, etc.; any trial; bargain, £90.—Steward, 57, Forest Drive West, Leytonstone. [5456

INDIAN, 1914, 7-9h.p., 2-speed, Mills-Fulford side car, electric lighting, speedometer, spares, tools, in first-class condition; £85.—74, Warwick St., Leamington. [X0820

INDIAN 5-6h.p. Combination, 1915, 3-speeds, clutch electric lights, Klaxon tools, good condition and appearance; £90.—Smith, 162, Usk Rd., Battersea, S.W.11. [5846

INDIAN, 1915, 7-9h.p., clutch model, excellent condition, tyres good, fully insured; £65; owner going abroad; after 6 p.m.—Warmington, 13, Queen's Rd., Bromley, Kent. [5595

1915 Red Indian Combination, lighting set model, very fine turnout, the whole as new; for quick sale £100.—Hyde Park Garage, 1a, Lancaster Gate, W.2. Paddington 1024. [5341

INDIAN 7-9h.p. Coachbuilt Combination, 1915, 2-speed, hand and foot clutch, kick start, tyres perfect, generator, lamps, and horn; bargain outfit £92.—7, Recreation Rd., Sydenham, S.E. [5757

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Indian.

CHEERIO, Boys! Indians galore. Order now. Note new prices: N.E.20 combination, fully equipped, £180; solo, £148; Model G, £115.—Horswill, 42, Bridge St., Chester. 'Phone: 943. [4025

INDIAN Powerplus Combination, spring frame, electric light (battery), carrier, alluminium torpedo-shaped sidecar, perfect order, run 1,500 miles.—R. J., c/o Highwood House, Upper Parkstone, Dorset. [5640

INDIAN 5-6h.p., 1915, like new, 3-speed, clutch, kick starter, complete new electric lighting, re-enamelled, renickelled, machine guaranteed perfect mechanical condition, horn, and new tool kit; trial any time; £90.—237, Iffley Rd., Oxford. [5609

INDIAN 7-9h.p. 1915 Combination, 3-speed, clutch, K.S., aluminium discs, electric lighting, voltmeter, long exhausts, the whole turnout in topping condition, like new; £115, no offers.—27, St. John's Rd., Putney, S.W.15. 'Phone: 1177 Putney. [5893

INDIAN 7-9h.p. Coachbuilt Combination, 1913, spring frame, Bosch mag., 2-speed, clutch, kick start, heavy Dunlops, as new, full accessories, perfect condition; £95; seen Sunday morning only.—Smith, 1, Gladstone Villas, Farnborough, Kent. [5753

1916 5-6h.p. Indian Combination, all red, Bramble underslung sidecar, 3-speed, clutch, kick-starter, 3 extra heavy Dunlops, as new, lamps, tools, in good condition; nearest £100; or exchange Triumph countershaft.—9, Eaton Rd., Coventry. [X1169

INDIAN 1915 7-9h.p. Combination, fine running order, exceptionally good engine, new extra heavy Dunlops all round, gas and electric lamps, latter require accumulators; for disposal second week in January; lowest price here £95.—Barker, Cromford Mills, Matlock. [X0920

1915 5-6h.p. Indian Combination, 3 speeds, clutch, kick starter, sporting torpedo sidecar fitted with Auster Triplex wind screen and hood, the whole outfit complete with electric lights, electric horn, speedometer, mirror, and a quantity of tools and spares, tyres practically new, engine recently overhauled, fully insured; one of the smartest turn-outs on the road; £100; Kent.—Box L6,079, c/o *The Motor Cycle*. [5304

Ivy.

1919 Ivy 2½h.p., in perfect condition, used only 3 months; £56.—Ault, Park Side, Belper. [X0965

IVY.—For the earliest possible deliveries, book your order now.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9577

1914 Ivy 4-stroke, 3-speed and clutch, 4¼h.p., a fast and powerful machine; £48, or near offer.—Barker, 13, Victoria St., Clifton, Bristol. [5434

H. G. HENLY and Co. have for immediate delivery 2 or 3 Ivy motor cycles.—Full particulars regarding price, etc., at Head Office, 91, Gt. Portland St., W.1. [0022

IVY-J.A.P, 90×77½, twin, overhead valve, 1914 enamelled blue, bright aluminium discs, copper exhausts, long mechanical horn, electric head and tail, just overhauled, exceptionally fast, real sporting mount; £70.—E. F. Godfray, Weeke, Winchester, Hants. [5367

James.

WAUCHOPE'S, 9, Shoe Lane, Fleet St., London.—3½h.p. 1920 James all-chain and new, £115. [5980

1919 1919½ James Lightweight, 2-speed, Lucas horn, P. and H. lamps, done 500 miles.—4, Esme Rd., Sparkhill, Birmingham. [X0658

1916 4h.p. James Combination, Canoelet sidecar, 2-speed, tools, and lamps, in first-rate condition; £95.—Stanbridge, Cranbrook. [5502

JAMES Lightweight, 2-stroke, 2-speed, splendid condition, just overhauled by makers; price £55.—Bascombe, 167, Duke St., Liverpool. [X0908

1920 No. 9 5-6h.p. James de Luxe Combination for immediate delivery; price at works £156; first wire secures.—Day, Okehampton. [5347

JAMES Combination, 4h.p., single-cyl., in running order, privately owned; offered for quick sale at £75; genuine bargain.—Britten, Lusten, Leominster. [5624

JAMES 4¼h.p. 1915 Combination, countershaft chain drive, 3 lamps, horn, complete, 3 new tyres August, 1919; £72, bargain.—Welford, West Parade, Weymouth. [X0982

JAMES 1919 5-6h.p. Twin Coachbuilt Combination, as new, Cameo wind screen, 3 lamps, horn, accessories; £138.—'Phone: 1779 Streatham.—103 Churlow Park Rd., West Dulwich. [5763

ALLEN-BENNETT Motor Co.—James. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5933

1919 James 4¼h.p. and sporting canoelet sidecar, fitted disc wheels, Binks carburetter, long exhaust, all accessories and spares, very fast and in perfect condition, special outfit; £135.—C. R. Parsons, Church End, Shustoke, Birmingham. [5637

J.A.P.

J.A.P. 4h.p., mechanically operated valves, mag., B.B. carburetter, adjustable pulley, tyres sound, suit young sporting rider; £35, or offer; after 7 p.m.—53, Ansdell Rd., Holydale Rd., Peckham. [X0814

MOTOR CYCLES FOR SALE.

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8h.p. 1915 J.A.P. Combination, large sidecar, hood wind screen, lamps, speedometer, Druids, Brooks pan saddle, engine not done 500 miles, tyres like new the whole in splendid condition and perfect order; bargain, 95 gns., or offer.—Knight, 81, Cecil Av., Wembley 'Phone: Gerrard 2898. [X0853

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LANCASHIRE and Cheshire Only.—J.E.S. motocyclette and attachment sets; enquiries invited J Blake and Co., Liverpool-Manchester [704

J.H.

WAUCHOPE'S, 9, Shoe Lane, London; 8h.p. 1915 J.H., M.A.G. twin-cyl. engine, Sturmey-Archer countershaft gear, clutch, and kick starter; £115. [5984

Kerry.

3½h.p. Kerry, U.H. mag., B. and B., tyres good.—C. Houlston, 560, King's Rd., Fulham. [5852

KERRY 2¾h.p., new E.I.C. mag., new tyres, B. and B. carburetter; £17.—Fernlea, Grove Hill, Woodford, E.18. [X0972

Lea-Francis

WAUCHOPE'S, 9, Shoe Lane, Fleet St., London.—Lea-Francis, for delivery early next season; book now for 1920 models. [5978

LEA-FRANCIS.—Orders are now being booked for future delivery of these splendid machines.—Hucklebridge, 133, Sloane St., London, S.W.1. [X351

LEA-FRANCIS, 1920.—Place your name on our waiting list for delivery of these aristocratic mounts.—A. J. Sproston, 198, Gt. Portland St., W.1. [6612

LEA-FRANCIS, 1919 (Oct.), as new, not done 300 miles, all-chain drive; £118, or near offer; also second-hand light sidecar, metal body, new tyre, £10.—Watson, 28, Kendrick Rd., Reading. [5358

Levis

LEVIS 1920, brand new; £55.—Levis, 13, Park Hill, Ealing, W.5. [5354

CYRIL WILLIAMS, for early delivery of Levis.—Chapel Ash Depot, Wolverhampton. [X8626

LEVIS for sale, cheap, late model, good running order.—End View, Netherne, Coulsdon, Surrey. [5615

LEVIS, 1915, sound, fully equipped, brand new acetylene lighting set; £34.—11, Ruskin Av., Kew. [5357

1916 2¾h.p. Levis, lamps and horn, perfect; £37/10.—Oak Villas, Station Rd., West Byfleet, Surrey. [5887

LEVIS 2¾h.p., 1914, single-speed, long exhaust pipe, Bosch, Dunlops; £29.—36, St. Thomas Rd., Hackney. [5702

2¼h.p. Levis, 1916, good running order, tyres excellent; £33/10.—Fry, 39, Walliscote Rd., Weston-super-Mare. [5362

BROOK Bros., Burnham-on-Sea, are now booking orders for early Levis delivery in 1920. Write for particulars. [4564

LEVIS 2-stroke, single and 2-speed models.—Early deliveries from the appointed agents, Lloyd and Son, 29, Station St., Lees. [9582

LEVIS, brand new, been 150 miles, 2½h.p., 2-speed model; first cheque secures, with lamps and horn, £65.—Wallis, Lynn Rd., Ely. [5336

HOVE Engineering Works, Davigdor Rd., for super service. Sole Levis agents Brighton and District. All accessories. Established 12 years. [4255

LEVIS Popular, the finest 2-stroke in the world—book now for early delivery and super-service.—The Walsall Garage, Walsall. Tel.: 444. [9578

LEVIS, new 1920 2¼h.p. Popular model; orders now booking at makers' list price, Birmingham only.—The Premier Motor Co., Aston Rd., Birmingham. [5558

LEVIS 1919, T.T. handle-bars, running 8 weeks, Watford registers 180, but has done 225, Hutchinson, almost as new, inners in good condition, acetylene, tool outfit, spare Lodge, chain drive, Klaxon, wide mudguards, registered London; owner asks £55.—Seen at A. V. Hyle, Kingsmead, College Rd., Dulwich Village, S.E.21. [5428

Lincoln-Elk.

LINCOLN-ELK 3h.p., 1913, fine condition, stored during war, recently rebushed, and new Philipson pulley fitted, new belt, new heavy Dunlop on back, front and rear bars, separate generators, T.T. bars; £35, or near offer.—30, Spenser Rd., Herne Hill, S.E.24. [5314

L.M.C.

L.M.C. Twin, tyres, etc., good condition, wants mag.; £14, or push cycle part exchange.—1, Rye Hill Park, Peckham, S.E. [5373

Matchless.

WAUCHOPE'S, 9, Shoe Lane, Fleet St., London.—Matchless 8h.p. twin, single-speed, £72/10. [5979

MATCHLESS, 7-9h.p., 2-speed, kick start, perfect condition; £85.—Barnes, 14, Buxton Rd., Mortlake. [5693

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MATCHLESS.—Order now for delivery February and March.—Edwards, 7, Exhibition Rd., South Kensington. [5759

CROW Bros., High St., Guildford, West Surrey agents for the new Matchless.—Order now for early delivery. [4085

JONES' Garage, special agents for Matchless, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0032

MATCHLESS Combination, 2-speed, kick start, fine turnout; £80.—57, Kenbury St., Coldharbour Lane, Camberwell, S.E. [5651

MATCHLESS, 8h.p., 3-speed, 1914, C.B. Combination, lamps, horn, etc.; £140.—N. Herf, Thornleigh, New Eltham, S.E.9. [5945

MATCHLESS C.B. Combination, countershaft 3-speed, K.S., fine condition; £95, or offer.—C.S., 14, Swaton Rd., Bow, E.3. [5783

1919-20 Matchless Combination, Model H., delivery promised mid January; £40 deposit paid; what offers —Wilkinson, Harleigh, Bodmin. [X0816

MATCHLESS Victory Combination, late 1918, perfect condition, London district, any trial; £140.—Box L6,176, c/o *The Motor Cycle.* [5955

IMMEDIATE Possession, Matchless, 1914, 8h.p. M.A.G. engine, solo, very powerful; 80 gns., or near offer.—195, Kennington Rd., S.E.11. [5971

MATCHLESS, Model H.—Book your order now for earliest delivery.—Short's Motor Stores, 485-493, Upper Richmond Rd., East Sheen, S.W. 'Phone: Richmond 394. [5913

MATCHLESS 6h.p. Twin, fitted with Ivy coachbuilt sidecar and luggage carrier, 3 lamps, and all spares, splendid outfit; £95, or offer.—Sherman, Decorator, High St., Southall. [5313

1920 Matchless Model H Combination, Lucas lighting, horn, spare wheel, tools, etc.; offers over £200 secures; not been ridden; private.—Apply, 98, Grange Park Rd., Leyton, E.10. [5694

ALLEN-BENNETT Motor Co.—Matchless. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5934

MATCHLESS-J.A.P. 8h.p. Combination, Bramble coachbuilt, 2-speed, lamps, horn, speedometer, apron, wind screen, perfect condition; real bargain, 85 gns. quick sale.—Howe, 19, Park Av. South, Crouch End, N.8. [5941

MATCHLESS Victory Combination, 1919, detachable and spare wheel, oversize car tyres, Easting screen, aluminium discs, Lucas lamps and horn, perfect throughout; £170.—B. Hodgson, Castle Rise, Cottingham, E. Yorks. [5899

MATCHLESS Model H., 1920, the superior combination. To ensure early delivery book your order with the firm that delivers the goods at makers' list price. No premiums.—Clapham (Motors), 119, King George St., Greenwich, S.E.10. [5359

1914 Matchless-Jap., 5-6h.p., latest Zenith carburetter, Bosch mag., good tyres, belt, lamps, horn, pump, and spare tube, Best's lubricator, tank re-enamelled by makers, a sporty bike of good appearance, fast and sound; a gift, £55.—Homestead, Birchington. [5608

MATCHLESS Victory Model, new November, 1918, fully equipped, spare wheel, Dunlop heavy tyres, Lucas lamps and horn, hood and triple Orto wind screen, in good condition; £145.—Hubbard, 126, High St., East Ham, E.C. 'Phone: East Ham 317. [4976

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MATCHLESS Combinations.—Book your orders early from T. J. Ross, 86, High Rd., Lee, S.E., for 1920 spring frame 8h.p. Matchless combinations; a H model always on view at above address. Deliveries guaranteed strictly as per order received. Retail price as ruling at time of delivery. [1505

MATCHLESS Combination, new in November, 1918, tyres good, spare wheel, luggage carrier, Lucas head, side, and tail lamps, Klaxon horn, mirror, new sidecar springs, very carefully used, complete, and ready to go anywhere; £150.—Julians, 84, Broad St., Reading. 'Phone 1024 Biggest dealers in the South. [0076

MATCHLESS 6h.p. J.A.P. Twin, T.T., special engine, new March, 1919, Bosch, Amac, 1919 Mark VII. Druid forks, 650×65 Palmer cord tyres, spare cover and tube, Lucas 462 head lamp, 3 Lucas generators, T.W.R. rear lamp, Stewart horn, all accessories, spare valves, chain sprocket wheels, etc., gold medal London-Edinburgh this year, gold medal first over 500 c.c. hill-climb Stile Cop, August 19th this year; £80.—Harveyson, Station Rd., Finchley. [5707

Metro.

1919 Metro-Tyler, 2-speed, completely equipped, as new; £67.—352, Wandsworth Bridge Rd., S.W. [5719

1919 Metro-Tyler, 2-speed, disc wheels, absolutely as new; £67.—G. Dawson, 60, Regent St., Cambridge. [X0652

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Metro.

1919 (Oct.) Metro-Tyler, 2-speed, disc wheels, long exhaust, splendid condition; offers; receiving Morgan.—Baines, Square, Retford. [X0828

Moto-Reve.

2¾h.p. Moto-Reve, spring forks, mag., B. and B., good tyres, requires slight adjustment; £18; after 6.30.—2, Charlton King's Rd., Leighton Rd., Kentish Town. [5470

Motosacoche.

MOTOSACOCHE 1914 2½h.p., Grado pulley, Bosch, Amac, just thoroughly overhauled and enamelled, tyres excellent, one new, very fast; £25.—145, Widmore Rd., Bromley, Kent. [X0953

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NEALL 2½h.p. 2-stroke Motor Cycle, Peco engine, in thorough order; £40.—Cross, Quarry Rd., Tunbridge Wells. [5494

New Hudson.

NEW HUDSON 1914 6h.p. twin coachbuilt sidecar, 3-speed, good; £80.—20, Derby Grove, Nottingham. [X1085

1914 4h.p. New Hudson Combination, 3-speed Armstrong; £80; exchange Enfield 6h.p.—28, Mostyn Rd., Bow. [5351

1915 New Hudson 2-stroke, tyres and condition very good, 1 new Dunlop, in perfect running order; £35.—'Phone: 888 Hammersmith. [5779

1919 New Hudson, 4h.p., 3-speed countershaft, kick start, handle-bar control clutch, only done 400 miles; £80.—Young, Southend Av., Darlington. [X0821

NEW HUDSON Combination, 1914, in running order, 3-speed, clutch, lamps, horn, glass screen, enamel good; £120, or near offer.—Box 965, c/o *The Motor Cycle.* [5880

NEW HUDSON, single, 1914, 3-speed and clutch, chain-cum-belt, fully equipped, Klaxon, speedometer, and lamp sets, etc., hardly used; £70.—Sissleys, Chadwell Heath. [5824

1914 4h.p. New Hudson, 3-speed, clutch, Bosch, sprung aluminium footboards, all accessories, excellent condition; £70, or offer.—Main, 215, Wimbledon Park Rd., Southfields, S.W. [5735

1916 Sporting Model New Hudson 2¼h.p. 2-stroke, 2 speeds, horn, P. and H. lamp, wind shields, spares, etc., excellent running order; £42, or nearest.—Berwyn, Marsh Rd., Pinner. [5786

NEW HUDSON 1916 Big Six Twin Combination, lamps, speedometer, etc., sound mechanical condition; ride away; owner going abroad; £90, quick sale.—Powell, Hunton Cottage, Sutton Scotney, Hants. [5366

1914 6h.p. New Hudson Combination, C.B. sidecar, Armstrong 3-speed, clutch, kick starter, Bosch, chain-cum-belt, perfect order, ready to ride anywhere, tyres excellent, 3 lamps, mechanical horn, tools, etc.; £100; Bristol.—Box 962, c/o *The Motor Cycle.* [X1145

2¾h.p. New Hudson-Jap (1913 or 1914), 3-speed, clutch, 2 lamps, mechanical horn (new), tools, etc., stored throughout petrol restrictions, new tyre and tubes, splendid mechanical condition, fast, take 2 anywhere; bargain, 38 gns.—67, Frederick St., Widnes, Lancs. [5597

New Imperial.

CROW Bros., High St., Guildford, have contracted largely for 1920 New Imperials. [X7946

1915 New Imperial, 2¾h.p. J.A.P., guaranteed in perfect order; £40.—16, York St., Dover. [5327

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, good running order.—8, Western Rd., Bexhill-on-Sea, Sussex. [X0862

NEW IMPERIAL, 2½h.p., 2-speed, excellent condition, completely equipped; £45.—Long, 30, Belvedere, Bath. [X0676

NEW IMPERIAL-J.A.P. 2¾h.p., 1919, indistinguishable from new; price £70.—W. Saunders, Ltd., Colchester. [X1066

NEW IMPERIAL Combination, 8h.p., unused, olive finish; £135.—Clifford Wilson Mfg. Co., 70, Royal Hospital Rd., Chelsea, S.W.3. [5818

1919 2¾h.p. New Imperial-Jap, 2 speeds, clutch, kick starter, fully equipped, as new; £65.—Loweth, 6, Mount Pleasant Rd., Ealing. [5688

1919 New Imperial 8h.p. Twin, 3 speeds, lamps, horn, only done 550 miles; £90; Rye.—See Kwiksale advertisement, Miscellaneous Sale column. [5532

NEW IMPERIAL-J.A.P., 2¾h.p., 2-speed, countershaft, lamps, toolbag, good appearance and condition, ride away; £37; any time by appointment.—Gough, 143a, Abbey Rd., N.W.6. [5958

1919 New Imperial-Jap, 2¾h.p., 2-speed, lamps, horn, tools, spares, almost new, unscratched; a real bargain, £65, no offers; after 5.30, or Saturday by appointment.—Avalon, Lewis Rd., Sutton. [5420

1919 2¾h.p. New Imperial, 2-speed, kick starter, hand control clutch, lamps, and horn, only used 500 miles, guaranteed as good as new, Cambridge; £52.—Box L6,174, c/o *The Motor Cycle.* [5953

ALLEN-BENNETT Motor Co.—New Imperial. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10,11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5935

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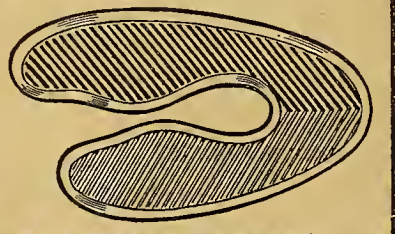
4-5	2/3	1-13	2/-
2-3	2/-	11-12	1/9



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Solution Brush, 4d.

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ELITE RUBBER Co.

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VICTORIA, S.W.1.

MOTOR CYCLES FOR SALE.

New Imperial.

1919 New Imperial Combination, 8h.p. J.A.P. engine, 3 speeds, and enclosed chain drive, completely fitted out with lamps, wind screen, carrier seat, horn, and tools, 28×3 tyres; this machine is practically as new in every respect; £135.—Hal's Garage, Ltd., Stevenage, Herts. [5486

1919 8h.p. New Imperial Combination, very powerful, with large comfortable sidecar, with large enclosed luggage compartment at rear, Easting wind screen, P. and H. lighting set, tools, Klaxon, and all accessories, in perfect condition; reason for selling, owner buying car.—R. W. Bromfield, 35, Keswick Rd., E. Putney, S.W.15. 'Phone: Putney 1598. [5384

Norton.

CROW Bros., High St., Guildford, Norton agents. Let us reserve you one. [X7947

NORTON 4¼h.p., Sturmey-Archer countershaft, disc wheels all round, low undershung sporting sidecar, lamp, and all fittings; £115.—C. and J. Dawson, 62, Regent St., Cambridge. [X0653

1916 (July) 3½h.p. T.T. Norton, acetylene lamps, 2 generators, tools Dunlop tyres, all in very good condition, just enamelled Matchless grey and fitted with new tank, knee-grips, and 2 new belts, in good running order, and looks like new; £70, no offers.—W. Halford, Cleeve Prior, Evesham. [X1110

N.S.U.

3h.p. N.S.U., perfect order; £15, with accessories.—Hall, Hockman, Whetstone, N.20. [5370

N.S.U. 5-6h.p. Twin, good condition; ride away; £30 cash. 64, Buchanan Gardens, Kensal Rise, N.W.10. [5322

6h.p. N.S.U., 1911, less back cylinder and piston, 3½ h.p. Rex, 1911, less piston; parts for sale, including frames, wheels, tyres, magnetos, and belt; offers wanted.—Wells and Davis, Highfields St., Earl Shilton, Hinckley. [X0973

N.U.T.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for N.U.T. motor cycles; early delivery. [5295

N.U.T., 8h.p. J.A.P. engine, o.h.v., T.T. model, exceedingly fast; £80.—Ward's, 129, Larkhill Lane, Clapham. (Privately owned.) [5447

1915 Nut-Jap Twin, 6h.p., 3-speed, good condition; £79, or nearest offer; leaving country.—22, Dundonald Rd., Ramsgate. [5450

N.U.T.—Sole agents for Staffordshire. For particulars of prices and deliveries, watch future announcements.—The Walsall Garage, Wolverhampton St., Walsall. Tel.: 444. [9579

N.U.T., 3½h.p., o.h.v. twin J.A.P., 1917 (Nov.), 3-speed, clutch, T.T., Klaxon, Lucas lighting, Amac, speedometer, Tan-Sad, Dunlops, perfect condition, fast and sporting, complete with tools and spares; £90, or offer; seen London by appointment.—Holmes-Tarn, 35, Duke St., St. James's, London. [5886

O.K.

O.K. Motor Cycle, 2¼h.p., 4-stroke, 2-speed, in good condition; £38.—7, Chapelhay St., Weymouth. [X1136

O.K. Junior, 2h.p., 2-speed, all good condition, fast, reliable; £38.—N. G. Avery, Biddenden, Kent. [X0888

BROOK Bros., Burnham-on-Sea, are now booking orders for early O.K. delivery in 1920. Write for particulars. [4567

O.K.—New 2-speed 2-stroke, Villiers, in stock.—Chandler, Reyre and Williams, Hitchin, Herts. 'Phone: 165 Hitchin. [0064

JONES' Garage, special agents for O.K. machines, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0033

HOVE Engineering Works, Davigdor Rd., for super service. Sole O.K. agents Brighton and district. All accessories. Established 12 years. [4254

1916 O.K., 2-speed, free engine, countershaft gear, lamps, horn, etc., condition excellent throughout; bargain, £45; ride away.—5, Howard Rd., Bromley, Kent. [5385

2¾h.p. O.K., 2-speed, M.A.G. engine, overhead inlet, new April, not run 500 miles, original tyres as new, aluminium footboards, new P. and H. lamps, horn; £55, bargain.—20, Derby Rd., Croydon. [5534

Omega.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Omega-Jap motor cycles; early delivery. [5296

OMEGA-J.A.P. Model de Luxe and 2-speed Models; 68 gns. and 58 gns. respectively.—Stocked by Lloyd and Son, 29, Station St., Lewes. [9584

OMEGA-J.A.P., new Sept., 1919, mileage 200, 2-speed countershaft gears, complete tool kit; selling as owner is in ill-health; genuine bargain, £53 cash.—Collins, 5, Churchfields, Salisbury, Wilts. [5507

P. and M.

CYRIL WILLIAMS, for early delivery of P. and M.'s.—Chapel Ash Depot, Wolverhampton. [X8624

P. and M., incomplete, 1917; £30 quick sale; seen week-end.—91, Mapledene Rd., Dalston, E.8. [5792

MOTOR CYCLES FOR SALE.

P. and M.

1919 Phelon and Moore Combination, 500 miles only, new condition.—Kay, 39, Tottenham Court Rd., W. [5473

1916 P. and M., 2-speed countershaft, fine condition, 4h.p., mudshields; £50.—G. Pawson, 62, Regent St., Cambridge. [X0655

P. and M. Cycle and Sidecar, Cowey speedometer, P. and H. Lamps, just overhauled; £55.—E. B., 71, Foyle Rd., Blackheath, S.E.3. [5740

P. and M., 3½h.p., 2-speed, requires few repairs, ready for spring; a bargain, £28/10; bought Enfield combination.—Ineson, Longfield, Heckmondwike, Yorks. [X0664

P. and M., 1917 R.A.F. model, solo, good condition throughout; £55 trial by appointment; seen eveenings after 7.—Holly View, White Rose Lane, Woking. [5613

1919 P. and M., excellent condition, lamps, horn, spare tube, spare valve, pillion seat; £85; selling to get car.—Can be seen at Pimm's, North St., Guildford. [5475

1919 P. and M. and Sidecar (coachbuilt), complete with tools, lamp and horn; price £115; can be seen and tried by appointment.—Haines, Littlewick, Maidenhead. [X0826

1919 P. and M. Combination (November), horn, tools, pump, mileage under 200, guaranteed perfect; £120; Friday, after 6.—64, Gladsmuir Rd., Highgate, N.19. [5675

P. and M. 1914 3½h.p., 2-speed, kick starter, good tyres, good running order; £45.—Mebes and Mebes, Motor Cycle Depot, 154-6, Gt. Portland St., W.1. Tel.: 3426 Mayfair. [6004

1919 P. and M. Combination, complete with tools, lamps, Klaxon, and petrol can carrier. new Dunlop steel-studded cover on back wheel, spare cover and 4 tubes; £125.—Dover, 31, Airedale Rd., Balham, S.W.12. [5812

1914 P. and M. Combination, 3½h.p., 2-speed, kick starter, with new Bastone sidecar and spare tube, apron, tools, pump, etc., engine and gears recently overhauled; £78, or near offer.—Barker, 13, Victoria St., Clifton, Bristol. [5433

Precision.

WAUCHOPE'S, 9, Shoe Lane, London; 3½h.p. Precision-engined motor cycle, Sturmey-Archer, 3-speed gear, fitted with coachbuilt sidecar; £45. [5993

Premier.

PREMIER Lightweight, 2½h.p., 1914; £33.—Dentist, 9, High St., N. Finchley [5422

3½h.p., 3-speed, handle-bar clutch, 1913 Premier, in good condition; price £35.—Blackborow Bros., Tavistock, Devon. [X1139

PREMIER 1914 2½h.p., Bosch, Amac, just thoroughly overhauled tyres good, all tools, etc.; £30. —129, Widmore Rd., Bromley, Kent. [X0954

PREMIER 3½h.p., genuine T.T., fast, just thoroughly overhauled, Bosch, Senspray, new P.H. lamp, horn, etc.—Lilley, 39, Milton Rd., Westcliff-on-Sea. [5598

PREMIER (late 1914) 2¼h.p., C.A.V. mag., just been thoroughly overhauled, condition excellent; £45 for quick sale.—B. S. Marshall, Ltd., 33-34, Foley St., W. 'Phone: Mayfair 5906. [0077

LATE 1915 Premier, in new condition, original tyres sound, 3½h.p., 3-speed countershaft, clutch, kick start, lamps, generator, horn; £65, or 2-stroke part.—Hall, Cresthill Av., Grays, Essex. [5683

Quadrant.

QUADRANT 3h.p., good running condition; £23.—Barker, 13, Victoria St., Clifton, Bristol. [5436

3h.p. Quadrant, just recntly overhanled, B. and B., spring forks, good tyres (less magneto); £17, or offer.—19, Dickson Rd., Well Hall, Eltham, S.E. [5405

QUADRANT 2h.p., coil ignition, low built, 26in. wheels, Amac, footboards, etc., perfect running order; £11.—14, Waterloo Rd., St. Thomas, Exeter. [X0856

QUADRANT 4h.p., 1919, B.S.A. 3-speed gear box, complete lamps, horn, only drivea 500 miles; any trial; £92/10.—Seymour and Baker, 215, High St., Lewisham, S.E. [5485

4½h.p. Quadrant, brand new show model, 3-speed, clutch, and kick starter; £95.—Harrods Motor Showrooms, 116-118, Brompton Rd., opposite Main Building, S.W.1. [5331

QUADRANT 4½h.p., late 1914-1915, 3-speed, clutch, Bosch, B. and B., mechanical horn, lamps, T.T. bars, fast, sporty, Indian red; £68, or near offer.—55, Turney Rd., West Dulwich, S.E. [5342

QUADRANT, 1920 models, delivered from stock, 4½h.p., 3-speed, chain drive, £95; combination, £122/10; extended terms if desired.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0065

WAUCHOPE'S, 9, Shoe Lane, London, supply new Quadrants from stock; 1920 models for immediate delivery, 4½h.p., 3-speed Sturmey-Archer countershaft gear, clutch and kick starter, all-chain drive; solo machines, £95; sidecar combinations, £122/10. [5983

Radco.

STANLEY RUSSELL, Newport, sole Isle of Wight agent for Radco motor cycles; delivery commenced. [5298

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WELL-KNOWN MAKE.	Our Price.	List Price
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26×2⅜ Tourist Trophy	39/6	45/9
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26×2¼×2¼ Heavy model	69/-	—
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650×65 Extra Heavy, 3-ribbed	61/-	—
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650×75×65 Keygrip, heavy	62/-	—
26×2¼ Combination	84/-	—
26×2½×2¼ Combination	96/-	—
26×2½ Combination	90/6	—

SKEW—

26×2½ rubber non-skid	68/6	—

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26×2¼ Safety Tread	57/6	—
28×3 Safety Tread	70/-	—

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NEW AND FULLY GUARANTEED.

26×2¼	10/-	11/-
26×2½	9/6	11/6
26×2¼	9/6	11/-
28×2	9/-	11/9
26×2½×2¼ lap-ended, butted	8/6	—

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All makes in stock at special prices.

Belt, English make, 1in. section, 6ft. lengths, 1/8 per foot.

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Extra Heavy	17/6	—
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Medium	12/6	—

We have a large motor tyre stock and shall be pleased to quote on receipt of postcard.

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264 266 **Vauxhall Bridge Road, S.W. Victoria. I.**

MOTOR CYCLES FOR SALE.

Radco.

1915 Radco 2¼h.p., 2-stroke, splendid condition; trial; 26 gns., lowest.—9, Coombe Rd., Gravesend. [5720

JONES' Garage, special agents for Radco, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0034

RADCO.—Special agents for Islington and Barnsbury, Pritchett's Automobile Garage, Park St., Islington, N.1. 'Phone: North 1596. [5453

RADCO 2-stroke, single and 2-speed models; deliveries now commenced. Book your 1920 mount now.—Pritchett's Automobile Garage, Park St., Islington, N.1. 'Phone: North 1596. [5454

RADCO, single-speed, new covers, lamps, generator, aluminium footboards; £30, no offers.—Mercer, 8, Richmond Park Crescent, Bournemouth. [X0916

Rex.

A TWIN Rex Motor Cycle, 6h.p., good, Bosch mag., few minor repairs necessary; £29, or near offer.—Barrett, 4, Clifton Rd., Watford. [X1133

3½h.p. Rex, Amac, Druids, Bosch, engine just overhauled, good running order; £25, or offers.—Bradley, Temple Sowerby, Penrith. [4626

REX Combination, 1913 engine, 6h.p., 2 speeds, handle starter, good running order; must sell; £58. —Bales, 47, Willowfield Rd., Eastbourne. [5444

3½h.p. Rex, Bosch, B.B., T.T. handles, lamps, Klaxon, long exhaust, tyres and enamel good; a snip, £35. —Maynard, Woolhampton, Reading, Berks. [5522

REX Combination, 4h.p. single, 3-speed Sturmey-Archer, K.S., spare wheel, all interchangeable, C.B. sidecar, enamelled mauve; book now; delivery about January.—Below.

PRITCHETT'S Automobile Garage, Park St., Islington, N.1. 'Phone: North 1596. [5455

REX 6h.p. Combination, 2 speeds, clutch, handle start, very powerful and smart; £65, or exchange lightweight and cash.—57, Kenbury St., Coldharbour Lane, Camberwell, S.E. [5649

LATE 1914 6-8h.p. Rex Combination, 3-speed countershaft, chain drive, clutch, Binks, Bosch, heavy Dunlops, lamps, etc., splendid condition; £85.—Aley, 43, Studley Rd., Stockwell, S.W. [X1130

REX 6h.p. Combination, 1913, 2-speed, K.S., complete set lamps, horn, speedometer, C.B. sidecar, hood, wind screen; London; cash or solo exchange, offers.—Box 941, c/o *The Motor Cycle*. [X0901

REX 2h.p. Motor Cycle, accumulator coil ignition, with footboards complete, in good running order, just overhauled; first £8 secures.—W. Arnott, 5, Limekiln Rd., Stevenston, Ayrshire, Scotland. [5382

1911 5-6h.p. Twin Rex, 2-speed, handle starting, and coachbuilt sidecar, in good condition; exchange for good lightweight 2-stroke and cash adjustment, or sell £43.—H. Knighton, Woodford, Thrapston, Northants. [X0824

Rex-Jap.

REX-J.A.P. 1913 6h.p. Combination, 2-speed, nearly new coachbuilt Montgomery sidecar, accessories, spares, splendid condition; £80.—Rubery, 49, Lonsdale Rd., Wolverhampton. [5920

Rover.

ROVER, 3½h.p., 3-speed, clutch, new condition; £65. —14, St. John's Rd., Boxmoor, Herts. [5871

1914 3½h.p Rover Combination, 3-speed; £65.—Write Stocken, 15a, Elsham Rd., Kensington. [5491

JONES' Garage, special agents for Rovers, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0035

ROVER 3½h.p., 1919 T.T. model, mileage only 500; £80; seen by appointment.—16, The Parade, Leamington Spa. [X0903

NEW Rover Combination, 6h.p., 3 speeds, etc., just delivered.—Brown, Rover Agent, 3 and 7a, Parker Lane, Burnley. Tel.: 194. [X1041

1917 3½h.p. T.T. Rover, Philipson, absolutely excellent condition; £65, no offers.—Roddick, 31, York Rd., Birkdale, Lancs. [X1047

ROVER Combination, 6h.p., unused, olive finish; £125.—Clifford Wilson Mfg. Co., 70, Royal Hospital Rd., Chelsea, S.W.3. [5819

ROVER 3½h.p., 1919, T.T. model, just overhauled, lamps, tools, spares; bargain, £92.—92, Park Rd., S. Farnborough, Hants. [5809

ROVER 3½h.p., 1914, 3-speed, clutch, Bosch, good condition, lamps, horn; first cheque £45.—W. A. Warwick, Rutland, Belvoir Rd., Bristol. [X1112

ROVER 1918 Combination, fully equipped; best offer over £98; guaranteed not done 4,000 miles.—Powell, 91, Pimlico Rd., S.W.1. [5656

1918 3½h.p. Rover and coachbuilt sidecar, dynamo lighting set, in very nice condition; £135.—King and Harper, 6 and 7, Bridge St., Cambridge. [5480

1919 5-6h.p. Rover, with coachbuilt sidecar, disc wheel, lamp, horn, as new; £150.—King and Harper, 6 and 7, Bridge St., Cambridge. [5481

ROVER 4h.p. Motor Cycle Combination, in Marylebone; £50 net, or with accessories £55 net.—Reply by letter to G. E. Neal, 11, Haymarket, S.W.1. [5460

MOTOR CYCLES FOR SALE.

Rover.

ROVER 1919 3½h.p., T.T., Philipson pulley, new July, done 1,000 miles, in first-class order; £90.—Staley, Woodside, Chell Green, Tunstall, N. Staffs. [X1073

ROVER Single and Twin Models; a limited number available for next season.—Particulars of delivery dates and prices from Lloyd and Son, 29, Station St., Lewes. [9581

3½h.p. Rover, C.B. combination, 3-speed, clutch, Bosch, lamps, tools, perfect condition, good climber; £65.—14, Briscoe Lane, Newton Heath, Manchester. [X1080

1914 Rover Combination, 3½h.p., 3-speed Sturmey-Archer, new tyres, Binks (September), lamps, horn, overhauled October; £75; trial any time.—Birch, 48, High St., Uxbridge. [0918

1914 3½h.p. Rover, 3-speed, thoroughly overhauled and re-enamelled at cost of £15; any trial; £60, lowest; underslung sidecar, £9 (no offers).—69, Kingston Rd., New Malden. [5537

ROVER 1917 3½h.p., T.T., Philipson, new electric lamps, new belt, horn, toolbags, recently overhauled; any trial; best over £60; after 6, or Saturday.—W. Hirst, 50, Orchard Rd., St. Margaret's, Twickenham. [5723

ROVER, late 1915, 3-speed gear box, C. and B. drive, new condition, complete with coachbuilt sidecar, lamps, speedometer, spares, etc.; £110, or near offer; view by appointment.—Fowler, 6, Alderbrook Rd., Balham, London. [5406

3½h.p. Rover, 1919, 3-speed, and clutch, in excellent condition, almost equal to new, equipped with speedometer, horn, electric head and tail lamps, tyres perfect, and free from punctures.—H. E. Hall, Westnor, Tonbridge, Kent. [X1122

1916-17 Rover 3½h.p. Combination, 3-speed, countershaft, excellent condition, as new, Major Canoelet sidecar, lamps, horn, and spares, etc.; £90, first cheque secures.—Byrd, Jun., Hinstock, Market Drayton. [5907

1919 3½h.p. Countershaft Rover, hand and foot-controlled clutch, solo and sidecar sprockets, new belts and spare, electric lighting by battery, Klaxon, spares, condition excellent; 100 gns.—Spencer Parker, Mildenhall, Suffolk. [5680

Royal Ruby.

JONES' Garage, special agents for Royal Rubys, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0036

1917 Royal Ruby 2-stroke, with lamps, etc., condition guaranteed; £38, no offers.—Sergt. Downing, R.A.F., Donibristle, Fife. [X0665

ROYAL RUBY 1916 2-stroke, 2-speed, and free engine, splendid condition; 35 gns., or offer.—15, Ranelagh Gardens, Ilford. [5803

1919 (July) 8h.p. Royal Ruby Combination, small mileage, lamps, generator, speedometer, wind screen, side curtains, mirror, horn, kit of tools; £200, or near offer.—Butcher, 2, Princes Parade, Church End, Finchley. [5733

ROYAL RUBY, late 1919, 8h.p. J.A.P., red and black combination, 3-speed, hand clutch, 3 lamps, mechanical horn, W.S.R. variable jet, mileage 2,000, just overhauled, new rings, spring fitted, tyres 28×3, perfect, special wide bars, very sporting outfit, fast, wonderful on hills; nearest £170 accepted.—Ruby, 7, Orleans Rd., N.19. [5539

Rudge.

CROW Bros., High St., Guildford, Rudge agents, supply at list prices. [X7948

1916 3½h.p. Rudge Multi, T.T., foot oiler; £50; bargain.—7, Gibson Sq., Islington, N.1. [5576

RUDGE 3½h.p., T.T. model; £45, for quick sale.—57, Kenbury St., Coldharbour Lane, Camberwell, S.E. [5650

1920 3½h.p. Rudge Multi, just delivered from the makers, and still in crate; £90.—Stanbridge, Cranbrook. [5501

1913 Rudge, clutch, B. and B., C.A.V., stored 3 years, new tyres, belt; £35.—E. Horn, Long Buckby, Rugby. [X0971

JONES' Garage, special agents for Rudge, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0037

RUDGE Multi, brand new, just delivered, 3½h.p.; first cheque for £90 secures this.—Philpots, 91, High St., Ramsgate. [X1025

3½h.p. Rudge, 2 speeds, countershaft, new Amac carburetter, good tyres, in splendid running order; £35.—16, York St., Dover. [5325

1919 Rudge Multi, 3½h.p., horn, perfect condition; £88; Liverpool.—See Kwiksale advertisement, Miscellaneous Sale column. [5529

RUDGE 1912 Clutch Model, nearly new tyres, belt, piston rings and valves; ride away; £38, or offer; Yorks.—Box 951, c/o *The Motor Cycle.* [X0839

WAUCHOPE'S, 9, Shoe Lane, Fleet St., London.—5-6h.p. Rudge Multi and sidecar, £87/10; also 3½h.p., £75; 3½h.p. 1913 model, £45. [5981

SEPT., 1919, 3½h.p. Rudge Multi, unnumbered, mileage 150, not used, owner at school, all fittings; 89 gns.—Scott, Judde House, Tonbridge. [5380

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We have at the present time the finest selection of 1920 models in England. Many Actual OLYMPIA MODELS, including most of the following

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MOTOR CYCLES FOR SALE.

Rudge.

1919 Rudge Multi 3½h.p., Montgomery C.B. sidecar (new June), hood, screen, perfect conditon; £100.—Crick, Holmwood House, Longfield, Kent. [X0944

I.O.M. Rudge Multi T.T., very fast, in splendid condition, with lamps, horn; £65, or exchange with cash combination.—151, Globe Rd., Mile End. [5471

1919 Rudge Multi 3½h.p. Roadster, only used for a few miles; £85 cash, or extended terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C.3. [0066

3½h.p. Rudge Multi, late 1914, thoroughly overhauled by Rudge, tyres perfect, condition as new, lamps, horn, etc.; £75.—Apply, 25, Warwick Rd., Clapton, E.5. (No dealers.) [5589

RUDGE I.O.M. 1916, fast machine, excellent condition, usual accessories, owner having purchased combination; £72; no offers.—W. Douglas, 37, Sheep St., Northampton. [5623

3½h.p. Rudge Multi, clutch, P.H. lamps, horn, tools, etc., mechanical foot oiling, Senspray, C.A.V., with coachbuilt sidecar, in good condition; £95.—Adams, 58, Nantwich Rd., Crewe. [X0910

1919 Rudge Multi, 5-6h.p., with wicker sidecar (only done 427 miles, practically new), horn, rear lamp, tools, and spare valves; £105.—E. Golightly, Paragon St., Stanhope, Co. Durham. [X0840

RUDGE Multi Combination, 3½h.p., coachbuilt sidecar, good condition; seen Williamson cycle agent, Cupar, Fife; £85, no offers.—Streeter, 5, Rugby Terrace, Broughty Ferry, Scotland. [X0919

RUDGE Multi and Sidecar, in splendid condition, ready to ride away, horn, lamps, speedometer; £55, no offers; apply evenings 6 to 7.—May, 21, Oseney Ct., Camden Rd., N.W. [5699

RUDGE Multi 1915 3½h.p., with clutch and pedal start, new Avon tyre on back, variable jet carburetter, complete with lamps, horn, etc.; £57; exchanges.—R. P. Varty, Thundersley, Essex. [5999

ALLEN-BENNETT Motor Co.—Rudge. Earliest delivery, in strict rotation, at makers' prices ruling at time of delivery.—9-10-11, Royal Parade, London Rd., Croydon. 'Phone: Croydon 2450. [5936

1920 Model I.O.M. Rudge Multi, clutch, starter, equipped nicely, guaranteed not run 50 miles; real reason for sale; £105, or exchange G.N. cycle car, cash adjustment.—Rudge, 75, Thorpe Rd., Norwich. [X0834

1914 Rudge Multi, 3½h.p., and sidecar, electric lamps, new piston, back tyre and tube, new tool kit, everything complete, in good running order; bargain, £64, including insurance policy until Nov., 1920.—Box 6,131, c/o *The Motor Cycle,* [5389

NOV. (1919) Rudge Multi, 3½h.p., semi T.T., Miller head light torpedo rear lamp, Premier mechanical horn, C.A.V., Senspray, etc., a beautiful machine, ready for touring; complete outfit £110, or best offer over.—Adams, 58, Nantwich Rd., Crewe. [X0911

RUDGE 1914 3½h.p., fixed gear, little used until this year, fast, powerful, perfect condition, beautiful appearance, lighting set, accessories; £43, lowest; will ride 50 miles to purchaser; any trial or test.—Knowles, Denham House, Headington, Oxford. [X1108

Sarolea.

SAROLEA, 3½h.p. 3-speed, fast; £45, or exchange.—47, Canonbury Park North, London, N.1. [5843

6h.p. Sarolea Twin, Bosch mag., Amac carburetter, lamp, horn, excellent condition; £45, or reasonable offer.—Allen, 37, Oakley Rd., London, N.1. [5718

Scott.

SCOTT 3¾h.p., 2-speed, kick start, B.B., Bosch; £42.—14, Eccleshourne Rd., Islington, N.1. [5605

NEW 1919 Scott, 3¾h.p., only done 200 miles; £115.—Dr. Green, 59, Balby Rd., Doncaster. [X1060

NEW 1919 Scott Combination; £165.—King and Harper, 6 and 7, Bridge St., Cambridge. [5482

1919 Scott, fitted with all accessories, grand condition; £110.—3, Parker Lane, Burnley. [X1040

1919 Scott (T.T.), new, delivered Nov. 26th, unridden; price £115/17/6.—Apply, Box 945, c/o *The Motor Cycle.* [X0844

SCOTT, 1920, brand new, just delivered, cost with fittings £122 odd; best offer over £120.—Powell, 91, Pimlico Rd., S.W.1. [5657

SCOTT, solo, also combination, just arrived, brand new; first customer secures at list prices.—Pepper, Market Hill, Royston, Herts. [5189

SCOTT Combination, in new condition, mileage under 2,000, Lucas accessories; bargain, £120.—Bunting's, Motor Exchange, Wealdstone. [5774

SCOTT 3¾h.p., 2-speed, goes like the wind; £48, or exchange for lightweight and cash.—57, Kenbury St., Coldharbour Lane, Camberwell, S.E. [5652

SCOTT Combination, believed 1913, good condition, Cooper sidecar, Lucas lamps, Cowey; ride purchaser 70 miles home; £65.—24, Stourport Rd., Kidderminster. [5492

SCOTT 3¾h.p., October, 1919, T.T. bars, mechanical horn, long brass exhaust, aluminium discs, fitted Rennoe sporting coachbuilt sidecar, finished to match machine, no lamps, combination as new, run 370 miles, available after Christmas; price £160. West Riding District.—Box L6,155, c/o *The Motor Cycle.* [5631

Rotax

Motor Cycle "HORNS"

As fitted to the latest and most up to-date Machines. Sound, Strength, and Finish of the best. A real Horn.

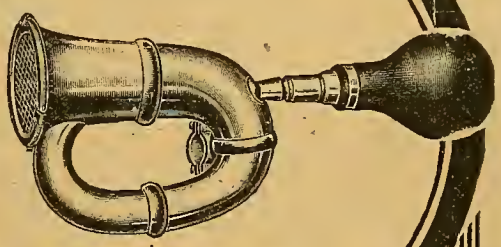
Manufacturers' Enquiries Cordially Invited

also for

TOOL KITS
In Leather or C nvas Case.

BRASS FITTINGS,
Taps, Grease Caps, etc.

The "CLEARAWAY."

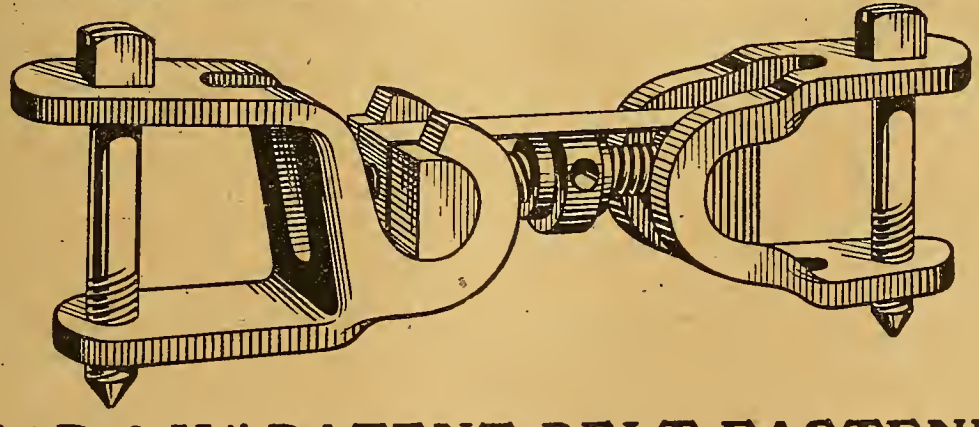


Price 29/9.

CAT. NO. 2473 NICKEL PLATED.
CAT. NO. 2473a EBONY BLACK.

THE ROTAX MOTOR ACCESSORIES Co., Ltd.
WILLESDEN JUNCTION, LONDON, N.W.10.

PRICE **2/-** All Sizes.



In Sizes, $\frac{3}{4}$", $\frac{7}{8}$", and 1"

THE "R. & H." PATENT BELT FASTENER

ADJUSTABLE UNDER TENSION.

INSTANTLY DETACHABLE — SIMPLE — SECURE AND STRONG.

Can be ADJUSTED to meet your immediate need INSTANTLY and without the use of Spare Parts.

MAXIMUM of Adjustment with MINIMUM of Gap between Belt Ends.

ALL PARTS IN BEST STEEL, HARDENED AND TEMPERED.

If you are unable to obtain locally, write direct, or send Name and Address of nearest Agent.

PATENTEES AND MANUFACTURERS:

ROBERTS & HIBBS, Bank Street Works, Droylsden, MANCHESTER.

Telephone: 623 Openshaw. Telegraphic Address: "Roberhibs, Droylsden, Manchester."

THE MOTOR CYCLE SPECIAL PRIVILEGE

A free weekly copy of "THE MOTOR CYCLE" is sent to every policy holder when the premium paid is £3-7-6 or over

Insurance Policy

(Subscribed by Lloyd's Underwriters only).

COVERING MOTOR CYCLES or CYCLES and SIDECARS—USED FOR PRIVATE PURPOSES.

Complete Comprehensive Cover Free of Vexatious Restrictions.

RISKS COVERED.

THIRD PARTY. Complete indemnity up to an **unlimited amount** against all legal liability. All law costs incurred by Underwriters' consent paid in addition to compensation awarded. Defence of any police summons for driving to the danger of the public when an accident, as insured, is concerned free of legal costs.

ACCIDENTAL DAMAGE up to full value, including side slip. Reasonable repairs up to **£5** may be put in hand at once.

FIRE up to **full value,** including tyres and accessories.

THEFT up to **full value,** including tyres and accessories when machine is stolen. Damage through attempted theft included.

TRANSIT. Accidental damage during transit by road, rail, or inland waterway.

— Comprehensive Policy — SCHEDULE OF PREMIUMS.

Motor Cycles not exceeding

3 h.p.	4 h.p.	5 h.p.	6 h.p.	8 h.p.
£2 15 0	£3 0 0	£3 10 0	£4 5 0	£4 10 0
Third Party, Fire, and Theft only.				
£1 7 6	£1 10 0	£1 12 6	£1 15 0	£1 17 6

BONUS : 10% reduction on renewal premium if no claim.

If maker's list price, including all accessories, exceeds £100, an extra premium of **10/-** is payable.

Cycle used without sidecar attached to carry passenger on pillion seat or luggage carrier—**50% extra.**

If machine driven by any person other than owner—**10/- extra.**

If **named** extra rider—**5/- extra.**

Occasional business journeys, 25% extra. Professional purposes, 40% extra. Trade purposes 75% extra.

REDUCTIONS.

To be taken off premiums in schedule only.

15% if Insured bears first **£1** of all claims
25% " " **£2** "
33⅓% " " **£5** "
50% " " **£10** "

Two cycles insured—one out at one time **25%**

ACCIDENTS TO OWNER.

BENEFITS: Death, **£250.** Loss of two limbs or sight of both eyes, **£250.** Loss of one limb or sight of one eye, **£150.** Total disablement, limited to 26 weeks each accident, **£3** per week.
Premium **25 -** cycles, **20 -** cycles with sidecars.
Half Benefits—Half Premiums.

ACCIDENTS TO PASSENGERS.

BENEFITS AS FOR OWNER: If passenger specified by name. Premium **15 -** sidecars. Any passenger of not less than 16 or more than 55 years of age. Premium **20/-** sidecars.

PROPOSAL FORM. Particulars of Motor Cycles.

Make.	H.P.	Date of Make.	If with Sidecar.	Value (including Accessories). NEW Cost.	Present Value.	Registered Letter and Number.
(1)				£	£	
(2)				£	£	

Owner's Name (in full).....
Address .....
.....
Occupation (if any).....
Have you any physical defect or infirmity? ..... Age.....
Will cycle to be insured be used solely for private pleasure purposes?.....

If not, please give full particulars .....
Will cycle be solely driven by proposer?.....
Have you ever had your licence endorsed or suspended?.....
Are you now, or have you ever been, insured in respect of a Motor Vehicle? .....
Has any Company refused to renew your insurance or required an increased premium? .....

I declare that the above statements are true and complete.

Date..... Proposer's Signature.....

Immediate protection can be obtained by forwarding this Form, filled in, and remittance for first premium to

"THE MOTOR CYCLE" Insurance Dept., 20, Tudor St., London, E.C.4.

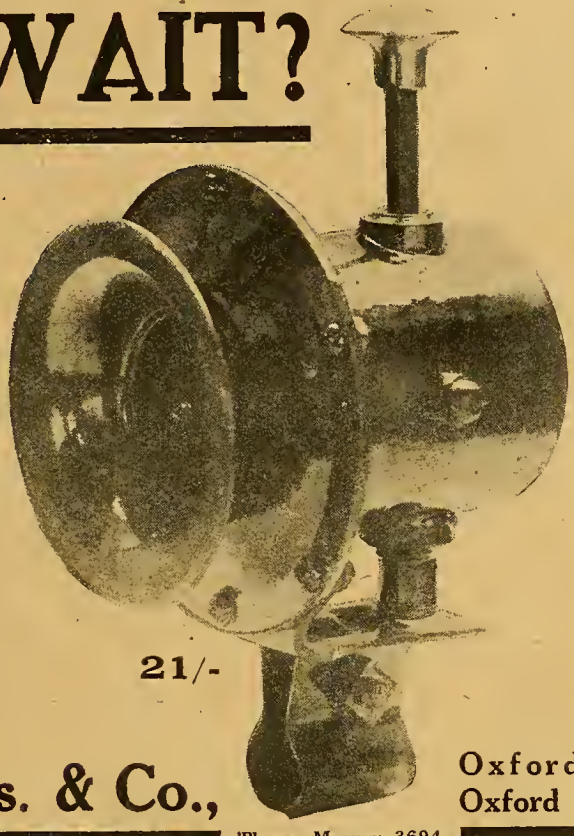
Telegrams—"Cyclist, Fleet, London." Telephone—2848 City.

Branch Offices: BIRMINGHAM: Guildhall Buildings, Navigation Street. Telephone—2273 Midland.
MANCHESTER: Century Buildings, 199, Deansgate. Telephone—620 City.
(At which personal enquiries will receive prompt attention).

WHY WAIT?

Immediate Delivery

A REALLY SOLID BRITISH-MADE MECHANICAL HORN.



British Made Motor Cycle Horn. All Black

Price **21/-**

POSITIVELY WEATHERPROOF and ADJUSTABLE.

21/-

Delivery at once from Stock.

Ramsay Bros. & Co.,

Oxford Circus House, 245, Oxford Street, LONDON, W.1.

'Phone: Museum 3694.

Two of the Best

Bar Type Mica
5/-
of all Dealers.

Plugs we have yet produced are the Sphinx Bar-Type Mica and Bar-Type Ceramic, which possess peculiar merit in the design of the firing points. These

SPHINX

plugs give excellent results at both high and low speeds When the magncto is running slowly, and its impulse is at its weakest, this form of firing point gives the hottest possible spark. As the current voltage and volume increase, it accommodates itself automatically, always affording a minimum resistance and a maximum area to the spark.

The Steatite Model is the general purpose plug, but the Mica Insulated Type should be used where much heat or vibration are involved.

Catalogue free upon request.

The Sphinx Manufacturing Co., Birmingham

Bar Type Ceramic
4/-
of all Dealers

Art Catalogue post free.

ARIEL WORKS LTD., 3, BOURNBROOK, BIRMINGHAM.

In answering this advertisement it is desirable to mention "The Motor Cycle."

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices: 20, Tudor St., London, E.C.4. *Editorial Offices:* Hertford St., Coventry.
Telegrams: "Cyclist, Fleet, London" *Telephone:* 2818 City 9 lines. *Telegrams:* "Motorcycle, Coventry," *Telephone:* 10 Coventry (5 lines).
Northern Offices: 199, Deansgate, Manchester. *Mid and Branch Offices:* Guildhall Bldgs., Navigation St., B'ham.
Telegrams: "Iliffe, Manchester." *Telephone:* 8970 and 8971 City. *Telegrams:* "Autopress, Birmingham." *Telephone:* 2278 Midland.

Subscription Rates: Home, 17s. 4d.; Canada, 19s. 6d.; other countries abroad, 23s. 10d. per annum.
The Foreign rates quoted above apply also to men in the Services abroad.

COLONIAL AND FOREIGN AGENTS:
UNITED STATES—The International News Agency, New York. CANADA—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon & Gotch, Ltd., 132, Bay Street, Toronto.
AUSTRALIA—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).
NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin INDIA—A. H. Wheeler & Co., Bombay, Allahabad and Calcutta.
SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Greetings.

A LITTLE over a year has elapsed since the signing of the Armistice, and motor cycle matters are once again assuming a more normal aspect. Many of our readers have been disappointed at being unable to obtain new mounts, owing to the fact that mass production has not yet got into its stride, and that manufacturers have been held up by labour troubles and shortage of materials. At this season of the year it is opportune to remember that our motor cycle manufacturers played an enormously important part in the winning of the war, and that many of them have experienced a very difficult time in reorganising their works for motor cycle production. At the close of the year we may look back on the past with satisfaction. Never has there been such a demand for motor cycles as at present. Never has there been such promise of progress on sound and satisfactory lines, and never have we known a time when more large and important business firms have turned their attention to satisfying the needs of the motor cyclist.

It is the pleasant duty of *The Motor Cycle* to be of service to rider and manufacturer alike, and to help forward the motor cycle movement by every means in its power, and it is satisfactory to note that its campaigns for genuine improvements always bear fruit, while the ever-growing number of readers encourages us in the belief that our efforts are appreciated.

Our heartiest greetings go alike to all those interested in motor cycles. To manufacturers: May your plans for producing our future mounts be successful from every point of view. To agents: May your efforts to sell be supported by both manufacturers and public. You have an almost limitless market if you can deliver the goods. To riders: May you obtain the object of your desires without delay, and may you spend many a happy day on the chosen mount. And to all our readers, at home, overseas, and in foreign climes: A Happy Christmas.

Christmas Trials.

MOTOR cyclists who will rise from their Christmas festivities to participate in a long distance trial are regarded as mad-men by those who are less keen, but, undoubtedly, such events help to make the motor cycling movement what it is to-day. Reminiscences of the London-Exeter and the Bristol-Land's End Boxing Day Trials are the enthusiasts' chief stock-in-trade, and, while the conditions are usually hard and trying, it is their difficulty that makes the winning of a "gold," or an award of any kind, an honour worthy of the effort. It is the question of pride of achievement that attracts the entry. Every man entering takes pride in the knowledge that the total entry represents only about .1% (or one in every thousand) of motor cyclists in this country—to be that one in a thousand is, in itself, something of which to be proud. This year the Boxing Day events show every sign of regaining their pre-war popularity, which shows that the present-day motor cyclist is in every way as keen as his *confrère* of 1910-1913.

When all is said and done, we think the real attraction of such events is love of adventure, which has gone so far to make this country what it is and which contributed so much to winning the late war. It is an excellent thing to find the young manhood of our country is inspired with such a spirit, so awake and enthusiastic at a time when one may reasonably expect an attitude of apathy after the strenuous times during the war.

As tests of machines these trials pale before their severity as tests of men, yet a majority will come through smiling, with awards to their credit which they will thoroughly deserve.

And who benefits by such trials? The country as a whole; because they help to breed strong, resourceful, hardy men who are not afraid of discomfort to bring about an end, and motor cycling posterity, because they help to breed better motor cycles.

An Index to the advertisements in this issue will be found on the page facing the back cover.

Steering Design.

TRIALS of a few 1920 models have again reminded me of the marked variations which distinguish the steering of different makes of motor cycle. For example, during the past month I have driven three machines which were terrors on grease. As an amateur critic I should ascribe their misbehaviour to the following factors: A had an almost vertical rake on the front forks; B had its engine much too high up (excessive road clearance is not without due penalties); C had far too long a wheelbase. All three machines were really mildly alarming even to a practised rider. Some readers may have had occasion in the past to straddle a frame which has been distorted by a head-on biff or by several thousand miles with a badly fitted sidecar. If so they will understand the sensations to which I refer. Such trials actually suggest that a frame is laid out by fifth-rate makers on the drawing-board with sole reference to the dimensions of the items which have to be housed within it, and without consideration of the factors which render a mount stable and pleasant to handle.

On Holiday.

AS the result of bad attacks of Showitis, a colleague on the staff of a sister journal and myself are spending a brief holiday in the wilds. He is one of those opulent, indolent, corpulent, flatulent people who drive cars; whereas I—well, all veteran motor cyclists have a lean, Aussie kind of look, due to many years at the run-and-push start. In this rural fastness, grease, corners, and gradients are the rule. The other night we ran out of baccy. Nearest shop, five miles. Weather—unfit for flying. We tossed up who should go and buy. I lost. As a consolation prize he lent me his car; having taken an awful purler by daylight on a certain fierce bend, I was temporarily off motor bicycles. The baccy being successfully procured, I started for home, thanking my stars I was snug inside a coupé, instead of perched like a parrot on an unprotected motor bicycle amidst gales and hail. Suddenly, the engine coughed to rest. No petrol, I thought. Investigated. Jones, always a canny soul, had a spare tin in the boot. Transferred it to the tank. Horrors. The car had a vacuum feed. We have not vacuum feeds on motor cycles yet, but—

Bad to Worse.

AN innocent motor cyclist can hardly be expected to know how to fill up a dry carburetter from a dry vacuum feed. Brainwave No. 1. Removed lid of float chamber. Sloshed juice in from a tin. Replaced lid. Brainwave No. 2. Pushed car on a few yards lest spilt petrol should ignite. Engine still reluctant to start, and radiator rapidly freezing. Tackled ignition. No spark at front plug. No spark at any plug. No spark at distributer. Brainwave No. 3. Remove switchwire. Still no spark. Gentlemen, it was pitch dark, and no lamp on the car could conceivably be trained on the ignition details. I gave it up. Fingered my A.C.U. "get-you-home" tickets. Not much good on a lonesome road five miles from a repairer. Brainwave No. 4. There is a farm at the foot of the next hill. Pushed to top of hill. Freeled down it. Woke farmer. Yes, he has a horse. No, he won't pull my car home, because his horse is a shaft horse, and won't pull in chains. No, he hasn't a stable where I can leave the car. Brainwave No. 5. Attach trap to horse. Attach car to tail of trap. Horse will then be in shafts, and will suppose that the extra weight is merely the farmer's wife. Trap attached; car attached. Horse satisfied. And so home. Colleague greatly dissatisfied. More dissatisfied next morning when daylight proves that his mag. has gone hopelessly dud. I disport myself lavishly over the countryside on my motor cycle, while he tries to extract nutriment from yesterday's *Pickleton Gazette*. Said journal is principally interested in profiteering on the part of manure dealers. Serves him right for winning the toss overnight.

Occasional Comments.—

Speed Wobble.

SURELY Mr. Behren's Oxford don rather begged the question which was put to him. Speedman's wobble is obviously a question of dynamics. Equally obvious is the fact that equilibrium tends to disappear when a bump is encountered above certain speeds. But what we want to know is *why* equilibrium is lost on certain machines at speeds which are within our reach—*e.g.*, I have a machine which speed-wobbles at 52 m.p.h.—and *why* other machines maintain their equilibrium up to their speed limit. If this point is once cleared up, we can exorcise speedman's wobble for good and all. At present some designers know nothing at all about it, and those who know will not tell.

Export Trade.

I HAVE just read a savage letter from a New Zealand garage owner, denouncing British manufacturers for their neglect of trade in his country. He remarks that in fifteen years' experience he has seen the British come along and oust the French, then die away and relinquish their market to America. I agree with every word he has to say anent pre-war days. Everybody admits that most of our motor firms lacked constructive imagination in that era. They were content with small outputs, the bulk of which were absorbed by the home market. If an overseas buyer ordered a British motor, too often he bought it at his own risk. Local "service" was often non-existent, and the manufacturers, as a class, failed to recognise the immense possibilities of overseas business, keenly sought and efficiently handled. Now comes the tragedy of lost opportunities. The war has changed our mental attitude. Most makers have formed grandiose plans for nursing the overseas market. But at least a year must elapse before these plans can commence to bear fruit. The home demand will sop up practically the whole of the output. Financial handicaps intensify the difficulties of competing with America. The trader who has tardily awakened to the opportunities which overseas customers afford is doomed to sit helplessly watching, whilst other nations step in where he once refused to tread. For the moment, our overseas markets are temporarily at the mercy of America. But I fancy, nevertheless, that we shall not finally surrender them without putting up a sound battle. Within a year or two we shall be making far more motor cycles than can ever be sold at home; and the overseas customer will then be given some tempting bargains, coupled with superfine service.

Bad Testing.

HAVE all the D.R.'s found excellent jobs? I once mused to myself that the aftermath of the war would equip all the motor cycle factories with an embarrassing selection of skilled testers. Yet I hear to-day from a Birmingham correspondent that his new machine was delivered with the belt pulley at least half an inch out of line with the belt rim. Not being accustomed to belt drive, he discovered the fault through the rapid wear of the parts concerned. When he returned the machine, the makers behaved sensibly, and put things right. But on this occasion their fitter mounted the two plates of the new fastener on opposite sides of the ends of the new belt, so that the drive was again a good half inch out of line. There is surely no shortage of skilled riders for testing purposes? I am perfectly certain that my 1919 machines were passed for delivery by D.R. testers, for no C3 man could have started them in the tune in which they reached me.

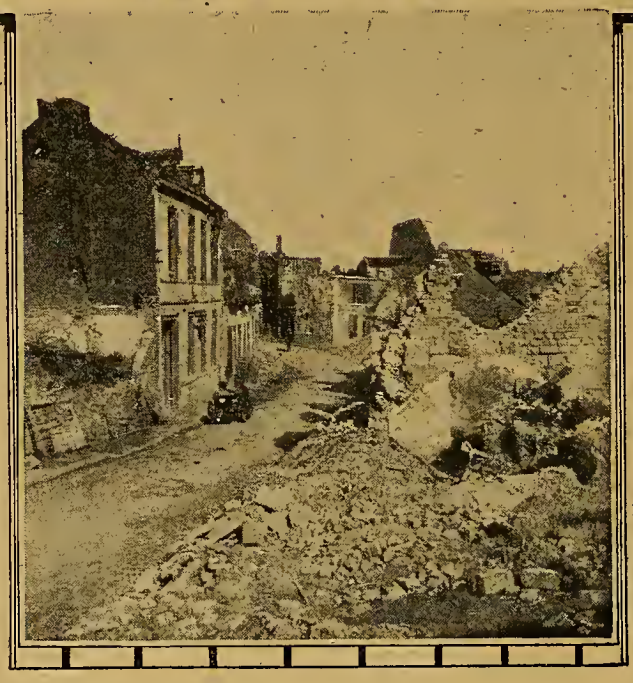
A TOUR IN THE DEVASTATED AREAS

A Post-war Trip in the North of France on a Motor Cycle and Sidecar.

By MAJOR H. G. GUINNESS.

HAVING seen three years' active service in France, it may seem strange that on demobilisation we found ourselves planning a motor cycling tour in that country; but, as photographic souvenirs are of such interest, and otherwise impossible to obtain, we decided to take a camera and tour the battlefields.

Fortunately our 4 h.p. machine and sidecar of well-known make were almost new, so, in spite of their comparative lightness, we decided to use them. However, as our luggage capacity was strictly limited, it was only possible to attempt a ten days' trip of some 600 miles.



"We were in the devastated areas and wished to visit certain places of especial interest."

Preliminary arrangements regarding triptych (for passing the Customs), driving licence, etc., were quickly and easily made by the A.A. and M.U., and lists of the best routes and hotels that we might require were prepared by that organisation.

The run from London to Folkestone was uneventful, and next morning the Association's representative met us on the wharf and attended to the embarkation of the outfit.

A Useful Tip.

As the boat arrived in Boulogne by 3 p.m., it was decided to run on to Abbeville that night. Our first experience of French *pavé* was not to be pleasant, as those who know Boulogne may well believe; but, much to our relief, macadam replaced the cobbles when we got clear of the town, and an average speed of 14 m.p.h. was then maintained in spite of inevitable stops at railway crossings. At one of these, however, we were to learn something, for, as a despatch rider drew up, we noticed his 26in. × 2⅜in. rims had on 28in. × 3in. tyres, and he assured us that, although they were an easy fit, they held on well if properly inflated, and, naturally, gave a much smoother ride.

The next day our route lay through Amiens, and the familiar lines of trees along the straight open roads were passed more quickly than they ever were in war days, when walking and lorry hopping were the only means of transport available to us. Albert was our resting place that night, and we were accommodated by an old British despatch rider and his French wife, who have set up an accommodation house amongst the ruins of that town and give tourists every attention.

Up to this point, only well known roads had been encountered, but, now that we were in the devastated areas and wished to visit certain places of especial interest, it was a question of pottering along where possible tracks existed and walking the rest. Our engine kept wonderfully cool considering the miles of continuous second and first gear work that were inevitable under these circumstances.

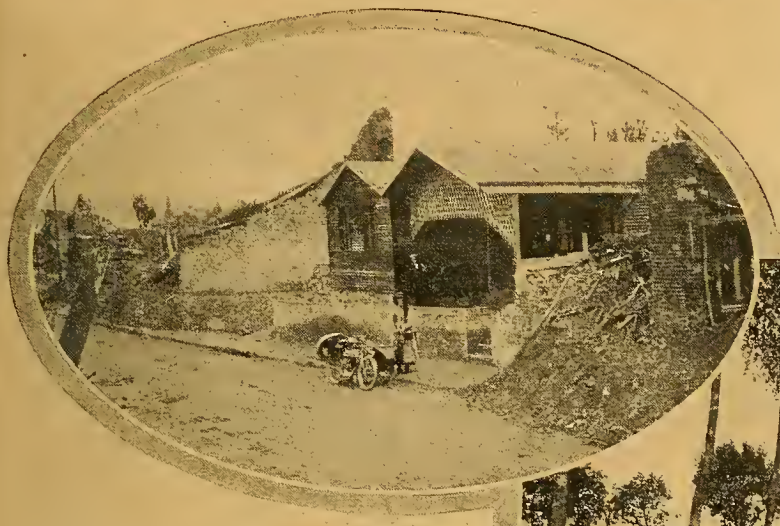
From Albert we journeyed to Arras *via* Bapaume and the many ruined villages lining the route, and, on arrival, were glad of a comfortable bed and good meal in one of the less damaged hotels. It was interesting to note how specially prepared paper took the place of glass in most of the window-frames, and how plaster work, done by a clever workman, could hide a multitude of holes—for Arras is rapidly being restored, and good accommodation can be obtained there.

The next day we passed over Vimy Ridge and on towards Lens—one of the most wrecked towns in Northern France—and had miles of badly laid *pavé* to encounter, which forced us to keep down to an average of 6 m.p.h. until Armentières was reached. This took us past such famous places as Loos, Hulluch, La Bassée, and Neuve Chapelle; but the road was so poor that, unfortunately, we could not give much attention to the country, and the passenger also was thankful for the final stretch of macadam to Poperinghe.

Normal Conditions Re-appearing.

Here things seemed almost normal, for harvesting was in full swing, and the hop-pickers were busy getting in their crops. The town offered excellent accommodation, and dinner in the garden of the old hotel brought another day to a satisfactory end.

From here trips were made over the very indifferent roads to local places of interest—Bailleul, Kemmel, and Ypres—after which the Passchendele Ridge was



(Left) "We were accommodated by an old British despatch rider and his wife, who have set up an accommodation house amongst the ruins of that town."

(Right) "It was this north and south route which was of such strategical value to the Boche."

crossed and the old Menin-Roulers road tested. It was this north and south route which was of such strategical value to the Boche in the late war, enabling the rapid movement of troops from one part of the line to another. Our progress, however, was slow, for one of the sidecar springs broke on the unspeakable *pavé*, a local repair being necessitated. But good time was made over the last stretch to Bruges as we passed the low-lying but timbered country of that part. This canalised district, with its docks and ports, was of special interest; the submarine shelters and defences being very well worth visiting, while the stretch of asphalt road running through the sand dunes to Ostend proved a delightful change, for the surface was excellent, the scenery pretty, and the German coastal defences a never-ending wonder. South of Ostend was seen the large (German) naval gun which shelled Dunkirk, some twenty-six miles away. A small Belgian boy guided us to the wood which was this Bertha's home, perching himself on the carrier and much enjoying the ride. All the roads of this part and through Furnes and Dunkirk were much better in surface than those encountered further south, and the run to Boulogne was accomplished without incident.

We had been fortunate to accomplish this tour without any tyre trouble or stoppage whatever, excepting for the broken spring, and put it down to neither having attempted the impossible in the way of roads or loads, nor having tried to average too great a daily mileage. Of course, for the solo rider, difficulties are greatly minimised, for the cinder and macadam footpaths along many of the *pavé* routes offer an excellent track; and the phantom of a mangled sidecar frame

"Bapaume and the many ruined villages lining the route."

A Tour in the Devastated Areas.—

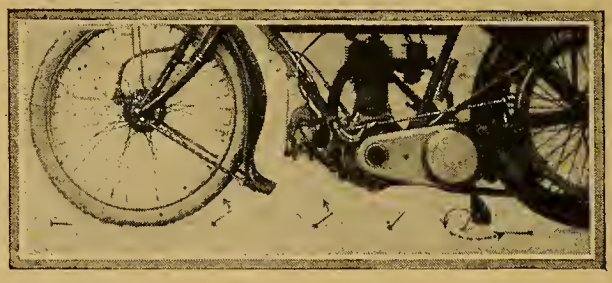
never crosses his mind. Any passenger outfit attempting a tour of the battlefields may be sure of a thorough testing, and it is not advisable for three people to try it on an old 3½ h.p. machine and wicker sidecar (as we saw attempted there by some sportsman), for inevitably trouble must come, as a good deal of kit and spares must be carried in order to ensure a satisfactory run. It is especially on such tours that one appreciates interchangeable wheels and large petrol and oil tanks, for garages are not always within reach, and, even then, do not always supply what is needed.

In conclusion, it may be said that if one does not appreciate English roads, it does one good to experience a week of what the despatch riders have faced under far worse circumstances for four years; and at the same time make a permanent photographic souvenir of one's life in France.

A Real Puncture Preventer.

By ROAD RIDER.

TYRES have been anathematised as the Achilles heel of the skilful motor cyclist. Given a good machine and a good rider, nothing else is likely to interfere with timekeeping, whether the ride be undertaken in competition, on business, or for pleasure. *Pace* Mr. F. L. Rapson, very little has been attempted to safeguard our journeys in this respect. Detachable wheels are hardly applicable to solo machines. Butt-jointed tubes are still imperfect. There is a limit to the nail-resisting powers of covers; the main difference between an old and a new cover is that, whereas the new cover will only surrender to a big nail, the old cover may admit entry to a tin-tack or a small flint. Various inventors have tried fitting chains or rubber shoes at a small clearance to extract partly-entered nails from the tyres; and the fact that not one rider in a hundred troubles to use such fittings is a silent commentary on their uselessness.



Showing how the deflector in front of the rear tyre renders harmless nails thrown up by the front tyre.

A new invention which strikes me as being of very great value, though it suffers from one obvious disadvantage of a minor character, stands to the credit of Mr. M. M. Monie, who is the surveyor of soils under the Board of Agriculture for the West of Scotland, and is compelled by his professional duties to travel thousands of miles annually on a motor cycle over roads which some of us know to be almost unequalled alike for their bad surfaces and their loneliness. In his first 11,000 miles, he sustained over forty punctures. This aggravating experience set his scientific mind to work, and he produced the device described below. It is cheap and simple; since he began to use it, he has covered upwards of 20,000 miles without any punctures at all. Inventors' private trials are apt to be regarded sceptically, but Mr. Monie's standing entitles him to a respectful hearing, and he is not without the reinforcement of plausible arguments.

Every rider knows that of a hundred punctures, about ninety-five occur in the rear tyre, and only five in the front tyre. It is generally supposed that this distribution is ascribable to the fact that the rear wheel takes drive and weight, whilst the front wheel takes weight alone. If this supposition were sound, we might expect the life of the two tyres to be in somewhat similar ratio; and estimating the life of a cover on the back wheel at 2,500 miles, we should almost expect to get $\frac{2,500 \times 95}{5}$ miles (say 40,000) out of the front tyre. In actual fact, we esteem ourselves lucky if we secure 4,000 miles from a front cover. If the mileage ratio between front and back tyres is as 8 : 5, and the puncture ratio is as 19 : 1, it is obvious that driving strains have little to do with the incidence of punctures.

The real explanation of the fact that front tyres hardly ever puncture is set in the subjoined sketches, which are self-explanatory. It is extremely exceptional for a nail to lie in the road with its business end uppermost. It lies flat. The front wheel of the motor cycle hits it, and tweaks it into an erect position. Before it has time to resume its repose, the rear wheel runs full tilt on its point, and a puncture occurs.

This is Mr. Monie's system. He fits a small deflector with a tiny ground clearance immediately in front of the rear wheel. The deflector is sufficiently flexible to bend backwards when it touches any projection from the road surface. But it infallibly sweeps aside any puncturing instruments which may have been tipped up into dangerous attitudes by the front wheel. In order to satisfy himself that the deflector would enable him to continue using a motor cycle satisfactorily, the inventor laid down 80,000 nails on a hard smooth surface, some of them at right angles to his track, some of them across it, and some of them higgledy-piggledy. He spent seven hours in traversing these nails, and, so long as the deflector was in position, not one of them so much as marked his tyres. When the deflector was removed, punctures began to come thick and fast.

The minor defect of the fitting, already alluded to, is its obvious tendency to stir up the dust.

It is a simple matter to test the efficiency of this preventer. Mr. Monie cut away the off side half of his first experimental deflector, so that one side of the tyre was left unprotected. He got several punctures in the unguarded side, as against no trouble with the protected side.

The device will shortly be advertised commercially; in the meantime a few are on sale (10s. 6d.) at "The Broford," 360, Great Western Road, Glasgow.

A TRAGEDY OF THE WAITING LIST.

CHAPTER I.

In which the ardent Rupert discovers that the path of true love runs smoothly if—

ONE, two, three—hesitate; one, two, three—hesit—hang it all, dancing is better than proposing. But no one can do both at once; not properly anyhow, and, as Rupert went to the dance to prop., there was nothing for it to declutch and go on full lock into the gara—pardon, the conservatory.

"Dancing is better than proposing."

Rupert felt fine and fit. Did not a letter from Cumfy Coachbuilts, Ltd., rustle in his pocket, telling him he was number nine hundred and sixty-four on the waiting list? Hope deferred perhaps—but still HOPE.

"Gwendoline, will you be mine?"

"Rupert, I cannot tell a lie—I will. But stay, as a proof of your love, you must achieve success; you must perform where others promise; you must show yourself a true cavalier. There is one little deed you must carry out. Promise me that you will do what I ask, and the answer is in the affirmative, as a lady M.P. (oh! how I wish I were one) might say. Tell me, Rupert, you will not fail?"

"My own, my ownest, I will do aught you demand. I am rich. Diamonds are yours for the asking. The choicest Chesterfields shall grace your parlour, demobilised Waacs shall bring you early morning tea, twenty matinées a month shall be your lot, and halls twice nightly in addition, anything—"

"Ah! Rupert, you know not what you promise. Mine is no ordinary request! Think, Rupert, think of the great deeds of history. Think of all that Mark Anthony essayed for Cleopatra—think of the wonders shown to the Queen of Sheba—think of the Field of the Cloth of Gold. Think of Philip of Spain and his Armada—think of the conquest of India—"

"Gwendoline, do not mock me!"

"Can you equal these deeds, my Rupert?"

"All these shall fade in the shade at what I will achieve for you! For you I will annex the Adriatic Coast, dispossess the Czecho-Slovaks, bring d'Annuncio himself bound captive before you. Ah! Gwendoline, you know not your Rupert—to dare all is to achieve all—and Rupert undertakes to deliver the goods, to bring home the pumpkin, to collect the ashes, to achieve the impossible—you have but to command! But, hark, the Foxtrot—let us not tarry!"

"Ah, Rupert, heartless that your are! Would you go to the Foxtrot when you know not my command. That which I shall require of you is a far, far greater job than you have ever done, and will require far, far greater skill than you have ever shown. Mark me well, Rupert. I like much your fair protestations, but should you fail in that which I enjoin—then I will have none of you; instead the suit of Sidney shall be favoured."

"Ha—ha! Would'st mock me, loved one? Would'st torment me with that horrid name? Speak, I pray thee. Say that which thou would'st have me do. There is nothing I will not dare. A house even—have I not an aunt who stands in the same butter queue as an old man who has a house to let? Did she not give him her extra ration once? She has but to demand a modest favour in return, and he must let her have the house—he can do no less—Gwendoline, just think, married, and with a house."

"—Rupert, it is not of houses I would speak. A house is easy beside the task I would set you to perform. Nerve yourself, Rupert, the suspense is killing me. Rupert, I must have a sidecar. It must have dinky cupboards, mirrors, screens, hoods, side curtains, dressing cases, luggage carriers, electric lights, detachable wheels, Triplex glass, cushions, cloth upholstery—in short, it must be *some* sidecar. Ah, do not speak—I know full well that your order has gone forth for such a one. I know your great wealth has been expended with a lavish hand as a deposit. All this I know, but *when* will it come? Ah, no, Rupert, do not buoy me up with false promises. Rupert, our union cannot be. I would fate had willed otherwise. Alas! Rupert, you must go your way and I mine. Farewell, Rupert, Farewell! *Sidney is number one on the waiting list.*"

CHAPTER II.

In which the resourceful Rupert conceives a plot for the undoing of unsuspecting Sidney, but is himself very thoroughly undone.

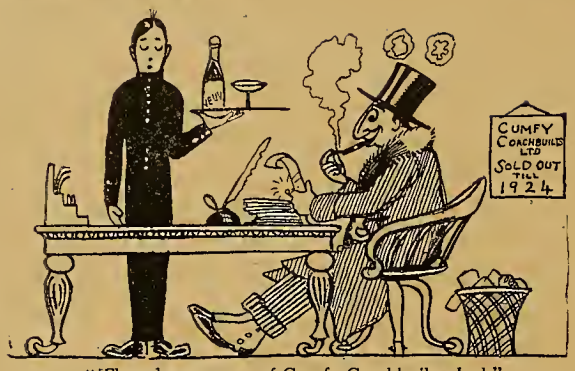
Rupert reeled from the ferny alcove alone, and, like one dazed, plunged through the ball room. Those who could sufficiently extricate themselves from the Bunny Hug turned their faces to gaze upon him, marvelling at his haggard look and wild eye. But Rupert heeded them not. Straight on he went—not even pausing at the bar. At high r.p.m. his feet carried him on—on—on. Rupert had a plan.

"Think of the Field of the Cloth of Gold."

* * * * * *

The sales manager of Cumfy Coachbuilts, Ltd. (Tel. address, Mustard, Brum.), sat gazing at his morning mail. Things were moving. Already the waiting list (each with a deposit) was of a length extraordinary. Ferdinand Flivver calculated that, if each waiting applicant were laid head to heels in a

A Tragedy of the Waiting List.—



"The sales manager of Cumfy Coachbuilts, Ltd."

straight line, the line would be curved and would stretch right round the confines of the local borough council's domains and then have a bit left over to begin all over again. "Sold out till 1924!" Delicious thought. And the deposits had already multiplied the assets of Cumfy Coachbuilts, Ltd., to a figure which made Ferdinand Flivver feel as though he were already a Napoleon of the sidecar industry.

In a word Ferdinand was pleased.

Life was good—his weekly salary was assured for quite a bit. He drew forth the cigar box in which reposed the choice Fumidoros kept as a bait for those about to place their names (with deposits) somewhere about in the third thousand of the waiting list. The light danced merrily on the superb Oriental colourings on the band round the Fumidoro. The effect was indescribably rich. It reminded Ferdinand of Cumfy Coachbuilts' standard finish, as shown at Olympia. Hang the expense. He took one—ah! what's that?

A knock on the door. Rupert entered.

Ferdinand blenched a little. He owed Rupert certain moneys, a debt incurred at Nap when travelling home after 1913 Olympia. Ferdinand hoped the war had washed out the memory of that deal. He gazed at Rupert's haggard look and turned the key in the petty cash drawer firmly, but as one in a dream.

"Rupert I cannot pay! Cumfy Coachbuilts, Ltd., are not war profiteers; alas! the rise in silver does not do us a good turn."

"Ferdinand, it is not your money I want. I will forgive all you owe if you will agree to one condition."

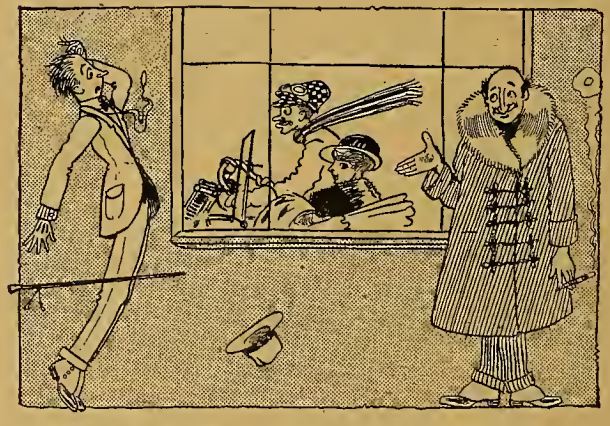
"Name it, Rupert, name it, and I agree!"

"Ferdinand, as perhaps you are aware, I am nine hundred and sixty-fourth on the waiting-list of Cumfy Coachbuilts, Ltd. Sidney Snaffle is number one. Change our positions and all you owe me is a write-off."

"Impossible. I wired Sidney yesterday to come and take delivery. He is now in the works—he has paid his cash. Ah, see, come to the window. He starts. His engine fires. And look in the sidecar—ah, Rupert, *what* a girl—"

But Rupert had turned paler even than when in the conservatory. He staggered forth—he forgot to collect his debt. He must for ever be on the waiting-list, waiting and watching. Waiting the long dreary years till the turn of number nine hundred and sixty-four on the waiting list of Cumfy Coachbuilts, Ltd., was reached—watching for something wherewith to furnish the sidecar whenever it should be ready. But 1920 damsels wait not for sidecarless swains.

MORAL: All delay is dangerous. M.F.W.S.

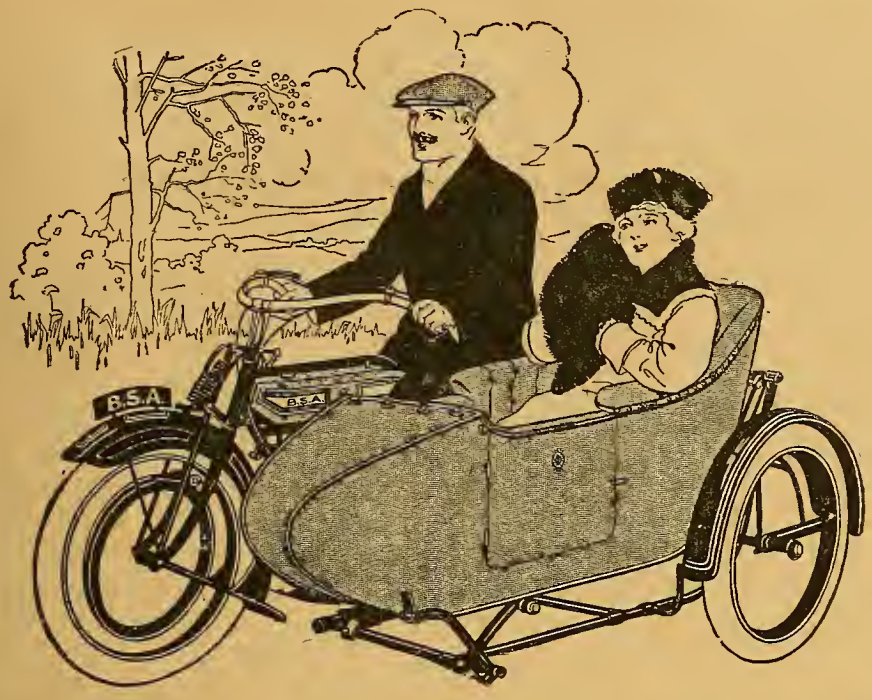


'But Rupert had turned paler even than when in the conservatory.".

THE MONOCAR.

Some Reasons for its Limited Popularity and Suggestions for Development.

PERHAPS one reason for the surprisingly restricted popularity of such monocars as have appeared is that the vehicles are quite a special job, and their designer must woo success by putting both cars and cycles clean out of his head. For example, if a four-wheeler is intended, it is perfectly hopeless to rely on standard wheels and tyres. Four wire wheels, with 26in. × 2½in. tyres, will make too big a hole in the available cash; moreover, unless they are very widely spaced in the track, they will not afford anything like the comfort of a motor bicycle. On the other hand, if the gross weight of the machine can be kept down to the standard of a 7-9 h.p. twin, and this load is to be distributed over four wheels instead of two, quite small tyres will serve; and perhaps wheels of large diameter would modify the springing problem. Arguing on these lines would lead to some such scheme as 40in. wheels, shod with 1in. tyres, which would only be possible if disc wheels were pressed out of steel and heavily perforated for lightness. Incidentally, this construction would raise the driver to a level at which passing bullocks could not kiss him. These foolish suggestions are not meant to be taken seriously. I merely wish to suggest that there is a big potential market for monocars; that this market is very sensitive in the matter of price; and that a designer who attempts to cross the motor cycle with the motor car may possibly combine the worst points of both vehicles. Machines of the Carden type have obviously possibilities for the all-weather soloist, yet for some mysterious reason their sales have never even distantly approached the presumed number of such riders. Why is it? ROAD RIDER.



BIRMINGHAM SMALL ARMS CO. LTD. TRADE MARK BSA BIRMINGHAM

Winter Riding.

THE keen enjoyment of motor cycling with a B.S.A. on a winter's day is without equal. The hard roads, winter air, and the comfort and easy running of the reliable B.S.A. all make for thorough enjoyment. The sturdy construction of B.S.A. Motor Bicycles and the searching tests to which each individual machine is subjected before finally leaving the B.S.A. factory is a guarantee of the satisfactory service that can be confidently anticipated from

Write for Catalogue.

B·S·A

MOTOR BICYCLES

For Solo and Sidecar.

B.S.A. CYCLES LIMITED, BIRMINGHAM.

Proprietors : The Birmingham Small Arms Company, Limited.

A Message of Hope & Goodwill to Every Motor Cyclist

The new "TAN-SAD" Motor Saddle loves Pot-holes. The faster you go over Pot-holes the more it likes it; The machine likes it too, and simply dances with joy.

See What We Save You

Absolutely all shock: An enormous amount of repairs: Many more miles to the gallon on rough roads: And, lastly, you will find a pleasure in motor cycling that nothing has ever given you before—you will love your TAN-SAD and thank us for evermore.

Just as its marvellous springing system makes the Rolls-Royce the acme of car perfection, so the TAN-SAD Motor Saddle lifts motor cycling to an entirely new plane of pleasure. Words can only suggest the improvement. Experience will confirm it to you.

So send for descriptive list and order quickly to ensure prompt delivery. Price **38/-**

Remember, also, the TAN-SAD patent Pillion Seat which makes Pillion riding safe and comfortable. Price **38/-**

And the TAN-SAD patent Rear Lamp which can't help lighting. Price **6/6** or **7/6** with number plate.

Sold by all Dealers. **Write now for full particulars to Sole Makers:**

"TAN-SAD" Works (F. H. Headley), **9, Freeman St., Birmingham**

In answering this advertisement it is desirable to mention "The Motor Cycle."

TALES THAT ARE TOLD

Some Legends of the Road and the Phantoms that use them.

The shade of Dick Turpin is supposed to haunt a hollow of the road near Warrington.

IT has been said that the mechanically propelled vehicle has robbed the roads of their romance. Rather should it be said that the motor has revived it. Before the advent of the motor cycle and the motor car, the roads had merely become byways between villages—the great highways were the steel rails upon which people travelled from place to place. To railway travellers the country between home and destination is unknown, and to them travelling is a bore. All that is now altered; with the aid of a motor cycle, a holiday begins at one's very door, and not least among the pleasures of a vacation are those associated with the road along which the journey has been made.

Almost every hamlet, village, and town in England has its legend, whilst most districts can claim a lonely stretch of road with a history and a ghost. At this time of the year—in the depth of winter and with Christmas about us—anything appertaining to the supernatural forms an absorbing topic in many households. It is, perhaps, only natural that this particular season is singled out as the time for ghost stories. During the glorious weather of the summer, its long days, its flowers, and its birds, one would find it exceedingly difficult to conjure up a suitable atmosphere for the telling of a story in which the leading figure is a headless horseman, a hooded monk, or the shade of a murdered bride.

True, one often hears such stories during the summer rambles with the motor cycle, but the retelling is reserved for the dreary winter evenings, when chairs are drawn up to a blazing hearth.

It is not altogether surprising in view of this fact that the majority of ghost stories are connected with the Christmas festival. Most legends of this nature are timed somewhere between midnight on Christmas eve and the same time on Christmas night.

A Prolific Period.

Another remarkable feature is the fact that most ghost stories are confined to the Elizabethan and Stuart periods. In a few isolated cases we have knights in shining armour, and at the other extreme side-whiskered earls in top hats and frock coats, but one rarely hears of Crusaders or Roman soldiery taking a part in these tales of long ago, which are supposed to be reacted for the benefit of the present generation generally by the spirits of departed victims of foul play.

In Warwickshire, somewhere near the old Fosseway, a ghost carrying its head under its arm is said to run across the road.

Some Necessary "Properties."

Doublet and hose, rattling chains, highwaymen and gibbets, dungeons deep, skeletons, coffins, swords and daggers are some of the

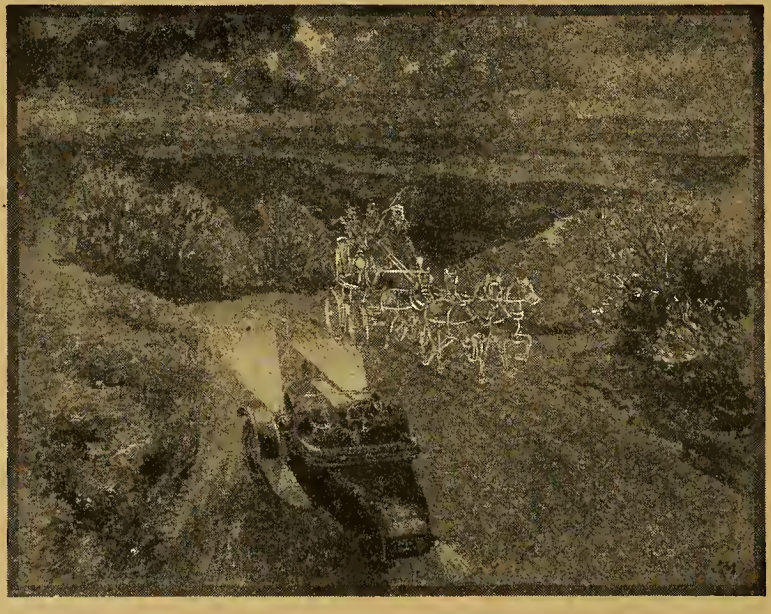
most important "properties"; the ghost story will have to be properly staged. The early Victorian period appears to be sadly neglected, for one seldom hears of ghostly figures in crinolines and peg tops; hence, it can be said that this was a period dividing the old romantic days and the era of the steam age, and that the latter killed most romance by diverting the main traffic from the highways.

One of the most fascinating figures in romantic history is Dick Turpin, who, but for his famous, even if legendary, ride to York, and the death of his faithful mare, would have been lost to fame with many other rascals of the same ilk. To motor cyclists who have competed in the London-Edinburgh run, Dick Turpin's ride is particularly interesting, since he used the Great North Road, but it is doubtful whether any aspirant for an M.C.C. "gold" has ever been asked to "stand and deliver" by the shade of a masked horseman.

No doubt many of the legends of the famous highwayman rightfully belong to other robbers of that period. Thus, we hear that other districts than those through which the Great North Road passes claim the distinction of a connection with him.

The Spectre of Dick Turpin.

There is, for instance, a road turning off the Knutsford high road which leads to Warrington. Some little distance from the high road there is a wooded hollow where, tradition says, Dick Turpin waylaid anything that came along. This hollow is said to be haunted by the shade of the highwayman duly booted and spurred.



Another road-haunting ghost is that of a coach and four said to appear on certain parts of the Old Colwyn Road. Why and wherefore tradition appears silent.

The sailor ghost of Hindhead is a popular superstition, probably kept fresh in the minds of the present generation by the stone which marks the spot where the said sailor, when in the flesh, was done to death. It is said that the ghost appears fairly regularly to passers-by on any night that the sky is cloud-wracked and a watery moon is sailing. It is also reputed that it generally appears from behind the stone that records the details of the murder. The ghost appears with the plaited hair and rice bag trousers of the sailor of that particular period. It is satisfactory to remember that the murderers were hanged on the hill just above this point.

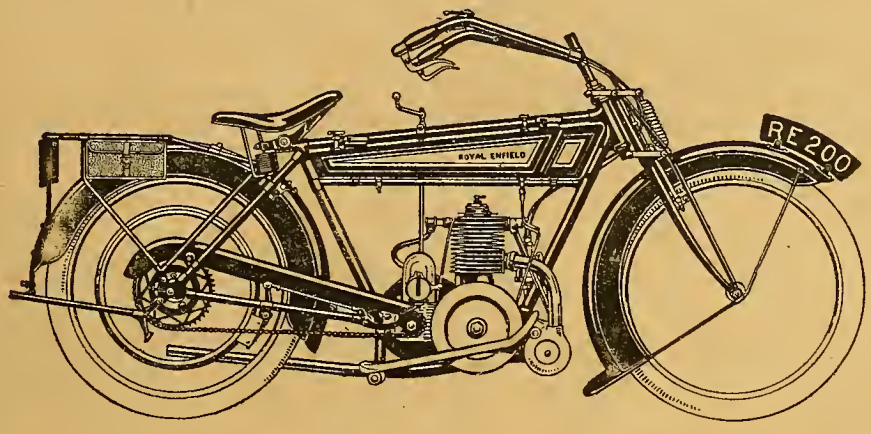
Another well-known ghost is that which is said to haunt St. Leonard's Forest. Nothing much is known of this spectre, and the reason of his restless wandering is shrouded in mystery. It is said to be the spirit of a certain Captain Powlett, of the Horse Grenadiers, and it is alleged to wander this forest side with its head under its arm. According to history, Captain (or Squire) Powlett lived a most exemplary life, and was certainly not beheaded, but died naturally in 1746. One comes across legends similar to this in many parts of the country. The headless figure, carrying its head under its arm, lends itself to artistic treatment on the tongue of the superstitious yokel. In Warwickshire, somewhere near the old Fosseway, there is a picturesque farmhouse, with an old church forming part of a barn. A little distance away there is a coppice, and between this and the ancient building a ghost carrying its head in its hand is said to run on certain nights of the year.

A Personal Experience.

The writer has had one experience which may not be out of place in this article. It occurred in the Midlands while riding home on a motor cycle late one moonlight autumn night. Having dismounted at the top of a hill locally reputed to be haunted, but by what has never been made clear, the shadow of a gallows with something dangling from its arm was distinctly seen on the road. It is to be confessed no effort was made immediately to investigate the matter. Next day a return was made to the spot, but nothing that would cast such a shadow across the road was to be found. Probably there is a great difference between what one sees, and what one thinks one sees. The knowledge that a particular place is reputed to be haunted may have much to do with the matter, although the writer cannot remember thinking of this at the time of the incident alluded to.

Then there is the legend of a ghostly coach and four which silently passes along the Old Colwyn Road. The old stage coach makes a good setting for a ghost story, but, on the other hand, the monster railway engine does not appear to figure in stories of the supernatural. Neither is the up-to-date steamship called upon to play the part of a phantom ship, but one hears stories of the supernatural in which the motor cycle or motor car is introduced. Such stories are occasionally told at Christmas time—perhaps more to keep alive the spirit of Yuletide and to bring it up-to-date than with any intention on the narrator's part to lead their listeners to believe that the stories are true.

VEDETTE.



The 2¼ h.p. ROYAL ENFIELD
Two-stroke Motor Cycle.

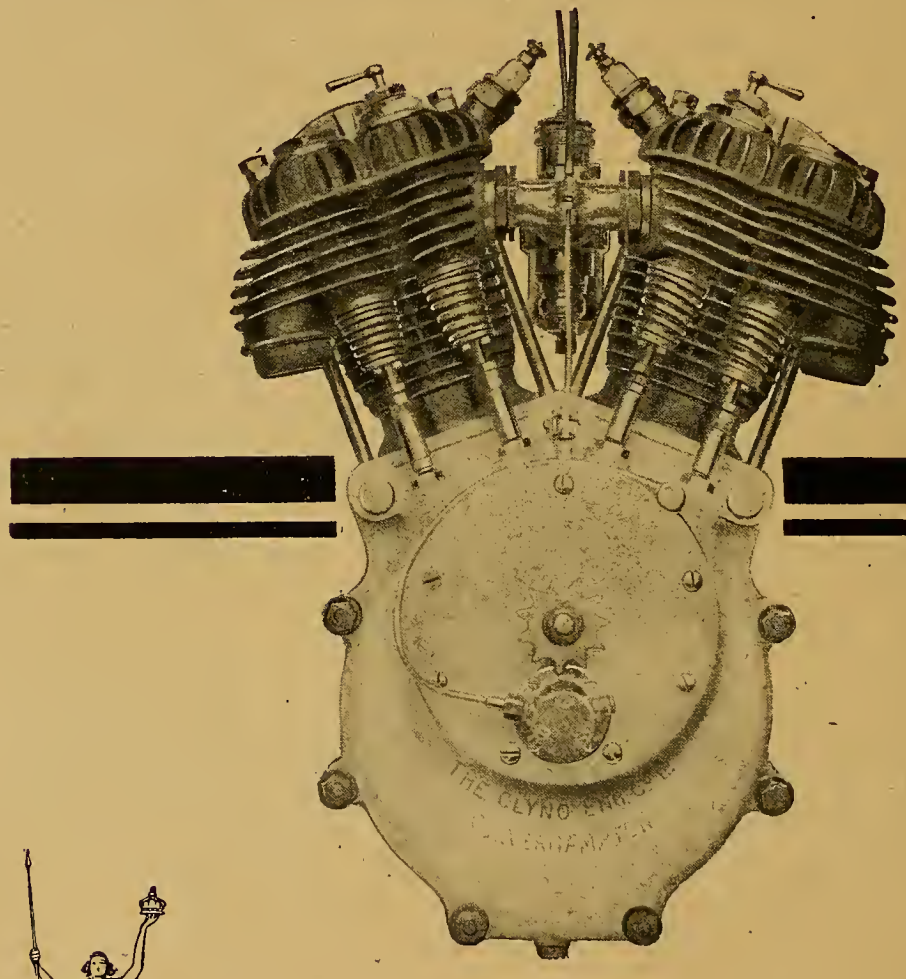
Described by *Motor Cycling* as being
"*Essentially a no-trouble Mount.*"

Specification includes the Enfield two-speed and free engine gear, all chain drive, and the A.M.A.C. single lever automatic carburetter.

Send for a copy of our latest Motor Cycle Folder, which contains illustrations, price, and complete specification of this model.

The Enfield Cycle Co., Ltd., Redditch,
and 48, Holborn Viaduct, London, E.C.1.

The first of a series of advertisemen features which combine to make th Sidecar Outfit in the World.



THE CLYNO ENGINEERING CO., LTD.,
PELHAM STREET, WOLVERHAMPTON.

In answering this advertisement it is desirable to mention "The Motor Cycle."

ealing with the many and various h.p. Clyno the finest Motor Cycle

Its Power Unit

Our illustration indicates the very neat appearance of the twin-cylinder 8 h.p. air-cooled

CLYNO

Engine. An entirely new feature in Clyno practice is the equipping of this power unit with Detachable Cylinder Heads. Again, an unusually interesting point is its ingenious exhaust lifter mechanism, all the Bowden working machinery being readily accessible outside the engine, and easily removable for replacement. Each Sparking Plug is situated in a pocket of its own directly over the inlet port, the valve caps being thus unhampered. Lubrication is by a vane-type mechanical pump—the oil being driven from the tank via a sight-feed regulator. From the pump the oil passes to the front cylinder and thence by splash to other parts. Plain bearings to Mainshaft; four-row cage roller bearings to connecting rods.

Our next advertisement will deal with the Gear Box.

Sunbeam Motor Cycles with Perfect Power Transmission.

The 1920 3½ h.p. Sunbeam possesses many Innovations and Improvements which cannot be obtained in their Entirety on any other Motor Cycles

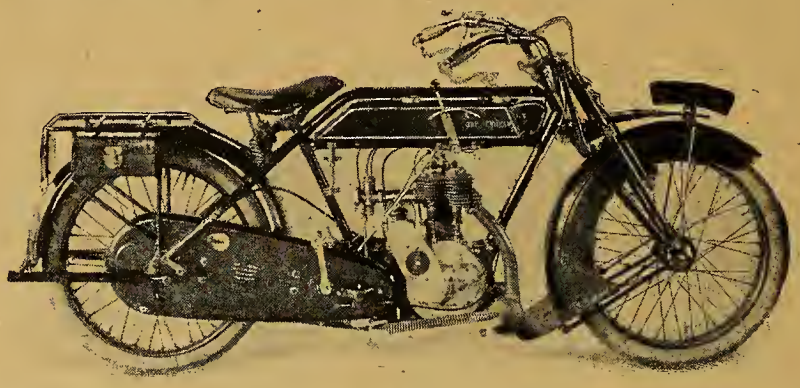
1. The Wheels are instantly Detachable and Interchangeable.
2. The Transmission is Weatherproof and Trouble Free.
3. The Leaf Spring front fork is of Sunbeam patented design and manufacture.
4. The Gearbox is a "Sunbeam" Gearbox made at Sunbeamland exclusively for the Sunbeam Motor Cycle.
5. The 3½ h.p. Model will take a Sidecar anywhere.
6. The Bearings of Engine and Gearbox wear almost indefinitely, and the machine has earned the title amongst a large coterie of motor cyclists as the "Rolls-Royce" of the Motor Cycle World.

3½ h.p. - 130 Gns.

No. 1 Sidecar - 40 Gns.

8 h.p. - 150 Gns.

No. 2 Sidecar - 48 Gns.



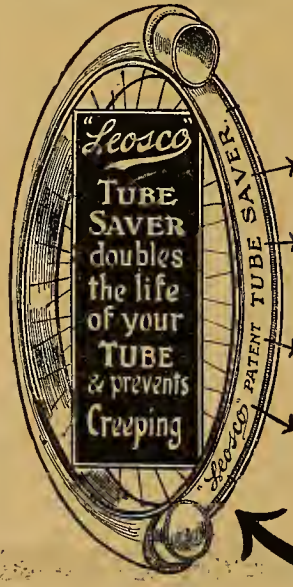
JOHN MARSTON, LIMITED, 11, SUNBEAMLAND, WOLVERHAMPTON.

London Showrooms: 57, Holborn Viaduct, E.C.1. 157, Sloane Street, S.W.1.

C. C. WAKEFIELD & CO., Ltd.,
WAKEFIELD HOUSE,
CHEAPSIDE, LONDON, E.C.2

LEO-SCO
TUBE SAVER
"The One & Only"

Just the weather for LEO-SCO patent TUBE SAVERS.



NEVER were Leo-sco Tube Savers as valuable as now, the season of wet, sloshy roads, the season of dampness, the maker of rust which eats inner tubes.

The Leo-sco Patent Tube Saver prevents the inner tube of the tyre coming into contact with rusty rims, and, in the case of wire wheels, with spoke heads. It saves the tube from danger and destruction. It assists to hold the cover in its place, eliminates creeping and does away with security bolts.

Obtainable from all Agents, Factors, or direct from the sole Manufacturers and Patentees.

Price 5/- each. Postage 4d.

LEO SWAIN & CO.,
237-9, Deansgate, MANCHESTER
Works & Garage: St. John St.

Telephone: City 6180-1.
Telegrams: "Immaculate, Manchester."

"Presently I sighted the dust of a big car, perhaps a mile and a half ahead, and down went my nose on the lamp bracket."

A Queer Christmas.

THE STORY OF A CREDULOUS SPEEDMAN.

THE s.s. *Orient Queen* was slowly boring her majestic way through the Eastern Mediterranean with 2,000 assorted troops on board. Though they were proceeding homewards for demobilisation, the passengers' feelings were somewhat mixed, for the night was Christmas Eve. On the one hand, it was certainly good to have done with the Army for ever, or so they fancied, for yearnings after the old khaki comradeship do not begin on the voyage home. Yet for most of them, sailing orders had come a good fortnight too late. Home in large doses is apt to be boring; but few of the *Orient Queen's* passengers had seen home for four years or more, and, anyhow, home has a trick of pulling at one's heart-strings towards Christmas time. There were scraps of every fighting unit "out East" below the decks; but few were boisterous, even of those who did not feel the return to heaving open waters after the peace of the Suez Canal. In fact, three officers, lolling in a small cabin, bore every appearance of being thoroughly bored with life. The colonel was idly glancing over a month old copy of the *Times*, which had come aboard at Port Said.

"So Lord Mintshire's got his decree all right," he drawled presently. "Awful bad lot that woman must have been. Did you read the butler's evidence?"

Majors ought not to interrupt colonels, even if the colonel belongs to another regiment and is half-demobilised at that. But the major was not interested in the ex-Lady Mintshire's morals; so he interrupted—with a yawn, too.

"Queer place this to spend Christmas," he said wearily.

The doctor knocked out his pipe, with a grim reminiscent smile.

"I've spent one in a queerer." He spoke with a curious emphasis. The major looked up quickly.

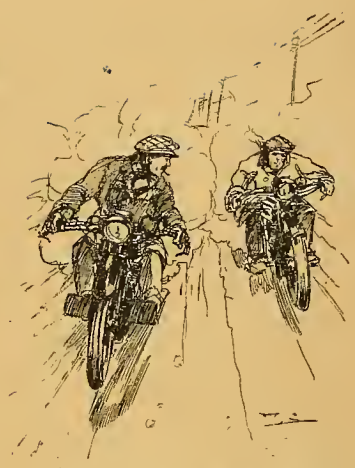
"Blenkinsop for a yarn," he demanded.

The colonel reluctantly bade farewell to Lord Mintshire's matrimonial miseries. "Let's have it, Blenk; the drinks are on you if it's a slow tale." So Blenkinsop began.

* * *

"My old dad knew all there is to be known about wool, and precious little about anything else. S'pose that was why he sent me to Cambridge to learn medicine. 'Varsity did a lot for me. Played footer fairly well; owed pots of money; acquired original and expensive tastes in dress; got a degree of sorts; but learnt no medicine. Right at the finish—the very last week—there was a ball. There may be men who can share a punt down the Backs by moonlight without making asses of themselves. I couldn't. Least of all with Dolly. Any greenhorn would have found her irresistible. Tremendous blue eyes. Slim little figure full of twisty little wriggles. Laugh like a bell. Yellow curls always blowing about and having to be patted back into place. I proposed—there'd been champagne, you understand. She accepted. I walked home on air. Next morning snags developed. Her papa frightfully rich; I just a raw young sawbones with a fifth-rate degree and no particular prospects. Decided I should go down to Winchester and interview her papa, whilst her angry auntie whisked her back to town.

"I decided to ride down on my Triumph motor cycle. Thought it might cool my head. Got off early, and let her rip. Began to feel better. An hour or so blew the fumes of Dolly and the fizz out of my noddle, and I began to sit up and take notice. Presently I sighted the dust of a big car, perhaps a mile and a half ahead, and down went my nose on the lamp bracket. I'd done perhaps a mile at quite a tidy speed when there was a roar and a rattle alongside, and some other bicycle shot past as if I'd been standing. Well, my old 'bus was only a roadster machine, but she was in pretty decent tune and game to touch 55 m.p.h. on

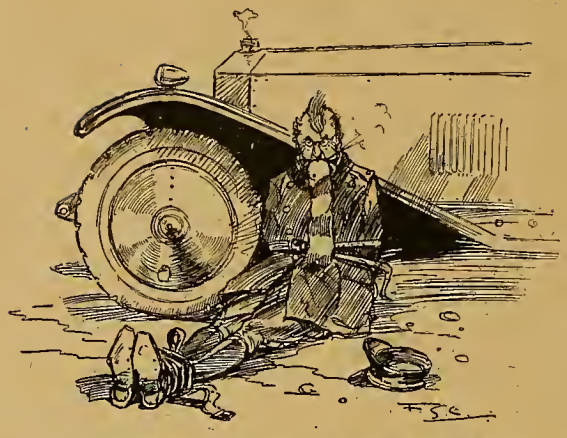


"'D'you mind if the fellow's armed?' he bellowed, as our engines accelerated with a thunderous roar.

"'Not I,' I cried recklessly. So we got our noses down, and we fairly ate up that straight white road."

". . . put up the best imitation of a speedman's wobble I've ever seen. Goodness! how he swerved and wobbled! He scared me stiff, I thought he'd be killed."

A Queer Christmas.—



"As his language was beyond all barrack standards, we shoved the end of the scarf in his mouth as a silencer."

the straight anywhere. I was some narked, I can tell you, but I'd hardly time to wonder what had mopped me up so easily when the other fellow began to slow down and shot out his left arm across me as a signal to stop. I thought it was pretty cool cheek to mop up a fellow like that without giving me a chance to get my own back, but I wanted to spot what he was on before I challenged, so I throttled down.

"As for him, he didn't wait to slow his 'bus right off. He jumped down when she was still doing a cool twenty, I should think, and he had to gallop like a hen to stop her dragging him over. I cocked my eye at him as I came up, and I saw he was on a Brooklands Norton—they can do seventy, you know, so I wasn't going to take him on any more. He looked all right too. Grey flannel breeks, Norfolk jacket, a club tie, big woollen scarf of some rowing colours, seemingly, and a decent cap. He was all flushed and panting.

"'Can you fight?' he gasped, as I got off alongside.

"I began to think he'd broken out of an asylum.

"'Try me,' I said, looking for a soft spot to drop my Triumph on.

"He was breathing so heavily he could hardly speak.

"'No guff, old man,' he pleaded between his gasps, 'I'm not ragging. Did you see that big car on ahead? That's my governor's Rolls. It's been pinched. Fellow nicked it out of our garage while everybody was at breakfast. I thought it'ud be pretty smart to get it back while the police were gassing round doing nothing. So I followed the tyre marks on the road, and here we are. Come along and help.'

"This was a lark with a vengeance.

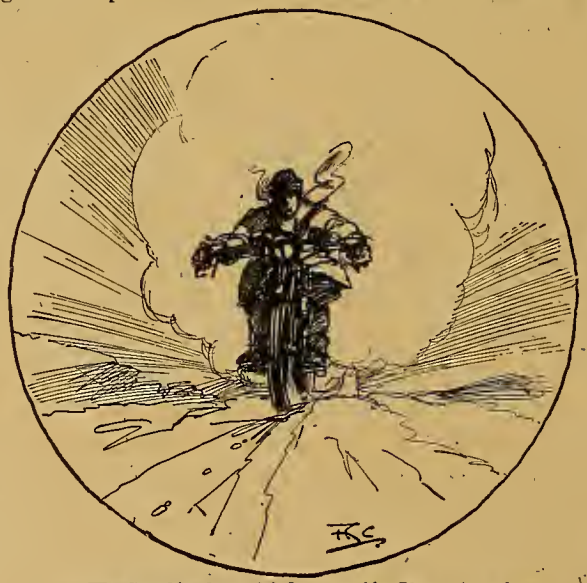
"'I'm your man,' I said eagerly, 'but my 'bus can't hold yours. Fifty-five's my limit, and you can put a good ten on to that.'

"His face brightened into one big merry grin when he found I was game.

"'That's all right,' he stuttered, still gasping with excitement, 'you're plenty fast enough to hold the Rolls—she's not in extra tune.'

"We were both in our saddles again, quick as lightning.

"'D'you mind if the fellow's armed?' he bellowed, as our engines accelerated with a thunderous roar.



"The Brooklands model does a pukka 70 m.p.h. at least, if Bonniksen speedometers do not lie."

"'Not I,' I cried recklessly. So we got our noses down, and we fairly ate up that straight white road.

"Presently we sighted the grey dust-cloud again. It had picked up a mile or two while we were talking, but the scoundrel wasn't travelling particularly, and we managed to gain on him at a pretty tidy rate.

"Well, some ten minutes' hard riding put us right on the heels of the Rolls, and rather to my surprise my pal hooted at her (I thought he'd have tried to slip past). The thief in the car drew in to his near side—evidently he hadn't a notion that we were after him. Both of us tore past, and when we got, say, fifty yards ahead, my pal put up the best imitation of a speedman's wobble I've ever seen. Goodness! how he swerved and wobbled! He scared me stiff, I thought he'd be killed. The Rolls man thought so, too, for he took his foot off the accelerator. I shut my throttle, while the Norton man was apparently fighting to get control of his 'bus. He slowed her down right enough, but the slower she went, the more she wobbled, and, at last, he crashed off, with the bicycle lying right across the middle of the road. I braked hard, dropped my feet, and pulled up level with him, and the Rolls slid up and came to a stop too. I looked at the thief, and saw by his goggling, astonished eyes that he never suspected us of being on his track. But the instant the Rolls stopped, the Norton man wriggled clear of his fallen machine, and, shouting to me, fairly flew at the Rolls driver. I'm not generally slow, but he'd got the thief half throttled before I'd dropped my Triumph and clambered on board the car. The cute rascal was dressed in a chauffeur's livery to avoid suspicion, too. We had him trussed in no time; the Norton man's scarf came in handy for that, and the straps off the hood did the rest. As his language was beyond all barrack standards, we shoved the end of the scarf in his mouth as a silencer. Then the Norton man and I shook hands and roared with laughter.

"'What's the next item?' I asked. 'Take this ruffian on to the next police station, and then hey for a drink!'

"The Norton man's face fell. 'Well, to be quite frank,' he said, in rather a pleasant voice—he'd got his breath back, now, you know—'I'm particularly keen on delivering the goods at

A Queer Christmas.—

home myself. Our local cop is a pestilent fellow—he's had me for furious riding more than once. Look here. What d'you say to coming back to lunch—here's my card. Dad'll be awful pleased to make your acquaintance. We can shove your Triumph in the back of the Rolls, if you care to sample my 'bus.'

"Dolly rose up in my memory.

"I told Ashburton—that was the name on the card, Edgar Ashburton, Coldford Hall, Yiewslip—that I was due at Winchester to request the honour of a lady's hand, but that I'd be charmed to put up with his people the next night. Then we compressed our trussed thief into part of the remaining space, and covered him up with rugs. Then we bade each other a fond farewell. Ashburton made tracks north-east with the Rolls, plus the malefactor and my Triumph. I burbled south-west on Ashburton's Norton, and found the advertisements are quite O.K. The Brooklands model does a pukka 70 m.p.h. at least, according to the Bonniksen speedometer reading.

"While he was pouring the juice into my tank I started to tell him what I thought of garages."

"She ran so charmingly that I forgot all about the drink I had promised myself, and did not stop till I got a little anxious about petrol.

"I found a garage, dropped my feet outside, and shouted. Nobody came, and at last I pushed the 'bus inside. A man was speaking at the 'phone inside a little glass office, and I got quite cross before he came out. When the fellow condescended to come and ask what I wanted, he was unconscionably slow about getting it, and I got rather riled. While he was pouring the juice into my tank I started to tell him what I thought of garages which treat motor cyclists as beneath their attention. I'd just got fairly wound up when a heavy hand fell on my shoulder. I looked round and there were two enormous policemen, one on each side. They pinched Ashburton's Norton and they pinched me. Before I knew where I was, I had been charged by an inspector fellow, and was safely locked up for the night in cells, common drunks, for the use of, one."

"But, good heavens, Blenk!" began the Colonel in astonishment. "The charge, of course," explained the Doctor, "was stealing one perfectly good Brooklands Norton motor bicycle."

"I don't quite get you," objected the Major.

The doctor proceeded.

"Next morning the charge was extended to include the theft of one perfectly good Rolls-Royce, Edinburgh model, with sporting body. I was hauled out of my cell, and confronted with a pallid, much-bandaged, but wholly irascible individual, whom I instantly recognised as the scoundrelly rascal whom Ashburton and I had sandbagged on the Rolls. It transpired that he was the lawful chauffeur. He was accompanied by—saving your presence, sir—the most choleric, purply-cheeked colonel I have ever seen, to wit, the bereaved owner of the Rolls.

"Then Ashburton . . . " enquired the Major intelligently.

"Exactly," murmured the Doctor admiringly; "Ashburton, whose real name was something quite different, was undoubtedly the super motor thief of his generation. He deposited the trussed chauffeur in a deep and nettlesome ditch about a mile from the scene of our joint outrage. He then disappeared off the map at high speed.

"Of course, you were able to clear yourself?" asked the Colonel.

"How could I?" retorted the doctor testily. "I was not convicted of pinching the Rolls, principally because they never found it. But I was caught red-handed with the Norton, and they made no bones at all about giving me twelve months for that."

"You didn't *serve* it?" said the Colonel, incredulously.

"I served six and a half months of it," replied the doctor grimly. "By that time immunity had encouraged the ingenious Edgar to get rather too fresh. The impudent fellow actually opened a West End mart to dispose of his stolen cars. They collared him at last in the act of tooling off a Guardsman's 27-80 h.p. Austro-Daimler from the stage door of the Frivolity. When he saw he was in for a good stretch anyhow, he was sport enough to clear me. I went to see him at Pentonville, when I received what the law is pleased to call 'His Majesty's gracious pardon' for a crime I had never committed. He got the D.C.M. in Gallipoli, and went west during the awful November blizzard. Incidentally, it was the middle of January when he cleared me. A man who has spent Christmas in gaol may surely say there are worse places than a troopship, eh?"

"By gad, yes!" agreed the Major.

The Colonel was elderly enough to prefer romance to adventure.

"What about the fairhaired Dolly all this time; you were on the way to interview the obdurate parent when you met Ashburton?"

"Dolly!" said the doctor. "Oh, she married Mintshire before they let me out. Mintshire was up at Trinity with me.

"Lucky riddance for you," said the Colonel with conviction. "I think the drinks are on me." And he pressed the bell.

B. H. DAVIES.

UNITED STATES NEWS LETTER.

Old Name to be Revived; New Make to be Introduced. Harley and Excelsior have New Models with Larger Engines. Smaller Diameter Wheels but Larger Tyres Favoured.

MORE proof of the tremendous awakening of motor cycle interest, following the return of four million men from Army service, and their desire for out-of-door sports, may be gleaned from the fact that a machine of a new make and another that has been off the market for five years will soon be ready for delivery. The latter is the Eagle, a motor cycle made in Brockton, Mass., with a limited following. The newcomer, which is being made in Philadelphia, has been named the Ace. It has been designed by William G. Henderson, of four-cylinder motor-cycle fame, and deliveries are promised about February 1st. Rumours are rife that the Ace will create a furore when it appears. The Ace factory will not bring out a yearly model, but will pattern after automobile practice, and announce new models as the need of improvement in design becomes apparent.

The Harley-Davidson Co. is experimenting with a larger motor. A very fast and powerful Harley-Davidson has been seen in local hill-climbs. It has a piston displacement of over 1,100 c.c. This motor, known as the C.A.B., has been sold to dealers exclusively, and only a privileged few at that. Possibly, it is this motor, with lower compression, that will be the Harley-Davidson contribution towards larger engines.

Detail Improvements.

The valve diameters of the Reading-Standard have been increased by a quarter of an inch. This is the principal change, the rest of the improvements being along refinement lines.

Splashboards, introduced on the American market by Harley-Davidson, are becoming popular with the all-weather riders in the States, and, with a few bends in the boards, or brace, that holds the accessory to the motor cycle frame, they may be fitted to any make.

The Harley-Davidson policy has ever been to hook up the rider with the dealer in more ways than merely selling motor cycles or sidecars. These folk have a complete line of riders' needs, from gloves to sidecar robes, all carrying the Harley-Davidson shield trade mark, and sold in their agencies exclusively. The goods are all of the highest quality, and adapted to motor cyclists' needs. The cost is reasonable at all times, and the result is that this co-operation on the part of the factory with the dealer and rider has resulted in a vastly neater garbed motor cyclist.

The Excelsior retains the familiar overhead intake valve engine, that has been refined and improved but little since it first came on the road in 1912. The motors will be made in two sizes: 1,000 c.c. piston displacement, with the usual bore and stroke, and a newcomer that will rate about 1,100 c.c., for it carries a 101 mm. stroke. This fills a demand for a more powerful motor for sidecar work that has been insistent among motor cyclists since sidecars leaped into popularity. Both of these motors, so it is rumoured, will be fitted with larger diameter valves than in the past.

The well-known Excelsior type of frame will be retained, but the spring loop front fork with bell cranks taking up road shocks, that has been used on the Excelsior since 1912, will be discarded in favour of the Henderson fork. The later fork is of the castor or trailing wheel type, with a rigid fork, sprung fork, and rocker arms carrying the axle. The Henderson fork is made of heavy fork side material that can withstand all side thrusts and road shocks, and is of ample width to take an oversize tyre and set of Weed skid chains.

A Change in Wheel Sizes.

Henderson handle-bars will be used, and this means the discarding of the rod system of throttle and magneto control. Rods will be used on the handle-bar clutch control, for this exclusive Excelsior feature is one of the best fitments on American machines, affording absolute mastery of the clutch without removing the hands from the bars at any time.

All 1920 Excelsior motor cycles are to be fitted with smaller rims, permitting the use of 27×3½in. tyres, with a resultant lowering of the saddle position. This will be hailed with delight by the Clan Short-legged, for a few years back a motor cycle with a low saddle position was as scarce as a special sale in a post office, and machines were all made in one leg length. Thus the customs change.

Another departure from standard is rumoured in the matter of ignition and lighting. With the 1920 models, Excelsior is to be equipped with separate magneto and generator, instead of both incorporated together as at present. *Très bien.*

And now we come to the Henderson, known by that shorter and more affectionate term Hen. The 1920 Henderson will be engined with the same type of four-cylinder motor that always characterised this mount as different. It is to rate along in the neighbourhood of 76 cubic inches piston displacement, with side-by-side valves and a lot of oversize parts in the innards. The crankshaft will be 3in. longer; there will be no offset in the connecting rods. The bearing surfaces for the connecting rods will be three-sixteenths larger, while wrist pins will be one-eighth larger in diameter. The motor will be longer in stroke and shorter in bore than at present, and the crankshaft will be hollow, with force feed lubrication. That is making for positive oiling of important parts, and is a real step ahead in motor cycle design. Bearings are of bronze, with white metal facings.

A Revived Racing Engine.

The Henderson Four, like the Excelsior twin, will be equipped with 27×3½in. tyres, which will give the Henderson the lowest saddle position of any of the big machines now offered on the American market.

For the 1920 campaign of dirt track or speedway racing, the Excelsior is experimenting with the well-known and speedy Cyclone motor, that flashed across the American horizon like a comet a few seasons back. The Cyclone has plenty of hop in it, and is an overhead valve motor with valve mechanism actuated by shaft drive to overhead cams. When the Cyclone was in evidence on the track in 1914 or so, it was an amazingly fast sprint machine over the shorter distances, which is a mark of the overhead valve engine. Excelsior engineers are putting staying qualities into this rejuvenated Cyclone, and it will be seen in action in several speed events during the coming year.

After lingering on the edge of oblivion for several seasons, the Thor motor cycle has gone to its rest. The Thor was one of the pioneer American makes, and played a large part in the early history of the pastime, but since 1913 it has been losing popularity with the riders. Made by a company that did not have every interest tied up in the motor cycle industry—for the makers of the Thor are big producers of automatic machinery—the design did not keep closely to riders' wants, and although the engine was powerful and material and workmanship of the best, Harley-Davidson, Indian, Henderson, Excelsior, and Reading Standard outstripped the Thor in appealing to the exacting demands of riders. It was but a question of time when the Thor would go off the market. Now it has happened.

An Unhealthy Condition.

It is to be regretted that the American market is being limited gradually. We have six makes of varying popularity that cater to riders' wants. There are four twin-engined motors, one four-cylinder, a flat twin, and a two-cycle motor that lets us out on engines. Cleveland makes the only two-speed machine on the market, the rest all being three-speeds. Controls will soon all be of wire, for Excelsior is planning that change this coming year. In frames, we have three "keystone"—two loop and three duplex. Going back to motors, there are overhead intake and side-by-side valve motors. Variety is the spice of life, they quote some wise bird as saying—well, the British motor cycle market may have that spice; obviously we Americans do not get it.

And last, but not least, one make of carburetter takes care of the entire American market. How's that for an unhealthy condition of trade, and a discouraging of advance in carburetter design?

You British riders do not know when you are well off. You can pick anything from a light T.T. model, stripped to the bone for fast rolling, up to a de luxe sidecar outfit, hung about with fitments in such variety that it is like a Christmas tree on the morning of December 25th.

E. B. HOLTON.

Visions of Xmastide
HELEN MARKUS

CURRENT CHAT

Special Features.

A TOUR IN THE DEVASTATED AREAS.
AMERICAN NEWS LETTER.
A QUEER CHRISTMAS.

Times to Light Lamps.

GREENWICH TIME.

Dec. 25th	...	...	4.23 p.m.
,, 27th	...	...	4.25 ,,
,, 29th	...	...	4.27 ,,
,, 31st	...	...	4.28 ,,

Greetings.

A merry Christmas to one and all of our hundred thousand readers, and to the several thousands over who have recently become our friends.

Westward Ho!

Competitors in the London-Exeter run should read A. E. W. Mason's account of a ride over this road in "The Watchers." It would add a zest to their trip. By the way, this author shows a nice appreciation of roads in more than one of his books.

Prize Draw for Motor Cycle.

The winning number in the Ravensthorpe (Dewsbury) Ambulance Prize Draw for a 2½ h.p. Metro-Tyler two-stroke motor cycle is 24,287. The holder of the ticket bearing this number should communicate at once with the secretary, Mr. W. Ledgard, 42, Broomer Street, Ravensthorpe, Dewsbury, Yorks.

Disposal of W.D. Machines.

A question was asked in the House of Commons recently regarding the number of motor cycles sold through the War Motors Association since August last. The reply of Mr. Kellaway was that 484 machines had been purchased by the Association mentioned, while the number otherwise disposed of by the Ministry of Munitions (Disposal Board) was 6,011.

North-west London M.C.C.

We were recently informed by a reader that he won two cups at the last Brooklands meeting organised in 1914 by the above club. Owing to the outbreak of war, there was no distribution of awards in that year, and consequently the trophies are still unclaimed. Our correspondent would like to get in touch with any of the former officials.

The Lighting Regulations.

Errors in interpreting the rules regarding rear lights are generally found on vehicles propelled by human or equine agency, but a few nights ago we followed for some miles a motor van which displayed a bright white light to the rear in addition to its red light. Such lights are confusing!

While on this subject, may we ask why it is that when a cyclist has no red light (this is, we are glad to say, becoming less common), and is riding with a friend who is properly equipped, he almost invariably takes the outside position? One would suppose that common-sense and the instinct of self-preservation would suggest to him the advisability of keeping next the hedge.

Since 1903.

This issue completes the twenty-third volume of *The Motor Cycle*, which has had an unbroken run for 874 issues.

Scare Headlines.

Apparently the end of the world, so confidently predicted by some people to take place last week, has, like a drought once foretold for a certain summer in Australia (which summer proved to be the wettest on record), been postponed owing to the inclemency of the weather. Those of our readers who threw away all their petrol as being dangerously inflammable for such an occasion will have to purchase fresh supplies.

The A.C.U. Paid.

One of the most useful facilities enjoyed by motor cyclists who are members of the Auto-Cycle Union is that of free legal defence and advice. A week or two ago the Union fought a rather involved case in the Courts on behalf of a motor-cycling member. The case concerned a charge made against a motor cyclist of riding an unregistered machine and displaying false identification numbers, and he was convicted by the magistrate on both counts. The A.C.U., through its solicitor, lodged an appeal, and prepared to produce evidence that the motor cycle was registered, but the application was dismissed as being frivolous, and the £50 recognisances that had been paid into court was accordingly sacrificed. Had the motor cyclist not been a member of the A.C.U. it is most probable that he would have been involved in a heavy pecuniary loss in connection with the case, but in accordance with its invariable rule of championing what it considered was a good case, the Union bore the £50 loss involved.

THE CHRISTMAS TRIALS.

OF the two Christmas holiday events which will be run this year, probably the London-Exeter run organised by the M.C.C., is the better known. It is as "classic" as the T.T. and the A.C.U. Six Days, with which it may be said to form the triangle of types of motor cycle competitions. The first trial was held on Boxing night, 1910, and was the outcome of a suggestion which appeared in *The Motor Cycle* from the well-known competition enthusiast, Mr. W. Cooper.

The 300 odd miles run starts and ends at Staines, and a 20 m.p.h. (approx.) schedule is fixed as below, the times given being those of the first competitor:

	Miles		Time p.m.
Staines	0	..	8
Bagshot	9½	..	8.31
Blackwater	15½	..	8.46
Hartley Row	21½	..	9.5
Basingstoke	29	..	9.34
Andover	47½	..	10.37
Salisbury (arrive)	65	..	11.30
(Sign check sheets. One hour stop at White Hart Hotel.)			
			a.m.
Salisbury (leave)	65	..	12.30
Shaftesbury	86½	..	1.42
Sherbourne	104½	..	2.36
Yeovil	108½	..	2.55
(Petrol and oil replishments at Yeovil.)			
Chard	125¼	..	3.47
(Non-stop to top of hill.)			
Honiton	138¼	..	4.33
Exeter	154½	..	5.24
(Sign check sheets. Breakfast at Bude Hotel.			

RETURN JOURNEY.

			a.m.
Exeter	154½	..	6.50
Trow Hill	169¾	..	7.36
(Non-stop to top of hill. Sign check sheets.			
Lyme Regis	182¼	..	8.17
Bridport	192¼	..	8.44
Dorchester	207	..	9.28
Blandford	222¾	..	10.15
Salisbury	245½	..	11.21
(Sign check sheets. One hour stop. Luuch at White Hart Hotel.)			
			p.m.
Salisbury	245½	..	12.21
Andover	263	..	1.16
Basingstoke	281½	..	2.12
Blackwater	294½	..	2.51
Staines	310½	..	3.40

Although not so important in point of number of entrants, the Bristol Club's trial to Land's End is probably more strenuous than the London-Exeter. To include such hills as Porlock and Lynton to be climbed in the dark adds an element of uncertainty sufficient to deter even the most hardened riders. The route, too, is longer than the London-Exeter trial, and covers some of the most difficult main roads in England, and, like the M.C.C. event, will prove the efficiency or otherwise of modern lighting systems, for in this trial the competitors have no fewer than fifteen hours' riding in the dark.

TOURING is the most fascinating phase of motor cycling. For its full enjoyment agreeable hotel accommodation is essential. Wherever A.C.U. members tour they are sure to find this in the specially appointed A.C.U. HOTELS. These are regularly inspected by the Union's Consuls and Headquarters Staff, and in visiting them the A.C.U. member may always be sure of efficient service, courteous treatment, and reasonable charges.

Do not tour without the A.C.U. Badge on your machine. It is the passport to the best hotel service and "The Freedom of the Road" everwhere.

Information Coupon

The Secretary
AUTO-CYCLE UNION
83, PALL MALL,
LONDON, S.W.1

Please send me further particulars regarding the advantages of becoming a member of the A.C.U. together with Application Form for membership.

Name.....

Address.....

"The Motor Cycle."

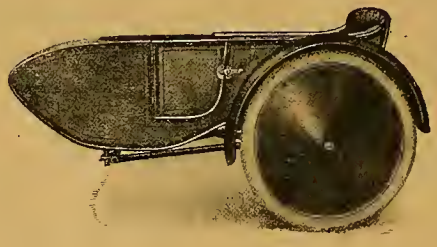
10/- ANNUAL SUBSCRIPTION TO THE A.C.U.

brings you the following FREE Benefits:

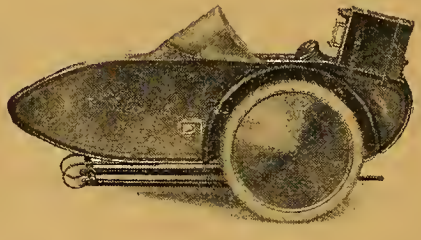
FREE "GET-YOU-HOME" SCHEME, whereby in case of accident or breakdown on the road practical assistance is afforded you. FREE Legal Advice and Defence on all technical motor cycling matters, FREE Assistance of the R.A.C. Road Guides, FREE Use of a Reading Room at the R.A.C. Headquarters, FREE Assistance in Touring and Foreign Travel, SPECIAL INSURANCE FACILITIES, etc., etc.

Henderson SIDE CARS

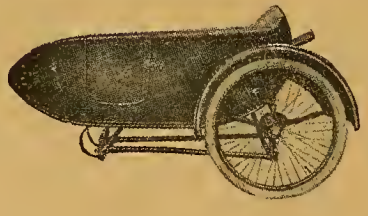
1920 SEASON.



The Genuine Featherweight
Model "A"



The wonderful Model "Elite"
showing windscreen and petrol
cans in position.



Our new "Wonder"
The Spring Frame Model.

Write for Catalogue of all models and details to—

Aero Works, Fitzwilliam Street, Sheffield.

'Grams: "Aero," Sheffield.
'Phone: 3119 Central.

Water-cooling.

Owners of water-cooled Scotts, Williamsons, and Humbers take warning! If it is freezing when the Christmas festivities commence, empty your radiators. In the whirl of Sir Roger de Coverley, machines may be forgotten.

An Outdoor Journal.

Out and Away is called by the publishers, Messrs. S. Heath Robinson and J. Birch, Ltd., a "posy of travellers' joy," and the second number of this entertaining journal is such indeed. The whole atmosphere is motorish, and will make appeal to all lovers of the open country.

A Petrol-electric Possibility.

In America there is an electrically-driven light car which weighs less than 10 cwt., and which carries its own charging plant in the form of a small air-cooled engine. If this is possible, then the petrol-electric motor cycle, with infinitely variable ratio between power plant and road wheel, is feasible.

Taxation.

This is the time of year when clubs hold dinners, whist drives, dances, and other social events. The Bath and West of England M.C. is among the clubs which held its annual dinner last week, when the president of the club, the Rev. F. Garfield Waterbury, referred at length to future taxation, and suggested that the club should register a protest against any departure from the present means of taxation, and state that, in its opinion, the best form of taxation was that on petrol at so much per gallon.

Powerful Two-strokes.

What began the other day as a mild discussion on types of engine gradually developed into a furious debate on the advantage and shortcomings of two-strokes. A lover of the type asserted that the two-stroke would eventually oust the four-stroke, even for heavy sidecar work. What do readers think about it?

Eighty-four m.p.g. with Sidecar.

At the commencement of this year we ran a chain-driven Triumph sidecar for over 3,000 miles. 2,123 miles of this total were run on benzole without decarbonising, in fact without using a tool. We kept a very careful account of mileage and fuel used, and the average consumption worked out at 84 m.p.g., exactly the average mileage obtained by H. Finch when he drove the Triumph sidecar for the A.A. 5,000-mile benzole test.

Standard Benzole.

The recent A.A. 5,000 mile benzole test proves that benzole of standard quality is not only a superior fuel to petrol, but has absolutely no bad effects on any part of the engine. The only doubt remaining now is the question of obtaining "standard" benzole—that is to say, the same quality used by the A.A. The motor cyclist's best safeguard is to buy "National" benzole, *i.e.*, fuel conforming to the specification of the National Benzole Association—a body of benzole producers which is pledged to market only fuel of a specification which has been proved to have no deleterious effects upon any of the interior parts of the engine.

The Iver Johnson.

A statement was recently made inferring that only one machine of the above make existed in this country. A correspondent writes and says he knows of two or three Iver Johnsons near Taunton.

Jack Frost.

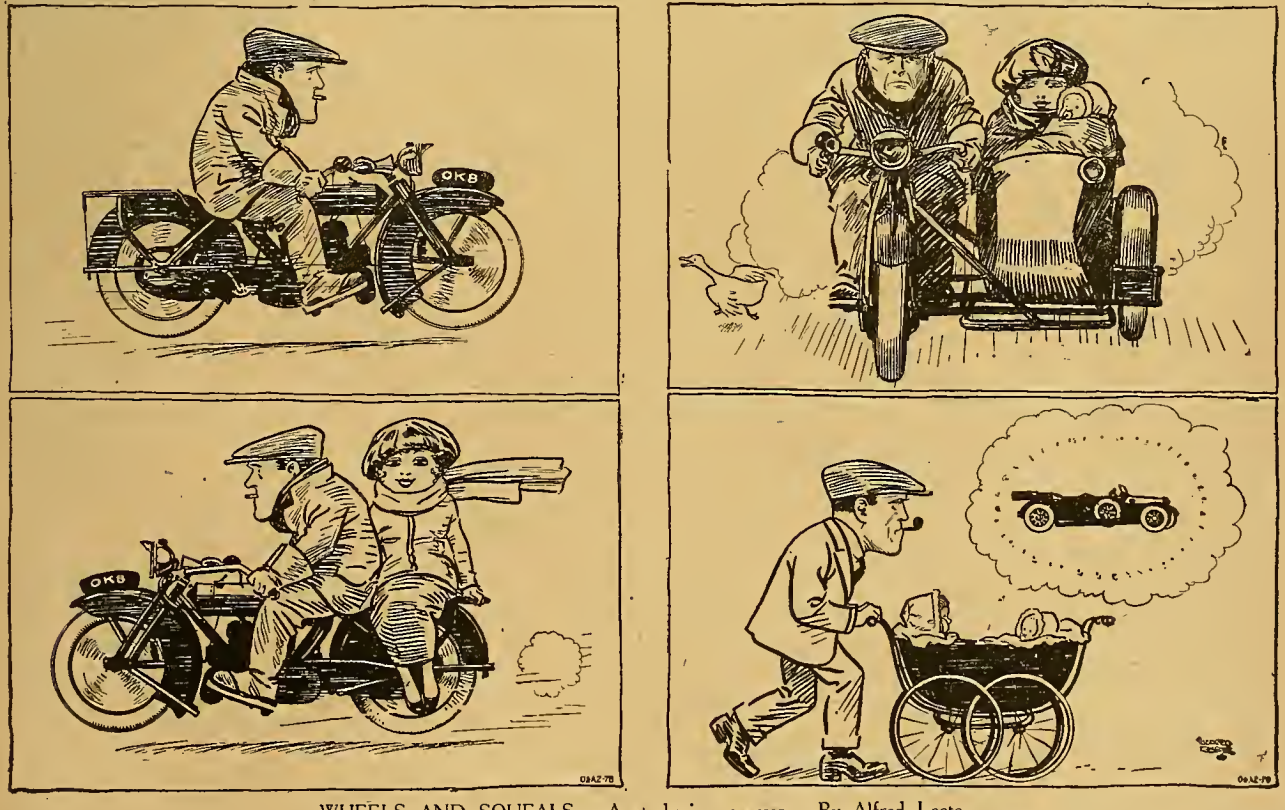
This is the season when the majority of motor cyclists have the advantage of a brother who owns a car. No need for the former to rise hurriedly from the festive board in order to rush to the garage to drain the water from the radiator.

Newcastle and District M.C.

The Newcastle and District Motor Club will call a meeting of motor cyclists early in February, when it is hoped to reorganise the club and enrol many youthful motor cyclists. The fact that the Six Days Trials in 1920 may use Newcastle as the centre is responsible for this special activity.

£200 Prize for a Name.

In connection with the campaign in favour of an Anglo-American standardised metric system, one thousand dollars (£200) is being offered to the person first suggesting the best name word denoting U.S. America and Britannia. The contest is open to all. Words to be considered must be received by the World Trade Club, 681, Market Street, San Francisco, before May 1st, 1920. The amount mentioned will be paid in the currency of the nation from which the best word is suggested to the person first suggesting the best name. "Unitania" is the best word received thus far.



WHEELS AND SQUEALS. A study in progress. By Alfred Leete.

(Reproduced from "Out and Away," published by G. Heath Robinson and J. Birch, Ltd.)

OVERSEAS SECTION.

A Commentary based upon Practical Experience and a Study of Overseas Opinions.

Overseas Models at Olympia. THOSE buyers from abroad who visited the 1919 Olympia must have been impressed by the many machines obviously designed to suit their special requirements. No longer can it be said that the British motor cycle is unsuitable for Overseas, as the majority of new machines appear to lean towards the "Colonial" specification even at the expense of the demands of the rider in the home country. Since the last Show the position has been reversed, and, while five years ago, the Overseas buyer was expected to put up with a machine designed for British roads, the 1920 motor cyclist, in many cases, will be running a motor cycle developed in excess of his requirements. Few will complain on this score, however, as it is recognised that the average motor cyclist's requirements are better met by a machine with large wheels and high ground clearance than by the types in majority in 1913.

♔ ♔ ♔

Wheels and Transmissions. CHAIN drive is now almost universal on heavy machines, and 28in. × 3in. tyres the general rule. Among the many machines so equipped may be mentioned the following: Ariel, A.J.S., Abingdon, B.S.A., New Imperial, Matchless, British Excelsior, Rex, James, Clyno, Sunbeam, Enfield, and Royal Ruby. All of these machines have been designed with a view to meeting the demands of Overseas' buyers so often urged in *The Motor Cycle*.

♔ ♔ ♔

Other Overseas Needs. IT is gratifying for us to note the abundant results of our campaigns in favour of points to place the British motor cycle in a better position to compete in the markets of the greater world. As a result of these efforts, the British industry has been convinced of the need for larger wheels, stronger frames, chain transmission, and, finally, spring frames. While all this may have been appreciated, the average maker appeared loth to embody such points, while the home demand for less ambitious machines absorbed the main part of his output. He now knows, however, that, to meet Overseas requirements, does not necessarily mean the production of an extra model. For 1920 there will be quite a large number of spring frame machines, and, although the majority are in the smaller types of machines, there are many examples of the large twin to show that the proposition has been tackled for both solo and passenger work. Among the solo machines may be mentioned the 3½ Douglas, A.B.C., Royal Ruby, Precision, Paragon, Coulson, and Wooler; in the heavier types the Clyno, Matchless, and Royal Ruby. Between the two types is the Raleigh flat twin, eminently a dual purpose mount, which answers the needs of the Overseas buyer of the medium-powered spring frame machine. As a compromise between the rigid and spring frame, quite a number of manufacturers favour the spring seat-pillar and semi-spring frame. Among the former may be mentioned the A.J.S., B.S.A., Ariel, Chater-Lea, Rex, and the latter people include the Edmund, Bat, and L.M.C., while the Barnes spring saddle as fitted to Zeniths is an important advance.

♔ ♔ ♔

Metal Sidecars. THE need for metal sidecars, too, has been recognised and several makers are now producing sidecar bodies in which the woodwork is reduced to a minimum. Some makers are also so designing the lugs on the motor cycle frame that the sidecar may be fitted on the right side of the machine if required, while attention has also been paid to the fitting of luggage grids sprung with the body.

♔ ♔ ♔

Interchangeable Wheels. QUICKLY detachable and interchangeable wheels are becoming general practice on sidecar machines and several are equipped with a spare wheel, which, incidentally, is a point not yet covered by American machines.

♔ ♔ ♔

Delivery. ON the point of delivery there appears to be evidence at the present time that makers' outputs will not be very good until well on into the New Year. For three months or more the moulders have been on strike, and, even when their differences have been settled, it may be several months before many makers obtain delivery of castings, which are so important in all engineering productions. As we write, it may be said that the whole engineering industry of Great Britain is impatiently waiting for labour to settle down to work again.

HILL-CLIMBING IN ARIZONA

An American competition rider, H. C. Scherer, who established a new record for the Three-flag Course (from the Canadian border to Mexico) on a Harley-Davidson by covering the distance (1,716 miles) in 64 hours and 58 minutes

HUTCHINSON

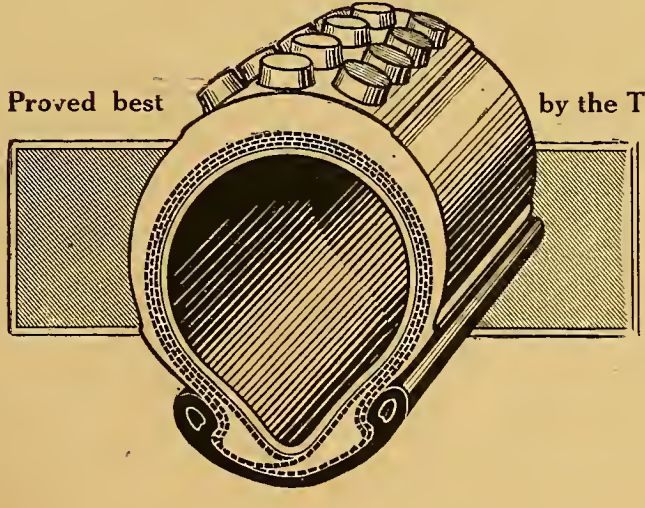
The Winner Gets the Rubber

and the rubber in Hutchinsons gets the winners.

More successes at trials all over the world, and including the T.T., have been accomplished on Hutchinsons, than on any other make of tyre.

That is Proof of Superlative Quality.

Proved best by the Trials



THE TYRE WITH NINE LIVES

HUTCHINSON TYRES,
70, Basinghall St., London, E.C.2.
Established 1850.

THE TYRE WITH NINE LIVES

In answering this advertisement it is desirable to mention "The Motor Cycle."

B23

- UNION

2¾ h.p. Two-Stroke Motor Cycle.

THE WHOLE OF OUR OUTPUT FOR 1920 IS SOLD, AND IN CONSEQUENCE WE HAVE BEEN OBLIGED TO REFUSE HUNDREDS OF FURTHER AGENCIES. WE ARE NOW BUSY PRODUCING THE MACHINES, AND THEY WILL BE COMING THROUGH IN A FEW WEEKS.

HEED THIS WARNING — Order from your Agent NOW!

HUMPHRIES & DAWES, Ltd.,
HALL GREEN WORKS, BIRMINGHAM.

Telephone: SHIRLEY 48 (Private Branch Ex.)
Telegrams: "HUMDAW, BIRMINGHAM."
Code: A.B.C., 5th Edition.

PRICE:
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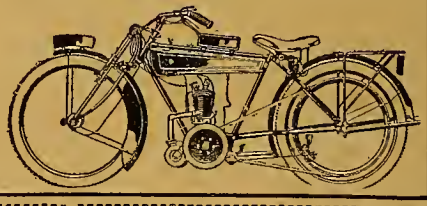
Guineas.



DUNHILL'S 1920 SIDECARS.

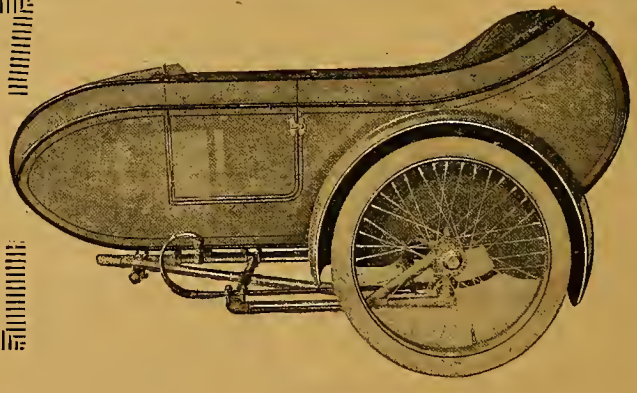
The Dunhill patent triangulated frame for sidecar chassis is the most scientific on the market. Its design combines maximum strength and rigidity, with minimum weight. There is no possibility of frame distortion.

Three Models are available:

The Underslung Lightweight, suitable for machines up to 3½ h.p.

The Underslung Touring Chassis, for machines up to 6 h.p.

The Tandem and Colonial Mod l, suitable for machines over 6 h.p.



Dunhill Sidecar Body.

Dunhills

Equipment Headquarters

359-361, Euston Road, LONDON, N.W.1.
West End Branch: 2, Conduit Street, W.1.
GLASGOW: 72, St Vincent Street.

A copy of our Sidecar List, and of any of our lists on Motor Cycle Clothing, Lighting, or Tools, will be sent gladly on request.

Model B 37.

Comfortable touring body with bulbous back, opening to give ample room for luggage, etc. Room for petrol tin under seat. Locker of polished mahogany, for maps, etc, in front facing passenger. Standard colour dark green, upholstered in best quality "Rexine" cloth.

Price of above, fitted to A 36 chassis, complete £32 0 0
Suitable for machines up to 5-6 h.p.

EXTRAS:

Fancy colours	£1 1 0
Hood	£4 10 0
Apron	£1 10 0

A Selection of Letters from Readers scattered all over the World.

Trade Abroad.

"INDIA," Allada Valley, Katary, Nilgiris, South India, says: "I do not think motor manufacturers at home know what a bad turn British agents are doing them. Here, in India, one of the most famous English outfits advertised at £140 was sold (with the rupee at 1s. 6d.) at an equivalent of £202 5s. The rupee is now 2s., and the said combination is still being sold at 2,700 (against 2,800 Rs. before), or at present equivalent to £270! American bicycles and sidecars, developing much greater h.p., are sold for much less. It is all very well to say that British machines will always be preferred. I refused an American during the war, and waited for a British machine. I got it, and could get no spares. I have tried for five months, and written home three times. This make of machine used to be the most popular in these parts, but three men whom I have met tell me that they, too, have had the following experiences: One got no answer to his letters for spares. One got spares of the wrong size. The third had to wait many months. A friend of mine at home, whom I asked to tackle the firm, has just written: 'You evidently do not understand that they are full up with orders for a year, and simply do not want to be bothered with such orders.' Well, my machine is now on sale. I have bought a 7-9 h.p. Harley-Davidson and sidecar, and 'you bet' the H.-D. Co. will see their agents have all the spares in stock.

"Of course, it is a very happy position to have orders enough for a year; but, meanwhile, British machines are being driven out of their position of favouritism by the prices British firms allow their middlemen to charge, and the fact that spares are not always forthcoming.

"It is credibly reported here that one or more American firms intend to cancel their agencies, because their middlemen will not sell their motors at a fair profit. This seems to be a point of view the British firms do not worry about; but if the Americans establish direct agencies, as it is reported they are going to do, and sell their machines at about half the cost of those from home, and of at least equal power with the British, British firms will find at the end of one year or so of boom there are twenty American motors and motor bicycles to one British on the market in India."

10,000 Miles in Many Countries.

"M.L.L.," of the Italian Economic Mission to the United States, writes: "The hope that your mail bag is not over full with letters from British motor cyclists touring in the States induces me to send you these experiences of mine, extending for a distance of over 10,000 miles, and on roads in England, Scotland, Ireland, France, and the U.S.A.

"Last March, on demobilisation, I bought a 1919 model, chain-cum-belt 4¼ h.p. B.S.A. motor cycle, which has been my faithful companion ever since, and on which I have spent the greater part of my time on the road.

"From March till July I toured England, Wales, and Scotland, entering into every county in the first two, and taking part in many competitions, including the classical London to Edinburgh run.

"In July I went over to France, and passed a pleasant fortnight on the roads between Boulogne and Paris and Le Havre.

"In August I had a little hill-climbing fever, and visited Wales and North Devon. I found my Waterloo neither on Bwlch-y-Groes nor at Lynmouth. I was then travelling with a light sidecar attached.

"September saw me cross over to Dublin and shake the sidecar to pieces over the bad roads in the sixteen Southern counties I visited. The glorious scenery in County Kerry and the hospitality of the people went a long way to make me forget the roads.

"On the 18th I crossed over to Paris with my faithful B.S.A. and stayed in the gay capital till it was time to get the boat over to America. I rode to Brest and crossed the herring pond. I have now been here in the States about two months. Business has kept me off my machine a great deal, but, nevertheless, I managed to ride to Indianapolis and see the famous people there. I believe mine was the first real British thoroughbred they had seen. They were very pleased with the excellent 'service'—to use an American slang for reliability given by the machine.

"Looking back over these 10,000 miles I see that my troubles have been:

"*(a)* Oil freezing in the drip feed one very cold night when on the 'Hog's Back.'

"*(b)* Three sooted plugs during the first 2,000 miles, owing to too liberal lubrication and use of cheap plugs.

"*(c)* A broken kick-starter spring.

"*(d)* A broken valve lifter Bowden wire.

"*(e)* Two belt pull-throughs.

"*(f)* Punctures, etc., in great abundance. In fact, my only involuntary stoppages were from this cause. The bad conditions of the roads and under inflation were the principal causes of tyre trouble.

"The engine is in excellent condition and ready for 10,000 more miles, as I had occasion to see during the sea journey, when I gave it a general overhaul. The whole arrangement of the machine is excellent, and my only criticisms are:

"*(a)* The present 26×2½in. tyres are insufficient. 650×65 mm. would be much better also, in consideration of the greater ease of replacement when out of England.

"*(b)* The present drip feed is inefficient. A positive feed or an automatic lubrication would be better.

"*(c)* A handle-bar-controlled clutch would render the machine easier to drive in traffic.

"I will not mention such refinements as electric light, etc., on American lines, because I am sure all progressive British makers will include them in their 1920 models.

"I will end by saying that during the first 10,000 miles the consumption was: *(a)* petrol, 114 gallons; *(b)* oil, 11 gallons. I will add the usual disclaimer."

The Rover in France.

L. DELABRE, of Messrs. L. Psalty and Delabre, motor agents, Paris, in forwarding the photograph below, says: "You will probably be interested with the enclosed photograph, which represents the Prince of Monaco, aged

The Prince of Monaco, aged 71 years, taking delivery of a new Rover sidecar in Paris.

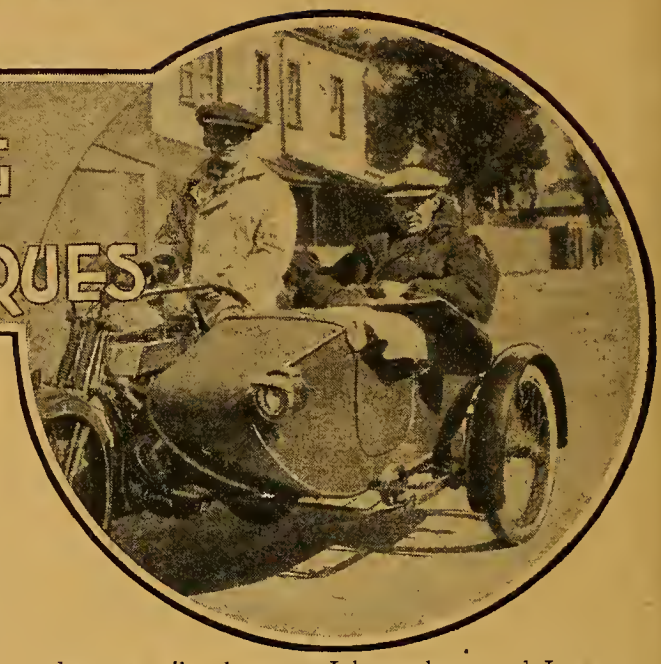
71, taking delivery of a Rover 3½ h.p. and sidecar, to be used on the devastated land in the Département de l'Aisne, which is to be rebuilt under his control.

"If you can spare a little space in your esteemed paper to remind English manufacturers that they are losing a good chance in their leaving the French market without any motor cycles you will oblige."

Direct Representation.

"An Englishman in Canada" writes on the question of direct representation in the Dominion, and refers to the Association of British Accessory Manufacturers, which is opening a stores in Canada. "This is a step in the right direction, but if makers of complete machines would set up depots where spare parts could be obtained, there would be some hope for them securing their share of the trade Overseas."

FROM JOHANNESBURG TO LOURENCO MARQUES



A Journey Through the Native Reserves of Swaziland.

TO the majority of motor cyclists in this country Lourenco-Marques is just a place on the map which was mentioned in English newspapers at the time of the Boer War. It is the chief port of Portuguese East Africa, and, although it is only three hundred odd miles from Johannesburg, one seldom connects the two cities when thinking about either place. Probably this is due to the fact that, between the East coast of Africa and the capital of the Transvaal, lies Swaziland, which, to the average English mind, conjures up visions of big game hunting and unclothed savages.

How often is the actual so different from the imaginary. From the photograph on the right, it will be seen that Swaziland might easily pass for a part of the north-west of Scotland, or even Central Wales; yet until this year the 374 miles between Johannesburg and Lourenco Marques had never been traversed by a motor cycle. The honour of doing the first journey on motor cycle and sidecar belongs to Messrs. Rose and W. S. Thomas, of Johannesburg, who used an 8 h.p. Royal Enfield outfit, and did the journey at an average speed of 18 m.p.h.

Considering the very bad road conditions, 21 hrs. 20 mins. running time was extremely good going, although the frontiersmen appear to have been disappointed that they did not succeed in reaching their destination in two days.

We are advised that Mr. Rose found the road fair all the way to Ermelo. From Ermelo to Lake Chrissie the travellers report the road in a specially

(Left) The drive down Polana Beach at Lourenco Marques.

(Right) Midst the Swaziland Mountains over the Transvaal Mountains at Oshoek From here the road drops 3,000ft. down M'babane, a distance of eight miles.

MAXIMS FOR MOTORISTS

The Rule of the Road is keep to the left, and insure your Car or Cycle with the Motor Union Insurance Company, Limited.

Under the Auspices of the

WRITE TO-DAY FOR PROSPECTUS:—

THE MOTOR UNION Insurance Company, Ltd.,

10, Saint James's Street, S.W.1.

Telephone: Regent 2200.

Branches and Agencies all over the World.

LONDON-EDINBURGH RUN
1919

both A.B.C. Solo Mounts and A.B.C. Combination gained
GOLD MEDAL AWARDS.

THE TALBOT GARAGE, Ltd. STOCKPORT,

Are the sole distributing Agents for Lancashire and Cheshire for the famous

Greatest engine efficiency and power for all purposes by air-cooled, flat twin power unit.

15% reduction in fuel consumption. Luxurious riding comfort by scientific eal springing. Greater resiliency by **30%** lighter frame construction. with **100%** greater strength. Four-speed gear box. Automatic lubrication.

Send for particulars and early delivery dates, and secure your mount for this season's riding.

'Phone : 500, Stockport.
'Grams: "Talbot Garage, Stockport."

A Tyre Maker's Temptation

Yes, perhaps the mixture for the tread *could* stand a little juggling with. The casing made just *one* ply less. The Proofing used *need* not be Para. Yes, *that* would cheapen things. But—a tyre so tampered with would never give the mileage that a

PEDLEY

will. It simply couldn't.

The secret of the Pedley fame lies in the *extra* quality and *better* workmanship that's built into these tyres.

J. PEDLEY & SON, Ltd.,
Oxford Works,
Great Charles Street,
BIRMINGHAM.

LONDON DEPOT:
30, Holywell Lane,
Great Eastern Street,
London, E.C.2.

From Johannesburg to Lourenco Marques.—

bad condition, and from Lake Chrissie to Vlakfontein encountered heavy sand. The travellers reported a fine herd of blesbok about here, but saw no more game during the rest of the trip. Blesbok are about the size of small oxen, and are dangerous at times.

In Portuguese East Africa.

Vlakfontein to M'babane was good going, but hilly. From M'babane to the Portuguese Customs House at Goba (the border of Portuguese East Africa and the Union), the road was in quite good condition. At the Customs House (a small corrugated iron shed) the travellers were given a pass for the motor cycle, which had to be handed in on the return journey. They found the officials quite courteous, but conversation was difficult, as they knew very little English.

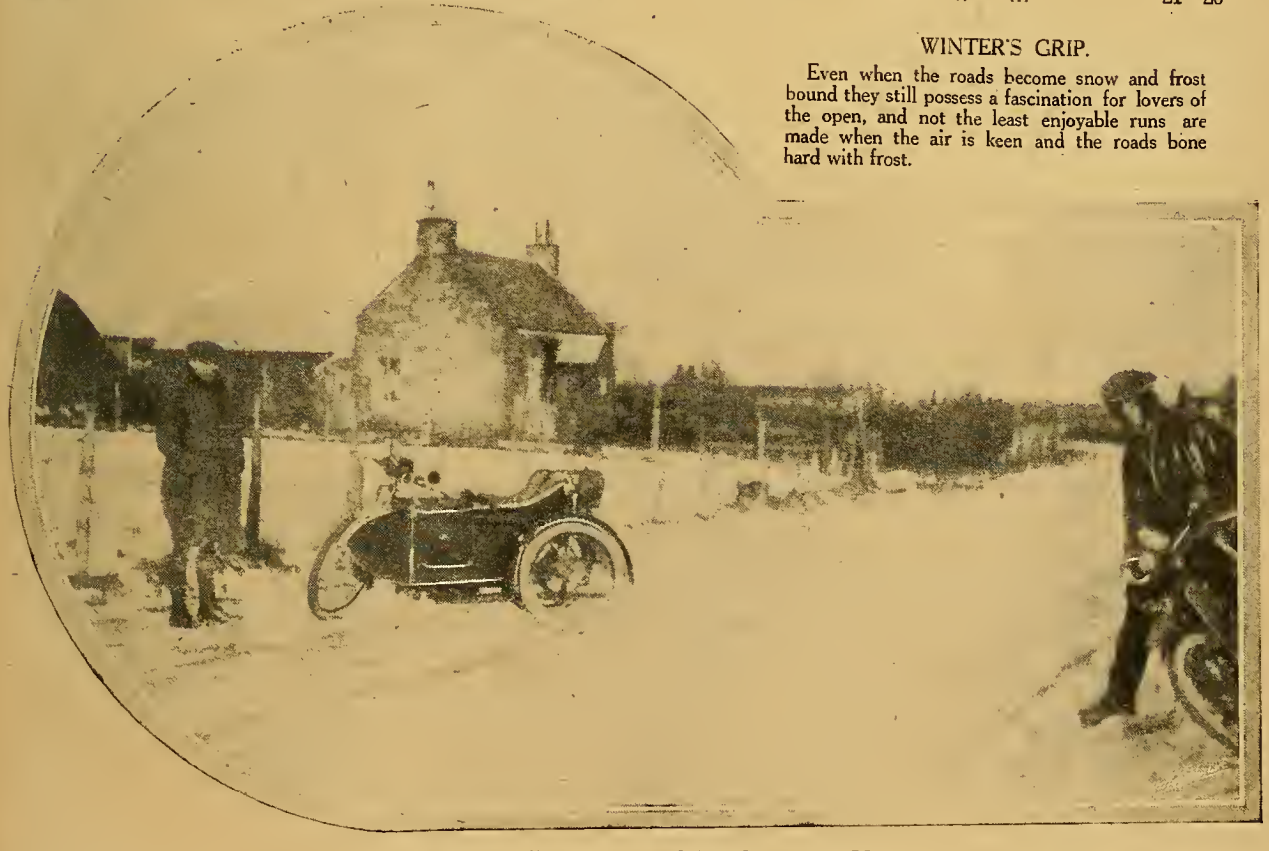
From the border there is a new "road" for over twenty miles to Boana. This "road" is very bad, and only consists of two trenches to mark the way across the veldt: a typical South African road.

Messrs. Rose and Thomas stayed a few days in Lourenco Marques, and then started on the return journey to the Rand. Two days were taken on the trip up, with an actual travelling time of under nineteen hours.

Petrol consumption on the outward trip was seven gallons and one gallon oil. Return, nine gallons petrol and one gallon oil. The petrol consumption works out at about 42 m.p.g. for the respective trips.

The following table gives an idea of the distances and times of the trip to Lourenco Marques:

	Miles.	h.	m.
Johannesburg to Springs ...	31	1	1
Springs to Bethal	80	5	45
Bethal to Ermelo	36	2	0
Ermelo to Lake Chrissie ...	24	1	25
Lake Chrissie to Oshoek ...	54	2	50
Oshoek to M'babane	15	0	50
M'babane to Bremersdorp ...	21	1	15
Bremersdorp to Stegi	41	3	55
Stegi to Portuguese Border ...	18	1	10
Border to Lourenco Marques ...	54	3	10
Total	374	23	20
Less stoppages; looking for passport, broken throttle, carburetter, and putting on gaiter		2	0
Total		21	20



WINTER'S GRIP.

Even when the roads become snow and frost bound they still possess a fascination for lovers of the open, and not the least enjoyable runs are made when the air is keen and the roads bone hard with frost.

WHEN WINTER HOLDS SWAY.

IN our young days, when our only dread lay in the danger of one day acquiring by some mischance a mount which had no speed—which was, in fact, too slow to catch a cold—none of the hazards of winter riding had any terror to shake the soundness of our hearts.

Now that the first flush of enthusiasm has given place to those incipient twinges in the joints that at once warn us of the season of the year and the passing of youth, the most ardent soloist may pause to allow himself furiously to think.

And having thought and pondered on the state of the roads, now awash with rain, now smothered in slime and mud, and anon treacherous with ice and snow, he whose past experience teaches wisdom need feel no shame if, believing discretion to be the better part of valour, he hangs a sidecar on his mount until the sun of spring smiles once again. WHARFEDALE.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters must be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

FINDING A WINNER.

Sir,—*Re* finding a winner in reliability trials, there is one method which, to my mind, stands out as a certain solution, and also one which will be materially conducive to progress in every way. This is a fuel efficiency test on a ton mileage basis. The speed at which machines are to be driven to be limited between, say, 15 and 25 miles per hour, the average touring pace. This limit would do away with freak performances, which have no value to the industry. For the welfare of the industry generally—as opposed to competitions being sporting propositions pure and simple, and a test of men rather than of machines—the most economical machine and accessories should, I think, be recognised as the goal at which all makers are aiming, and, in fact, the principal reason why these reliability trials are entered into at all. I take your paper regularly, and follow with interest the various discussions in your Correspondence columns.

Brisbane, Queensland. WILFRID PILKINGTON.

MOTOR SCOOTERS.

Sir,—I have just returned from an excursion around this city (Bristol) on a well-known type of scooter, and, as you are aware, there are some very stiff hills in the town itself, and after an enjoyable morning feel I would like to air my views in opposition to Major Kennedy, though I will first admit that I have not had much experience with scooters. I have always been very interested in them, and certain that they will become very popular with the public, especially with women, provided they are handled properly by those who sell them, and that they can be sold cheaper than at present

Major Kennedy states that a novice has a great deal of difficulty in starting these little machines; the one I am lucky to possess is of British make, and will start from cold in four to six walking paces, *not* running; being new, it is a little stiff, so there is no need for a lady to look undignified by hopping. A friend of mine, with a similar mount, which has done hundreds of miles, beats me easily in starting when cold.

Most novices have the idea of always improving things, which is generally the starting of all troubles. Always "let well alone" is the safest plan. Giving everything plenty of oil is more than half the battle, coupled with cleanliness.

My scooter scales 58 lb., less petrol and oil. The mixture problem is surmounted by a single lever carburetter. I have not as yet found a young lady who gets "fed up" after she has ridden a properly designed mount.

The automatic inlet valve and drip carburetter alluded to are not found on the principal British machines. Has Major Kennedy tried to adjust a magneto of the flywheel type? If not, I can assure him it is a "nice job," especially if it has to be done away from "home."

B. O

I do agree with Major Kennedy that it is Aunt Jane and little Dorothy who will have the say with the ultimate scooter, and this is where the good "service" agent will or should come in. He must advise and help his customers as much as possible, and a carefully written little book should be given with each machine. This would help considerably, and relieve the agent. Someone on the agent's staff should have a good knowledge of the type of machine he sells, as I understand is the case in this city, and, of course, many others. It will not be all profit and sunshine to start with, and the public will have to be educated into the scooter's many really handy uses.

I fail to see how some motor scooters weigh as much as two-stroke motor cycles. My last little Royal Enfield weighed more than three times the scooter, though a splendid mount. HAROLD SOLOMON.

Sir,—I am somewhat at a loss to comprehend in what spirit Major Kennedy's letter (December 4th) was written, whether in solemnity or banter. His expression of grief about the A.C.U. Scooter Trial savours of the latter. I charitably suppose, also, that his claim to "a greater experience of scooters than anyone else in Great Britain" must also be taken in a Pickwickian sense, otherwise one can only lament that so much experience should have produced so little knowledge.

On the other hand, as some readers may take the communication seriously, it is well that one or two of Major Kennedy's dogmatic assertions should be contradicted.

He "assures" us that "those who favour a seat on scooters should abandon the idea right away." Yet I have seen a scooter, with lady seated, go through a forty-mile road competition at fourteen miles per hour, schedule time, inclusive of some toughish test-hills and a watersplash, some very bad roads, and other features included by a club competition committee bent on finding a sporting course. Moreover, this scooter, seat included, made the best performance of the day under absolutely equal conditions (except 14 m.p.h. instead of 20 m.p.h.), against a fairly large field for a club event, inclusive of some of the best competition riders in England

Major Kennedy talks of "10in. wheels," "speedman's wobble on a scooter," while his final comparisons regarding tractive resistance, wind resistance, and weight are inaccurate.

He remarks that "tractive resistance is greater in the scooter, wind resistance at least equal, and weight not much less than in a motor cycle." This reminds me of the old description of the lobster as a "red fish that walks backwards"; a good description, except that the lobster is *not* red, *nor* a fish, *nor* does it walk backwards.

Similarly, the tractive resistance of a scooter is *not* greater, the wind resistance at scooter speed *is* less, and the weight is *much* less. FRANK WHITWORTH.

WHEN the leaves are falling and the autumn mists make the roads sodden and treacherous it's worth a lot to know that you can trust your tyres as you swing round the corner and make for home.

That's were the Dunlop rubber studded motor cycle cover scores as well as in its capacity to give long and faithful service.

Don't the A.C.U. Six Days Trials prove it, with 63.63% of the gold medallists on them?

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DUNLOP RUBBER CO., LTD.,
Founders of the Pneumatic Tyre Industry.
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with its increased accessibility and ease of decarbonising, has, for over seven years, been a successful feature of the G.N., carried out, too, in an extremely neat and effective manner. The holding down nuts can almost be unscrewed without lifting the bonnet, so accessible is this 90° vibrationless engine.

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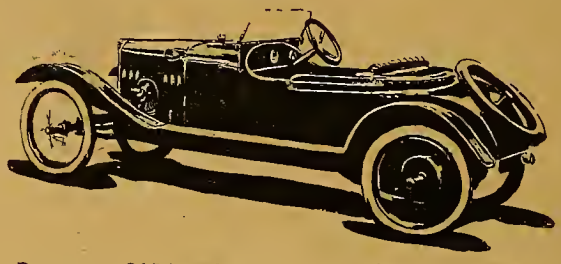

Prices are £184 and upwards according to equipment

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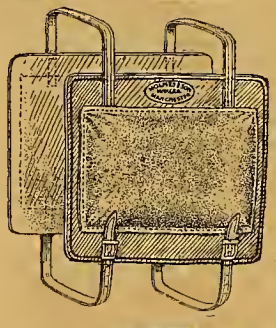

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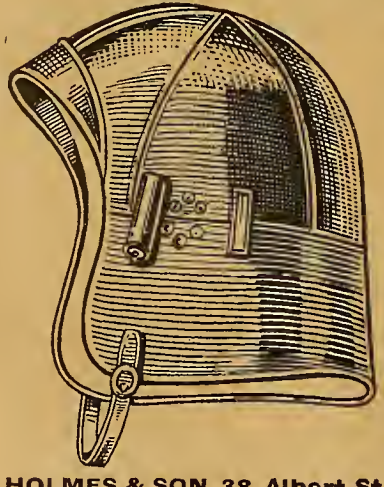
Knee Grips for Winter Riding. Our A.1 Quality made of Selected Hides. Measuring Overall, length 7in. by 6¾in. deep. Pad 6in. by 4in. Suitable for Triumph, Norton, and machines with similar tanks. **Price 12/6 per pair.**



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Invaluable for cold weather riding. Keeps the ears and head free from draughts. Made from selected soft skins, lined wool, and fitted with Ear Rolls and Goggle Slides as illustrated. **Price 21/-.**

Made in dark khaki green colour only.

For complete protection we still supply the **Famous "All Weather" Motor Suit at £4.**

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Vivian Hardie & Lane Limited

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DOUGLAS

Messrs. Vivian Hardie and Lane, Ltd. 6.8.19.
Gentlemen,—Enclosed remittance for £1 16 6. All has been a real pleasure to deal with so courteous and prompt a firm.
Yours sincerely,
(Signed) W.F.R—

Dear Sirs, Oct. 16, 1919.
Please accept my sincere thanks for your courtesy and prompt attention which is appreciated.
Yours faithfully,
(Signed) W.H.T—

12th November, 1919.
Gentlemen,
I have to thank you for the "Douglas" Book received this morning, and must apologise for omitting to enclose the P.O. in my previous communication. I enclose same for 1/6 now.
Thanking you for the extreme courtesy and attention which you have given me in this matter.
I am, Gentlemen,
Yours truly,
(Signed) E.C.R—

LEVIS &

N.U.T.

Messrs. Vivian Hardie, Douglas Lane, Ltd. April 25, 1919.
Dear Sirs,—I must thank you for your attention. I first saw your ad. in The Motor Cycle, it is always a real pleasure to deal with a firm which takes a real personal interest and treats their customers as courtesy and consideration.
Yours faithfully,
(Signed) H.C.S—

Dear Sirs, Oct. 22, 1919.
I feel I must write and thank you for such prompt attention, especially as I know the amount of business you must have on hand at present. I am glad to place any further orders for spare parts with you, as I require prompt attention when I do.
Yours faithfully,
(Signed) H.L.C—

P. & H. Lamp Sets, Cowey Speedometers and Horns, Tan-Sad Seats, Douglas Instruction Books, etc., etc., actually in stock.

BRAND NEW MACHINES IN STOCK:

4 h.p. Douglas Combination, latest 1920 model, price **£145**
2¾ h.p. Solo, latest 1920 model .. .. „ **£90**
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24, Woodstock St. (off Oxford Street), Bond St., W.1.

Telephone: Mayfair, 6559.

THE LIGHTING REGULATIONS.

Sir,—"Sivel's" letter in your issue of 4th December is astounding, and makes one wonder whether "Sivel" has ever done any night riding at all. He states: "The onus of avoiding accidents should lie with the overtaking vehicle. It does not matter whether the 'obstacle' is a cyclist, pedestrian, vehicle, child, or *anything else*." Naturally, the onus lies with the overtaking vehicle, but does that preclude the advisability of taking precautions to render the risks of an accident as small as possible? If that is so, according to "Sivel's" reasoning, places where the road is "up," or under repair, should not be marked by lights at night—for this certainly comes under his category of "obstacles."

It is not a far cry from that to doubt whether "Sivel" considers a railing necessary to prevent one falling over a cliff when the road runs along its edge. The onus is on the vehicle, he says, and his head light must save him, or else he must have been going too fast, and it is his own fault!

If a pedestrian, even in daylight, falls down a coal shoot left open and unattended, the court awards him damages. Why? When, according to "Sivel's" reasoning, head lights are for the purpose of showing us what is in front, so that we can avoid it, and, similarly, the pedestrian's eyesight should have enabled him to avoid the accident.

Since my letter, published in your issue of 11th December, was written, I have moved to the country, and now ride two miles home from the station every night, along a road practically destitute of lights, but much frequented by cyclists and motor cars with glaring head lights. During this short period I have become, if possible, even more convinced of the necessity for a rear light for cyclists, both for their safety and for my own, and I cannot conceive any night rider thinking otherwise.

Incidentally, I may mention that many of the local pedestrians, obliged to walk in the road owing to lack of pavement, carry lanterns with them at night—for their own safety from traffic, I am informed. And yet so far I have met no one "road hogging" it at night here!

C. TYERS.

Sir,—From the point of view of a push cyclist, I would like to say that I agree entirely with "Toleration." It is surprising how close one may get to another cyclist minus a rear light without being aware of it, even when oneself has a good head lamp.

In the next letter, "Sivel," referring to the rear lamp, speaks of "its notorious unreliability, both as regards its keeping alight and its value as a preventive of accidents." As far as unreliability is concerned this may be due to two causes—(1) design and (2) treatment.

In the first place, it is up to the purchaser to get a good lamp, and in the second place, to look after it. How many people one sees on the road with oil rear lamps having their wicks turned up too much, air holes and chimney clogged with soot, and the red glasses smoked so much that they are rendered almost invisible?

Such a lamp *is* unreliable both as regards keeping alight and as a means of preventing accidents. If you buy a good lamp and give it a little attention it will not go out, and it will prevent accidents. Surely it is not too much trouble to give an oil lamp a few minutes every week.

Leamington Spa. KNIGHTRIDER.

Sir,—I trust we disputants on the subject of rear lighting are not absorbing more than our fair share of space in your valuable journal, but I am in the lists again in reply to the letters, from Messrs. Holland and Tyers, in your issue of December 11th.

Mr. Holland alleges an absence of logic in my letters, and then proceeds to demonstrate his own absolute lack of that valuable commodity. A misquotation, Mr. Holland, is a misquotation, and no amount of "explanation" will alter the fact. I submit that no one reading my letter in a fair and intelligent manner would contend that I suggested that all such impedimenta as were mentioned should bear a red lamp. Further, in his letter, "Iorwarth," referring to pedestrians, says, "These usually have the sense to get out of the way," the inference being, obviously, that certain other road users have not that sense. I take leave to doubt the statement that cyclists "often" display red lights in front and white lights behind! I ride some hundreds of miles at night during the year and have never seen one yet.

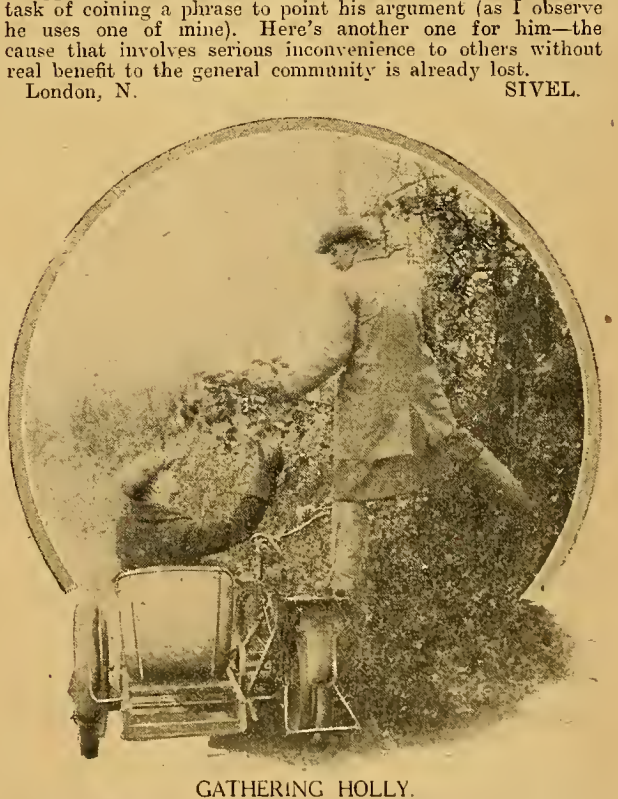
I know that my escapes from being smashed up by passing motorists were not due entirely (mind the split infinitive next time, Mr. Holland) to my rear light, because on one occasion I drove my machine into a grass bank to avoid being run down, and on another had my rear lamp bent forward by some projection on a passing car. Does this flatter the rear light enthusiast? My escape was due in each case solely to such skill as I possess in driving, otherwise I might now have been in a spot whence it would be impossible to give those who need it the benefit of my enlightened views on this subject.

I have been riding bicycles, pedal and motor, for thirty years, and have probably done as much night work as most cyclists, and have never yet run into anything, simply because I ride according to the condition of the road before me as revealed by my lamp. I am as fond of a "bat" at 30 or 40 m.p.h. as most people, but on a clear road in daylight, please, not at night when the best of lamps will not always show up every possible source of trouble. Let me commend to the notice of the red lamp champions the query on page 765 of your issue of December 11th, under the heading of "Cattle on the Road," and the reply, more especially the last three paragraphs of the latter.

Summed up, the argument appears to be: "I can see nothing in front of me, no red lights apparent; ergo, there's nothing there, and I can tear along in the dark at any speed." This is the only logical conclusion from the contentions of the supporters of the lamp, and I should zealously support any movement to do away with it, as I would, also, the effort to suppress that other ridiculous regulation, the "speed limit," made by the amateurs who frame our laws. "Riding to the public danger" if you like, but not this infantile provision! There are plenty of motorists who would undertake to ride down the Strand during the daytime at thirty miles an hour with less danger to the general public than would be involved by other road users travelling at a tenth of that speed.

Apparently Mr. Holland's faculties are not equal to the task of coining a phrase to point his argument (as I observe he uses one of mine). Here's another one for him—the cause that involves serious inconvenience to others without real benefit to the general community is already lost.

London, N. SIVEL.



GATHERING HOLLY.

A few miles run in the country at Christmas time will generally result in a "find" of holly if the passenger keeps a good lookout

THE MUDGUARDING PROBLEM.

Sir,—A few weeks ago I took delivery of a well-known Coventry make of motor cycle, and had some hundred miles to ride to bring it home. It rained and snowed practically the whole of the ride, and, much to my disgust and discomfort, I was simply plastered from head to foot with mud on my arrival.

One reads a lot about mudguarding, and several firms have taken the matter to heart by fitting efficient guards. This particular firm seems to forget the climatic conditions that one has to contend with. The machine itself is *almost* ideal. SOL.

Sir,—As a medical man who has regularly used motor cycles of various makes in his practice since 1901 (I have owned twenty-one and ridden many others), I can state definitely that I *have never had one single machine which was properly mudguarded.* I have had to have special mudguards made for every machine I have owned. The majority of motor cycles are mudguarded on the principle of the push bicycle, which type of mudguarding is quite inefficient when applied to a motor cycle. The best mudguarded machine I have owned was called, I believe, the Midget Bicar. This machine had wide, flat mudguards and was fairly clean. The faults of most motor cycles are :

(1.) Design of frame : Most motor bicycles are merely heavy push bicycles with engine, etc., thrown on.

(2.) Mudguards : After a wet ride mud is deposited in quantities on the back of the rider (particularly on his neck) and on his knees and boots.

(3.) There is not nearly enough clearance between the mudguards and the tyres.

(4.) Too many projections of all sorts on the machine, all of which collect dirt, etc.

(5.) Too many different sizes of nuts, bolts, etc.

(6.) No rear springing, in most cases.

(7.) Often inefficient spring forks (some well-known machines suffer in this matter).

(8.) Too many twiddly bits on handle-bar.

(9.) Exhaust noise and valve clatter generally too pronounced.

(10.) Transmission, etc., on wrong side of machine (this applies more particularly to machines used for sidecar work).

I have used my machines in all types of weather by day and night, so I think I can speak with some authority. At present I am keeping my eye on *The Motor Cycle* with the view to the purchase of a motor after my return from foreign service. It seems, however, that I shall have to go in for a small two-seater (three or four wheels), unless I can find a really clean, dependable machine, with the above stated faults eliminated. M.D., R.A.M.C. (T.F.).

Italian Expeditionary Force.

COMPETITIONS FOR PASSENGER VEHICLES.

Sir,—The present position with regard to trials for passenger vehicles appears to me to be wholly and entirely unsatisfactory, chiefly owing to the recent decision of the authorities that all three-wheelers shall come under the A.C.U., and all four-wheelers under the R.A.C., without any exception or reservation.

The Auto-Cycle Union and the R.A.C. are organised, not merely as independent, but as thoroughly water-tight compartments; each assumes a magnificent unconcern in the proceedings of the other. One therefore assumes that, although three-wheeled cycle cars will compete with sidecar outfits in competition, four-wheelers will be kept strictly to themselves.

One cannot help feeling that this arrangement is likely to confer singularly little benefit either upon the industry or the private motorist of small means.

What seems to me to be quite obviously wanted is a trial, or rather trials, in which all passenger vehicles coming within a certain price limit can run together. We want an answer to the question as to whether it is possible to make a cycle car that is as good as a combination for the same selling price, and we want to know whether or not three wheels are as good as, or better than, four. And that is to instance only two of the points that trials for passenger machines of all types can help to settle for us.

The cheap passenger vehicle is in its infancy, despite the assertions of advertisers, and our problem at the moment is rather the relative efficiency of types than the relative efficiency of individual makes. Hence the present policy of running various types apart instead of together appears to me to be futile. It is of little help to the private individual in search of guidance, or to the designer in need of data.

I would emphasise the importance of classification by price. The man who wants a decent motor vehicle at a low figure does not care two straws whether it is a sidecar, a cycle car, or a light car, provided that it is efficient. Nor does he care much about weight, or about horse-power, except in so far as these factors bear upon the question of price. I would therefore suggest that for the purpose of competition vehicles should be classified simply on a price basis, and the organisation should be in the hands of the R.A.C. and A.C.U. jointly, an arrangement that should be quite feasible, if only for this special purpose.

Wold Newton, Yorkshire. L. FRANCIS JONES.

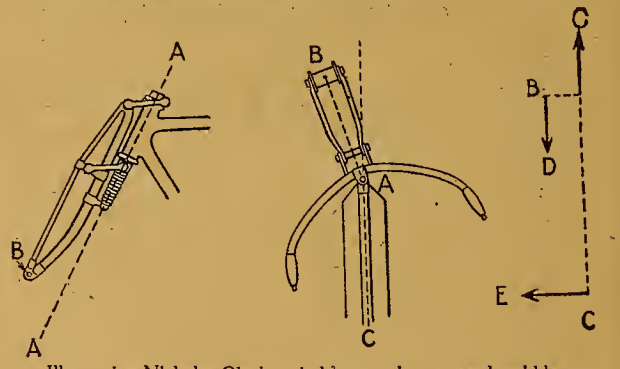
AN INVALID MOTOR CHAIR.

Sir,—When visiting the Motor Cycle Show I saw in the Hammersmith Road an invalid hand-propelled chair with a motor attachment, the maker's name being placed at the back of the seat.

However, this chair was travelling so fast that I was unable to read the address, and as I am particularly interested in this class of machine, I wonder if any of your readers could let me know the maker's name. JAS. COOPER.

SPEED WOBBLE.

Sir,—"Ixion," in *The Motor Cycle* of November 20th, touches upon the phenomenon of "Speed Wobble." I suffered once from this on a 5 h.p. machine, and quite luckily finished my journey in the hedge by the roadside, but the possibility of encountering a hard brick wall next time made me uncomfortable, and I shortly disposed of this machine. Now I see that it is the fault not only of this machine but of others also, and therefore this question becomes very important. As an engineer and air pilot, I know of an explanation of similar phenomenon in some types of aeroplanes, and I will try to explain it in case of a motor cycle. I should be much obliged if "Ixion" would carry out experiments with his machines to examine my idea, and if he would let us know the results. The enclosed sketch and explanation will, I hope, be quite clear.



Illustrating Nicholas Olechnovitch's remarks on speed wobble.

1. *Front Fork.*—A A, axis of turning; B, centre of front wheel.

2. *View from the top* on the machine, with handle-bars turned to the left.

Centre B is out of the vertical plane, and therefore out of line C C of movement of the centre of gravity.

3. *Diagram of forces,* which arise in case of left turning; C C, inertia of the centre of gravity; B D, resistance of the front wheel; C E, side resistance of the back wheel.

Now we can get three different results, depending upon the position of the centre of gravity :

1. If centre of gravity is in the same horizontal plane as the centres of the wheels, machine has a dead balance.

2. If centre of gravity is higher, machine declines out from the centre of circle of turning, and therefore makes a wobble.

3. If centre of gravity is lower, machine possesses an automatic balance.

A good machine can be constructed if the centre of the front wheel B will always remain in the line A A, or if the machine possesses first or third position of the centre of gravity. NICOLAS OLECHNOVITCH, Lieut.

1200 SUCCESSES IN THREE YEARS!

Did you secure at the Show a copy of the ZENITH BUDGET setting out this wonderful record of successes? If not, write to-day for a copy while the edition lasts.

Achieved by riders of the **ZENITH** **in all parts of the world.**

MOTOR CYCLE with the GRADUA GEAR.

The 1920 MODELS are:

2¾ h.p. Horizontally opposed twin—an entirely new production.

5 h.p. Model C. V-twin (654 c.c.) known as the Sporting Model.

8 h.p. Model H. V-twin (988 c.c.) with Kick-starter and Clutch, known as the Passenger Model.

All fitted with the famous Gradua Gear.

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THE VERDICT OF THE

Daily Mail

TUESDAY, NOVEMBER 25, 1919.

The motor-cycle of to-day is, above all, the result of individual trial and personal taste. One of the finest, if not the finest, side-cars in the show is the product of a Manchester firm, the Royal Ruby. It is a monument of technical skill combined with a knowledge of what the user wants. Leaf springs rear and front, leaf springs for the side-car, spare-wheel carrier not a mere bolt but part of the side-car chassis, spare petrol tin carrier part of the luggage grid and secured very much after the style of the exhaust manifold of a car, cycle frame and side-car insulated completely from all road shocks—these are but a few of its many utilitarian and technical points.

ON THE **ROYAL RUBY** Patent Spring Frame and Spring Wheel Sidecar Chassis

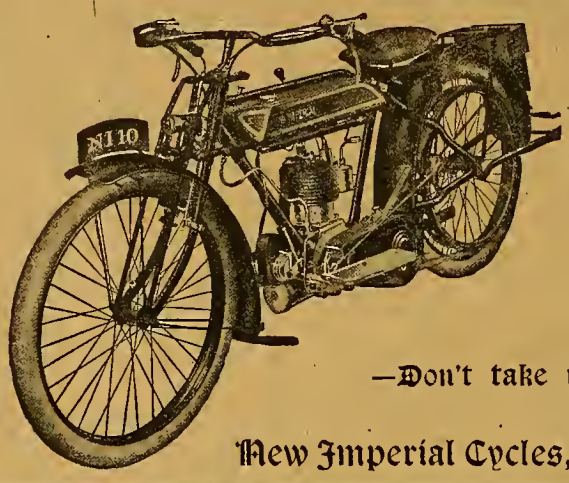
THE RUBY CYCLE CO., LTD., Manufacturers and Patentees of the Royal Ruby Cycles, Motor Cycles and Sidecars
CANNEL STREET. ANCOATS, MANCHESTER.

The Perfect Dependability of

New Imperial Motors

is—Our Motto,
Your Safeguard.

"New Imperial" Agents will be found in all towns of the United Kingdom and all countries abroad. Ask your local Agent for particulars—if he fails you please write us and we will give you fully illustrated particulars—we lay ourselves out to give you every service before and after purchase.



2¾ Light Tourist
64 & 72 guineas.

8 h.p. Combination
147 guineas.

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"New Imperial."

New Imperial Cycles, Ltd., Birmingham.

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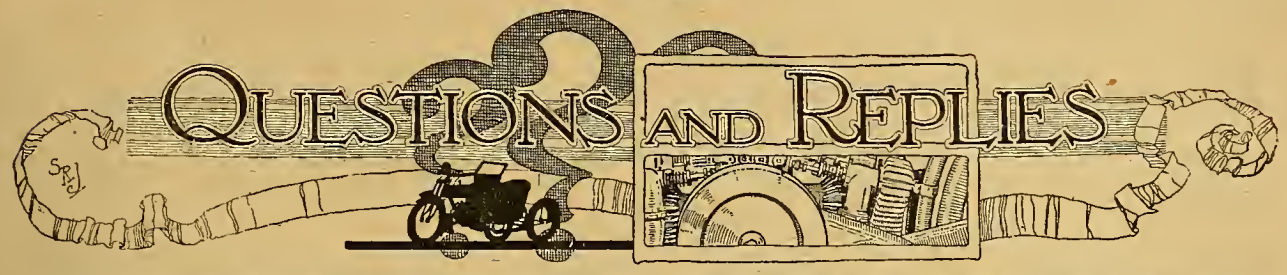
CARBURETTERS

HEAVYWEIGHT.
MADE IN LIGHTWEIGHT MODELS.
TWO-STROKE.

GIVE THE BEST RESULTS FROM YOUR ENGINE.

The favourite of both expert and novice.
BROWN & BARLOW, Ltd., Witton, BIRMINGHAM

In answering these advertisements it is desirable to mention "The Motor Cycle."



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C.4, and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Mechanical Lubrication.

Does a mechanical oil pump, worked from the timing gear, lessen the efficiency of the whole engine as a power unit to so great an extent that the improved oiling would not warrant its use?—O.B.M.

A mechanical oil pump of dimensions suitable for a motor cycle engine does not absorb sufficient power materially to lessen the general efficiency.

Gear Ratios.

(1.) My 2¾ h.p. two-stroke Connaught has a single speed, belt rim 20in. diameter, and flywheel pulley 4in. diameter. I have fitted a two-speed gear; the number of teeth on clutch pulley of the gear box is thirty-two. The belt pulley on the gear box is 6in. diameter. Will you please state how many teeth I shall require on the flywheel sprocket to bring it to the same speed as it had when single geared? (2.) On the same question, to increase speed do I require a smaller or larger number of teeth on the flywheel sprocket?—W.S.

(1.) You will require a twenty-one tooth engine sprocket. (2.) To raise the gear you will require more teeth on the engine shaft sprocket.

Fitting a Dynamo.

I am desirous of fitting a lighting set to a 6 h.p. military model Clyno. Could you give me any advice as to the best means of getting an easy drive for the dynamo? There is a ½in. nut on the end of the magneto shaft, and I thought to screw a drive on to that projecting outside the chain case. Would you consider that a practical proposition? If so, what size sprocket or pulleys ought I to employ to get the dynamo working fast enough? Specification of dynamo states 800 r.p.m. (cut in speed) to 3,000 r.p.m. It seems impossible to get a drive either from the engine or countershaft.—L.F.H.D.

We do not recommend the driving of the dynamo from the end of the magneto shaft, since the magneto bearings are not designed for any extra load. You would also require to gear up again, owing to the fact that the magneto only runs at half engine speed. Is it not possible to fit an additional pulley on the engine driving sprocket? If you can do this, the diameters of the driving and driven pulleys should be in the ratio of 3 to 2. This gearing will give you the most suitable dynamo speed at normal engine revolutions.

Castor Oil.

(1.) I should be glad if you would advise me on the value of castor oil as a lubricant for the motor cycle cylinder, and how would the cost compare with the oils of usual practice? (2.) Can you say whether the percentage of single-cylinder overhead valve engines on the market is low or reasonably high, and do you consider the engine essentially a "speed merchant" or touring type?—N.T.F.

(1.) As a lubricant for motor cycle engines, a pure castor oil has not proved satisfactory; moreover, it would be extremely expensive. If you are deeply interested in this subject, we would advise you to communicate with C. C. Wakefield and Co., Wakefield House, Cheapside, London, E.C.2. (2.) We should imagine that the percentage of such engines on the road is extremely low, but they are gaining in popularity. Hitherto the overhead valve power unit has been regarded as essentially of the racing type.

An Untrained Horse.

While I was travelling by motor cycle I overtook a horse and trap driven by a farmer. He was in the centre of the road, allowing me plenty of room to pass, but, just as I was about to do so, the horse (a young one) shied, and plunged across the road directly in front of me. I unavoidably ran into the trap, and was thrown headlong into some wood fencing, receiving concussion of the brain. It will be some time before I shall be fit for work, while my motor cycle is badly damaged. How do I stand for compensation?—M.H.S.

The driver of the horse and trap is not necessarily liable for damage done through his horse shying and plunging across the road. You would have to show that there was some negligence on the part of the driver, and it was through his unskilful driving that he did not keep the horse under proper control. This would probably be difficult to prove, and, if you commence an action you ought to have the support of some independent evidence showing exactly how it occurred. Even if the driver of the horse and trap were guilty of negligence, you would not be able to recover damages if you yourself were going too fast. The best plan to follow would be to write to the farmer explaining the injuries sustained, and ask for compensation. However, on the facts, it would probably be better to compromise than to get involved in an action.

Timing a Douglas.

Will you kindly furnish me with particulars of valve and ignition timing for 2¾ h.p. Douglas for fast running, so that with the ignition retarded the timing would become as normally used with ignition almost fully advanced?—C.M.

In timing the Douglas engine, a certain amount of overlap of the valves must occur. When the piston is at the top of the exhaust stroke, the valve should be not quite closed, and the inlet valve should have commenced to open; about 5 to 10 degrees of overlap should be allowed, but we should advise you, if you wish to go into this subject thoroughly, to obtain the instruction book from the makers, as this gives timing diagrams both for standard and overlap cams. The maximum advance of the ignition should not exceed 20 degrees before top dead centre, and this should be with the ignition control in the fully advanced position; timing it in the way you suggest would render starting extremely difficult, and there would be no advantage in running.

Heavy Consumption.

I have a 1919 Villiers two-stroke, which has run about 500 miles. Owing to popping back in carburetter (Amac) I thoroughly cleaned the cylinder, piston, rings and grooves, and made certain of all joints on replacing. It starts very easily, and two-strokes well at all speeds. I set drip-feed, so that the engine smokes very slightly, and use a good single point plug, and it takes nearly full air with 24 jet. It is timed so that spark occurs on top dead centre of stroke with ignition fully retarded, but when fully advanced the spark occurs when piston is only ¼in. from top of stroke. Will you please inform me: (1.) What is the cause of overheating and loss of power on hills? (2.) Only doing 60 m.p.g., when previously it did over 100 m.p.g. with a larger jet? (3.) Is ignition too far retarded?—G.E.F.

(1.) The level in the carburetter may be too high, also the sparking plug may be of unsuitable design. In other respects you appear to have effected all the adjustments correctly. We presume that you have not by any chance replaced the piston wrong way round. (2—3.) A poor consumption points to the fact that the trouble lies in carburation. (4.) The ignition timing is correct, but the advance seems unusually small.

Philipson Pulley.

I shall be glad if you will give me your advice as to the working of the Philipson pulley. The pulley does not seem to expand on hard hill work, but does so if firmly pressed or retarded by the heel of the boot. I bought the pulley to fit a 3½ h.p. Triumph, and as far as I can see the gear has had very little wear. How am I to lubricate the working parts?—J.Y.C.

The Philipson pulley you have appears to be one fitted with a racing spring. This does not work automatically, and requires a good deal of pressure on the periphery of the governor. If you require the pulley to work without control you should write to the makers, who will quote for the conversion of the racing governor to the touring type. Personally, we prefer the former. On the Triumph the pulley is self-lubricating through crank case release in main shaft.

Tyre Sizes.

I shall be obliged if you can give me the following information. I have a Humberette light car, which is at present shod with Dunlop 700×65 mm. tyres, which are a perfect fit, but are apparently unobtainable now. I have tried 650 × 65 Voiturettes, which will not attempt to go on. Will you please tell me how tyre sizes are measured? No one seems to know amongst my acquaintances. I have a small runabout, with 650 × 65 rims, and I wish to get oversize tyres, in order to raise the gear slightly. Are there oversizes for these rims?—J.S.W.

Tyres are measured across the outside diameter, and also by the diameter of the section; thus a 28 × 3 cover is 28in. extreme diameter across the wheel, and 3in. diameter in section. Oversize tyres are made for most rims, thus 26 × 2, 2¼ and 2⅜, also 26 × 2½, for 2¼, all fit the same rim, the larger sizes being oversize. The most suitable oversize covers for your 650 × 65 Voiturette rims are 700 × 80. These will no doubt increase your gear to the extent you desire. The Dunlop Rubber Co., Ltd., Aston Cross, Birmingham, will no doubt supply you with a booklet giving much interesting information on tyre sizes, if you will apply to them.

Fitting Another Engine.

I have a small two-seater cycle car fitted with 5-6 h.p. single-cylinder engine a.o.i.v. Lately, at a sale, I picked up a Riley 8 h.p. water-cooled V type twin engine, in excellent condition. Can I fit this to my car? My difficulties are as follow: (1.) Riley engine has no starting handle; main shaft ending flush with crank case. (2.) My old engine revolved in an anti-clockwise direction; the Riley is clockwise. Can I alter direction of engine revs, or shall I require new gear box? Or again, would it be possible to remove entire rear axle and differential—only the *off side* back wheel of the car is driven—and reverse it, making the *near side* the driving wheel?—H.C.B.

Without having the chassis and engine before us it is almost impossible to give you much assistance. From your description we should imagine that the cost of fitting will be very much greater than you would expect on casual examination. We should strongly advise you to sell the cycle car and engine separately, and invest in a more modern machine. In the matter of reversing the gear box or rear axle, we cannot advise you, as we have no details of the design, and if, for instance, any parts are held by screw lock rings, reversing them might tend to unwind parts which would otherwise be locked up.

Two-stroke Queries

(1.) My machine is a 2¾ h.p. two-stroke: I want to know the best way to time it. (2.) The carburetter is a Senspray. What size jet should I use for most power? (3.) What is the best oil (light or heavy) to use, and what is the best method of oiling a two-stroke, a constant drip or a direct pump full?—NOVICE.

(1.) Time the ignition of your engine as follows: Fully retard the control, and rotate the engine until the piston is at the top dead centre; connect the magneto drive when the contact breaker points are just commencing to separate. (2.) Jet No. 28. (3.) A moderately light oil will suit your engine. A constant drip is more satisfactory than a hand pump for two-stroke lubrication.

RECOMMENDED ROUTES.

CLAPHAM JUNCTION (LONDON) TO HULL.—J.R.Y.

Make your way straight across London, as follows: Clapham Junction, Battersea Bridge Road, Fulham Road, take the third turning on the left, and go straight up Queen's Gate into Hyde Park, make your way straight across from there into Oxford and Cambridge Terrace, cross Edgware Road, and take the second turning on the left (Lisson Grove) just before reaching the Great Central Hotel, then go absolutely straight on into Wellington Road, Finchley Road, Finchley, Barnet, then up the Great North Road through Hatfield, Stevenage, Baldock, Biggleswade, Eaton Socon, Alconbury, Norman Cross, Stamford, Grantham, Lincoln, Brigg, New Holland, by ferry to Hull.

LEICESTER TO LYTHAM (AND TO LAKE DISTRICT).—L.G.B.

Leicester, Melton Mowbray, Grantham, Newark, Retford, Tuxford, Bawtry, Doncaster, Ferrybridge, Aberford, Bramham, Collingham, Harewood, Otley, Ilkley, Skipton, Gargrave, Settle, Clapham, Bentham, Lancaster, Garstang, St. Michael's, Elswick, Singleton, Kirkham, Lytham. The above journey could be done in one day, but would suggest a break at Skipton. Lytham being conveniently near the Lake District, you might make a two days' trip thereto. Lytham, Blackpool, Poulton, Garstang, Lancaster, Carnforth, Burton, Milthorpe, Lindale, Newby Bridge, Greenodd, Coniston, Ambleside, Rydal, Grasmere, Thirlmere, Keswick (break journey here), Troutbeck, Dockray, Ullswater, Patterdale, Kirkstone Pass, Windermere, Bowness, Crook, Kendal, Kirkby-Lonsdale, Ingleton, Settle, etc., back to Leicester.

SPARKLETS

Catalogues Received.

Engineering and Motor Utilities Co., Haslam and Stretton, Ltd., 11, Windsor Place, Cardiff. A well got-up catalogue listing all the principal motor cycle accessories.

Leo Ripault and Co., 1, King's Road, St. Pancras, London, N.W.1. A well got-up catalogue of Ripault sparking plugs of various types, sizes, and reaches. Ripault Oleo plugs are now manufactured in Great Britain. High-tension terminals, plug testers, and compression taps are also listed.

A booklet describing the system of making reinforced concrete roads, compiled by the British Reinforced Concrete Engineering Co., Ltd., 1, Dickinson Street, Manchester, which gives some interesting information as to the construction of these roads, and some informative photographs showing the state of the various roads before and after treatment.

The Leatheries, Ltd., Sampson Road North, Birmingham. An attractive list of leather goods of interest to the motor cyclist. The Empire de Luxe saddles are illustrated; also an excellent range of toolbags, suit cases, and an expanding valise to fit the standard carrier. Incidentally the price of the latter shows some variation from that given in our report of the article when it was exhibited at Olympia, and readers who are interested are advised to write for full particulars to the above address.

The 1920 Levis Tank.

It is perhaps interesting to note that, though the colour scheme of the 1920 Levis tank apparently consists of black panels upon a grey background, it is not really the case. The matter received very careful attention, and it was decided that the tank should receive first of all a substantial coat of hard-wearing black, the grey borders afterwards being applied, leaving the black panels. This, therefore, gives an extra coat on the edges, where the wear takes place.

Engine Lubrication.

We have lately been making a test, with very satisfactory results, of Nulsec Oil, which is made by Mr. W. Blackwell, Victoria Oil Works, Aston, Birmingham. We have used nearly half a gallon in a small four-stroke twin engine having mechanical lubrication, and have covered upwards of 1,500 miles. An oil consumption of well over 3,000 m.p.g. must be accounted excellent on a motor cycle, and we never found that the engine lacked oil at any time during this test. No special effort was made to effect economy, and the results certainly point to the fact that Nulsec Oil is able to resist heat to an unusual degree, otherwise it would have been used up more quickly. The oil is manufactured in a variety of grades.

To You and Yours!

WE devote our page this Christmas week not to call attention to our stock of new models nor to announce our policy for the New Year—the former you can see whenever you are passing, the latter will be the same as in the past ten years—but to simply, honestly, and sincerely wish all our numerous friends

A Merry Christmas & a Happy and Prosperous New Year.

To our customers (whom we are pleased to know are our friends) we desire to say how much we appreciate their support in the past, and to thank those who have done so much by their recommendations to extend our business.

The year which is drawing to a close has been a difficult and trying one for the motor trade. But it has shown us that Agents who play the game can always rely on every consideration and encouragement from their customers.

That you may have a good time this Christmas, and that the New Year may bring you all you desire, with Health and Strength to pursue the greatest of all pastimes, is the Christmas wish of

'Phone: 7091 Mayfair (2 lines).

GODFREY'S LTD.,

208, Gt. Portland St., London, W.1.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 2/-, and 2d. for every additional word. Each paragraph is charged separately. Name and address must be counted. Series discounts, conditions, and special terms to regular trade advertisers will be quoted on application.

Postal Orders and Cheques sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co. Treasury Notes, being untraceable if lost in transit, should not be sent as remittances.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.4), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box ooo, c/o "The Motor Cycle." Only the number will appear in the advertisement. All replies should be addressed No. ooo, c/o "Motor Cycle," 20, Tudor Street, E.C.4. *Replies to Box Number advertisements containing remittances should be sent by registered post, but in all such cases it is advisable to make use of the Deposit System.*

In the case of motor cycles offered for sale under a box number, as it is unusual for these to be sold without first being inspected by the intending purchaser, advertisers will facilitate business by embodying in their advertisements some mention of the district in which the machine offered may be seen and tried.

THE DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but, if not, we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50 and under £75, 5/-; over £75 and under £100, 7/6; and on all transactions over £100, 1 %. All deposit matters are dealt with at 20, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Option on A.B.C. motor cycle £10; £5 deposit paid 15th April.—57, Talbot Rd., Blackpool. [X1419

JONES' Garage, special agents for A.B.C., Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0026

A.B.C.—Deliveries commencing after the Show. Have you ordered?—Prompt deliveries from Victor Horsman, Ltd., 7, Mount Pleasant, Liverpool. [0021

FANCOURT'S Garage, Stamford, for A.B.C.'s; sole distributing agent for Soke of Peterboro' and County of Rutland; particulars and illustrations on request. [0056

WAUCHOPE'S

9, Shoe Lane, Fleet Street, London. EC4.

For square deals and Values....

Our Stock includes the following Machines.

NEW.

No.	H.P.	Machine.	Year.	Price.
12154.	2½	**CLYNO**	1920	£63 0
12163.	4	**BLACKBURNE** and Sidecar	1920	£135 5
12161.	8	**NEW IMPERIAL** and Sidecar	1919	—
12183.	4	**DOUGLAS**	1919	£105 0
12209.	4½	**QUADRANT** Combination	1920	£122 10
12212.	4½	**QUADRANT**, solo.	1920	£95 0
12197.	2¾	**DOUGLAS**	1919	£80 0
	2¾	**DOUGLAS**, 3-spseed	1920	£90 0
	4	**DOUGLAS** Combination	1920	£145 0

SECOND-HAND SOLO MACHINES.

12074.	6	**ZENITH**, Gradua gear	1914	£84 0
12059.	8	**MATCHLESS**, single gear	1913	£72 10
12012.	3½	**CORAH-J.A.P.**	1912	£48 0
12193.	4	**DOUGLAS**	1919	£118 0
12186.	2¾	**O.K.-JUNIOR**	1917	£55 0
11762.	3½	**RUDGE**	1913	£45 0
12152.	4	**TRIUMPH**	1916	£87 10
12156.	3½	**RUDGE-MULTI**	1915	£75 0
12079.	2½	**TRIUMPH JUNIOR**	1914	£52 10
12169.	3½	**N.S.U.**	—	£22 10
12187.	3½	**TRIUMPH**	1914	£57 10
12205.	2¼	**CHATER-LEA**	1914	£45 0
12206.	5-6	**ZENITH**	1914	£57 10

SECOND-HAND COMBINATIONS.

12166.	8	**ROYAL ENFIELD** Combination	1919	£167 15
12010.	7-9	**JAMES-HOWARTH** Comb.	1914	£125 0
12120.	3½	**KERRY-ABINGDON** Comb.	1914	£72 10
12082.	5-6	**INDIAN** Combination	1913	£125 0
12000.	7-9	**INDIAN** Combination	1913	£85 0
12784.	6	**ROYAL ENFIELD** Combination	1917	£155 0
12207.	3½	**DENE** and Sidecar	1912	£45 0
12196.	4	**DOUGLAS** Combination	1919	£125 0
12101.	4	**A.J.S.** and Sidecar	1915	£130 0
11977.	8	**WILLIAMSON** Combination	1914	£110 0
12159.	5-6	**RUDGE-MULTI** and Sidecar	1914	£87 10
12164.	4	(twin) **ZENITH** and Sidecar	1919	£145 0
12134.	4	**TRIUMPH** and Sidecar	1918	£125 0
12104.	7-9	**HARLEY-DAVIDSON** Comb.	1915	£150 0
12188.	6	**ROYAL ENFIELD** Combination	1913	£87 10
12189.	4	**DOUGLAS** Combination	1919	£120 0
12136.	3½	**RUDGE MULTI**	1916	£130 0
12168.	7-9	**INDIAN** Combination	1913	£77 10
11983.	6	**ROYAL ENFIELD** Combination	1913	£82 10
12204.	5-6	**INDIAN** and Sidecar	1914	£80 0
12203.	6	**ROYAL ENFIELD** and Sidecar	1918	£165 0
	4	**TRIUMPH**	1916	£84 0

SECOND-HAND CARS.

12135.	-	**CARDENA** Cycle Car, 7-9 h.p. Harley-Davidson engine	£145 0
12099.	8	**DUO** Car, J.A.P. engine	£150 0

SIDECARS.

Canoelet Minor.	Royal Ruby.
Canoelet D4.	"Wauchope's" No. 1.
Canoelet K4.	"Wauchope's" No. 2.
Canoelet K3.	Williamsons.

The Latest 1919
6 h.p. J.A.P. TWIN-CYLINDER ENGINES.

From Stock. Trade supplied. Terms on application; these include extras. 50 engines, for immediate delivery, **£37 10s.** each.

Second-hand Machines taken in Part Payment. **Good price allowed.** Maker's guarantee.

WAUCHOPE'S,
9, SHOE LANE, E.C.4.

'Phone: Holborn 5777
'Grams: Opificer, Fleet, London.

MOTOR CYCLES FOR SALE.

A.B.C.

A.B.C.—Book early and prevent disappointment. Specification and full particulars will be sent on application.—The Spalding Motor Co., Ltd., Spalding, distributing agents for Lincolnshire [0015

Abingdon.

3½ h.p. Abingdon King Dick, brand new T.T., Show model; £80.—Harrods Motor Showrooms, 116-118, Brompton Rd. (opposite Main Building), London, S.W.1. [6084

ABINGDON King Dick, 3½h.p., splendid condition, just overhauled, new tube, Dunlop heavy back tyre, belt, piston rings; first cheque above 40 gns. secures.—Comley, 59, High St., Falmouth. [6076

A.J.S.

A.J.S. Specialists and Agents: The Walsall Garage, Walsall. Tel.: 444. [9574

CROW Bros., High St., Guildford, A.J.S. agents since 1912, accept no premiums. [X7943

A.J.S. Brand New 6h.p. Combination, screen, spare wheel, tyre.—Parker's, Bradshawgate, Bolton. [X1115

A.J.S. Spares; engine and gear box repairs; prompt delivery.—Cyril Williams, Chapel Ash Depot, Wolverhampton T.A.: Parts. [2237

2¾h.p. A.J.S., 2-speed, free engine, countershaft, hand clutch, lamps, mechanical horn; £45.—Wilman, 73, Orchard Rd., Darlington. [6013

WAUCHOPE'S, 9, Shoe Lane, London; 1915 A.J.S. 4-5h.p. machine, 3-speed and clutch and kick starter, with coachbuilt sidecar; £130. [5991

A.J.S.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. Sole agents. Now booking for earliest deliveries. [0061

:: DEPOSITS ::

SPECIAL NOTICE.

The attention of Advertisers is called to the fact that Deposits are now dealt with at

20, Tudor St., London, E.C.4,

to which address all communications relating to deposits should be directed

1919 A.J.S. Combination (18/9/1919), spare wheel, etc., over £15 accessories; £195, or part payment 1920 Morgan; after 6.—64, Gladsmuir Rd., Highgate, N.19. [6132

A.J.S. 6h.p. Combination, 1919, M.M., 1915 A.J.S. sidecar, Lucas lamps, horn, mirror, Klaxon, Tan-Sad; after 6; £180; as new.—Beaton, 5, Ruscleigh Gardens, Putney Bridge. [6122

1918 A.J.S. Combination, complete with hood, screen, storm apron, spare wheel with cover, Lucas horn, and 3 lamps; price complete £165 for quick sale; no offers, as machine is in splendid condition.—Wortley Lodge, Burley-in-Wharfedale. [6112

Alldays.

ALLONS at Gourlay's, Fallowfield, Manchester. [2832

ALLDAYS Allon.—Early deliveries; secure now.—Morriss and Co., 139, Finchley Rd., N.W. [6070

JONES' Garage, special agents for Alldays Allon, Broadway, Muswell Hill, N.10, and Woodside Parade, North Finchley. [0027

LATE 1915 Allon 2-stroke, single speed, mileage under 3,000, Lucas lamps, horn, excellent condition, take two anywhere; £44.—Madeley Cottage, Little Common, Bexhill. [X1225

ALLDAYS 2¾h.p. 2-stroke, 2-speed, kick starter, clutch, complete with lamps, etc., good condition and appearance, and in good running order; £55.—Alldays, 21, Alma Rd., Sheerness. [X1410

Ariel.

ARIELS.—Gourlay, Agent, Fallowfield, Manchester. [2833

ARIEL 3h.p., £14; offers.—Rathmell, 22, Warwick Gardens, Harringay, N.4. [6015

CROW Bros., High St., Guildford, Ariel agents, supply at makers' prices. [X7944

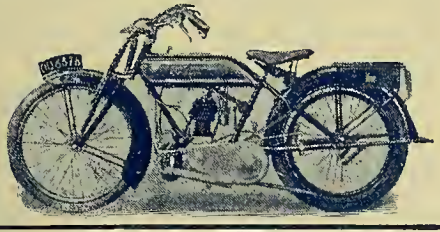
CYRIL WILLIAMS, for early delivery of Ariels.—Chapel Ash Depot, Wolverhampton. [X8625

Coventry-Eagle

"Manners make the man"
and "Grade"
makes the Motor Cycle.
"COVENTRY-EAGLE"
Motor Cycles
are A1 grade down to the
minutest detail.

London Agents—Godfrey's, Ltd.

The Coventry-Eagle Cycle & Motor Co.,
COVENTRY.



Huile de Luxe

(Call it WHEEL OE LOOX.)

If you have a sidecar machine,

consider the economy of buying a 5-gallon drum of oil for your season's requirements—the saving is considerable.

We have ready an interesting, illustrated leaflet showing how you can pour oil from a drum without spilling a drop. Write for this also.

The current Lists give the prices of Oils in drums. Please mention this paper.

PRICES' COMPANY LIMITED,
BATTERSEA, LONDON, S.W 11

100 MILES Per GALLON

That is by no means an impossibility, or an unusual performance, for the simpliest light-weight engine ever built—the

DALM.

In design and manufacture it marks pertection in a two-stroke. If you think in ones or in hundreds, send for our descriptive hooklet.

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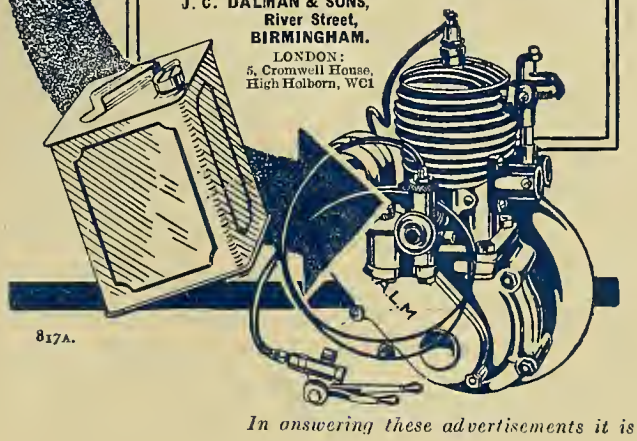

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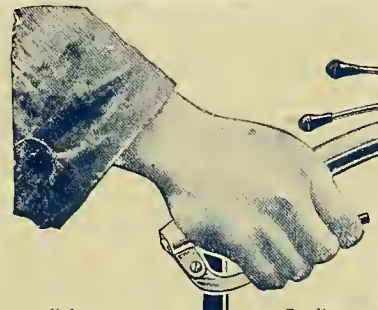

"A touch controls."

There are few names associated with greater benefits to the Motor Cyclist than that of "BOWDEN, Tyseley."

That name is closely allied to the "Safety First" policy of the discerning rider, because the "BOWDEN, Tyseley" Brake and Control Fitments at all times secure his perfect safety under all normal and emergency conditions.

The keynote of "BOWDEN" Service is Efficiency and the Works of "BOWDEN Tyseley," replete with the most modern machinery and methods, scientifically equipped and organised for efficient, accelerated mass production.

BOWDEN BRAKE CO.
Ltd., Tyseley Birmingham

"Bowden," Tyseley.

R.H.S.

Liverpool Reliance Cup Open Trial Successes on

AVON TYRES

Bonus Marks Secured.

The following awards were obtained by successful competitors using Avon Tyres in the Liverpool Reliance Cup Open Trial:

Mead Martin Challenge Cup	Mr. O. Wade.
Gold Medals	Messrs. O. Wade, W. H. Brown, Eric Williams, W. B. Gibb, and T. B. G. Vale.
Silver Medal	Mr. H. Poole.
Bronze Medals	Messrs. R. H. W. Brown and R. Arnold.

Mr. O. WADE, one of the only three competitors in the Trial to gain maximum marks, winner of the Mead Martin Challenge Cup, Gold Medal, and one of the A.J.S. Team, who secured the Silver Cup, writes:

"You will, no doubt, be pleased to hear that I was successful in gaining a Gold Medal in the Liverpool Reliance Cup Open Trial. Your tyres behaved splendidly, and as usual I had no trouble. On Llangollen Canal Hill, bonus marks were given for a clean ascent owing to the very treacherous and greasy surface, and my Avons secured these bonus marks for me."

Mr. E. WILLIAMS, Gold Medallist:

"The lanes they took us through could not have been in a worse condition after the heavy rains on the previous day, but the excellent Avon Non-skids gave me such confidence that I had not a moment's anxiety."

The AVON INDIA RUBBER CO., LTD., 19, Newman St., Oxford St., London, W.1.

Works (Est. 1885): Melksham and Bradford-on-Avon, Wilts.

Depots at Manchester, Glasgow, Birmingham, Bristol, Newcastle, Nottingham, Aberdeen, Leeds, Swansea, Dublin, Belfast.

Printed and Published by the Proprietors, ILIFFE & SONS Limited, 20, Tudor Street, London, E.C.4, and Coventry.

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AUG 6